

Great Yarmouth Third River Crossing Application for Development Consent Order

Document 6.2: Environmental Statement Volume II: Technical Appendix 16C – Annex A and B – Part 1

Planning Act 2008

**The Infrastructure Planning (Applications: Prescribed Forms and Procedure)
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Annex A: 2017/2018 Scope of Works

Land Based Field Works

General Works

The land based ground investigation was undertaken between 18th September 2017 and 27th March 2018 by NPL who acted as Principal Contractor and were contracted to The Applicant. Envirolab Ltd were sub-contracted by NPL to undertake the chemical testing.

The ground investigation was undertaken in general accordance with techniques outlined in BS5930:2015 and BS1377:2016, as appropriate, at the positions shown on Drawing GYTRC-WSP-HGT-DR-GE-0001(AB). The exploratory hole logs are presented in Annex B.1.

The investigation was monitored part time by a Geotechnical Engineer from WSP Ltd.

Gas and Groundwater Monitoring Well Installation

Gas and groundwater monitoring wells were installed in selected boreholes summarised below and were constructed from 50mm perforated plastic pipe with a pea gravel surround and fitted with air tight gas valves. As a minimum requirement, each monitoring well comprised plain pipe from ground level to 1m with a bentonite pellet surround. Exact details of each installation are shown on the Engineer's logs in Annex B.1.

Table A.1: Summary of Monitoring Wells

Borehole ID	BH Depth (m bgl)	Installation Type	Standpipe Depth (m bgl)	Standpipe Response Zone (mbgl)	Target Strata
BH4	30.0	50mm Standpipe	9.5	6.5 – 9.5	Breydon and Crag Formations
BH4A	5.0	50mm Standpipe	1.8	0.5 – 1.7	Made ground and Alluvium
BH4D	30.0	50mm Standpipe	3.5	1.0 – 3.5	Made Ground
		50mm Standpipe	11.0	8.0 – 11.0	Crag Formation
BH6	30.0	50mm standpipe	15.0	9.0 – 15.0	Crag Formation
BH7	6.0	50mm Standpipe	6.0	0.3 – 1.15	Made ground and Breydon Formation

Borehole ID	BH Depth (m bgl)	Installation Type	Standpipe Depth (m bgl)	Standpipe Response Zone (mbgl)	Target Strata
BH10	50.0	50mm Standpipe	3.5	0.5 – 3.5	Made ground and alluvium
BH11	50.0	50mm Standpipe	20.5	4.5 – 20.5	Breydon, North Denes and Crag Formations
BH12B	50.0	50mm Standpipe	10.0	4.0 – 10.0	Made ground, alluvium and Breydon Formation
BH13	50.0	50mm Standpipe	14.5	3.5 – 14.5	Breydon Formation and Crag Formation
BH15	30.0	50mm Standpipe	7.0	1.0 – 7.0	North Denes Formation
WS20	5.0	50mm Standpipe	3.0	1.0 – 3.0	Alluvium (probably Tidal River or Creek Deposits)
WS21	5.0	50mm Standpipe	3.0	1.0 – 3.0	Alluvium (probably Tidal River or Creek Deposits)
WS22	6.0	50mm Standpipe	3.0	1.0 – 3.0	Alluvium (probably Tidal or River Creek Deposits)

It should be noted that an oversight by the Contractor resulted in only one gas and groundwater monitoring visit being undertaken for BH7.

Groundwater and Gas Monitoring

Boreholes were monitored by NPL for ground gas concentrations on a number of occasions on completion of the GI. Concentrations of methane (CH₄), carbon dioxide (CO₂), oxygen (O₂) and trace gases (including carbon monoxide, hydrogen sulphide) were recorded together with gas flow rates. Atmospheric pressures during the monitoring were also noted to enable a

quantitative gas risk assessment to be carried out if necessary in accordance with current best practice.

The results of the gas and groundwater monitoring are presented in Annex B.1.

Groundwater Sampling

NPL have undertaken groundwater sampling on a number of occasions to-date after completion of the site works. Prior to each round of groundwater sampling, three well volumes were purged.

Groundwater samples were retained by NPL in containers provided by Envirolab Ltd and transported to the testing laboratory in accordance with Envirolab Ltd sample handling protocols.

Marine Sampling Works

General Works

The marine sampling works were undertaken between 11th June 2018 and 14th July 2018 by NPL who were contracted to The Applicant. The chemical testing suite was developed by WSP Ltd and undertaken by Envirolab who were sub-contracted by NPL.

Samples were stored in appropriate bottles and transported in cooler boxes to the testing laboratory under a chain of custody protocol within 24 hours of being taken.

The WSP Factual Report including sampling locations and test results is presented in Annex C.

Testing

Chemical Testing – Soils & Leachate

Selected soil samples were scheduled for chemical analysis by WSP Ltd which was undertaken by Envirolab Ltd under contract to NPL. However, some locations (BH14, BH15, BH16, BH17 and WS20, WS21 and WS22) were scheduled by NPL for the same testing suite as those locations scheduled by WSP Ltd. The results of the contamination testing are presented in Annex B.1. The testing was scheduled as set out in Table A2 below.

Table A.2: Summary of Chemical Testing for Soils

Strata	Soil Sample Laboratory Analysis (no.)											% Samples in Upper 1m
	Metals	General	TPHCWG	VOC	SVOC	PAH	PCB EC7	PCB WHO 12	WAC	Asbestos	SOM	
Made Ground	32	32	32	32	32	32	16	9	14	25	32	44
Natural Ground	40	40	42	42	42	42	15	17	10		40	7
Key												
Metals	Arsenic, boron, cadmium, chromium (total and hexavalent), lead, mercury, copper, nickel, selenium and zinc											
General	pH, water soluble sulphate, total sulphate, ammonia as N, phenol, free cyanide and total cyanide											
TPHCWG	Speciated TPH (aliphatic and aromatic split and banded) including Benzene, Toluene, Ethyl Benzene and Xylene											
VOC	Volatile Organic Compounds											
SVOC	Semi Volatile Organic Compounds											
PAH	Speciated Poly Aromatic Hydrocarbons											
PCB EC7	PCBs EC7 Congeners											
PCB WHO12	PCBs WHO12 Congeners											
WAC	Total Waste Acceptance Criteria Suite											
Asbestos	Screen only											
SOM	Soil Organic Matter											

Table A.3: Summary of Chemical Testing for Leachate

Strata	Soil Leachate Laboratory Analysis (no.)					% Samples in Upper 1m
	Metals	General	TPHCWG	SVOC	PAH	
Made Ground	11	11	11	11	11	27
Natural Ground	13	13	13	13	13	15
Key						
Metals	Arsenic, boron, cadmium, chromium (total and hexavalent), lead, mercury, copper, nickel, selenium and zinc					
General	pH, water soluble sulphate, ammonia as N, phenol, free cyanide and total cyanide					
TPHCWG	Speciated TPH (aliphatic and aromatic split and banded) including Benzene, Toluene, Ethyl Benzene and Xylene					
SVOC	Semi Volatile Organic Compounds					
PAH	Speciated Polycyclic Aromatic Hydrocarbons					

Chemical Testing - Water

Water Samples were extracted from the monitoring wells on the Principal Application Site on a number of occasions by NPL and submitted for chemical analysis at Envirolab Ltd. The results of the contamination testing are presented in Annex B.1. The testing was carried out as set out in Table A4 below.

Table A.4: Summary of Chemical Testing for Water (Groundwater and Surface Water)

Water Body	Laboratory Analysis (no.)						
	Metals	General Suite	TPHCWG	VOC	SVOC	PAH	Enhanced General Suite
Groundwater	112	88	112	88	88	112	24
Key							
Metals	Arsenic, cadmium, chromium (hexavalent and total), lead, mercury, copper, nickel, selenium and zinc),						
General Suite	pH, Sulphate water soluble, Ammonia as N, Cyanide (total and free) and phenol						
TPHCWG	Speciated TPH (aliphatic and aromatic split and banded) including Benzene, Toluene, Ethyl Benzene and Xylene						
VOC	Volatile Organic Compounds						
SVOC	Semi Volatile Organic Compounds						
PAH	Speciated Polyaromatic Hydrocarbons (PAH)						
Enhanced general suite (final two monitoring visits only)	Electrical conductivity, BOD, Alkalinity, Hardness, Total Suspended Solids, Ammonium / Ammoniacal nitrogen as NH ₄ , Chloride, Bromine, Fluoride, Nitrite, Nitrate, Nitrate as N, Total Oxidised Nitrogen, Total Nitrogen, Nitrogen (kjeldahl), Phosphate (orthophosphate) as P, Total Phosphorus, Sulphate, DOC, Total Oil & Grease, Calcium, Iron, Manganese, Magnesium, Potassium, Sodium, Ethylene glycol (Monoethylene glycol)						

Chemical Testing – River Bed Soil Samples

River bed soil samples were taken by NPL from the 10 marine boreholes within the River Yare and were submitted for chemical analysis at Envirolab Ltd. The results of the contamination testing are presented in Annex C.

The soil testing was scheduled as set out in Table A5 below.

Table A.5: Summary of Chemical Testing for River Yare Soils

Strata	Soil Sample Laboratory Analysis (no.)											% Samples in Upper 1m
	Metals	General	TPHCWG	VOC	SVOC	PAH	PCB EC7	PCB WHO 12	WAC	Asbestos	SOM	
Made Ground	0	0	0	0	0	0	0	0	0	0	0	0
Natural Ground	20	20	20	20	20	20	9	13	0	10	20	35
Key												
Metals	Arsenic, boron, cadmium, chromium (total and hexavalent), lead, mercury, copper, nickel, selenium and zinc											
General	pH, water soluble sulphate, total sulphate, ammonia as N, phenol, free cyanide and total cyanide											
TPHCWG	Speciated TPH (aliphatic and aromatic split and banded) including Benzene, Toluene, Ethyl Benzene and Xylene											
VOC	Volatile Organic Compounds											
SVOC	Semi Volatile Organic Compounds											
PAH	Speciated Poly Aromatic Hydrocarbons											
PCB EC7	PCBs EC7 Congeners											
PCB WHO12	PCBs WHO12 Congeners											
WAC	Total Waste Acceptance Criteria Suite											
Asbestos	Screen only											
SOM	Soil Organic Matter											

The soil leachate testing was scheduled as set out in Table A6.

Table A.6: Summary of Chemical Testing for Leachate (River Bed Soils)

Strata	Soil Leachate Laboratory Analysis (no.)					% Samples in Upper 1m
	Metals	General	TPHCWG	SVOC	PAH	
Made Ground	0	0	0	0	0	0
Natural Ground	7	7	7	7	7	86
Key						
Metals	Arsenic, boron, cadmium, chromium (total and hexavalent), lead, mercury, copper, nickel, selenium and zinc					
General	pH, water soluble sulphate, ammonia as N, phenol, free cyanide and total cyanide					
TPHCWG	Speciated TPH (aliphatic and aromatic split and banded) including Benzene, Toluene, Ethyl Benzene and Xylene					
SVOC	Semi Volatile Organic Compounds					
PAH	Speciated Polyaromatic Hydrocarbons					

Annex B: Land Based Ground Investigation Factual Reports

Annex B.1 2017/2018 Ground Investigation Factual Report



Norfolk County Council

GREAT YARMOUTH THIRD RIVER CROSSING

Onshore Ground Investigation - Factual Report





Norfolk County **Council**

GREAT YARMOUTH THIRD RIVER CROSSING

Onshore Ground Investigation - Factual Report

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Appendix I – Gas and Ground Water Monitoring



1 INTRODUCTION

On the instructions and under the supervision of WSP (the Engineer), acting on behalf of Norfolk County Council (the Employer), a site investigation was undertaken by Norfolk Partnership Laboratory (Main Contractor) on land partly by James and Milton and partly by Ground Technology (sub-contractors) at the River Yare crossing in Great Yarmouth.

The Great Yarmouth Third Crossing Project comprises a bridge with a central bascule lifting section located centrally over River Yare, and the associated highway embankments, junctions and infrastructure. The proposed bridge alignment would provide an east-west connection between the Strategic Road Network (A47) and the South Denes Business Park, Enterprise Zone, Great Yarmouth Energy Park and the Outer Harbour, all of which are located on the South Denes peninsula.

This factual report is being produced by WSP on behalf of Norfolk Partnership Laboratory for Norfolk County Council.

The objective of the investigation was to determine the ground, groundwater and ground contamination conditions at the site and to provide information that would assist the geotechnical and geoenvironmental design of the proposed works. The scope of the investigation was determined by the Engineer.

The site work at Great Yarmouth Third River Crossing was carried out between the 18th September 2017 and 27th March 2018 and comprised:

- Twenty five cable percussion boreholes (four locations terminated early)
- Sixteen dynamic window sampling boreholes
- Five cone penetration tests
- In-situ and laboratory testing

The site plan Drawing Reference GYTRC-WSP-HGT-DR-GE-0001 is included in Appendix A.

2 THE SITE AND GEOLOGY

The irregular shaped site is located on both sides of River Yare, immediately south of Great Yarmouth town centre. The site is approximately bounded to the north by Boundary Road and Newcastle Road, to the east by Exmouth Road and Admiralty Road, to the south by Swanston's Road and William Adams Way, and to the west by Harfrey's Road. The site area is centred on National Grid reference 652320, 306005. The location of the site is shown on the appended site location plan, WSP drawing No. GYTRC-WSP-HGT-DR-GE-0001 included in Appendix A.

Made Ground material is expected to be present and varied in nature and thickness associated to existing infrastructural developments at the site.

The British Geology Survey Map Sheet 162 (British Geological Survey, 1991) for Great Yarmouth indicates that the site is underlain by a variety of superficial deposits:

- South West – peat of the Breydon Formation
- North – clay and silt of the Breydon Formation
- Eastern part beyond the River Yare – sand and gravel of the North Denes Formation
- Within the River Yare – Clay and silt tidal river or creek deposits

Solid geology underlying the site is shown on the BGS website to comprise sand and gravel of the Crag Group, underlain by London Clay.

Groundsure (Groundsure, 2017) records a number of historical ground workings on site, all associated with the quay/ wharf immediately adjacent to the River Yare.

Extract from geological map included in Appendix B

3 METHOD OF INVESTIGATION

3.1 GENERAL

A Cable Avoidance Tool (CAT) survey was undertaken at the exploratory hole locations. Prior to sinking of the boreholes, dynamic sampler holes and cone penetrometer tests, inspection pits were dug by hand at each location in order to identify the presence of any services.

Details of in-situ sampling and testing carried out, together with the descriptions of the strata encountered, are given on the various exploratory hole records. The investigation was generally carried out in accordance with BS 5930:1999 (British Standard, 1999), BS EN ISO 14688-1:2002 (British Standard, 2002) and BS EN ISO 14689-1:2003 (British Standard, 2003) as appropriate.

Exploratory hole details including depths, surveyed coordinates and installation information are given in Appendix C.

All geotechnical samples were transported to the laboratories and offices of Norfolk Partnership Laboratory (NPL) for examination and testing as scheduled by the NPL and the Engineer. Chemical samples were couriered to the Envirolab laboratory in Cheshire for testing scheduled by the Engineer.

3.2 UNEXPLODED ORDNANCE RISK MITIGATION SURVEY

A detailed unexploded ordnance assessment, commissioned by WSP, was undertaken by Dynasafe BACTEC with the report titled 'Explosive Ordnance Desktop Threat Assessment' dated 17th September 2017, Ref. 7307TA. The detailed assessment considers the site to include zones of low, medium and high risk of unexploded ordnance remaining within the site (Dynasafe, 2017).

At each proposed borehole, dynamic sampler and cone penetrometer (CPT) locations, a magnetometer survey was undertaken by MACC, the UXO protection sub-contractor, in order to identify the possible presence of unexploded ordnance (UXO). The testing was carried out by using a magnetic anomaly locator magnetometer or by inspection, in accordance with the guidance provided in CIRIA C681 (CIRIA, 2009). The results of the risk mitigation survey carried out for the ground investigation are given in Appendix D. The MAGNEX 120 LW operates by detecting ferromagnetic objects which are buried underground or underwater. A further important field of use of the Magnex 120 LW lies in the probing of bore holes where magnetic anomalies have been proven at relatively great depths or in detections fields with a lot of surface bound interference.

A total of three borehole locations were terminated before reaching their scheduled depth due to high Magnetometer readings. At these locations scanned depths were increased but readings remained high. The MACC UXO specialist on site advised that the exploratory holes should be terminated immediately following continuous high readings. A summary of the locations terminated due to high magnetometer readings are provided in the Table 1.

Table 1 - UXO Borehole Termination Summary

Location	Date	Termination Depth (m BGL)	Note
BH4A	04/12/2017	5.0	Location cancelled
BH5	01/12/2017	5.0	Location moved to BH5A
BH7	30/11/2017	6.0	Location cancelled

3.3 CONTAMINATED SITE PROCEDURES

The site was designated to be in the Institution of Civil Engineers Site Investigation Steering Group Yellow category and appropriate protection measures were undertaken (Site Investigation Steering Group, 1993).

Hand held sampling tools were cleaned after each sample to prevent cross contamination between samples. Samples for chemical contamination testing were taken as appropriate for the intended analyses, as shown on the exploratory hole records.

Each borehole was cased, which was progressively reduced in diameter with depth. Environmental seals of bentonite pellets, adequately hydrated were installed with every change in casing diameter, in order to minimise downward mobilisation of any contaminants within shallow soils or Made Ground.

4 FACTUAL INFORMATION

4.1 CABLE PERCUSSION BORING

Twenty five boreholes using three diameter casings 300mm, 250mm and 200mm were sunk to depths below ground level (bgl) between 5.0m and 50.0m using light cable tool percussion boring techniques. The borehole records are included in Appendix C.

The cable percussive boreholes are summarised in the table below:

Table 2 - Borehole Summary

Borehole ID	Date Completed	Depth (mbgl)	Location	Easting	Northing	Ground Level
BH1	11/12/2017	30.45	West Bank – William Adams Way	652112	305897	1.7
BH2	11/12/2017	30.00	West Bank – William Adams Way	652152	305894	1.56
BH3	-	-	Location Cancelled	-	-	-
BH4	05/12/2017	30.45	West Bank – William Adams Way/ Suffolk Road Junction	652233	305880	1.77
BH4A	05/12/2017	5.00	West Bank – William Adams Way	652315	305800	1.25
BH4D	15/12/2017	30.50	West Bank – William Adams Way	652290	305818	1.38
BH5	01/12/2017	5.00	West Bank – Suffolk Road	652223	305943	0.88
BH5A	15/12/2017	30.50	West Bank – Suffolk Road	652226	305950	0.91
BH6	28/11/2017	30.45	West Bank – Access Road off Suffolk Road	652283	305963	0.93
BH7	30/11/2017	6.00	West Bank – Access Road off Suffolk Road	652307	305946	1.23
BH8	30/01/2018	40.37	West Bank – Southtown Road	652390	305988	1.89
BH9	06/02/2018	40.45	West Bank – Southtown Road	652395	305965	1.83
BH10	06/03/2018	50.45	West Bank – Southtown Road	652407	305990	2.45

Borehole ID	Date Completed	Depth (mbgl)	Location	Easting	Northing	Ground Level
BH10A	27/02/2018	50.00	West Bank – Southtown Road	652414	306010	2.55
BH11	20/02/2018	50.00	West Bank – Southtown Road	652411	305966	2.46
BH11A	20/02/2018	50.00	West Bank – Southtown Road	652418	305947	2.50
BH12	16/03/2018	50.00	East Bank – Fish Warf	652513	306003	2.28
BH12A	19/03/2018	5.95	East Bank – Fish Warf	652504	306025	2.37
BH12B	27/03/2018	50.00	East Bank – Fish Warf	652506	306024	2.33
BH13	14/03/2018	50.00	East Bank – Fish Warf	652516	305980	2.27
BH13A	22/03/2018	50.00	East Bank – Fish Warf	652512	305958	2.38
BH14	22/09/2017	40.00	East Bank – Fish Warf	652536	305983	1.96
BH15	20/21/2017	30.45	East Bank – Fish Warf/ S Denes Road Junction	652637	306021	1.92
BH16	05/10/2017	40.45	East Bank – Fish Warf	652552	306008	2.00
BH17	22/09/2017	40.45	East Bank – Fish Warf	652556	305985	2.05
BH18	28/09/2017	40.45	East Bank – Fish Warf	652532	306006	2.00

Disturbed samples were taken at each change in soil type and at regular vertical intervals during boring in order to identify and give a record of the strata encountered. Environmental disturbed samples were also taken at varying depths within the boreholes which reduced in frequency at deeper depths.

In cohesive soils nominal 100mm diameter general purpose thin-wall driven open tube (UT100) samples were taken and subsequently sealed to preserve their natural moisture contents.

Standard penetration tests (SPT) using a split spoon (S) or a solid 60° cone (C) were carried out in the Made Ground, granular deposits and alternating with UT100 sampling in the cohesive materials. The results of in-situ tests are shown on the borehole records at the relevant depths included in Appendix C.

During the course of boring attention was given to recording any evidence of water inflow in order that the groundwater level beneath the site could be established. Water levels at breaks in boring were recorded where appropriate. Water samples were taken where sufficient water was encountered to allow sampling. Where water was added to facilitate penetration of the soil strata, or to maintain a positive hydrostatic head in the granular strata, this is noted on the borehole records.

Where blowing sand were encountered during drilling, preventative measures were undertaken to reduce the negative effects of the blowing. This was achieved by altering the drilling method to reduce the build up of negative pressures, as well as adding Drilling fluid, i.e. water or a ‘Dandopol’ polymer/water mix to aid drilling.

A total of four locations, including BH4A, BH5, BH7 and BH12A, were terminated before the scheduled depth due to obstructions encountered or detected during drilling. Details of the termination for each borehole are included on the log that are presented in Appendix C.

4.2 MARINE CABLE PERCUSSION BORING

No marine cable percussive boreholes are included in this factual report. The Factual report for the 2018 off-shore ground investigation shall be issued separately.

4.3 DYNAMIC WINDOW SAMPLING BOREHOLES

Sixteen dynamic sampling boreholes were sunk using the soil sampling (window) system to depths of between 1.10m and 6.00m below ground level (bgl). Penetration of the sampler was obtained by driving up to 128mm diameter windowless tubes, with PVC sleeves, by percussion using a vibrating hammer. Disturbed samples were subsampled from the tubes onsite. The Window Sample records are included in Appendix C.

A total of two trial pit locations from the original scope were undertaken as window samples due to restricted space at each location. An additional two window samples (BH4ASU, BH4BU) were undertaken along William Adams Way at locations that were not accessible by either trial pitting or the cable percussive borehole rig.

The dynamic window sampling boreholes are summarised in the table below:

Table 3 - Window Sample Summary

Window Sample ID	Date Completed	Depth (mbgl)	Location	Easting	Northing	Ground Level
WS1	05/12/2017	5.00	West Bank – William Adams Way – Crest of embankment	652125	305895	1.55
WS2	06/12/2017	2.00	West Bank – William Adams Way – Mid slope of embankment	652124	305897	0.85
WS3	06/12/2017	5.00	West Bank – William Adams Way – Toe of embankment	652124	305899	0.18
WS4	05/12/2017	5.00	West Bank – William Adams Way – Crest of embankment	652157	305893	1.59
WS5	04/12/2017	2.00	West Bank – William Adams Way – Mid slope of embankment	652156	305894	1.09
WS6	05/12/2017	5.00	West Bank – William Adams Way – Toe of embankment	652156	305897	0.14

Window Sample ID	Date Completed	Depth (mbgl)	Location	Easting	Northing	Ground Level
WS7	04/12/2017	8.00	West Bank – William Adams Way – Crest of embankment	652204	305885	1.70
WS8	04/12/2017	2.00 (3.00)	West Bank – William Adams Way – Mid slope of embankment	652203	305888	0.87
WS9	04/12/2017	5.00	West Bank – William Adams Way – Toe of embankment	652203	305890	0.27
WS20	11/09/2018	5.00	East Bank – Fish Warf	652545	305995	1.49
WS21	12/09/2018	5.00	East Bank – Fish Warf	652537	305984	1.96
WS22	10/09/2018	6.00	East Bank – Fish Warf	652572	306017	2.00
TP1	07/12/2017	6.00	West Bank – Suffolk Road	652248	305907	0.72
TP1B	13/12/2017	6.00	West Bank – William Adams Way – Eastbound verge	652342	305808	1.82
BH4ASU	13/11/2017	6.00	West Bank – William Adams Way – Eastbound verge	652280	305853	2.13
BH4BU	13/11/2017	5.00	West Bank – William Adams Way – Eastbound verge	652322	305820	1.83

4.4 TRIAL PITTING

No Trial pits were undertaken as part of this ground investigation. Scheduled trial pitting was replaced by window sampling due to space constraints encountered on site, as detailed in Section 4.3.

4.5 INSTRUMENTATION AND MONITORING

Fifteen installations were completed at No.14 locations within the scheme. 50mm diameter HDPE groundwater and gas monitoring standpipes and vibrating wire piezometers were installed within selected boreholes as summarised in the table below:

Table 4 - Installations Summary

Borehole ID	BH Depth (m bgl)	Installation Type	Standpipe Depth (m bgl)	Standpipe Response Zone (mbgl)
BH4	30.0	50mm Standpipe	9.5	6.5 – 9.5
BH4A	5.0	50mm Standpipe	1.8	0.5 – 1.7
BH4D	30.0	50mm Standpipe	3.5	1.0 – 3.5
		50mm Standpipe	11.0	8.0 – 11.0
BH5A	30.0	Vibrating Wire	6.5	5.5 – 6.0
BH6	30.0	50mm Standpipe	15.0	9.0 – 15.0
BH7	6.0	50mm Standpipe	1.15	0.3 – 1.15
BH10	50.0	50mm Standpipe	3.5	0.5 – 3.5
BH11	50.0	50mm Standpipe	20.5	4.5 – 20.5
BH12B	50.0	50mm Standpipe	10.0	4.0 – 10.0
BH13	50.0	50mm Standpipe	14.5	3.5 - 14.5
BH15	30.0	50mm Standpipe	7.0	1.0 – 7.0
WS20	5.0	50mm Standpipe	3.0	1.0 – 3.0
WS21	5.0	50mm Standpipe	3.0	1.0 – 3.0
WS22	6.0	50mm Standpipe	3.0	1.0 – 3.0

Groundwater entries were recorded in most boreholes with the exception of boreholes BH5, BH11A, BH12 and BH13. Groundwater entries were recorded in the range 0.90m (BH8) to 11.40m bgl (BH1). The recorded groundwater depths are summarised in the table below.

Table 5 - Groundwater Records Summary

Borehole ID	Depth of seepage noted (m bgl)	Depth of water after 20 minutes (m bgl)	Change in water depth (+/- m bgl)	Notes
BH1	2.80	2.80	0.00	Seepage
	11.40	7.00	-4.40	Fast Flow
BH2	3.10	2.70	-0.40	Slow Flow
BH4	3.00	2.24	-0.76	Very Slow Flow
	5.50	3.5	-2.00	Fast Flow
BH4A	3.20	2.90	-0.30	Slow Flow
BH4D	2.10	2.00	-0.10	Medium Flow
BH5A	1.10	1.10	0.00	Seepage
	3.60	3.32	-0.28	Slow Flow
BH6	2.10	1.66	-0.44	Slow Flow
BH7	3.90	3.61	-0.29	Slow Flow
BH8	0.90	0.86	-0.04	Seepage
BH9	1.30	1.25	-0.05	Very Slow Flow
BH10	4.00	3.63	-0.37	Slow Flow
BH10A	1.40	1.26	-0.14	Very Slow Flow
BH11	2.40	2.30	-0.10	Medium Flow
BH13A	1.90	1.85	-0.05	Very Slow Flow
BH14	1.40	-	-	-
BH15	2.00	1.70	-0.30	Very Slow Flow
BH16	2.00	-	-	-

Borehole ID	Depth of seepage noted (m bgl)	Depth of water after 20 minutes (m bgl)	Change in water depth (+/- m bgl)	Notes
BH17	2.00	-	-	-
BH18	2.70	-	-	-
WS1	2.00	1.70	-0.30	Medium Flow
WS2	2.00	1.30	-0.70	Medium Flow
WS3	0.80	0.60	-0.20	Slow Flow
WS4	2.00	1.85	-0.15	Slow Flow
WS5	NA	-	-	-
WS6	2.00	0.65	-1.35	Fast Flow
WS7	NA	-	--	-
WS8	NA	-	-	-
WS9	0.50	0.5	0.00	DNR
WS20	4.00	-	-	-
WS21	1.00	-	-	-
WS22	3.00	-	-	-
TP1	5.00	2.40	-2.60	Fast Flow
BH4ASU	2.00	2.00	0.00	
	5.00	5.00	0.00	
BH4BU	NA			

4.5.1 GROUNDWATER MONITORING

Standpipes were installed as described above in Section 4.5. Details of these installations, and water depth upon completion of the installation are given within Table 5.

At the time of issue of this report a total of fourteen groundwater monitoring and sampling visits had been completed. If further groundwater monitoring is required it will be issued as an addendum to this report.

A summary of the monitoring completed between 01st June 2018 and the 20th December 2018 are presented in Appendix I. Details of the Piezometer, Methane, Carbon Dioxide Oxygen, flow and atmospheric pressure are presented in the Appendix.

All geoenvironmental testing undertaken from sampling completed during the groundwater monitoring visits are included in Section 6.2 of this report.

4.6 SITE SURVEY

A final topographic survey of the completed exploratory hole location was undertaken on 28th March 2018 by surveyors appointed by the Norfolk Partnership Laboratory.

5 FIELD TESTING

5.1 CONE PENETRATION TEST

A total of 5 No. Static Cone Penetration Tests (CPT) were made using hydraulic penetrometer equipment at locations set out by the Clients Representative on site. Details of the test results and interpretations are presented in Appendix E. The fieldwork was carried out on the 19th and 20th March 2018.

The cone penetration tests are summarised in the table below:

Table 6 - Cone Penetration Summary

Test ID	Date Completed	Depth (mbgl)	Location	Coordinates	Ground Level
CPT 01	20/03/2018	30.0	West Bank – Suffolk Road	652228-305895	1.06
CPT 02	19/03/2018	30.0	West Bank – Suffolk Road	652244-305934	0.73
CPT 03	19/03/2018	32.4	West Bank – Access Road off Suffolk Road	652308-305951	1.17
CPT 04	19/03/2018	36.0	East Bank – Fish Warf	652572-306018	1.49
CPT 05	20/03/2018	30.0	East Bank – Fish Warf	652646-305985	1.83

The static cone penetration tests were made using twenty one tonne capacity hydraulic penetrometer equipment mounted on a truck, ballasted to provide the reaction weight. A 7.5 tonne capacity electric cone was used for each of the tests and during each test, measurements of local side friction were made in addition to cone end resistance. At all test locations measurements of porewater pressure were also made using an electric piezo-cone fitted with a filter and pressure sensor so that the pore water pressure (PWP) could be measured on the shoulder of the cone tip.

All tests were terminated at a depth instructed on site or on the basis of refusal when the maximum safe thrust capacity of the equipment was reached. The method of operation of the piezo-cone is outlined on the piezo-cone operation sheet in Appendix E, together with the Piezo-cone Penetrometer datasheet showing the layout of this type of cone.

The test results have been interpreted to provide the estimated soil types which have also been compared to borehole information from the site. The method of interpretation of the soil type is outlined on the data sheets given in Appendix E.

The results of all tests carried out are presented in the Appendix E and show the records of cone end resistance, local side friction and friction ratio. The results of the piezo-cone penetration tests are presented as separate plots for each test. The plots contains the basic data obtained during the test, i.e. cone resistance, cone sleeve friction and porewater pressure, as well as parameters derived from the basic data, i.e. net cone resistance, excess porewater pressure ratio and friction ratio.

5 pore pressure dissipation tests were carried out at CPT locations using the piezo-cone penetrometer. The test measured the dissipation of excess pore water pressures generated during cone testing. In order to achieve

this, the piezo-cone is advanced to the required test depth, temporarily stopped and the decrease in pore water pressure monitored with time. The results are presented in graphical form in Appendix E.

The cone penetration dissipation test locations are summarised in the table below:

Table 7 - Dissipation Test Summary

Test ID	Date Completed	Depth (mbgl)	Location	Coordinates	Ground Level
CPT 01	20/03/2018	3.46	West Bank – Suffolk Road	652228-305895	1.06
CPT 01	20/03/2018	4.00	West Bank – Suffolk Road	652228-305895	1.06
CPT 02	19/03/2018	2.40	West Bank – Suffolk Road	652244-305934	0.73
CPT 03	19/03/2018	4.60	West Bank – Access Road off Suffolk Road	652308-305951	1.17
CPT 04	19/03/2018	30.99	East Bank – Fish Warf	652572-306018	1.49

5.2 DYNAMIC CONE PENETROMETER TESTING

A total of seven Dynamic Cone Penetrometer (DCP) tests were undertaken during the fieldwork. Two tests were carried out in conjunction with shallow window sampling completed along the proposed realignment of the William Adams Way to the south at BH4A and BH4B. Three tests were undertaken along the existing embankment to the west of William Adams Way leading to the A12 round about and a single test (WS7DP) was completed to a depth of 15m close to the location of the cancelled BH3. A final DCP test was completed at the location of TP1.

The Dynamic Cone Penetrometer tests are summarised in the table below:

Table 8 - Dynamic Cone Penetrometer Testing Summary

Test ID	Date Completed	Depth (mbgl)	Location	Coordinates	Ground Level
BH4AS	14/12/2017	15.0	West Bank – William Adams Way	652284 - 305846	2.13
BH4B	14/12/2017	15.0	West Bank – William Adams Way	652312 - 305826	1.83
WS2DP	07/12/2017	5.00	West Bank – William Adams Way	652124 - 305896	0.85
WS5DP	05/12/2017	6.00	West Bank – William Adams Way	652156 - 305894	1.09
WS7DP	06/12/2017	15.00	West Bank – William Adams Way	652204 - 305884	0.85
WS8DP	07/12/2017	5.00	West Bank – William Adams Way	652203 - 305887	0.87

Test ID	Date Completed	Depth (mbgl)	Location	Coordinates	Ground Level
TP1	07/12/2017	15.0	To be confirmed - West Bank – Suffolk Road	652248 - 305907	0.72

The DCP's carried out as part of this investigation have been undertaken in accordance with TRL Project Report PR/INT/227/04

The results of the DCP tests are included in this report as Appendix F.

5.3 STANDARD PENETRATION TESTING

Standard Penetration Tests (SPT's) were carried out using the split spoon (S) or cone (C) attachment within the boreholes. The tests were carried out in accordance with BS EN ISO 22476-3:2005+A1:2011 (British Standard, 2006). The results are included on the appended borehole logs presented in Appendix C. The calibration / efficiency certificates for the relevant drilling rigs are summarised in the table below:

Table 9 - SPT Efficiency Ratings

SPT I.D	SPT Rod Type	Calibration Date	SPT Energy Ratio	Boreholes
DT-MGS174	1 ½ Whitworth SPT	06/04/2017	66.76	BH1, BH4, BH5A, BH8, BH9, BH10A, BH11A, BH13A
DT-GT03	1 ½ Whitworth SPT	27/04/2017	73.34	BH2, BH4A, BH4D, BH5, BH6, BH7, BH15
DT-AR1707	1 ½ Whitworth SPT	27/04/2017	70.37	BH10, BH11, BH12A, BH12B,
DT-DT0537	1 ½ Whitworth SPT	13/04/2017	70.68	WS1, WS2, WS3, WS4, WS5, WS6, WS7, WS8, WS9, TP1
J&M – JM03	1 ½ Whitworth SPT	12/11/2016	71.99	BH14, BH18,
J&M – JM04	1 ½ Whitworth SPT	12/11/2016	71.58	BH16, BH17

6 LABORATORY TESTING

6.1 GEOTECHNICAL LABORATORY TESTING

The laboratory testing schedules for geotechnical tests were prepared by WSP in coordination with Norfolk Partnership Laboratory.

The information included in this report is taken from the results of tests undertaken by the Norfolk Partnership Laboratory at County Hall, Martineau Land Norwich (UKAS accredited testing laboratory No. 0920), Harrison Group Environmental Ltd (UKAS accredited testing laboratory No. 4031) and Terra Tek, UKAS accredited testing laboratory No. 0126. The results of the laboratory tests in this report do not include some of the data required by the documented test procedure. However, all such data has been recorded by the aforementioned laboratories and will be issued on the client's instructions.

The following accredited test procedures were carried out:

- Natural Moisture Content
- Plasticity Index
- Liquid Limit
- Plastic limit
- Particle Size Density (PSD)
- Sedimentation
- Determination of CBR
- Maximum dry density/moisture content relationship
- Triaxial Testing (Quick Undrained Single Stage)
- Consolidation (one dimensional)

Testing was also scheduled and undertaken at the Norfolk Partnership Laboratory for sulphate suite in accordance with BRE Special Digest 1 (BRE, 2005), as listed below:

- Sulphate (total water soluble)
- Sulphur (Total)
- pH

A summary of the scheduled testing is shown in the table below:

Table 10 - Geotechnical Laboratory Testing Summary

Test	Number	Standard
Natural Moisture Content	17	BS 1377 : Part 2 :1990 - Section 3
Liquid Limit/ Plasticity Index	129	BS1377-2:1990 CI 4.3 BS1377-2:1990 CI 5

Test	Number	Standard
Particle Size Density	619	BS 1377 : Part 2 :1990 Section 9.1 & 9.4
Determination of CBR	4	BS 1377 : PART 4 : 1990
Determination of Dry Density/ Moisture Content Relationship	1	BS 1377 : Part 4 : 1990 : Section 3
Determination of Undrained Shear Strength - Definitive	65	BS1377 : Part 7 : 1990, Clause 8, Single Specimen
Determination of One Dimensional Consolidation	13	BS1377:Part 5:1990, clause 3

The geotechnical laboratory tests were carried out in the period between the September 2017 to October 2018.

The geotechnical laboratory testing has been carried out in accordance with BS 1377: 1990 (British Standard, 1990) using calibrated equipment specified within the British Standard.

The geotechnical laboratory test results are included in this report as Appendix G. All geotechnical testing will be submitted in AGS format with the electronic version of the report.

6.2 CHEMICAL LABORATORY TESTING

Soil samples selected by the Clients Representative were tested against a geo-environmental testing suite as chosen by WSP. The MCERTS accredited testing was undertaken by EnviroLab (UKAS Laboratory No. 1247).

The following accredited chemical testing test procedures were carried out on soil, water and for leachates:

Table 11 – Chemical Laboratory Testing Summary

Determinands	Soil	Soil Leachate	Water
Metals (Arsenic, Boron, Cadmium, Chromium (total and hexavalent), Copper, Lead, Mercury, Nickel, Selenium and Zinc)	✓	✓	✓
pH	✓	✓	✓
TPH CWG (GC-MS aliphatic/aromatic split) inc BTEX and MTBC	✓	✓	✓
VOCs by GCMS (including vinyl chloride)	✓		✓

Determinands	Soil	Soil Leachate	Water
SVOCs by GCMS excluding PAHs	✓	✓	✓
speciated PAH (USEPA 16)	✓	✓	✓
Ammonia as N	✓	✓	✓
Phenol	✓	✓	✓
Soil Organic Matter	Selected samples		
Cyanide - total	✓	✓	✓
Cyanide - free	✓	✓	✓
PCB's EC7 Congeners	Selected samples		
PCB's WHO 12 Congeners	Selected samples		
Sulphate - total	✓		
Sulphate - water soluble, 2:1 extract	✓	✓	✓
Asbestos (screen only)	Selected samples		
Total WAC Suite	Selected samples		
Leachate prep		✓	

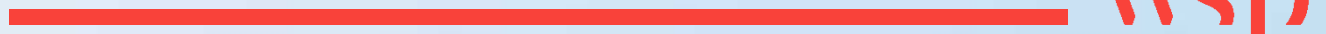
In addition to the laboratory testing outlined above selected samples was tested against the Waste Acceptance Criteria (WAC) suite of contaminants for classification for potential offsite disposal. The WAC testing was undertaken between December 2017 to October 2018 by EnviroLab.

Details of the standards used and the test results are presented in the Laboratory Test Results included in Appendix H. All chemical testing will be submitted in AGS format with the electronic version of the report.

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Appendix A



SITE PLAN

SURVEY CONTROL POINTS (CP)

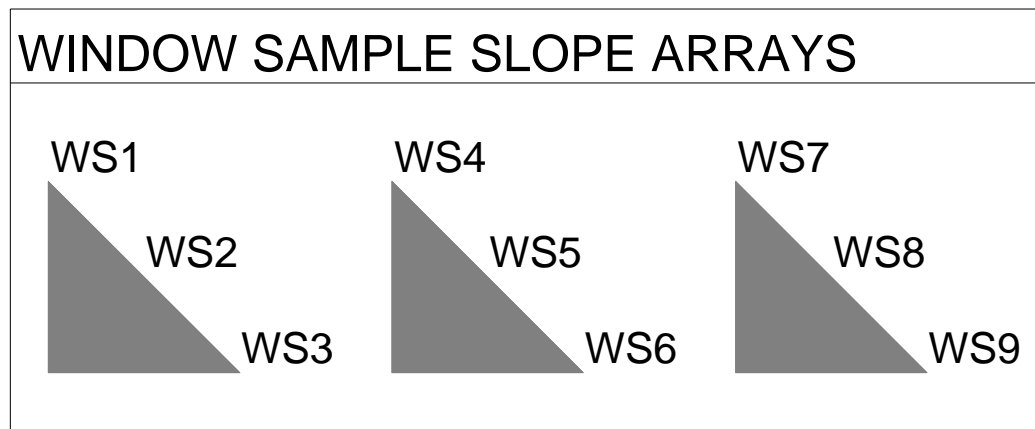
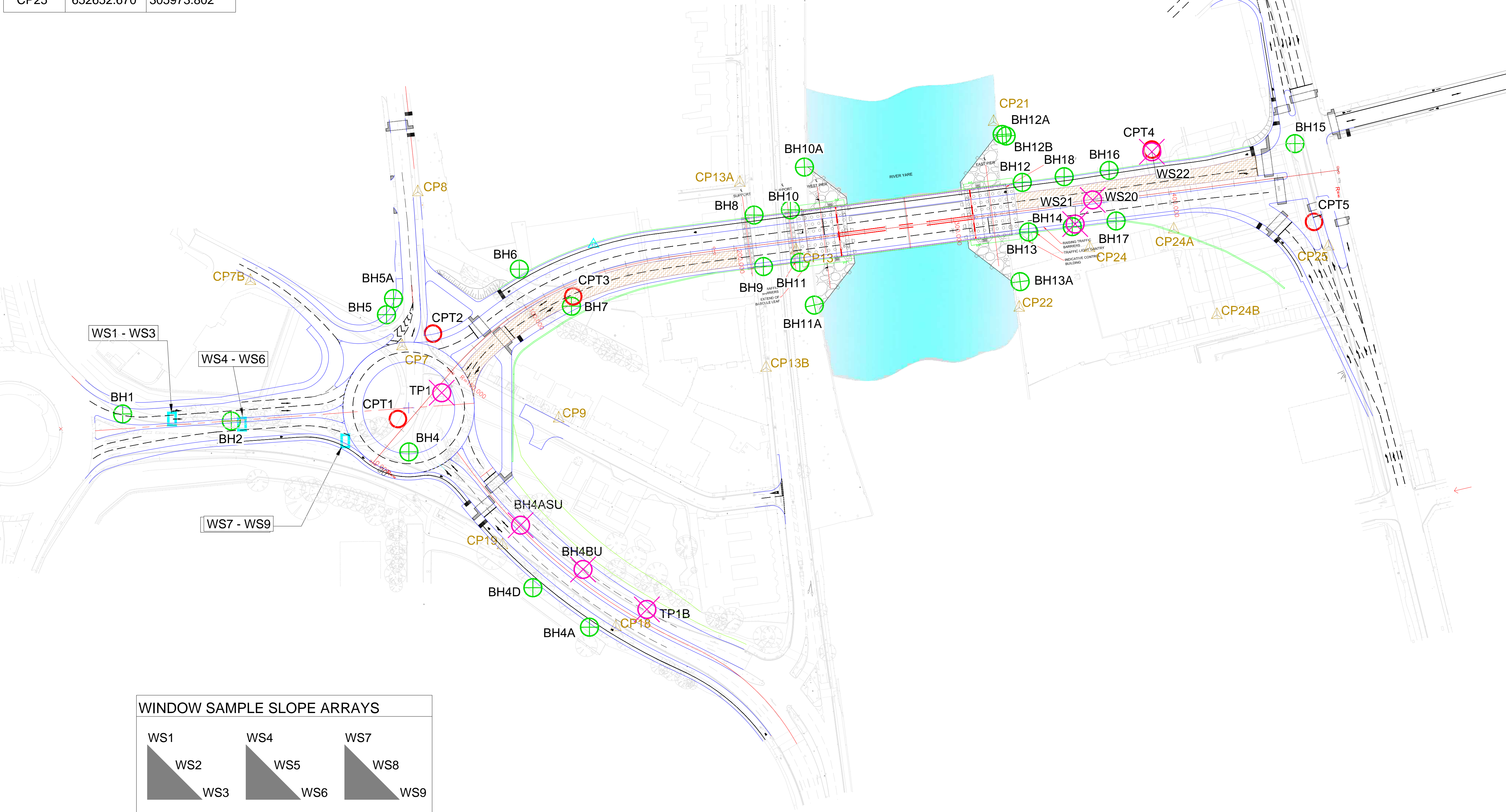
Name	Easting	Northing
CP7	652229.896	305928.238
CP7B	652160.722	305958.012
CP8	652237.071	305998.554
CP9	652301.363	305895.232
CP13	652409.609	305971.955
CP13A	652384.008	306002.816
CP13B	652395.988	305918.419
CP18	652327.431	305800.020
CP19	652275.712	305837.401
CP21	652499.777	306030.621
CP22	652511.485	305945.817
CP24	652543.602	305973.087
CP24A	652582.005	305981.555
CP24B	652601.692	305942.527
CP25	652652.670	305973.802

KEY

- CONE PENETRATION TEST
- ⊕ BOREHOLE
- ⊗ WINDOW SAMPLE
- ARRAY OF 3 WINDOW SAMPLES
- △ SURVEY CONTROL POINTS (CP) (APPROX)

LOCATION CO-ORDINATES

	REF	EASTING	NORTHING
CONE PENETRATION TEST	CPT1	652228.000	305895.000
	CPT2	652244.000	305934.000
	CPT3	652308.000	305951.000
	CPT4	652572.000	306018.000
	CPT5	652646.000	305985.000
BOREHOLE	BH1	652102.400	305897.300
	BH2	652152.000	305894.100
	BH3	Cancelled	
	BH4	652233.000	305880.000
	BH4A	652315.400	305800.000
	BH4D	652289.600	305818.000
	BH5	652222.800	305942.600
	BH5A	652226.000	305950.000
	BH6	652283.400	305963.400
	BH7	652307.200	305946.500
	BH8	652390.500	305988.100
	BH9	652394.800	305964.600
	BH10	652407.100	305990.500
	BH10A	652413.500	306010.000
	BH11	652411.400	305966.500
	BH11A	652418.000	305947.000
	BH12	652512.900	306003.000
	BH12A	652503.700	306024.900
BH12B	652505.500	306024.200	
BH13	652515.800	305980.400	
BH13A	652511.900	305957.700	
BH14	652535.700	305982.800	
BH15	652637.300	306020.700	
BH16	652552.500	306008.500	
BH17	652555.700	305985.400	
BH18	652532.000	306005.600	
WINDOW SAMPLE	WS1	652124.700	305894.600
	WS2	652124.400	305896.960
	WS3	652124.300	305899.200
	WS4	652156.600	305893.000
	WS5	652156.200	305894.500
	WS6	652156.400	305896.800
	WS7	652203.900	305885.000
	WS8	652202.900	305887.220
	WS9	652203.000	305889.800
	WS20	652545.000	305995.000
	WS21	652537.000	305984.000
	WS22	652572.000	306017.000
TP1	652248.210	305907.290	
TP1B	652341.600	305808.100	
BH4ASU	652283.980	305846.550	
BH4BU	652312.470	305826.350	



NOTES:
 1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED.
 2. DO NOT SCALE FROM THIS DRAWING.

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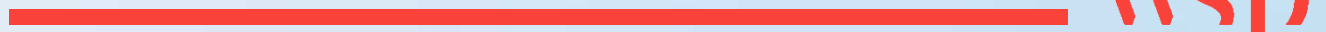
Tom McCabe
 Executive Director of
 Community and Environmental Services
 Norfolk County Council
 County Hall, Martineau Lane
 Norwich NR1 2SG

DRAWING TITLE
 GREAT YARMOUTH THIRD RIVER CROSSING
 PLAN SHOWING ACTUAL
 EXPLORATORY HOLE LOCATIONS

REV.	DESCRIPTION	DRAWN BY	CHECKED	DATE
C	COORDINATE UPDATE	DL	AC	NOV18
B	ADDITIONAL WINDOW SAMPLING ADDED	DL	AC	NOV18
A	FIRST ISSUE	DL	AC	JUL18

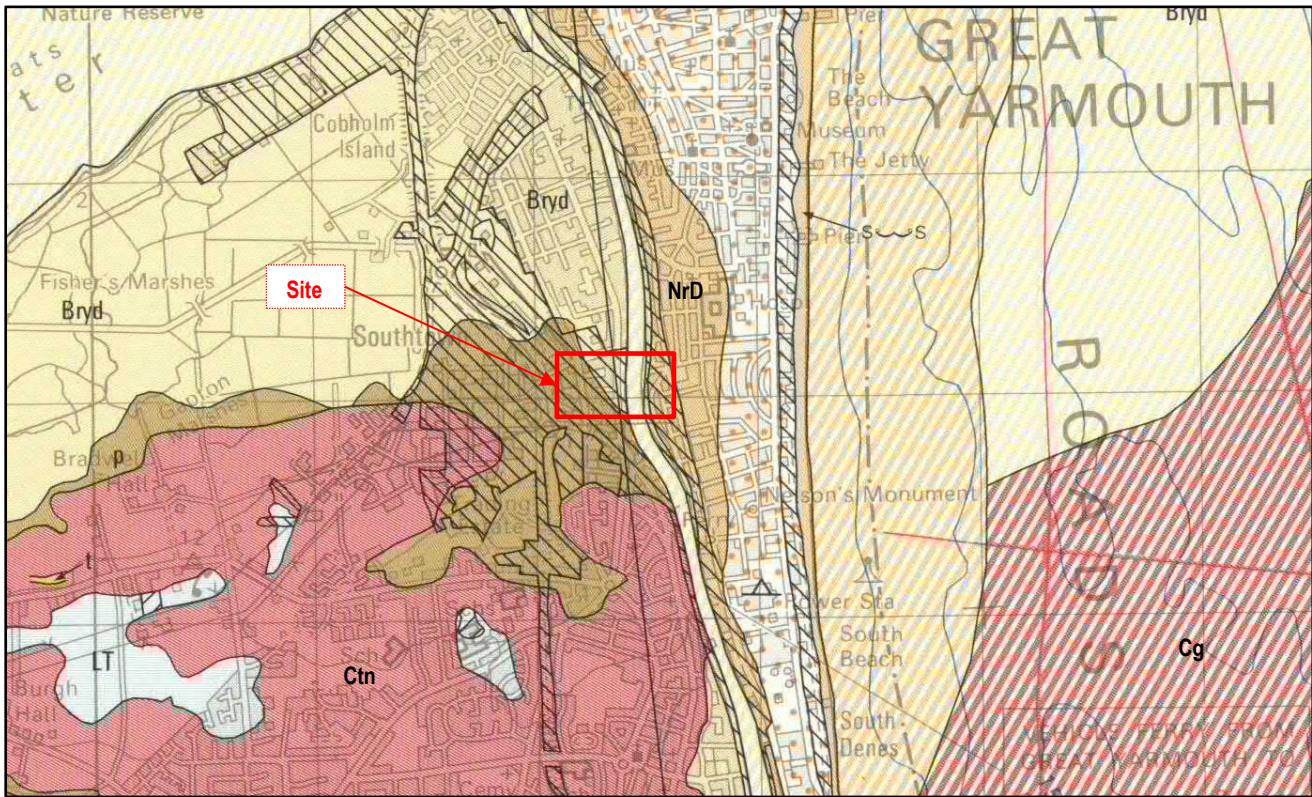
DESIGNED BY	INITIALS	DATE	DRAWING No.
DL	DL	JUL 18	GYTRC-WSP-HGT-DR-GE-0001(AB)
CE	CE	JUL 18	PROJECT TITLE
AC	AC	JUL 18	GREAT YARMOUTH THIRD RIVER CROSSING
AC	AC	JUL 18	SCALE 1:1000 @ A1
AC	AC	JUL 18	FILE No. 0001

Appendix B



GEOLOGICAL MAP

APPENDIX B



Key

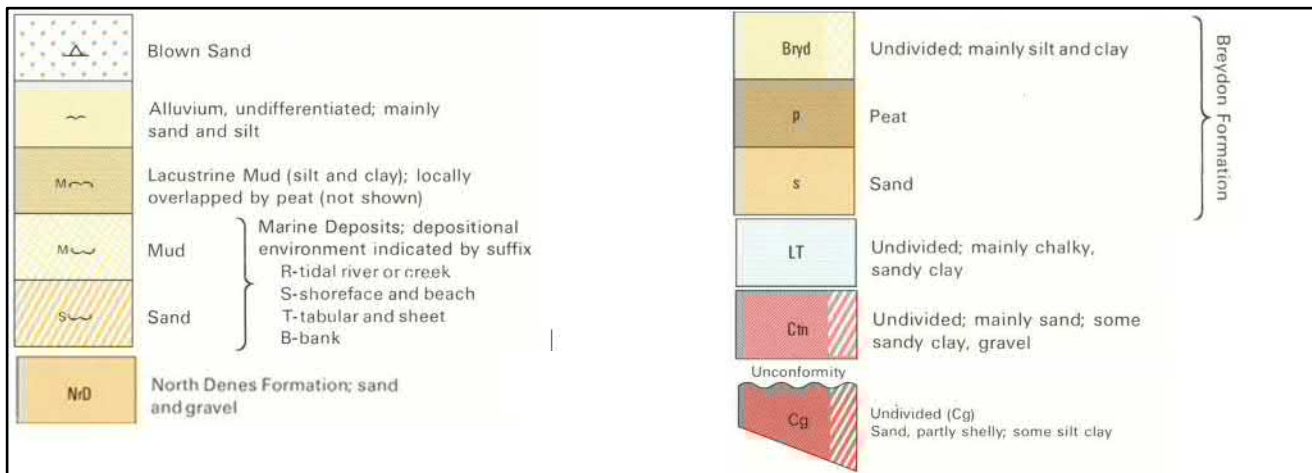


Figure 1- Quaternary and Pre-Quaternary Geology - Map 162 - 1:50,000 (C18/02 British Geological Survey © UKRI. All Rights Reserved 2018).

Appendix C

EXPLORATORY HOLE RECORDS



NORFOLK PARTNERSHIP LABORATORY

Borehole Log

Sheet 2 of 4



Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	Borehole No.	BH1		
Carried out for	Community & Environmental Services	Date Started	06/12/2017	Date Finished	08/12/2017		
Remarks:	Inspection pit: Hand dug	Type of Rig	Hand tools+Comacchio MC305+Dando 4000		Logged by	MB	
		Depth (m)	30.45	Ground Level (m AOD)	1.70	Drawn by	RK
		Co-ords	652102 - 305897			Checked by	MLB

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests						
							Type	No.		MC%	LL	PL	MPI	Org.	CBR	
		200	Black & dark brown fibrous PEAT. H2 B2 F3 R2 W1 Tv1 Th2 A1 P0 BREYDON FORMATION		11.00		●	36 35		359						
			Medium dense grey fine to medium SAND, with numerous lenses of dark grey silty fine SAND. BREYDON FORMATION		11.40		●	39 41	↓ 14							
			<i>Becoming more mottled yellowish brown & grey fine to medium sand, with lenses of grey organic silty fine sand from 12.00m</i>		12.00		●	42	↓							
			Medium dense greyish brown fine to medium SAND, with occasional shell fragments. CRAG		13.00	13.00	●	43 44	↓ 15							
			<i>Becoming laminated grey, brown & orangey brown fine to medium SAND from 14.50m</i>		14.00		●	45 46	↓ 25							
			Medium dense orangey brown fine to medium SAND. CRAG		15.00		●	47 48	↓ 25							
			Medium dense orangey brown gravelly, silty fine SAND. Gravel is fine to medium angular to sub-angular flint. CRAG		15.50		●	49 50	↓ 17							
			Medium dense orangey brown gravelly, silty fine SAND. Gravel is fine to medium angular to sub-angular flint. CRAG		16.40		●	51 52	↓ 21							
			Dense orange fine to medium SAND. CRAG		17.00		●	53	↓							
			<i>Becoming very dense from 19.50 to 21.00m</i>		17.30		●	54 55	↓ 32							
					18.00		●	56 57	↓ 48							
					19.00		●	58 59	↓ 50							

NORFOLK PARTNERSHIP LABORATORY

Borehole Log

Sheet 3 of 4



Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	Borehole No.	BH1		
Carried out for	Community & Environmental Services	Date Started	06/12/2017	Date Finished	08/12/2017		
Remarks:	Inspection pit: Hand dug	Type of Rig	Hand tools+Comacchio MC305+Dando 4000		Logged by	MB	
		Depth (m)	30.45	Ground Level (m AOD)	1.70	Drawn by	RK
		Co-ords	652102 - 305897			Checked by	MLB

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests							
							Type	No.		MC%	LL	PL	MPI	Org.	CBR		
					21.00		●	60	↓ 40								
					22.00		●	63									
			<p>23.00</p> <p><i>Becoming medium dense from 23.00m</i></p>		23.00		●	64	↓ 28								
			<p>24.20</p> <p>Dense grey silty fine to medium SAND, with some shell fragments. CRAG</p>		24.20		●	66									
			<p>25.00</p> <p><i>Becoming slightly silty from 25.00m</i></p>		25.00		●	67	↓ 43								
			<p>26.10</p> <p>Stiff laminated grey clayey SILT & light grey silty fine to medium SAND, with occasional shell fragments. CRAG</p>		26.10		●	69									
					27.00												
					28.00		●	71		27	39	17	22				
					28.80		●	72									
			<p>29.00</p> <p>Medium dense grey silty fine to medium SAND with thin bed of stiff grey silty CLAY, with some shell fragments. CRAG</p>		29.00		●	73	↓ 20								
							●	74									
							●	75									
										22	20						

NORFOLK PARTNERSHIP LABORATORY

Borehole Log

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Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	Borehole No.	BH2		
Carried out for	Community & Environmental Services	Date Started	06/12/2017	Date Finished	08/12/2017		
Remarks:	Inspection pit: Hand dug. General; trench hole dug to locate service near BH found 0.7m from the road and 0.3m from BH from 8.30am to 9.00am. General; tried piston test at 7.5m failed. General; 250l of water added	Type of Rig	Dando 2000+Hand tools		Logged by	MB	
		Depth (m)	30.00	Ground Level (m AOD)	1.56	Drawn by	RK
		Co-ords	652152 - 305894			Checked by	MLB

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests						
							Type	No.		MC%	LL	PL	MPI	Org.	CBR	
			Dark greyish brown sandy TOPSOIL. TOPSOIL		0.40		●	1								
			Brown slightly silty very gravelly, fine to medium SAND, with lenses of firm sandy, silty CLAY, with roots. Gravel is medium to coarse angular to sub-angular flint & asphalt. MADE GROUND		1.20		●	2								
			Medium dense brown slightly silty, gravelly fine to medium SAND. Gravel is fine to medium sub-angular to sub-rounded flint. MADE GROUND		2.00		●	4	S ↓ 15							
			Medium dense brown very gravelly medium to coarse SAND. Gravel is fine to medium rounded to sub-rounded flint & quartz. MADE GROUND		2.00	W	●	7	S ↓ 13							
			Soft grey sandy, silty CLAY, with lenses of black organic material. BREYDON FORMATION		4.00		●	13	S ↓ 5							
			Soft dark grey very clayey very sandy SILT. BREYDON FORMATION		4.30		●	15	X=	55	56	26	30			
		200	Dark grey gravelly fine to coarse SAND. Gravel is fine sub-angular to sub-rounded flint. BREYDON FORMATION		5.00		●	17								
			<i>Becoming softer from 6.00m</i>		6.00		●	18								
					6.00		●	19								
					7.00		●	21	X=	83	67	35	32			
					8.00		●	23								
					9.00		●	24		197						
			Dark brown pseudo fibrous PEAT, with lenses of very soft grey silty CLAY & soft brown silty CLAY. H4 B2 F2 R2 W1 Tv0 Th0 A1 P1 BREYDON FORMATION		9.00		●	26	S ↓ 6							
			Black fibrous PEAT. H2 B2 F3 R2 W0 Tv1 Th2 A1 P0 BREYDON FORMATION		9.50		●	28								
			Dark brown pseudo fibrous PEAT.				●			257						

NORFOLK PARTNERSHIP LABORATORY

Borehole Log

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Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	Borehole No.	BH2		
Carried out for	Community & Environmental Services	Date Started	06/12/2017	Date Finished	08/12/2017		
Remarks:	Inspection pit: Hand dug. General; trench hole dug to locate service near BH found 0.7m from the road and 0.3m from BH from 8.30am to 9.00am. General; tried piston test at 7.5m failed. General; 250l of water added	Type of Rig	Dando 2000+Hand tools		Logged by	MB	
		Depth (m)	30.00	Ground Level (m AOD)	1.56	Drawn by	RK
		Co-ords	652152 - 305894			Checked by	MLB

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests								
							Type	No.		MC%	LL	PL	MPI	Org.	CBR			
			Very dense greyish brown slightly silty fine to medium SAND, with some shell fragments. CRAG						S ↓ 50									
							21.00			54								
										56								
										57								
							22.00			55	S ↓ 44							
										58								
							23.00											
										59								
							24.00			60	S ↓ 50							
										61								
					25.00													
								62										
					26.00			63	S ↓ 51									
								64										
					27.00	27.00				24	20	15	5					
			Laminated light grey silty fine to medium SAND, light grey sandy SILT & stiff grey silty CLAY . CRAG					65										
							28.00			66								
								67	S ↓ 33	25	30	15	15					
					29.00			68										
								69										
								70	S ↓ 45	25	25	15	10					
					30.00													

Becoming stiff grey silty clay & light grey sandy silt from 30.00m

150

NORFOLK PARTNERSHIP LABORATORY

Borehole Log

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Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	Borehole No.	BH4		
Carried out for	Community & Environmental Services	Date Started	28/11/2017	Date Finished	01/12/2017		
Remarks:	Inspection pit: Hand dug. General; remove casing and tool string due to sand causing them too jam together. General; 1500 litres water added from 15m to 24m	Type of Rig	Dando 3000+Hand tools+Comacchio MC305		Logged by	MB	
		Depth (m)	30.45	Ground Level (m AOD)	1.77	Drawn by	RK
		Co-ords	652233 - 305880			Checked by	MLB

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests									
							Type	No.		MC%	LL	PL	MPI	Org.	CBR				
							●	61											
							●	62	S	43									
					21.00		▲												
							●	64											
			Becoming medium dense from 22.00m		22.00		●	65											
							●	66	S	27									
			Becoming slightly gravelly with lenses of soft silty clay from 23.00m Gravel is fine sub-rounded flint		23.00		▲												
							●	67											
		150			24.00		●	68	S	23									
			Medium dense grey fine to medium SAND CRAG		24.45		▲												
							●	69											
					25.00		▲												
							●	70											
					26.00		●	71											
			With occasional lenses of soft grey clay & some shell fragments from 26.00m				●	72	S	25									
					27.00		▲												
							●	73											
			Dense grey fine to medium SAND, with some shell fragments. CRAG		27.60		▲												
							●	74											
			With laminae of stiff to firm grey silty clay from 28.00m		28.00		●	75											
							●	76	S	34									
					29.00		▲												
			Dense firm to stiff laminated & thinly bedded grey CLAY & dark grey clayey SILT & grey silty fine to medium SAND. CRAG		29.50		●	77											
							▲												
											29	33	16	18					

NORFOLK PARTNERSHIP LABORATORY

Borehole Log

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Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	Borehole No.	BH4D		
Carried out for	Community & Environmental Services	Date Started	12/12/2017	Date Finished	15/12/2017		
Remarks:	Inspection pit: Hand dug. General; remove casing and tool string due to sand causing them too jam together. General; . General; 1000 litres water added from 15m to 28m	Type of Rig	Dando 2000		Logged by	MB	
		Depth (m)	30.45	Ground Level (m AOD)	0.00	Drawn by	RK
		Co-ords	652290 - 305818			Checked by	MLB

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests							
							Type	No.		MC%	LL	PL	MPI	Org.	CBR		
			Dense laminated & thinly bedded greyish brown fine to medium SAND & orange silty fine to medium SAND & reddish brown silty fine SAND. CRAG		21.00		●	47									
							●	48	S 31								
					22.00		●	49									
			Dense to very dense greyish brown medium SAND, with laminae of soft grey CLAY. CRAG		22.00		●	50									
							●	51	S 38								
					23.00		●	52									
					24.00		●	53									
							●	54	S 45								
			<i>With occasional shell fragments from 25.00m</i>		25.00		●	55			28	42	20	23			
			Firm laminated grey silty CLAY & light grey sandy SILT. CRAG		25.20		●	60									
			Very dense grey slightly silty fine to medium SAND, with laminae of soft grey silty CLAY. CRAG		25.30		●	61	S 50								
					26.00		●	62									
			<i>Becoming medium SAND</i>		27.00		●	63									
					27.90		●	64			26	41	18	23			
			Firm to stiff grey silty CLAY, with laminae of grey sandy SILT & some shell fragments. CRAG		28.00		●	65									
					28.45		●	66									
			Thinly bedded firm grey silty CLAY & grey silty fine to medium SAND. CRAG		28.60		●	67									
			Very dense grey silty medium SAND, with thin beds of soft grey CLAY. CRAG		29.00		●	68									
		150			30.00						27	33	16	17			

NORFOLK PARTNERSHIP LABORATORY

Borehole Log

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Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	Borehole No.	BH4D		
Carried out for	Community & Environmental Services	Date Started	12/12/2017	Date Finished	15/12/2017		
Remarks:	Inspection pit: Hand dug. General; remove casing and tool string due to sand causing them too jam together. General; . General; 1000 litres water added from 15m to 28m	Type of Rig	Dando 2000		Logged by	MB	
		Depth (m)	30.45	Ground Level (m AOD)	0.00	Drawn by	RK
		Co-ords	652290 - 305818			Checked by	MLB

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests					
							Type	No.		MC%	LL	PL	MPI	Org.	CBR
			Soft to firm grey silty CLAY with laminae of grey fine to medium SAND, occasional shell fragments. CRAG		30.45 31.00 32.00 33.00 34.00 35.00 36.00 37.00 38.00 39.00	●	67	S 44 ↓							

NORFOLK PARTNERSHIP LABORATORY

Borehole Log

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Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	Borehole No.	BH5		
Carried out for	Community & Environmental Services	Date Started	01/12/2017	Date Finished	01/12/2017		
Remarks:	Inspection pit: Hand dug General; Hole terminated at 5m due to high UXO reading.	Type of Rig	Dando 2000+Hand tools		Logged by	MB	
		Depth (m)	5.00	Ground Level (m AOD)	0.88	Drawn by	RK
		Co-ords	652223 - 305943			Checked by	MLB

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests							
							Type	No.		MC%	LL	PL	MPI	Org.	CBR		
			MADEGROUND comprising black topsoil with up to coarse gravel size flint, brick, glass & asphalt gravel. MADE GROUND		0.30		●	1									
			MADEGROUND comprising up to cobble size brick, asphalt, slate in a matrix of dark reddish brown slightly silty fine to medium sand. MADE GROUND		1.00		●	3									
			Soft to very soft dark grey very gravelly, very sandy, slightly clayey SILT. Gravel is fine to medium angular brick, concrete, asphalt, flint & wood. MADE GROUND		1.20		●	6		S ↓ 3	26	37	22	15			
			Soft dark grey silty CLAY with lenses of black organic material & thin beds of dark brown pseudo fibrous PEAT, with numerous roots. BREYDON FORMATION		2.00		●	8	7		198	240	140	100			
			Dark brown organic slightly clayey very gravelly fine to coarse SAND. Gravel is fine to medium angular to rounded flint and quartz. BREYDON FORMATION		3.40		●	11	10								
			Soft to firm light grey silty CLAY with laminae of light greyish brown silty fine SAND. BREYDON FORMATION		4.00		●	13	12		17	25					
		200	<i>Becoming very soft & slightly gravelly from 4.40m Gravel is fine to medium angular to rounded flint & quartz</i>		5.00		●	14	14	S ↓ 3							

NORFOLK PARTNERSHIP LABORATORY

Borehole Log

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Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	Borehole No.	BH6
Carried out for	Community & Environmental Services	Date Started	23/11/2017	Date Finished	28/11/2017
Remarks:	Inspection pit: Hand dug. General; Added water from 2m to 8m approx 500L. General; Added water from 8 to 15m used approx 700L. General; Added water from 15m to 29.5m approx 600L	Type of Rig	Hand tools+Geotool+Dando 2000	Logged by	MB
		Depth (m)	30.45	Ground Level (m AOD)	0.00
		Co-ords	652271 - 305981		Checked by

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests							
							Type	No.		MC%	LL	PL	MPI	Org.	CBR		
			Very dense brownish grey fine to medium SAND, with some shell fragments. CRAG				●	55									
			Very dense grey fine to medium SAND, with some shell fragments. CRAG		20.90	21.00	●	56	S ↓ 50								
			<i>With laminae soft to firm grey silty clay from 22.00m</i>			22.00	●	57									
			<i>With fine angular flint gravel & some shell fragments from 23.10m</i>			23.00	●	58									
			Very stiff light grey very clayey SILT. CRAG		23.60	24.00	●	59	S ↓ 50								
			Very dense grey fine to medium SAND, with occasional shell fragments. CRAG		24.50	25.00	●	60		36	52	27	26				
			<i>With no shell fragments from 26.00m</i>			26.00	●	61									
			Stiff grey slightly sandy, silty CLAY, with laminae of dark grey silt. CRAG		27.00	27.00	●	62									
			Dense laminated & thinly bedded orangey brown fine to coarse SAND, firm light grey sandy CLAY & grey very sandy, clayey SILT, with some shell fragments. CRAG		27.10		●	63	S ↓ 35								
			Stiff grey silty CLAY, with thin beds of grey fine to medium sand. CRAG			28.00	●	64									
			Stiff grey silty CLAY, with occasional shell fragments. CRAG		29.00	29.00	●	65									
			Stiff grey silty CLAY, with thin beds of grey fine to medium sand.			29.60	●	66	S ↓ 50								
		150	Stiff grey silty CLAY, with thin beds of grey fine to medium sand.		29.80		●	67									
							●	68									
							●	69		28	46	20	26				
							●	70	S ↓ 45								
							●	71									
							●	72									
							●	73		26	40	16	25				

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Borehole Log

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Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	Borehole No.	BH8		
Carried out for	Community & Environmental Services	Date Started	23/01/2018	Date Finished	30/01/2018		
Remarks:	Inspection pit: Hand dug. General; ES17 amended to 2.5m to 2.6m instead of 2.9m to 3m	Type of Rig	Dando 4000+Hand tools		Logged by	MB	
		Depth (m)	40.37	Ground Level (m AOD)	1.89	Drawn by	RK
		Co-ords	652391 - 305988			Checked by	MLB

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests							
							Type	No.		MC%	LL	PL	MPI	Org.	CBR		
			Dense orangey brown fine SAND. CRAG		20.10		●	63									
			Very dense brownish grey slightly silty fine to medium SAND, with numerous shells fragments and lenses of soft grey CLAY. CRAG				●	64	S ↓ 43								
					21.00		●	65									
			Very dense thinly bedded brownish grey fine to medium SAND & grey silty fine SAND, with some shells fragments. CRAG		22.00	22.00	●	66									
							●	67	S ↓ 40								
					23.00		●	68									
			Medium dense grey slightly clayey slightly silty medium SAND, with some shell fragments. CRAG		23.50		●	69									
					24.00		●	70	S ↓ 21								
			<i>Becoming slightly silty from 25.00m</i>		25.00		●	71									
							●	72									
			<i>Becoming very dense from 26.00m</i>		26.00		●	73									
							●	74	S ↓ 46								
			Very stiff laminated grey silty CLAY & dark grey sandy SILT, with some shell fragments. CRAG		27.00	27.00	●	75									
			Medium dense grey medium SAND, with some shell fragments. CRAG		27.70		●	76		28	42	19	23				
			<i>With laminae of silty fine sand from 28.00m</i>		28.00		●	77									
							●	78									
							●	79									
			Laminated and thinly bedded grey silty fine SAND; grey slightly gravelly medium to coarse SAND, gravel is fine rounded to sub rounded flint and stiff grey silty CLAY. Some shell fragments CRAG		29.00	29.00	●	80									
							▲	81		26	40	18	22				

NORFOLK PARTNERSHIP LABORATORY

Borehole Log

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Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	Borehole No.	BH8		
Carried out for	Community & Environmental Services	Date Started	23/01/2018	Date Finished	30/01/2018		
Remarks:	Inspection pit: Hand dug. General; ES17 amended to 2.5m to 2.6m instead of 2.9m to 3m	Type of Rig	Dando 4000+Hand tools		Logged by	MB	
		Depth (m)	40.37	Ground Level (m AOD)	1.89	Drawn by	RK
		Co-ords	652391 - 305988			Checked by	MLB

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests							
							Type	No.		MC%	LL	PL	MPI	Org.	CBR		
			Laminated and thinly bedded grey silty fine SAND; grey slightly gravelly medium to coarse SAND, gravel is fine rounded to sub rounded flint and stiff grey silty CLAY. Some shell fragments CRAG		30.50		●	82									
			Grey fine SAND, with numerous laminae & thin beds of very stiff grey CLAY. CRAG		31.00		●	83	S	29							
			Laminated and thinly bedded dark grey silty slightly gravelly fine to medium SAND, gravel is fine sub rounded flint & stiff grey CLAY. Some shell fragments. CRAG		31.20		●	84									
			Laminated and thinly bedded dark grey silty slightly gravelly fine to medium SAND, gravel is fine sub rounded flint & stiff grey CLAY. Some shell fragments. CRAG		32.00		●	85									
					32.00		●	86									
					32.00		●	87									
					32.00		●	88	S	19							
			<i>With numerous shell fragments from 32.50m</i>		33.00		●	89									
					34.00		●	90									
					34.00		●	91	S	42							
					35.00		●	92									
			Dense to very dense grey fine SAND with laminae of clayey SILT. CRAG		36.00		●	93									
					36.00		●	94	S	38							
			<i>With laminae of soft grey silty clay & lenses of orangey brown clayey silty fine sand from 36.50m</i>		37.00		●	95									
					38.00		●	96									
					38.00		●	97									
			Very dense grey fine to medium SAND, with some shell fragments. CRAG		38.50		●	98									
					39.00		●	99									
					39.00		●	100									

200

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Borehole Log

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Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	Borehole No.	BH9		
Carried out for	Community & Environmental Services	Date Started	31/01/2018	Date Finished	06/02/2018		
Remarks:	Inspection pit: Hand dug	Type of Rig	Hand tools+Dando 2000		Logged by	MB	
		Depth (m)	40.45	Ground Level (m AOD)	1.83	Drawn by	RK
		Co-ords	652395 - 305965			Checked by	MLB

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests							
							Type	No.		MC%	LL	PL	MPI	Org.	CBR		
			<p><i>With thin beds of laminated firm light grey silty CLAY, dark grey silty CLAY & greyish brown gravelly, silty fine to medium SAND. Gravel is fine to medium sub-rounded flint, from 20.00m to 20.45m</i></p>		21.00		●	58									
					21.80		●	59	S	51							
			Thinly bedded soft grey sandy, silty CLAY & brown silty fine SAND, with some shell fragments.		22.00		●	60									
			CRAG		22.00		●	61			27						
			Very dense grey slightly silty fine to medium SAND.				●	62									
			CRAG				●	63									
					23.00		●	64									
					24.00		●	65	S	19							
			Medium dense grey medium SAND		25.00		●	66									
			CRAG				●	67									
					26.00		●	68									
							●	69	S	27							
			Thinly bedded greyish brown silty fine to medium SAND with shell fragments, dark grey clayey SILT & stiff grey silty CLAY.		27.10		●	70									
			CRAG				●	71									
			<i>With bed of greyish brown silty fine to coarse SAND with some shell fragments from 28.00m</i>		28.00		●	72									
			<i>Becoming predominantly sand from 28.00m.</i>				●	73				26	28	14	15		
			<i>Becoming bedded firm to stiff grey silty CLAY & greyish brown silty fine to medium SAND from 28.50m</i>				●	74	S	33							
			Medium dense laminated grey medium SAND and fine to medium SAND		29.00		●	75									
			CRAG				▲	76				25	40	14	27		

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Borehole Log

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Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	Borehole No.	BH10		
Carried out for	Community & Environmental Services	Date Started	20/02/2018	Date Finished	06/03/2018		
Remarks:	General; Added water from 5.5m to 7m approx 200litres	Type of Rig	Dando 4000		Logged by	MB	
		Depth (m)	50.45	Ground Level (m AOD)	0.00	Drawn by	RK
		Co-ords	652407 - 305991			Checked by	MLB

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests					
							Type	No.		MC%	LL	PL	MPI	Org.	CBR
			Becoming fine to coarse SAND, with numerous shell fragments from 40.00m				●	92	S ↓ 17						
					41.00		●	93							
					42.00		●	94							
					43.00		●	95	S ↓ 11						
					44.00		●	96							
			Becoming very dense & with numerous lenses of soft grey CLAY & light brown SILT from 44.00m		45.00		●	97							
					45.60		●	98	S ↓ 50						
					46.00		●	99							
			Stiff laminated grey slightly gravelly, silty CLAY & dark grey sandy SILT, with some shell fragments. Gravel is medium to coarse sub-rounded to sub-angular flint & pyrite.		45.60		●	100		30	51	28	23		
			LONDON CLAY		46.00		●	101		25	68	32	36		
			Very stiff laminated dark grey & brown CLAY.		46.00		●	102	S ↓ 37						
		200	LONDON CLAY		47.00		●	103							
					48.00		●	104							
			Becoming laminated brown CLAY with some gypsum from 48.00m		48.00		●	105	S ↓ 50	31	88	28	60		
					49.00		●	106							
							●	107							
							●	108							

NORFOLK PARTNERSHIP LABORATORY

Borehole Log

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Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	Borehole No.	BH10A
Carried out for	Community & Environmental Services	Date Started	19/02/2018	Date Finished	02/03/2018
Remarks:	Inspection pit: Hand dug	Type of Rig	Hand tools+Dando 2000	Logged by	MB
		Depth (m)	50.00	Ground Level (m AOD)	2.55
		Co-ords	652414 - 306010	Checked by	MLB

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests										
							Type	No.		MC%	LL	PL	MPI	Org.	CBR					
			BRICK WEAVE Cobbles. MADE GROUND CONCRETE. MADE GROUND		0.05															
			MADE GROUND comprising up to cobble size angular to sub-angular concrete, brick & flint in a matrix of brown silty fine to coarse sand. MADE GROUND CONCRETE. MADE GROUND		0.50 0.60 0.75			1 3 2 4 2 6 5												
			MADE GROUND comprising up to cobble size angular to sub-angular concrete, brick & flint in a matrix of dark grey silty fine to coarse sand. MADE GROUND Firm grey sandy, silty CLAY, with some shell fragments. MADE GROUND		1.00 1.10 1.30	1.00	W	7 9 8 10	S 3											
			Brown silty fine to medium SAND, with thin bed of firm grey CLAY. Gravel is fine to coarse angular to sub-angular flint & quartz. ALLUVIUM		2.30	2.00		12 13 14	S 8											
			Brown gravelly silty, clayey, fine to medium SAND. Gravel is fine to coarse angular to sub-angular concrete & flint. ALLUVIUM		3.00	3.00		15 16 17	S 3											
			Black slightly gravelly, slightly clayey, organic fine to medium SAND. Gravel is fine to medium angular to sub-angular flint & brick. BREYDON FORMATION <i>Becoming dark grey fine to coarse angular to rounded flint, wood & brick GRAVEL, & fine to coarse SAND.</i>		4.00	4.00		18 19 20 21	S 11	37	23									
			Soft laminated black organic, silty CLAY & brown silty fine to medium SAND. BREYDON FORMATION		4.30	4.30		22 23 24	S 9											
			Dark grey organic fine to medium rounded to sub-rounded flint & quartz GRAVEL & fine to medium SAND. BREYDON FORMATION		5.70	5.70		25 26 27	S 11											
			Loose dark grey gravelly, silty fine to coarse SAND, weathering to brown. Gravel is fine rounded to sub-angular flint & quartz. HAPPISBURGH GLACIGENIC FORMATION		6.60	6.60		28 29 30	S 14											
			Loose brown slightly gravelly medium to coarse SAND, with numerous beds of soft grey silty CLAY. Gravel is fine to medium angular to rounded flint & quartz. HAPPISBURGH GLACIGENIC FORMATION		8.00	8.00		31 32 33 34 35	S 17											
			Loose orangey brown slightly gravelly, silty fine to coarse SAND, with thin beds of soft grey silty CLAY. Gravel is fine to medium sub-angular to rounded flint. HAPPISBURGH GLACIGENIC FORMATION		9.00	9.00		36 37 38	S 24											
					10.00			39		25	31	16	15							

NORFOLK PARTNERSHIP LABORATORY

Borehole Log

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Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	Borehole No.	BH10A
Carried out for	Community & Environmental Services	Date Started	19/02/2018	Date Finished	02/03/2018
Remarks:	Inspection pit: Hand dug	Type of Rig	Hand tools+Dando 2000	Logged by	MB
		Depth (m)	50.00	Ground Level (m AOD)	2.55
		Co-ords	652414 - 306010	Checked by	MLB

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests							
							Type	No.		MC%	LL	PL	MPI	Org.	CBR		
			Medium dense orangey brown silty fine SAND. CRAG				●	63									
			Medium dense laminated brown, grey & reddish brown silty fine SAND. CRAG		20.90	21.00	●	64	S ↓ 26								
			<i>Becoming orangey brown silty fine to medium SAND, with some shell fragments from 22.00m</i>				●	65									
			Medium dense grey slightly gravelly, silty fine to medium SAND, with lenses of soft grey CLAY. Gravel is fine to medium sub-rounded flint & quartz. CRAG		22.40	22.00	●	66	S ↓ 25								
						23.00	●	67									
						24.00	●	69									
						24.00	●	70	S ↓ 27								
						25.00	●	71									
						26.00	●	72									
						26.00	●	73	S ↓ 30								
						27.00	●	74									
						27.00	●	75									
						28.00	●	76	S ↓ 33								
			Laminated & thinly bedded firm grey silty CLAY, light grey silty fine SAND & dark grey SILT, with occasional shell fragments. CRAG		28.30	28.00	●	77									
						29.00	●	78									
		250					▲				24	28	13	15			

NORFOLK PARTNERSHIP LABORATORY

Borehole Log

Sheet 2 of 5



Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	Borehole No.	BH11		
Carried out for	Community & Environmental Services	Date Started	12/02/2018	Date Finished	23/02/2018		
Remarks:	General; 2 Ds for 21.5 spt. General; 17:30 waiting for pipe install after grouting.	Type of Rig	Dando 4000		Logged by	MB	
		Depth (m)	50.00	Ground Level (m AOD)	2.46	Drawn by	RK
		Co-ords	652411 - 305967			Checked by	MLB

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests						
							Type	No.		MC%	LL	PL	MPI	Org.	CBR	
			Loose olive brown fine to medium SAND. HAPPISBURGH GLACIGENIC FORMATION		10.40		●	36	35	S ↓ 17						
			Loose orangey brown fine to medium SAND. HAPPISBURGH GLACIGENIC FORMATION		11.00	11.00	●	37								
			Medium dense orangey brown fine to medium SAND, with lenses of soft grey CLAY. HAPPISBURGH GLACIGENIC FORMATION		12.00		●	39	38	S ↓ 27						
			<i>With thin bed of brown gravelly fine to medium sand, gravel is fine sub-rounded flint, from 12.50m to 13.50m Becoming dense from 12.50m</i>		13.00		●	41	42	S ↓ 40						
			<i>Becoming very dense from 13.50m</i>		14.00	14.00	●	44	45	S ↓ 47						
			Dense orangey brown slightly silty fine SAND. HAPPISBURGH GLACIGENIC FORMATION		15.00		●	46								
					16.00		●	47	47	S ↓ 37						
					17.00		●	48								
					18.00		●	49	49	S ↓ 33						
					19.00		●	52	52	S ↓ 40						
					20.00		●	51	51	S ↓ 40						
					21.00		●	53	53	S ↓ 40						
					22.00		●	54	55	S ↓ 40						
					23.00		●	56	56	S ↓ 40						
			<i>With laminae of soft grey clay from 18.50m</i>		24.00		●	57	57	S ↓ 34						
		200			25.00		●	58	58	S ↓ 33						
					26.00		●	59	60	S ↓ 33						
					27.00		●	62	62							

NORFOLK PARTNERSHIP LABORATORY

Borehole Log

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Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	Borehole No.	BH11		
Carried out for	Community & Environmental Services	Date Started	12/02/2018	Date Finished	23/02/2018		
Remarks:	General; 2 Ds for 21.5 spt. General; 17:30 waiting for pipe install after grouting.	Type of Rig	Dando 4000		Logged by	MB	
		Depth (m)	50.00	Ground Level (m AOD)	2.46	Drawn by	RK
		Co-ords	652411 - 305967			Checked by	MLB

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests								
							Type	No.		MC%	LL	PL	MPI	Org.	CBR			
			Dense orangey brown slightly silty fine SAND. HAPPISBURGH GLACIGENIC FORMATION															
			Medium dense brown fine to medium SAND, with numerous shell fragments. CRAG		20.80													
			Medium dense grey silty fine to medium SAND, with some shell fragments, & with lenses & laminae of soft grey CLAY. CRAG		21.80					S	24							
			<i>With laminae of black clayey silt from 24.00m to 25.00m</i>		24.00					S	26							
			<i>Becoming grey fine to medium SAND, with occasional shell fragments, from 25.50m to 27.00m</i>		25.50					S	25							
			Medium dense thinly bedded brownish grey fine to medium SAND & grey silty, clayey fine SAND, with shell numerous fragments. CRAG		28.50					S	27							
		250	Laminated & thinly bedded stiff grey silty CLAY, grey very sandy SILT, black sandy silty & light grey silty fine SAND. CRAG		29.50					S	17	25	31	14	17			

NORFOLK PARTNERSHIP LABORATORY

Borehole Log

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Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	Borehole No.	BH11		
Carried out for	Community & Environmental Services	Date Started	12/02/2018	Date Finished	23/02/2018		
Remarks:	General; 2 Ds for 21.5 spt. General; 17:30 waiting for pipe install after grouting.	Type of Rig	Dando 4000		Logged by	MB	
		Depth (m)	50.00	Ground Level (m AOD)	2.46	Drawn by	RK
		Co-ords	652411 - 305967			Checked by	MLB

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests							
							Type	No.		MC%	LL	PL	MPI	Org.	CBR		
			Laminated & thinly bedded stiff grey silty CLAY, grey very sandy SILT, black sandy silty & light grey silty fine SAND. CRAG				●	81									
			Stiff laminated silty CLAY, with laminae of light grey silty fine SAND. CRAG		31.00	31.00	▲	●	82		24	47	21	26			
							●	86			28	37	17	20			
							▼	85									
							▲			S ↓ 16							
			Laminated & thinly bedded grey fine SAND & firm grey silty CLAY. CRAG		32.90	33.00	▲	●	87								
							▼	●	88								
							▲	●	89								
							▼	●	90								
							▲	●	91								
							▼	●	92								
							▲	●	94								
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NORFOLK PARTNERSHIP LABORATORY

Borehole Log

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Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	Borehole No.	BH11		
Carried out for	Community & Environmental Services	Date Started	12/02/2018	Date Finished	23/02/2018		
Remarks:	General; 2 Ds for 21.5 spt. General; 17:30 waiting for pipe install after grouting.	Type of Rig	Dando 4000		Logged by	MB	
		Depth (m)	50.00	Ground Level (m AOD)	2.46	Drawn by	RK
		Co-ords	652411 - 305967			Checked by	MLB

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests										
							Type	No.		MC%	LL	PL	MPI	Org.	CBR					
		200																		
			Becoming grey medium SAND with shell fragments from 41.00m		41.00			●	98											
					42.00			●	99	S 32										
					43.00			●	103											
					44.00			●	105	S 42										
			Dense to very dense grey silty fine to medium SAND, with laminae & thin beds of stiff light grey CLAY. CRAG		44.00			●	106											
					45.00			●	108											
			Becoming very stiff laminated grey silty CLAY, grey silty CLAY & black sandy SILT from 45.50m		46.00			●	109	S 46	33	59	25	34						
			With grey gravelly silty fine to medium sand, gravel is medium sub-angular to sub-rounded flint, from 46.00m		46.45			●	111											
			Stiff to very stiff grey silty CLAY, with occasional gypsum crystals, weathering to greyish brown. LONDON CLAY		47.00			●	112		24	69	29	40						
					48.00			●	114		28	63	29	34						
			Becoming very stiff laminated brown silty CLAY with thin beds of light brown SILT from 47.50m		48.00			●	115	S 45										
			Very stiff laminated brown silty CLAY. LONDON CLAY		49.00			●	118											
					50.00			●	119											
								●	120	S 40	32	77	29	48						

NORFOLK PARTNERSHIP LABORATORY

Borehole Log

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Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	Borehole No.	BH11A		
Carried out for	Community & Environmental Services	Date Started	13/02/2018	Date Finished	20/02/2018		
Remarks:	Type of Rig			Dando 2000+Dando 4000	Logged by	MB	
	Depth (m)		50.00	Ground Level (m AOD)	2.50	Drawn by	RK
	Co-ords				652418 - 305947	Checked by	MLB

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests						
							Type	No.		MC%	LL	PL	MPI	Org.	CBR	
			Medium dense orange brown fine SAND, with laminae of soft grey silty clay. CRAG				●	63	↓ 35							
			Medium dense to dense orangey brown fine to medium SAND, with numerous shell fragments. CRAG		20.90	21.00	●	64	↓							
			<i>With laminae soft light grey CLAY, firm grey silty CLAY & dark grey very sandy SILT from 22.00m</i>				●	65	↓							
			Medium dense greyish brown slightly silty fine to medium SAND, with some shell fragments. CRAG		22.00	22.00	●	66	↓ 41	22	24					
			Medium dense brownish grey fine to medium SAND, with numerous laminae of soft grey CLAY & occasional shell fragments. CRAG		22.80	23.00	●	67	↓							
							●	68	↓ 24							
							●	69	↓							
							●	70	↓ 32							
							●	71	↓							
							●	72	↓							
			Medium dense brownish grey fine to medium SAND, with numerous laminae of soft grey CLAY & occasional shell fragments. CRAG		25.00	25.00	●	73	↓ 26							
							●	74	↓							
							●	75	↓ 29							
							●	76	↓							
			Dense grey fine to medium SAND with numerous laminae of soft grey CLAY, with some shell fragments. CRAG		27.00	27.00	●	77	↓ 41							
							●	78	↓							
							●	79	↓							
			Medium dense greyish brown fine to medium SAND with numerous laminae of firm dark grey very sandy, silty CLAY, some shell fragments. CRAG		28.30	28.00	●	80	↓							
							●	81	↓							
							●	82	↓ 32							
							▲	83		25	30	15	15			

NORFOLK PARTNERSHIP LABORATORY

Borehole Log

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Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	Borehole No.	BH11A		
Carried out for	Community & Environmental Services	Date Started	13/02/2018	Date Finished	20/02/2018		
Remarks:	Type of Rig			Dando 2000+Dando 4000	Logged by	MB	
	Depth (m)		50.00	Ground Level (m AOD)	2.50	Drawn by	RK
	Co-ords			652418 - 305947		Checked by	MLB

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests						
							Type	No.		MC%	LL	PL	MPI	Org.	CBR	
		250	Medium dense greyish brown fine to medium SAND with numerous laminae of firm dark grey very sandy, silty CLAY, some shell fragments. CRAG		30.50		●	84	S ↓ 27							
			Laminated soft grey silty CLAY, grey fine to medium SAND & dark grey clayey SILT. CRAG		31.00		●	85								
			Laminated firm to stiff grey SILT:CLAY CRAG		31.30		●	86								
			Medium dense to dense grey fine to medium SAND, with numerous shell fragments. CRAG		32.00		●	87								
					32.20		●	88	S ↓ 26	26	37	16	22			
					33.00		●	89								
					34.00		●	90								
					35.00		●	91								
					36.00		●	92	S ↓ 39							
					37.00		●	93								
					38.00		●	94								
					39.00		●	95	S ↓ 50							
					40.00		●	96								
					41.00		●	97								
					42.00		●	98	S ↓ 50							
					43.00		●	99								
					44.00		●	100								

Becoming very dense from 36.00m

Becoming grey medium SAND with lenses of soft grey clay from 39.00 to 41.00m

NORFOLK PARTNERSHIP LABORATORY

Borehole Log

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Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	Borehole No.	BH12		
Carried out for	Community & Environmental Services	Date Started	06/03/2018	Date Finished	16/03/2018		
Remarks:	Inspection pit: Hand dug	Type of Rig	Hand tools+Dando 4000		Logged by	MB	
		Depth (m)	50.00	Ground Level (m AOD)	2.28	Drawn by	RK
		Co-ords	652513 - 306003			Checked by	MLB

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests							
							Type	No.		MC%	LL	PL	MPI	Org.	CBR		
			Medium dense olive brown slightly silty fine SAND, with thin beds of soft brown silty CLAY, weathering to brown. CRAG		20.50		●	59	S ↓ 29								
			Medium dense brown fine to medium SAND. CRAG		21.00		●	60									
					22.00		●	61									
			Very dense to dense grey gravelly, fine to medium SAND, with lenses of soft to firm grey clay & numerous shell fragments. Gravel is fine to medium sub-angular to sub-rounded flint. CRAG		22.50		●	62	S ↓ 50								
					23.00		●	63									
					24.00		●	64									
			<i>With less shell fragments from 24.50m to 25.50m</i>		25.00		●	65	S ↓ 34								
					26.00		●	66									
			<i>With more firm clay lenses from 25.50m</i>		27.00		●	67									
					28.00		●	68	S ↓ 50								
			Medium dense light grey fine SAND, with laminae of light grey silty CLAY. CRAG		28.70		●	69									
					29.00		●	70									
			Laminated & thinly bedded firm grey silty CLAY, light grey silty fine SAND & black SILT. CRAG		28.70		●	71	S ↓ 39								
					29.00		●	72									
			<i>Becoming stiff clay laminae from 29.50m</i>				●	73			32	38	17	21			

NORFOLK PARTNERSHIP LABORATORY

Borehole Log

Sheet 1 of 1



Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	Borehole No.	BH12A		
Carried out for	Community & Environmental Services	Date Started	15/03/2018	Date Finished	19/03/2018		
Remarks:	Inspection pit: Hand dug. General; hole terminated at 5.95m due to obstruction. General; 12inch ali lead length damaged due to obstruction. General; Added water from 1.5m to 4.8m approx 250litres	Type of Rig	Dando 4000+Hand tools		Logged by	MB	
		Depth (m)	5.95	Ground Level (m AOD)	2.37	Drawn by	RK
		Co-ords	652504 - 306025			Checked by	MLB

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests							
							Type	No.		MC%	LL	PL	MPI	Org.	CBR		
			BRICK WEAVE Cobbles. MADE GROUND		0.10		●	1									
			MADE GROUND comprising greyish brown gravelly fine to medium SAND. Gravel is fine to medium angular to sub-rounded flint, brick, porcelain & quartz. MADE GROUND				●	2									
			Brown slightly gravelly fine to medium SAND. Gravel is fine to medium rounded to sub-rounded flint. MADE GROUND		0.90	1.00	●	3									
			Greyish brown very gravelly medium SAND. Gravel is fine to coarse angular to sub-rounded flint & quartz . MADE GROUND		1.40		●	4									
							●	5									
							●	6	S ↓	4							
								7									
			<i>With coarse angular concrete gravel from 2.50m</i>				●	8									
							●	9	S ↓	2							
			<i>With a stiff bed of orangey brown sandy, silty CLAY from 3.00m</i>					10									
			Greyish brown fine to coarse rounded to sub-angular flint, brick, wood, quartzite & quartz GRAVEL and medium SAND. MADE GROUND		3.50		●	11									
							●	12	S ↓	7							
								13									
			Bedded greyish brown gravelly fine to medium SAND & soft dark grey sandy, silty CLAY. Gravel is fine to medium sub-angular to rounded flint, quartz & brick. BREYDON FORMATION		4.80		●	14									
			Dark grey slightly organic, very gravelly fine to medium SAND. Gravel is fine to coarse angular to rounded flint, quartz & concrete. BREYDON FORMATION		4.95	5.00	●	15	S ↓	13							
		300	<i>Becoming grey silty fine to medium SAND & fine to coarse angular to sub-angular concrete, flint & quartz, brick, & concrete.</i> CONCRETE BOULDERS. MADE GROUND		5.90	6.00		16									
					5.95			17	S ↓	8							

NORFOLK PARTNERSHIP LABORATORY

Borehole Log

Sheet 2 of 5



Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	Borehole No.	BH12B		
Carried out for	Community & Environmental Services	Date Started	20/03/2018	Date Finished	27/03/2018		
Remarks:	Inspection pit: Hand dug. General; adding water from 1.5m so unsure where waterstrike is but water sitting around 3m. General; Bentonite seal from 13m to 12m. General; Added water from 1.5m to 12m approx 1000litres	Type of Rig	Hand tools+Dando 4000		Logged by	MB	
		Depth (m)	50.00	Ground Level (m AOD)	2.37	Drawn by	RK
		Co-ords	652506 - 306024			Checked by	MLB

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests						
							Type	No.		MC%	LL	PL	MPI	Org.	CBR	
			Thinly bedded greyish brown very gravelly fine to medium SAND, grey silty CLAY, brownish orange silty CLAY & orangey brown weakly cemented fine to medium SAND. Gravel is fine to medium sub-angular to sub-rounded flint & quartz. BREYDON FORMATION		11.00		●	33	S ↓ 7							
			Firm mottled light grey & orangey brown slightly gravelly, slightly sandy, silty CLAY. Gravel is fine to medium angular to sub-angular flint. BREYDON FORMATION		11.60		●	35	S ↓ 9							
		300	Medium dense orangey brown fine to medium SAND, with numerous laminae of light grey silty CLAY, black clayey SILT & orange sandy SILT. BREYDON FORMATION		12.20		●	38		23	31					
			<i>With lenses of soft brown CLAY from 13.00m</i>		13.00		●	40	S ↓ 29							
			<i>Becoming dense from 14.00m</i>		14.00		●	42	S ↓ 32							
			Very dense thinly bedded light brown fine SAND, orangey brown sandy SILT & soft grey silty CLAY. BREYDON FORMATION		15.50		●	45	S ↓ 32							
			Dense laminated olive fine SAND with laminae of orangey brown clayey fine to medium SAND. BREYDON FORMATION		17.50		●	48	S ↓ 44							
			<i>Becoming fine to medium SAND with laminae of soft grey CLAY from 19.50m</i>		19.50		●	50	S ↓ 45							
					19.00		●	52	S ↓ 37							
					19.00		●	55	S ↓ 32							
					19.00		●	56	S ↓ 32							
					19.00		●	57	S ↓ 36							
					19.00		●	58	S ↓ 36							

NORFOLK PARTNERSHIP LABORATORY

Borehole Log

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Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	Borehole No.	BH13
Carried out for	Community & Environmental Services	Date Started	05/03/2018	Date Finished	14/03/2018
Remarks:	Inspection pit: Hand dug. General; rig changed to dando 3000 on the 8.3.18	Type of Rig	Hand tools+Dando 2000	Logged by	MB
		Depth (m)	50.00	Ground Level (m AOD)	2.27
		Co-ords	652516 - 305980	Checked by	MLB

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests						
							Type	No.		MC%	LL	PL	MPI	Org.	CBR	
			Medium dense thinly bedded light brown fine SAND & orangey brown fine to medium SAND with laminae of orange clayey SILT & soft grey CLAY. CRAG				●	66	↓ 26							
			Medium dense brown clayey fine to medium SAND. CRAG		21.00	21.00	●	67								
			Grey fine to medium SAND, occasional shell fragments CRAG		22.40	22.40	●	69	↓ 24							
			Medium dense grey very gravelly fine to medium SAND, with some shell fragments & with lenses of soft grey CLAY. Gravel is fine to medium rounded flint. CRAG		23.00	23.00	●	70								
			Medium dense grey very gravelly fine to medium SAND, with some shell fragments & with lenses of soft grey CLAY. Gravel is fine to medium rounded flint. CRAG		24.00	24.00	●	71								
			Medium dense grey very gravelly fine to medium SAND, with some shell fragments & with lenses of soft grey CLAY. Gravel is fine to medium rounded flint. CRAG		25.00	25.00	●	72	↓ 30							
			Medium dense grey very gravelly fine to medium SAND, with some shell fragments & with lenses of soft grey CLAY. Gravel is fine to medium rounded flint. CRAG		26.00	26.00	●	73	↓ 30							
			Medium dense grey medium SAND. CRAG		27.00	27.00	●	74								
			Medium dense grey medium SAND. CRAG		27.70	27.70	●	75	↓ 23							
			Firm to stiff grey CLAY, with laminae of grey fine SAND. CRAG		28.00	28.00	●	76								
			Firm to stiff grey CLAY, with laminae of grey fine SAND. CRAG		28.50	28.50	●	77								
			Stiff laminated silty CLAY, with numerous laminae of light grey SILT. CRAG		29.00	29.00	●	78								
			Stiff laminated silty CLAY, with numerous laminae of light grey SILT. CRAG		28.50	28.50	●	79			25	41	16	25		
			Stiff laminated silty CLAY, with numerous laminae of light grey SILT. CRAG		28.50	28.50	●	80	↓ 23							
			Stiff laminated silty CLAY, with numerous laminae of light grey SILT. CRAG		29.00	29.00	●	81	↓ 23							

NORFOLK PARTNERSHIP LABORATORY

Borehole Log

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Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	Borehole No.	BH13A		
Carried out for	Community & Environmental Services	Date Started	15/03/2018	Date Finished	22/03/2018		
Remarks:	Inspection pit: Hand dug	Type of Rig	Dando 2000+Hand tools		Logged by	MB	
		Depth (m)	50.00	Ground Level (m AOD)	2.38	Drawn by	RK
		Co-ords	652512 - 305958			Checked by	MLB

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests						
							Type	No.		MC%	LL	PL	MPI	Org.	CBR	
			Medium dense brown very gravelly medium SAND, with laminae & thin beds of olive very silty fine sand soft grey clay & black silt. Gravel is fine to medium angular to rounded flint & quartz. BREYDON FORMATION		10.80		●	37	↓ 29							
			Loose dark grey slightly organic, slightly silty, gravelly fine to medium SAND & orangey brown fine SAND. BREYDON FORMATION		11.00		●	38	↓ 14							
			Loose to medium dense olive fine to medium SAND, weathering to brown, with laminae of soft grey CLAY. CRAG		12.00		●	39	↓ 15							
			Loose to medium dense olive fine to medium SAND, weathering to brown, with laminae of soft grey CLAY. CRAG		13.00		●	40	↓ 23							
			Loose to medium dense olive fine to medium SAND, weathering to brown, with laminae of soft grey CLAY. CRAG		14.00		●	41	↓ 20							
			Loose to medium dense olive fine to medium SAND, weathering to brown, with laminae of soft grey CLAY. CRAG		15.00		●	42	↓ 21							
			Loose to medium dense olive fine SAND, weathering to brown, with numerous laminae of soft grey silty CLAY. Occasional dark brown ironstone nodules. CRAG		16.00		●	43	↓ 26							
			Loose to medium dense olive fine SAND, weathering to brown, with numerous laminae of soft grey silty CLAY. Occasional dark brown ironstone nodules. CRAG		17.00		●	44	↓ 30							
			Loose to medium dense olive fine SAND, weathering to brown, with numerous laminae of soft grey silty CLAY. Occasional dark brown ironstone nodules. CRAG		18.00		●	45	↓ 28							
			Loose to medium dense olive fine SAND, weathering to brown, with numerous laminae of soft grey silty CLAY. Occasional dark brown ironstone nodules. CRAG		19.00		●	46	↓ 19							
			Laminated & thinly bedded brown & orange slightly silty fine to medium SAND occasional laminae of brown sandy SILT. CRAG		19.50		●	47								
							▲	48								

300

With laminae of orangey brown fine to medium SAND from 14.45m

NORFOLK PARTNERSHIP LABORATORY

Borehole Log

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Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	Borehole No.	BH13A		
Carried out for	Community & Environmental Services	Date Started	15/03/2018	Date Finished	22/03/2018		
Remarks:	Inspection pit: Hand dug	Type of Rig	Dando 2000+Hand tools		Logged by	MB	
		Depth (m)	50.00	Ground Level (m AOD)	2.38	Drawn by	RK
		Co-ords	652512 - 305958			Checked by	MLB

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests										
							Type	No.		MC%	LL	PL	MPI	Org.	CBR					
			Becoming thinly bedded light brown, brown & orangey brown fine to medium SAND & brown & orangey brown silty fine SAND from 20.50m to 21.45m.					●	62											
								●	63	S	35									
			With numerous laminae of soft grey clay from 21.45m					●	64											
								●	65											
			Dense dark brown fine to medium SAND with laminae of soft grey clay, some shell fragments. CRAG		22.40			●	66	S	22									
								●	67											
			Becoming grey fine to medium SAND from 23.50m					●	68											
								●	69	S	31									
			With numerous laminae of soft grey clay from 25.00m					●	70											
								●	71											
								●	72	S	32									
								●	73											
			Laminated & thinly bedded soft to firm grey CLAY:SILT & light grey silty fine to medium SAND. CRAG		27.70			●	74											
								●	75											
								●	76											
								●	77											
			With some laminae of black SILT from 29.00m					●	78	S	35									
								▲				25	34	14	20					

NORFOLK PARTNERSHIP LABORATORY

Borehole Log

Sheet 3 of 4



Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	Borehole No.	BH15		
Carried out for	Community & Environmental Services	Date Started	15/12/2017	Date Finished	20/12/2017		
Remarks:	Inspection pit: Hand dug. General; added 500l of water from 4m to 13m. General; Bentonite seal 19.12.17 from 16.5m to 14.5m	Type of Rig	Hand tools+Dando 2000		Logged by	MB	
		Depth (m)	30.45	Ground Level (m AOD)	1.92	Drawn by	RK
		Co-ords	652637 - 306021			Checked by	MLB

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests								
							Type	No.		MC%	LL	PL	MPI	Org.	CBR			
			<i>Becoming very dense with thin beds of grey clayey silty fine SAND & reddish brown clayey SILT from 20.00m</i>				●	56										
							●	58	S	50								
			Dense brownish grey slightly silty fine to medium SAND, with laminae of grey SILT. CRAG		21.20		●	59										
							●	60										
							●	61	S	39								
			<i>With some fine to medium sub-angular flint gravel from 23.00m to 24.00m</i>				●	62										
							●	63										
							●	64	S	30								
			<i>Becoming light grey silty fine to medium SAND from 25.00m</i>				●	66										
							●	67										
			<i>Becoming very dense from 26.00m</i>				●	68	S	50								
			Medium dense grey fine to medium SAND with numerous lenses of soft grey clay. Occasional shell fragments. CRAG		27.10	27.00	●	69										
			Soft to firm laminated grey sandy CLAY with numerous laminae of greyish brown silty fine sand. CRAG		27.60		●	70			28	33	14	19				
			Soft to firm laminated light greyish brown silty fine SAND & grey clayey SILT. Some shell fragments. CRAG		27.70		●	71										
							●	72	S	44								
			Soft to firm grey clayey sandy SILT. CRAG		29.00	29.00	●	73										
		150									28	39	18	21				

NORFOLK PARTNERSHIP LABORATORY

Borehole Log

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Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	Borehole No.	BH18		
Carried out for	Community & Environmental Services	Date Started	26/09/2017	Date Finished	28/09/2017		
Remarks:	Water strike @ 2.70m	Type of Rig	Dando 3000		Logged by	RK	
		Depth (m)	40.45	Ground Level (m AOD)	2.00	Drawn by	RK
		Co-ords	652532 - 306006			Checked by	MLB

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests									
							Type	No.		MC%	LL	PL	MPI	Org.	CBR				
			BRICK WEAVE Cobbles. MADE GROUND MADE GROUND comprising crushed CONCRETE. MADE GROUND		0.15														
			MADE GROUND comprising very loose dark brown very gravelly slightly silty fine to medium SAND. Gravel is fine to medium angular concrete, flint, chalk & shells MADE GROUND		0.80	1.00	●	01											
			Very soft dark grey, slightly sandy, slightly gravelly, silty CLAY, weathering to brown. Gravel is fine to medium angular flint & shell. ALLUVIUM		1.50		●	02	S ↓ 2										
			Medium dense dark grey slightly clayey fine to coarse SAND, with numerous shell fragments. ALLUVIUM		2.10	2.00	■	03											
					2.10		●	04											
					3.00		●	05											
					3.00		●	06	S ↓ 12										
					4.00		●	07											
			<i>With some lenses of dark grey slightly gravelly silt from 4.00m</i>		4.00		●	08	S ↓ 22										
			Medium dense dark brown & grey fine to coarse SAND, weathering to brown. NORTH DENES FORMATION		4.70		●	09											
					5.00		●	10	S ↓ 26										
					6.00		●	11											
			<i>Becoming dense from 6.00m</i>		6.00		●	12	S ↓ 42										
					7.00		●	13											
					7.00		●	14	S ↓ 47										
			Medium dense dark grey slightly clayey, slightly silty gravelly fine SAND, gravel is fine to medium angular flint. Weathering to brown. NORTH DENES FORMATION		7.90		●	15	S ↓ 16										
					8.00		●	16											
			<i>No flint gravel from 9.00m</i>		9.00		●	17	S ↓ 11										
			Dark grey very sandy, clayey SILT, weathering to brown. NORTH DENES FORMATION		9.60		●	17			38	35	18	17					

NORFOLK PARTNERSHIP LABORATORY

Borehole Log

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Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	Borehole No.	BH18		
Carried out for	Community & Environmental Services	Date Started	26/09/2017	Date Finished	28/09/2017		
Remarks:	Water strike @ 2.70m	Type of Rig	Dando 3000		Logged by	RK	
		Depth (m)	40.45	Ground Level (m AOD)	2.00	Drawn by	RK
		Co-ords	652532 - 306006			Checked by	MLB

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests						
							Type	No.		MC%	LL	PL	MPI	Org.	CBR	
			Dark grey very sandy, clayey SILT, weathering to brown. NORTH DENES FORMATION				●	18	S ↓ 30							
					11.00		●	19	S ↓ 50							
			Very dense orangey grey fine to coarse SAND & greyish brown fine to coarse angular to sub-rounded flint & quartz GRAVEL. NORTH DENES FORMATION		11.70		●	20	↑ ↓							
					12.00		●	21	S ↓ 50							
					13.00		●	22	↑ ↓							
					13.00		●	23	S ↓ 50							
			<i>Becoming very gravelly from 14.00m</i>		14.00		●	24	S ↓ 50							
		250	Very dense yellowish grey very gravelly fine to coarse SAND. Gravel is fine to medium rounded to sub-rounded flint & quartz. CRAG		14.60		●	25	↑ ↓							
					15.00		●	26	S ↓ 50							
					16.00		●	27	S ↓ 50							
			<i>Becoming gravelly from 16.80m</i>		17.00		●	28	↑ ↓							
					17.00		●	29	S ↓ 50							
			Yellowish grey slightly gravelly fine to coarse SAND. Gravel is fine to medium rounded to sub-angular flint & quartz. CRAG		17.80		●	30	↑ ↓							
			Very dense yellowish brown silty fine SAND. CRAG		18.00	18.00	●	31	S ↓ 50							
			Very dense yellowish brown slightly silty fine to medium SAND CRAG		19.00	19.00	●	32	S ↓ 50							
							●	33	↑ ↓							

NORFOLK PARTNERSHIP LABORATORY

Borehole Log

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Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	Borehole No.	BH18		
Carried out for	Community & Environmental Services	Date Started	26/09/2017	Date Finished	28/09/2017		
Remarks:	Water strike @ 2.70m	Type of Rig	Dando 3000		Logged by	RK	
		Depth (m)	40.45	Ground Level (m AOD)	2.00	Drawn by	RK
		Co-ords	652532 - 306006			Checked by	MLB

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests						
							Type	No.		MC%	LL	PL	MPI	Org.	CBR	
			Very dense yellowish brown slightly silty fine to medium SAND CRAG				●	34	S ↓ 50							
			Very dense greyish brown slightly silty fine to medium SAND. CRAG		21.00	21.00	↕	35								
						22.00		●	36	S ↓ 50						
						23.00										
						24.00		●	37	S ↓ 50						
						25.00		↕	38							
						26.00		●	39	S ↓ 50						
						27.00										
						28.00		●	40	S ↓ 50						
						29.00		↕	41							
						30.00										

Becoming grey & silty from 28.00m

NORFOLK PARTNERSHIP LABORATORY

Borehole Log

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Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	Borehole No.	BH18		
Carried out for	Community & Environmental Services	Date Started	26/09/2017	Date Finished	28/09/2017		
Remarks:	Water strike @ 2.70m	Type of Rig	Dando 3000		Logged by	RK	
		Depth (m)	40.45	Ground Level (m AOD)	2.00	Drawn by	RK
		Co-ords	652532 - 306006			Checked by	MLB

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests						
							Type	No.		MC%	LL	PL	MPI	Org.	CBR	
			Dark grey slightly sandy SILT, with occasional lenses of firm grey clay. CRAG				●	42	S ↓ 50							
					31.00											
					32.00		●	43	S ↓ 50							
					33.00											
			Firm dark grey slightly silty CLAY, weathering to brown. CRAG		34.00	34.00	●	44	S ↓ 50							
					34.80		◆	45		26	45	19	26			
			Firm dark grey silty CLAY weathering to brown CRAG		35.00											
					36.00		■	46								
			Firm dark grey CLAY. CRAG		36.60		●	47								
					37.00											
					38.00		●	48	S ↓ 50	26	52	22	30			
			<i>Becoming firm to stiff from 38.00m</i>													
					39.00		●	49	↕							
			<i>With laminae of grey sandy silt from 39.00m</i>													
					40.00					31	24					

NORFOLK PARTNERSHIP LABORATORY

Window Sampler Log

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Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	WS No.	TP1		
Carried out for	Community & Environmental Services	Date Started	07/12/2017	Date Finished	07/12/2017		
Remarks:	General; @ 6m Sand blown up to 2.8m Refusal	Type of Rig	Hand Tools+Terrier+Geotool		Logged by	MB	
		Depth (m)	6.00	Ground Level (m AOD)	0.72	Drawn by	RK
		Co-ords	652248 - 305907			Checked by	MLB

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests							
							Type	No.		MC%	LL	PL	MPI	Org.	CBR		
			ASPHALT. MADE GROUND MADE GROUND comprising up to cobble sized angular to rounded brick, concrete, asphalt & flint in a matrix of dark brown slightly silty fine to medium sand. MADE GROUND		0.10		1										
			<i>With up to cobbles sized wood & concrete and becoming reddish brown from 0.50m</i>				2										
			Dark brown gravelly, slightly silty fine to medium SAND. Gravel is fine to medium sub-angular to sub-rounded flint. MADE GROUND		0.90	1.00	3	1									
			Firm to stiff dark grey very sandy, clayey SILT. BREYDON FORMATION		1.20		4	3		25	45	27	18				
			Laminated grey & brown sandy clayey SILT, silty fine SAND, & stiff sandy, silty CLAY. BREYDON FORMATION		1.40		5	6									
			Soft to firm grey very sandy very clayey SILT, with numerous lenses of brown fibrous peat. BREYDON FORMATION		1.85	2.00	6	7		30	44	21	24				
			Dark brown fibrous PEAT. H2 W2 F3 C2 W0 Tv1 Th1 A2 P0 BREYDON FORMATION		2.90	3.00	7	8									
			<i>Becoming more odorous from 4.25m - A3</i>				8	9									
			Grey slightly silty slightly gravelly fine to medium SAND. Gravel is fine to medium sub-angular to rounded flint & quartz. HAPPISBURGH GLACIGENIC FORMATION		4.60		9										

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Window Sampler Log

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Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	WS No.	TP1B		
Carried out for	Community & Environmental Services	Date Started	13/12/2017	Date Finished	19/12/2017		
Remarks:	General; Liners 4 and 5 in bulk bags	Type of Rig	Dando Terrier		Logged by	MB	
		Depth (m)	6.00	Ground Level (m AOD)	1.82	Drawn by	RK
		Co-ords	652342 - 305808			Checked by	MLB

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests							
							Type	No.		MC%	LL	PL	MPI	Org.	CBR		
			Dark brown sandy TOPSOIL. TOPSOIL MADE GROUND comprising fine to coarse gravel size angular to rounded flint, concrete & brick in a matrix of slightly silty fine to medium sand. MADE GROUND		0.10		▲										
			MADE GROUND comprising loose gravelly fine to medium SAND. Gravel is medium angular brick and concrete MADE GROUND		0.50		●	1									
			<i>With less concrete & brick from 0.80m</i>				▼	2									
			Brown very gravelly, slightly silty fine to medium SAND. Gravel is fine to coarse angular to rounded flint, quartz & quartzite. MARINE BEACH DEPOSITS		1.00	1.00	●	3									
			Brown medium to coarse SAND & fine to medium rounded to sub angular flint and quartz GRAVEL. MARINE BEACH DEPOSITS		1.20		▼	4									
			Orangey brown medium SAND. MARINE BEACH DEPOSITS		1.50		●	5			29	52	29	23			
			Stiff dark grey slightly organic, very sandy clayey SILT. BREYDON FORMATION		1.75		▼	6									
			Laminated & thinly bedded grey silty CLAY, with laminae of light grey silty fine SAND. BREYDON FORMATION		1.90	2.00	▼	7			100	130	51	75			
			Soft grey SILT:CLAY BREYDON FORMATION		2.70		▼	8									
			Grey laminated & thinly bedded silty fine to medium SAND, with occasional lenses of dark grey organic material & some roots. BREYDON FORMATION		3.00	3.00	▼	9									
			Grey medium SAND with occasional roots. BREYDON FORMATION		3.60		▼										
			Medium dense grey fine to medium SAND. HAPPISBURGH GLACIGENIC FORMATION		4.00	4.00	▼										
			<i>Becoming grey silty, clayey fine to medium SAND with thin beds of brown amorphous PEAT & grey slightly gravelly fine to medium SAND. Gravel is fine sub-rounded to sub-angular flint & quartz from 4.60m to 5.00</i>				▼										

NORFOLK PARTNERSHIP LABORATORY

Window Sampler Log

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Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	WS No.	WS7		
Carried out for	Community & Environmental Services	Date Started	06/12/2017	Date Finished	06/12/2017		
Remarks:	WS7 from 1.2-2m. DP from 1.2m	Type of Rig	Dando Terrier+Hand Dug		Logged by	MB	
		Depth (m)	8.00	Ground Level (m AOD)	1.70	Drawn by	RK
		Co-ords	652204 - 305885			Checked by	MLB

Backfill	Water	Casing	Description	Legend	Depth (m)	Scale	Sample		Field Tests	Laboratory Tests				
							Type	No.		MC%	LL	PL	MPI	Org.
			<p><i>Becoming soft from 5.10m</i></p> <p>Dark brown fibrous PEAT. H2 B2 F3 R1 W0 Tv0 Th2 A2 P0 BREYDON FORMATION</p> <p>Soft to firm brown clayey SILT, with lenses of black organic material. BREYDON FORMATION</p> <p>Soft grey sandy, very clayey SILT, with some shell fragments. BREYDON FORMATION</p> <p>Soft to firm greyish brown silty CLAY, with numerous lenses of brown organic material. BREYDON FORMATION</p> <p>Black pseudo fibrous PEAT. H3 B2 F2 R1 W1 Tv0 Th0 A1 P0 BREYDON FORMATION</p> <p>Dark brown pseudo fibrous PEAT. H3 B2 F2 R1 W0 Tv1 Th0 A1 P0 BREYDON FORMATION</p> <p>Dark brown pseudo fibrous PEAT, with lenses of soft grey CLAY. H2 B2 F3 R1 W0 Tv1 Th2 A1 P0 BREYDON FORMATION</p>		<p>5.65</p> <p>6.00</p> <p>6.10</p> <p>6.25</p> <p>6.40</p> <p>6.65</p> <p>7.00</p> <p>7.65</p> <p>8.00</p> <p>9.00</p>	<p>6.00</p>		<p>10</p> <p>11</p> <p>12</p>	<p>71</p>	<p>80</p>	<p>32</p>	<p>48</p>		

SPT Calibration Report

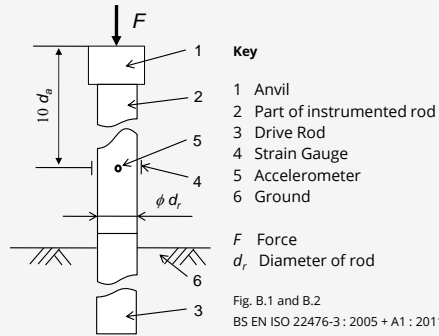
Hammer Energy Measurement Report

Type of Hammer: SPT HAMMER
Client: GROUND TECHNOLOGY SERVICES
Test No: EQU1782

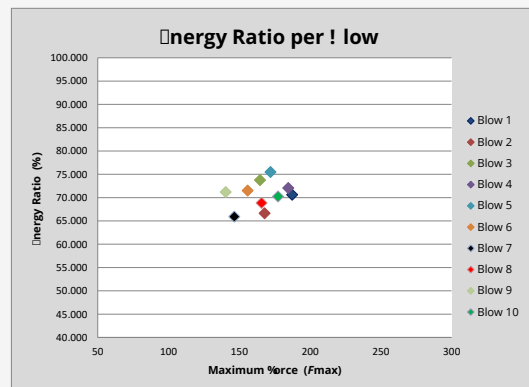
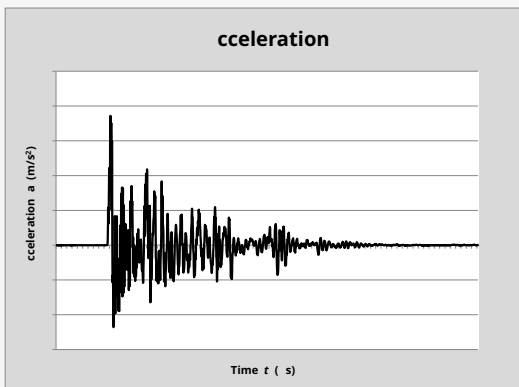
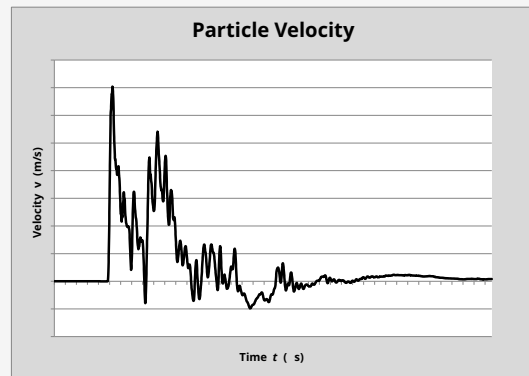
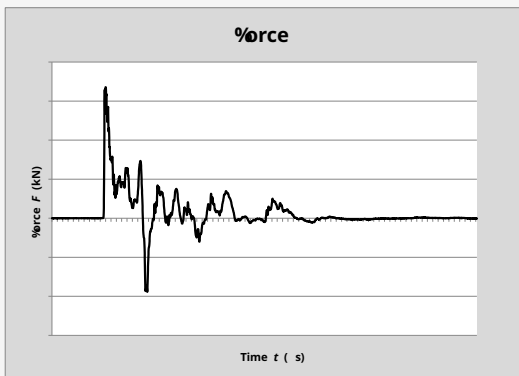
Test Depth (m): 8.20
Mass of the hammer: $m = 63.5\text{kg}$
Falling height: $h = 0.76\text{m}$
 $E_{\text{theor}} = m \times g \times h = 473\text{J}$

Characteristics of the instrumented rod

Diameter: $d_r = 0.052\text{ m}$
Length of instrumented rod: 0.558 m
Area: $A = 11.61\text{ cm}^2$
Modulus: $E_o = 206843\text{ MPa}$



TESTED 06 April 2017
VALID UNTIL 06 April 2018
MORRIS
ITS R1707



Observations:
1.

$E_{\text{meas}} = 0.333\text{ kN-m}$
 $E_{\text{theor}} = 0.473\text{ kN-m}$

Energy Ratio = $\frac{E_{\text{meas}}}{E_{\text{theor}}}$ = 70.37%
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Equip SPT Analyzer Operators: %
Prepared by: [Redacted] Checked by: [Redacted] Date: 13/04/2017

SPT Calibration Report

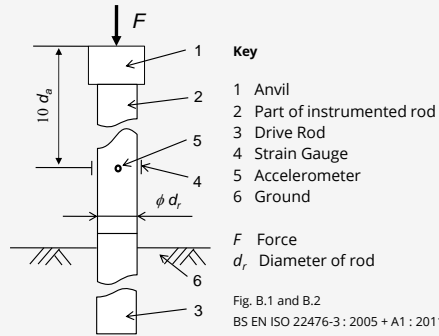
Hammer Energy Measurement Report

Type of Hammer: SPT HAMMER
Client: GROUND TECHNOLOGY SERVICES
Test No: EQU1810

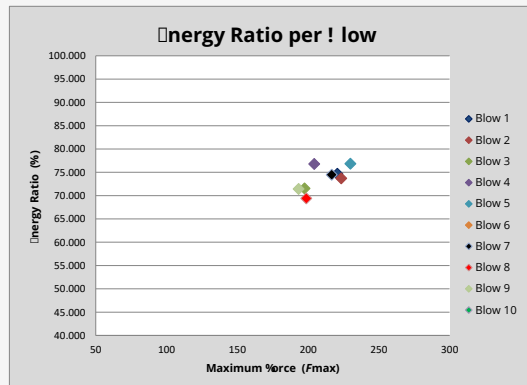
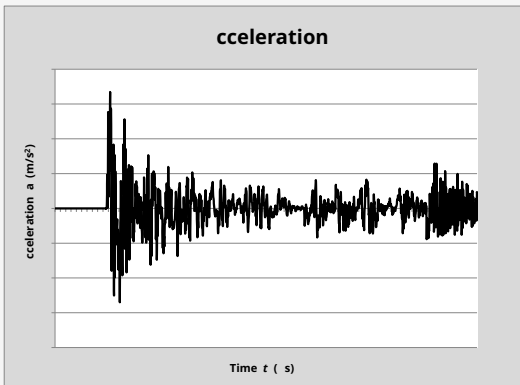
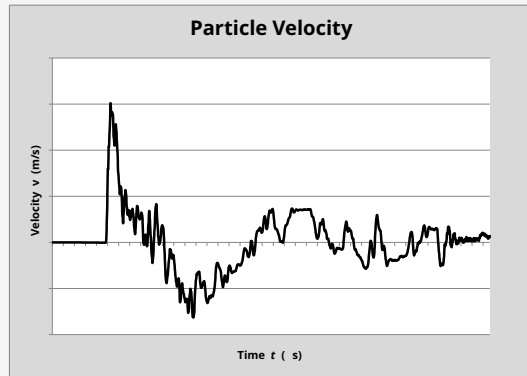
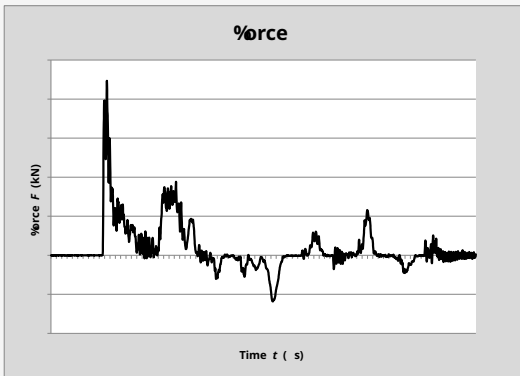
Test Depth (m): 8.50
Mass of the hammer: $m = 63.5\text{kg}$
Falling height: $h = 0.76\text{m}$
 $E_{\text{theor}} = m \times g \times h = 473\text{J}$

Characteristics of the instrumented rod

Diameter: $d_r = 0.052\text{m}$
Length of instrumented rod: 0.558 m
Area: $A = 11.61\text{cm}^2$
Modulus: $E_o = 206843\text{MPa}$



TESTED 26 April 2017
VALID UNTIL 26 April 2018
MORNING T03



Observations:
1.

$E_{\text{meas}} = 0.347\text{ kN-m}$
 $E_{\text{theor}} = 0.473\text{ kN-m}$

Energy Ratio = $\frac{E_{\text{meas}}}{E_{\text{theor}}}$ = 73.34%
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Equipe SPT Analyzer Operators: %
Prepared by: [Redacted] Checked by: [Redacted] Date: 05/05/2017

SPT Calibration Report



Hammer Energy Measurement Report

Type of Hammer: SPT HAMMER
 Client: JAMES AND MILTON DRILLING LTD
 Test No: EQU1552
 Test Depth (m): 8.50
 Date of Test: 12 November 2016
 Valid until: 12 November 2017
 Hammer ID: JM03

Mass of the hammer: $m = 63.5\text{kg}$
 Falling height: $h = 0.76\text{m}$
 $E_{\text{theor}} = m \times g \times h = 473\text{J}$
Characteristics of the instrumented rod
 Diameter: $d_r = 0.052\text{m}$
 Length of the instrumented rod: 0.558 m
 Area: $A = 11.61\text{ cm}^2$
 Modulus: $E_\sigma = 206843\text{ MPa}$

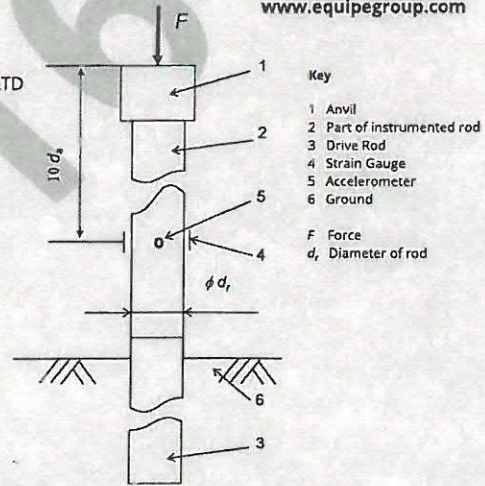
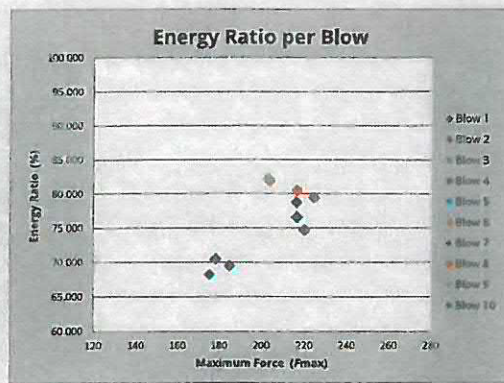
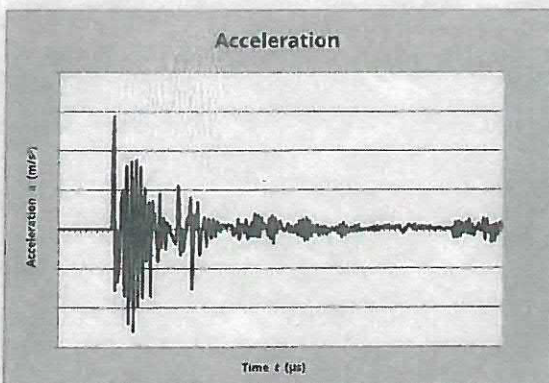
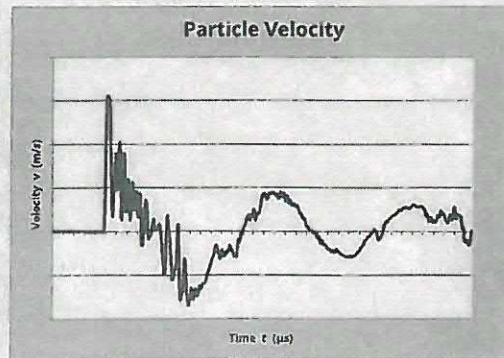
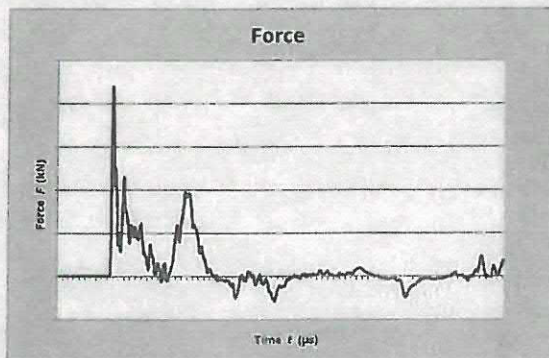


Fig. B.1 and B.2 BS EN ISO 22476-3 : 2005 + A1 : 2011



Observations:
1.

$E_{\text{meas}} = 0.340\text{ kN-m}$
 $E_{\text{theor}} = 0.473\text{ kN-m}$

$$\text{Energy Ratio} = \frac{E_{\text{meas}}}{E_{\text{theor}}} = 71.99\%$$

Equipe SPT Analyzer Operator: [Redacted]

MH

Prepared by: [Redacted]

Checked by: [Redacted]

Date: 12/11/2016

SPT Calibration Report



Hammer Energy Measurement Report

Type of Hammer: SPT HAMMER
 Client: JAMES AND MILTON DRILLING LTD
 Test No: EQU1551
 Test Depth (m): 8.50
 Date of Test: 12 November 2016
 Valid until: 12 November 2017
 Hammer ID: JM04

Mass of the hammer: $m = 63.5\text{kg}$
 Falling height: $h = 0.76\text{m}$
 $E_{theor} = m \times g \times h = 473\text{J}$
Characteristics of the instrumented rod
 Diameter: $d_r = 0.052\text{m}$
 Length of the instrumented rod: 0.558m
 Area: $A = 11.61\text{cm}^2$
 Modulus: $E_a = 206843\text{MPa}$

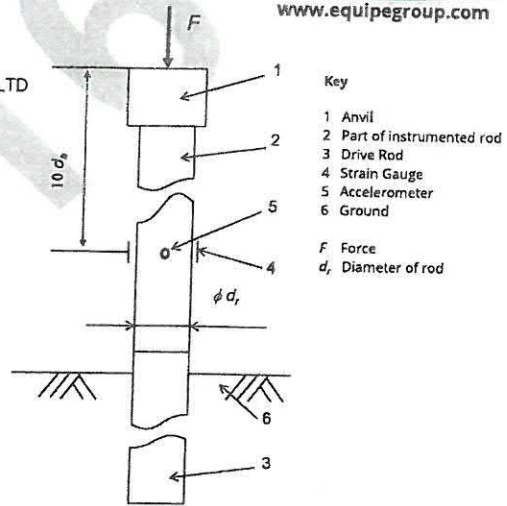
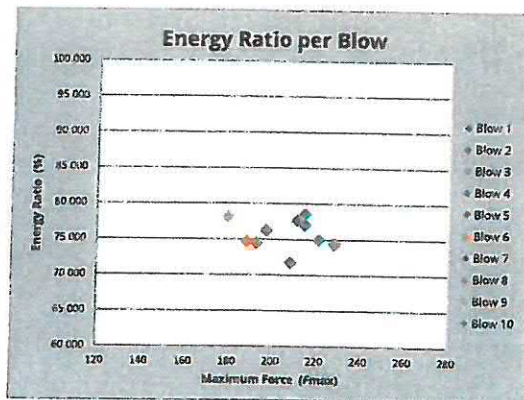
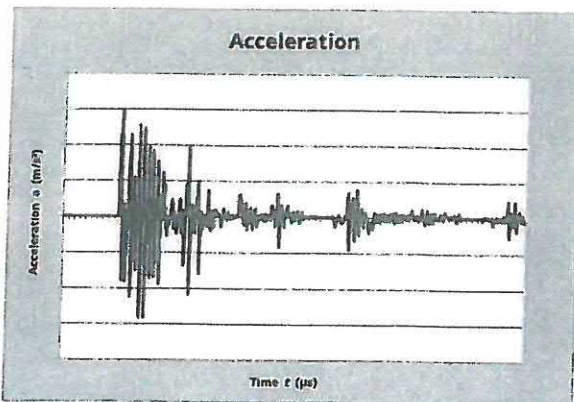
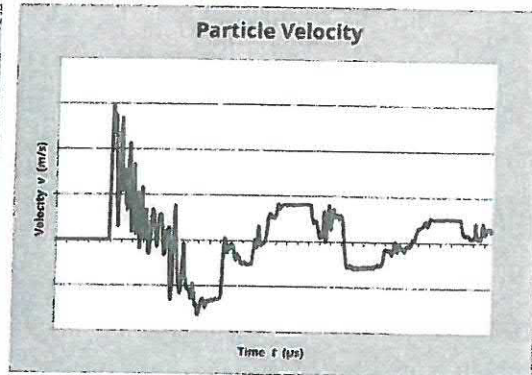
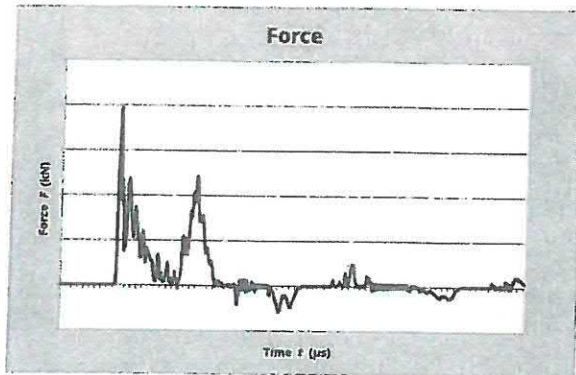


Fig. B.1 and B.2 BS EN ISO 22476-3 : 2005 + A1 : 2011



Observations:

1.

$E_{meas} = 0.339\text{ kN-m}$

$E_{theor} = 0.473\text{ kN-m}$

$$\text{Energy Ratio } (L) = \frac{E_{meas}}{E_{theor}} = 71.58\%$$

Equipe SPT Analyzer Operators:

MH

Prepared by:

Checked by:

Date

12/11/2016

SPT Calibration Report

Hammer Energy Measurement Report

Type of Hammer: SPT HAMMER
Client: GROUND TECHNOLOGY SERVICES
Test No: EQU1781

Test Depth (m): 8.00
Mass of the hammer: $m = 63.5\text{kg}$
Falling height: $h = 0.76\text{m}$
 $E_{\text{theor}} = m \times g \times h = 473\text{J}$

Characteristics of the instrumented rod

Diameter: $d_r = 0.052\text{m}$
Length of instrumented rod: 0.558 m
Area: $A = 11.61\text{cm}^2$
Modulus: $E_a = 206843\text{MPa}$

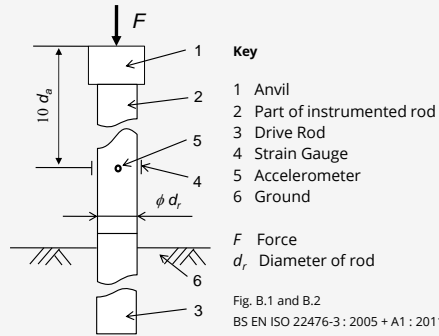
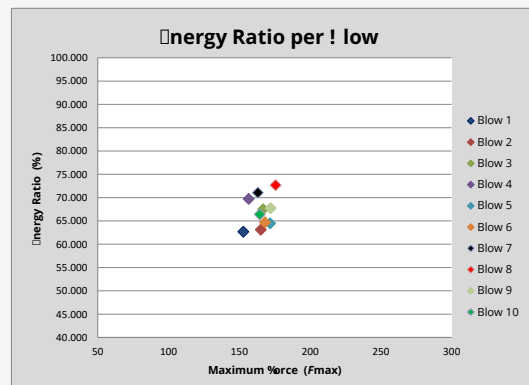
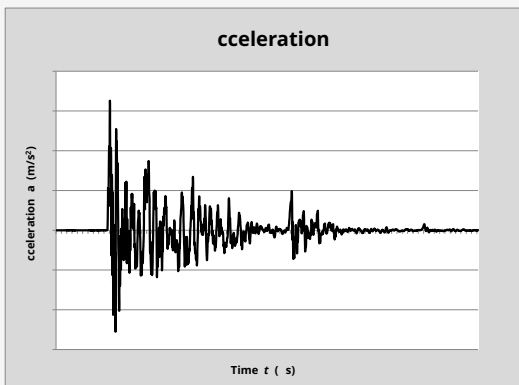
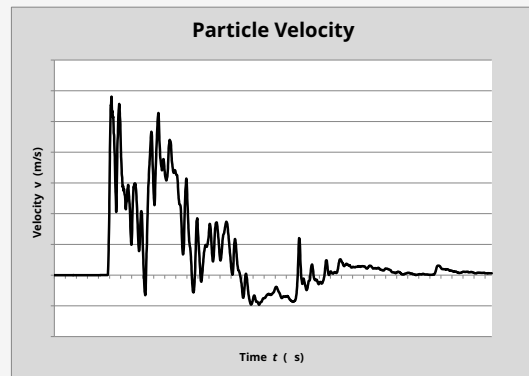
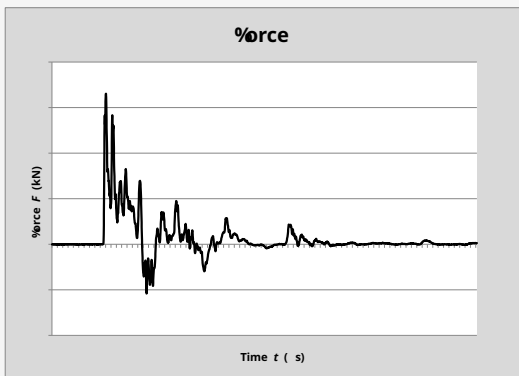


Fig. B.1 and B.2
BS EN ISO 22476-3 : 2005 + A1 : 2011

TESTED 06 April 2017
VALID UNTIL 06 April 2018
MMOR (M.S. 174)



Observations:
1.

$E_{\text{meas}} = 0.316\text{ kN-m}$
 $E_{\text{theor}} = 0.473\text{ kN-m}$

Energy Ratio = $\frac{E_{\text{meas}}}{E_{\text{theor}}}$ = 66.76%
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Equipe SPT Analyzer Operators: %
Prepared by: [Redacted] Checked by: [Redacted] Date: 13/04/2017

SPT Calibration Report

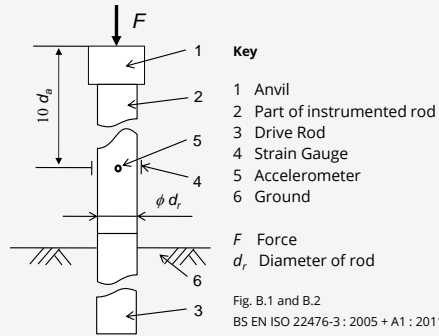
Hammer Energy Measurement Report

Type of Hammer: TERRIER
Client: GROUND TECHNOLOGY SERVICES
Test No: EQU1805

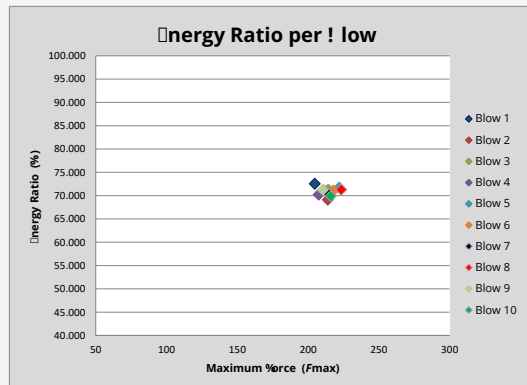
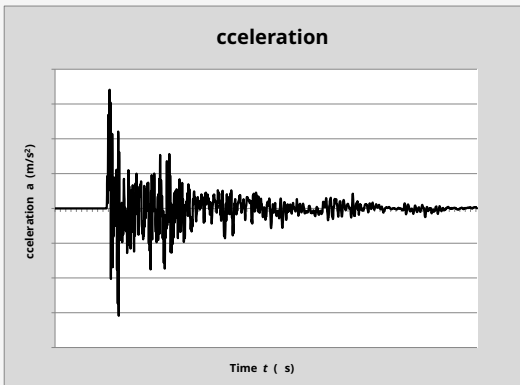
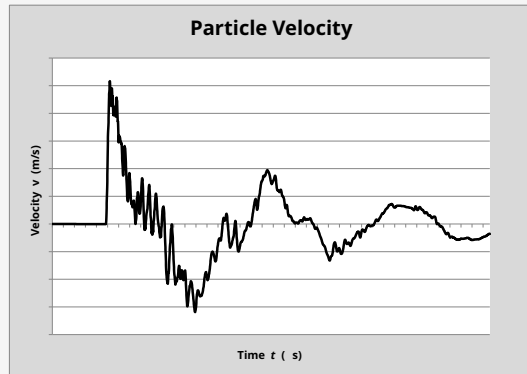
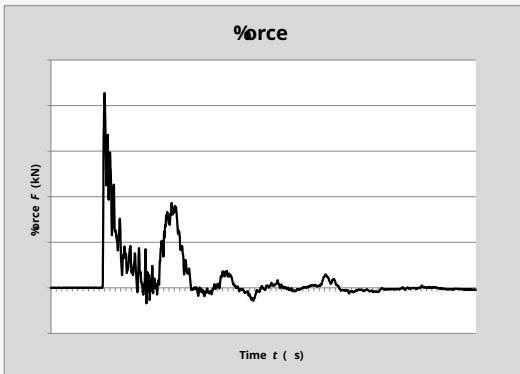
Test Depth (m): 8.50
Mass of the hammer: $m = 63.5\text{kg}$
Falling height: $h = 0.76\text{m}$
Theoretical energy: $E_{\text{theor}} = m \times g \times h = 473\text{J}$

Characteristics of the instrumented rod

Diameter: $d_r = 0.052\text{m}$
Length of instrumented rod: 0.558 m
Area: $A = 11.61\text{cm}^2$
Modulus: $E_a = 206843\text{MPa}$



TESTED 13 April 2017
VALID UNTIL 13 April 2018
MMOR 0/T/0537



Observations:
1.

$E_{\text{meas}} = 0.334\text{ kN-m}$
 $E_{\text{theor}} = 0.473\text{ kN-m}$

Energy Ratio = $\frac{E_{\text{meas}}}{E_{\text{theor}}}$ = 70.68%
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Equipe SPT Analyzer Operators: %
Prepared by: [Redacted] Checked by: [Redacted] Date: 13/04/2017

Appendix D

UXO RISK MITIGATION SURVEY





Explosive Ordnance Desktop Threat Assessment

Site: Southtown, Great Yarmouth

Client: WSP UK Limited

Ref: 7307TA

Date: 19th September 2017

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Date of Issue: 19th September 2017

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Originator: JA

This Report has been produced in compliance with the Construction Industry Research and Information Association guidelines for the preparation of Detailed Risk Assessments in the management of UXO risks in the construction industry.

Dynasafe BACTEC Limited

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Glossary of Terms

AAA	Anti-Aircraft Artillery
ARP	Air-raid Precautions
BDO	Bomb Disposal Officer
EOD	Explosive Ordnance Disposal (current term for “bomb” disposal)
HE	High Explosive
HG	Home Guard
IB	Incendiary Bomb
kg	Kilogram
LCC	London County Council
LM	Land Mine
LSA	Land Service Ammunition (includes grenades, mortars, etc.)
Luftwaffe	German Air Force
m bgl	Metres Below Ground Level
MoD	Ministry of Defence
OB	Oil Bomb
PM	Parachute Mine
RAF	Royal Air Force
RN	Royal Navy
SI	Site Investigation
SAA	Small Arms Ammunition (small calibre cartridges used in rifles & machine guns)
UXB	Unexploded Bomb
UXO	Unexploded Ordnance
V-1	“Doodlebug” the first cruise type missile, used against London from June 1944. Also known as ‘Flying Bomb’.
V-2	The first ballistic missile, used against London from September 1944
WWI	First World War (1914 -1918)
WWII	Second World War (1939 – 1945)

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Executive Summary

The Site: The study area, centred on the approximate OS National Grid Reference: TG 52451 05820, is located in Great Yarmouth, approximately 10m north of Southtown Common Recreation Ground. The site is bound to the north by residential properties fronting Waveney Road, to the east by the Petersons Distribution Centre, to the south by residential properties fronting Alpha Road and to the west by the A12 Dual Carriageway

The study area is complex / varied, comprising industrial / commercial properties in the east and residential areas mixed with commercial units in the west, with the River Yare passing north to south through the site. The study area encompasses a number of highways; the A1243, Cromwell Road, Cromwell Crescent, Southtown Road, Queen Anne's Road, William Adams Way, Suffolk Road, Beccles Road and the A12. In the west, there is a variety of soft open ground including allotment gardens, residential gardens, areas of dense vegetation, mature woodland and the periphery of Southtown Common Recreation Ground.

Proposed Works: The proposed Site Investigation which shall include both onshore and offshore boreholes to a maximum depth of 50m bgl, CPT boreholes to a maximum depth of 30m bgl, trial pits to 3m bgl, observation trenches to 6m bgl and window samples to 6m bgl.

Risk Assessment Methodology: In accordance with CIRIA guidelines this assessment has carried out research, analysed the evidence and considered the risks that the site has been contaminated with unexploded ordnance; that such items remained on site; that they could be encountered during any intrusive works and the consequences that could result. Appropriate risk mitigation measures have been proposed.

Explosive Ordnance Risk Assessment: Taking into consideration the findings of this study, Dynasafe BACTEC considers the risk across the route to be heterogeneous and can therefore be divided into **Low**, **Medium** and **High** Risk Zones.

German UXO:

- The site was located within central Great Yarmouth within an area of very high bombing density during WWII, with up to 8 x HE bombs likely to have landed on or adjacent to the site boundary. At least 12 further HE bombs are recorded within a 300m radius of the site. In addition, the site is likely to have been affected by 1kg incendiary bombing.
- The eastern extent of the site, comprising busy commercial / industrial areas would have been accessed on a daily basis thereby decreasing the risk of any UXB strike evidence going unnoticed. In addition, these areas may have been subject to post-raid checks for UXB entry holes.
- The western half of the site was occupied by large areas of ambiguous open ground and allotment gardens which are unlikely to have been accessed as regularly or frequently. Access to the allotments would have varied depending on the season and therefore, a UXB could conceivably have fallen here unobserved.
- Moreover, there are multiple areas of clearance and a ruin apparent on site, suggesting that these areas sustained serious bomb damage. As a result, the affected buildings will have been abandoned for a time, increasing the likelihood of subsequent UXO falling on site unnoticed. Therefore, it can be assumed that, for a time, significant quantities of rubble occupied this area and debris may have been strewn across the site, increasing the likelihood of a UXB remaining on site. However, had a UXB landed within the allotments, open ground soft, rubble, or area of open air storage on site it could have gone undetected. Note, that the entry hole of an SC50 (the most commonly deployed German HE bomb) could be as little as 20cm in diameter and therefore, easily obscured in dense vegetation.
- A UXB landing in the river during a night time raid will have been immediately obscured from view, beneath the waterline. Consequently, it is unlikely to have been observed, reported and mapped.
- A UXB entry hole within the river bank mud on site (revealed at low tide) is unlikely to have persisted; the next high tide filling in the hole with water and sediment. Even if evidence of a UXB was observed here and reported, it is highly unlikely to have been recovered by the local bomb disposal unit due to its insignificant location and the impracticalities of deep buried UXB removal in this environment.

British/Allied UXO:

- Due to its coastal location in south-eastern England, Great Yarmouth was considered vulnerable to German invasion and consequently, was well defended by Army and HG units, with River Yare and beaches fortified with static defences, minefields and gun positions.
- A group of WWII anti-invasion defences, including four pillboxes, a road block and a Spigot Mortar emplacement were present within the northern section of the site on the junction of Queen Anne's Road and

Southtown Road. The central element of the site was a substantial road block, designed to check the progress of tanks rather than act as a check point. Further defences were located within the site boundary, located at the westernmost end of Cromwell Road a Spigot Mortar position and associated Type 24 Pillbox were located.

- Although these defence installations were located on site, it is considered highly likely that the risk of shallow buried UXO has been mitigated on site due to post war development.
- Note, that four HAA batteries were situated within a 5km radius of the site during WWII. For the same reasons as given above, it is quite possible that an unexploded AA shell or rocket could have landed in the river on site and remained there.

The Risk that Unexploded Ordnance Remains on site: Land - Within the footprint of post-war ground works, the risk of small, shallow buried UXO (LSA, SAA, AA shells and German 1kg incendiaries) remaining will have been partly mitigated since any such items could have been encountered and removed during soil stripping / levelling, foundations etc.

Only within the volume of any post-war basement level bulk excavations and at the precise locations of any post-war pile foundations / boreholes, will the risk from deeper buried German HE UXBs have been completely mitigated. Therefore, it is conceivable that such a weapon could reside within virgin / untouched geology, beneath and amongst any such post-WWII ground works, down to the maximum bomb penetration depth. The risk from UXO contamination within the eastern extent of the site and pre-war buildings has been assessed as minimal and therefore the risk from UXO remaining is minimal.

River - It has been assessed that a HE UXB falling in the river will likely have achieved full burial within the overburden sediment and may also have penetrated the Crag Group bedrock. Consequently, such a UXB will have remained in situ up to the present day, largely unaffected by environmental conditions. Also, any large partially buried UXBs on site are less likely to be affected by environmental conditions as a result of their significant mass.

Tidal riverbed environments are mobile in nature and therefore as a result of water currents, any small items of UXO (British AA shells and German 1kg IBs) residing on or near the riverbed surface could experience migration. This is evidenced by the large quantity of munitions that are washed up on beaches around the UK, every year. The wider River Yare environment will have been subject to the same UXO contamination conditions as the site during WWII and therefore although riverbed UXO could have migrated out of the site since WWII, equally, additional UXO could have migrated into the site.

Bomb Penetration Assessment: It has been assessed that a 500kg bomb would have had an approximate maximum bomb penetration depth of between **8-10m** below WWII ground level. Penetration depth could potentially have been greater if the UXB was larger (though only 4% of German bombs used in WWII over Britain were of that size). Note that UXBs may be found at any depth between just below the WWII ground level and the maximum penetration depth.

Recommended Risk Mitigation Measures: Dynasafe BACTEC believes the following risk mitigation measures should be deployed to support the proposed works at the Southtown, Great Yarmouth site:

- Site Specific Explosive Ordnance Safety and Awareness Briefings to all personnel conducting intrusive works.
- The Provision of Unexploded Ordnance Site Safety Instructions.
- Explosive Ordnance Disposal (EOD) Engineer presence on site to support shallow intrusive works.
- Handheld Intrusive Magnetometer Survey of all borehole locations down to the maximum bomb penetration depth.
- Non-Intrusive Magnetometer and Side Scan UXO Survey.
- Intrusive Magnetometer Survey - Down-hole Vallon Probing ahead of Marine Boreholes.

Further Recommended Measures should the Scope of Works Change:

- Intrusive Magnetometer Survey of all pile / boreholes locations down to the maximum bomb penetration depth.
- Pre-Piling Intrusive Magnetometer Survey: TFG Clearance ahead of Piling.
- Intrusive Magnetometer Survey: Down-hole Vallon Probing ahead of Piling.

Annexes

Annex A	Site Location Maps
Annex B	Recent Aerial Photograph
Annex C	Site Plan
Annex D	Historical OS Mapping
Annex E	Great Yarmouth Bomb Plot Map
Annex F	Great Yarmouth Bomb Census Map
Annex G	RAF Aerial Photograph - 1946
Annex H	1kg Incendiary Bomb Penetration Photograph - July 1942
Annex I	German Air-Delivered Ordnance
Annex J	UXO Press Articles – Recent Finds
Annex K	UXO Press Articles – Fatal Incidents at Construction Sites
Annex L	Anti-Aircraft Artillery
Annex M	Recent UXO Incidents - Home Guard Incendiary Grenades
Annex N	Land Service Ammunition
Annex O	Small Arms Ammunition
Annex P	Risk Map

Explosive Ordnance Threat Assessment

In Respect of

Southtown, Great Yarmouth

1 Introduction

1.1 Background

WSP UK Limited has commissioned Dynasafe BACTEC Limited to conduct an Explosive Ordnance Threat Assessment for the Southtown, Great Yarmouth site.

Unexploded Ordnance (UXO) presents a significant threat to construction projects in parts of the UK as a result of enemy actions during the two 20th Century World Wars and historic British and Allied military activity.

It is estimated that over 20% of the UK landmass has been used for military training at some point and between 2006 and 2009, over 15,000 items of mainly British / Allied ordnance (excluding small arms ammunition) were found on UK construction sites.

In addition, one of the legacies of the two World Wars is buried unexploded air-dropped bombs or anti-aircraft projectiles resulting from the failure of a proportion of such weapons to function as designed. It is commonly accepted that the failure rate of these munitions was approximately 10% and, depending on their shape, weight, velocity and ground conditions many penetrated the ground and came to rest at depth.

Intensive efforts were made during and after the war to locate and render safe all UXO but, unsurprisingly, not all were found and dealt with. This is evidenced by the regular, on-going discoveries of UXO during construction-related intrusive ground works.

As a result of a generally increased risk awareness amongst professionals involved in ground engineering works and proactive health and safety measures, the threat to life and limb from UXO has been minimised. However even the simple discovery of a suspected device during on-going works can cause considerable disruption to production and cause unwanted delays and expense.

Such risks can be more fully addressed by a better understanding of the site-specific threat and the implementation of appropriate risk mitigation measures.

2 Construction Industry Duties and Responsibilities

2.1 The UK Regulatory Environment

There is no specific legislation covering the management and control of the UXO risk in the UK construction industry but issues regarding health and safety are addressed under a number of regulatory instruments, as outlined below.

In practice, the regulations impose a responsibility on the construction industry to ensure that they discharge their obligations to protect those engaged in ground-intrusive operations (such as archaeology, site investigation, drilling, piling or excavations) from any reasonably foreseeable UXO risk.

2.2 The Health and Safety at Work Act, 1974

The Act places a duty of care on an employer to put in place safe systems of work to address, as far as is reasonably practicable, all risks (to employees and the general public) that are reasonably foreseeable.

2.3 Construction (Design and Management) Regulations 2015

CDM 2015 ensures that health and safety within the construction industry is continually improved:

- Works are sensibly planned and managed.
- Competent staff are engaged in the works.
- Risks are identified and managed.
- All parties cooperate and coordinate activities.
- Communication flows to those who require it.
- Workers are consulted and engaged about risks and how they are being managed.

In line with CDM 2015 legislation, Dynasafe BACTEC Limited are able to assist parties in their discharge of CDM duties as follows:

- Assist Principal Designers with pre-construction information and risk assessments
- Assist the Designer with the Designer's Risk Assessment.
- Issue UXO risks as have been identified, and manage risks accordingly.
- Assist the Principal Contractor with the construction phase information, in particular risk assessments and mitigation strategies.
- Plan, manage and monitor survey and clearance works under Dynasafe BACTEC Limited's control.

2.4 Other Legislation

Other relevant legislation includes the "Management of Health and Safety at Work Regulations 1999" and "The Corporate Manslaughter and Corporate Homicide Act 2007".

3 The Role of the Authorities and Commercial Contractors

3.1 The Authorities

The Police have the responsibilities for co-ordinating the emergency services in the case of an ordnance-related incident on a construction site. They will make an initial assessment (i.e. is there a risk that the find is ordnance or not?) and if they judge necessary impose a safety cordon and/or evacuation and call the military authorities (JSEODOC - Joint Services Explosive Ordnance Disposal Operations Centre) to arrange for investigation and/or disposal. In the absence of an EOD specialist on site many Police Officers will use the precautionary principle, impose cordon(s)/evacuation and await advice from the JSEODOC.

The priority given to the request by JSEODOC will depend on their judgement of the nature of the threat (ordnance, location, people and assets at risk) and the availability of resources. They will respond immediately or as resources are freed up. Depending on the on-site risk

assessment the item of ordnance may be removed or demolished (by controlled explosion) in situ. In the latter case additional cordons and/or evacuations may be necessary.

Note that the military authorities will only carry out further investigations or clearances in very high profile or high-risk situations. If there are regular ordnance finds on a site, the JSEODOC may not treat each occurrence as an emergency and will encourage the construction company to put in place alternative procedures (i.e. the appointment of a commercial contractor) to manage the situation and relieve pressure from the JSEOD disposal teams.

3.2 Commercial Contractors

In addition to pre-construction site surveys and follow-on clearance work, a commercial contractor is able to provide a reactive service on construction sites. The presence of a qualified EOD Engineer with ordnance recognition skills will avoid unnecessary call-outs to the authorities and the Contractor will be able to arrange for the removal and disposal of low risk ordnance. If high risk ordnance is discovered actions will be co-ordinated with the authorities with the objective of causing the minimum possible disruption to site operations whilst putting immediate, safe and appropriate measures in place.

4 This Report

4.1 Aims and Objectives

The aim of this report is to examine the possibility of encountering any explosive ordnance during any intrusive works at the Southtown, Great Yarmouth site. Risk mitigation measures will be recommended, if deemed necessary, to eliminate or reduce the threat from explosive ordnance during the envisaged works. The report follows the CIRIA Guidelines.

The following issues will be addressed in the report:

- The risk that the site was contaminated with unexploded ordnance.
- The risk that UXO remains on site.
- The risk that ordnance may be encountered during any intrusive works.
- The risk that ordnance may be initiated.
- The consequences of initiating or encountering ordnance.

Risk mitigation measures, appropriate to the assessed level of risk and site conditions, will be recommended if required.

4.2 Approach

In preparing this Explosive Ordnance Threat Assessment Report, Dynasafe BACTEC has considered general and, as far as possible, site specific factors including:

- Evidence of German bombing and delivery of UXBs.
- Site history, occupancy and conditions during WWII.
- The legacy of Allied military activity.
- Details of any known EOD clearance activity.
- The extent of any post war redevelopment.
- Scope of the current proposed works.

4.3 Sources of Information

Dynasafe BACTEC has carried out detailed historical research for this Explosive Ordnance Threat Assessment including accessing military records and archived material held in the public domain and in the MoD.

Material from the following sources has been consulted:

- The National Archives.
- Norfolk Record Office.
- Norfolk County Council.
- Landmark Maps.
- Peel Ports Great Yarmouth.
- Council for British Archaeology.
- Available material from 33 Engineer Regiment (EOD) Archive.
- Relevant information supplied by WSP UK Limited.
- Dynasafe BACTEC's extensive archives built up over many years of research and hands-on Explosive Ordnance Disposal activities in the UK.
- Open sources such as published books, local historical records and the internet.

4.4 General Considerations

This report is based upon research of historical evidence. Whilst every effort has been made to locate all relevant material Dynasafe BACTEC cannot be held responsible for any changes to the assessed level of risk or risk mitigation measures based on documentation or other information that may come to light at a later date.

The accuracy and comprehensiveness of wartime records is frequently difficult or impossible to verify. As a result, conclusions as to the exact location, quantity and nature of the ordnance threat can never be definitive but must be based on the accumulation and careful analysis of all accessible evidence. Dynasafe BACTEC cannot be held responsible for inaccuracies or gaps in the available historical information.

4.5 Bombing Records

During WWII, considerable efforts were expended in recording enemy air raids. Air Raid Precautions (ARP) wardens were responsible for making records of bomb strikes either through direct observation or by post-raid surveys. However, their immediate priority was to deal with casualties and limit damage, so it is to be expected that records are often incomplete and sometimes contradictory. Record keeping in the early days of bombing was not comprehensive and details of bombing in the early part of the war were sometimes destroyed in subsequent attacks. Some reports may cover a single attack, others a period of months or the entire war.

Records of raids that took place on sparsely or uninhabited areas were often based upon third party or hearsay information and are not always reliable; records of attacks on military or strategic targets were often maintained separately from the general records and have not always survived.

5 The Site

5.1 Site Location

The study area is located in Great Yarmouth, approximately 10m north of Southtown Common Recreation Ground. The site is bound to the north by residential properties fronting Waveney Road, to the east by the Petersons Distribution Centre, to the south by residential properties fronting Alpha Road and to the west by the A12 Dual Carriageway.

The site, centred on the approximate OS National Grid Reference: TG 52451 05820.

Site Location Maps are presented in **Annex A**.

5.2 Site Description

The study area is complex / varied, comprising industrial / commercial properties in the east and residential areas mixed with commercial units in the west, with the River Yare passing north to south through the site.

The study area encompasses a number of highways; the A1243, Cromwell Road, Cromwell Crescent, Southtown Road, Queen Anne's Road, William Adams Way, Suffolk Road, Beccles Road and the A12.

In the west, there is a variety of soft open ground including allotment gardens, residential gardens, areas of dense vegetation, mature woodland and the periphery of Southtown Common Recreation Ground.

A Recent Aerial Photograph of the site is presented in **Annex B**.

6 Scope of the Proposed Works

The proposed Site Investigation which shall include both onshore and offshore boreholes to a maximum depth of 50m bgl, CPT boreholes to a maximum depth of 30m bgl, trial pits to 3m bgl, observation trenches to 6m bgl and window samples to 6m bgl.

A Site Plan showing the proposed future development of the site is presented in **Annex C**.

7 Ground Conditions

Published British Geological Survey (BGS) scale mapping indicates that the western extent of the site is underlain by superficial Breydon Formation (Peat), whilst the River Yare and the eastern extent of the site is underlain with Tidal River or Creek Deposits (Clay and Silt). Whereas the entirety of the site is underlain by Crag Group bedrock.

Data supplied by the WSP UK Limited, for a borehole sunk on land in 2007, records the following shallow geology on site:

- 1m of Made Ground.
- 3m of Sand (Tidal and River Creek Deposits).
- >10m of Sand (dense brown fine medium and coarse Sand – North Denes Formation).

A (marine) log (dated 2007) for a borehole sunk on site records the following shallow geology:

- 1.39m of Sand (shelly Sand with occasional silt/clay).

- >8.21m of Sand (Sand with layers of gravel).

8 Site History

Latest available pre-WWII and earliest available post-WWII OS maps were obtained from Landmark Maps. These are presented in **Annex D** and described below:

8.1 Pre-WWII

The 1927 (1:2,500 scale) map shows the site split into two halves by the River Yare. The eastern half is occupied by multiple industrial buildings, areas of open ground, unlabelled roadways and part of *Fish Wharf*. A rail siding supplying the Wharf is present in three locations within the eastern half of the site.

The western half of the site is predominantly occupied by residential properties, open ground and *Allotment Gardens*. The western half of the site is crossed by *Southtown Road*, *Queen Anne's Road*, *Cromwell Road* and smaller unlabelled roadways. The southern section of the site occupied the peripheries of *Southtown Common Recreation Ground*.

Note, that a 1927 (1: 2,500 scale) map was reviewed (not annexed) which shows the westernmost section of the site to be occupied by open ground.

8.2 Post-WWII

The 1949 (1:2,500 scale) map shows the eastern half of the site to have undergone two small areas of clearance, whilst the south-easternmost section of the site encroaches upon an area of redevelopment. No further major changes have occurred on this part of the site.

The western half of the site has sustained five areas of clearance across the site, whilst a single *Ruin* is located to the centre of the site. Note, the westernmost section of the site remains open ground.

Within the immediate surrounding area, a number of examples of clearance, redevelopment and ruins are noted. Such observations are often indicative of serious bomb damage on early post-WWII OS maps.

9 The Threat from German Aerial Bombing and Artillery Shelling

9.1 Conflict History of Great Yarmouth

9.1.1 First World War

9.1.1.1 Air Raids

A WWI bomb census map, shows that the town was subject to aerial bombardment. Note however that the map does not allow an accurate assessment of the bomb strike locations in relation to the study area due to the small scale and lack of detail.

Great Yarmouth suffered the first aerial bombardment in the UK, inflicted by Zeppelin L3 on 19th January 1915. Humberside is thought to have been the intended target, however, due to navigational difficulties, Great Yarmouth was attacked.

The Zeppelin reportedly dropped 10 bombs across the town; one of which landed outside the First and Last Tavern in Southgate Road by Fish Wharf. No casualties were sustained, the damage was confined to broken windows and a hole in the road. A second bomb landed adjacent to a riverside restaurant at Fish Wharf causing extensive damage, inflicted one

casualty from shattering glass. Therefore, as Fish Wharf occupies the eastern extent of the site it is likely that these bombs landed on site. However, no UXBs were noted.

9.1.1.2 Naval Bombardment

On the 25th April 1916 Lowestoft was attacked by the German Navy. Four large German battle cruisers (SMS Lützow, Derfflinger, Moltke and Von der Tann) supported by U-Boats bombarded the town with 6", 11" and 12" projectiles from a distance of approximately 6.5km. The attack commenced at 04:10 and lasted for 10 minutes.

The secondary target for this raid was to be Great Yarmouth however, the Royal Navy were made aware of the Germans actions and the British fleet engaged the German ships. This, coupled with heavy fog meant that only a few shells were fired at Great Yarmouth before the German warships pulled back.

9.1.1.3 Deductions

Although this study recognises the threat posed by WWI bombs and shells, it cannot be quantified to the same degree as the WWII threat due to the lack of complete and accurate incident records.

WWI bombs were generally smaller than those used in WWII and were dropped from a lower altitude, resulting in limited UXB penetration depths. Aerial bombing was often such a novelty at the time that it attracted public interest and even spectators to watch the raids in progress.

As only a few shells landed in Great Yarmouth it is unlikely that any failed to explode. Therefore, the risk of a German WWI unexploded bomb or shell landing on site unobserved, and subsequently going unreported, is considered minimal and therefore the risk from German WWI UXO is considered low and will not be further addressed in this report.

9.1.2 Second World War

The Luftwaffe reportedly carried out more bombing raids on Great Yarmouth than any other coastal town, due in part to the presence of an important port with a large fishing fleet and associated industries.

Moreover, due to the town's position on the east coast, where it was difficult to detect an incoming attack en route to the Midlands, it would have been vulnerable to 'tip and run' incidents, whereby an enemy aircraft under heavy AA fire or fighter interception would prematurely jettison its bomb load in order to evade the defences or indiscriminately deposit unused ordnance whilst returning to bases in northern Europe.

Consequently, the town was frequently attacked by German bombers. In a total of 237 properties were destroyed, 1,598 were severely damaged and subsequently demolished, 1,816 were seriously damaged but repairable and 19,818 were slightly damaged.

The available records of bombing incidents for Great Yarmouth are presented in the following sections.

9.2 Second World War Bombing Records

9.2.1 Bombing Statistics

The following table summarises the quantity of German bombs (excluding 1kg incendiaries and anti-personnel bombs) falling on the Municipal Borough of Great Yarmouth (within which the site was historically located) between 1940 and 1945: (source: National Archives)

Record of German Ordnance Dropped on the Municipal Borough of Great Yarmouth	
Area Acreage	3,598
High Explosive Bombs (all types)	910
Parachute Mines	9
Oil Bombs	1
Phosphorus Bombs	8
Fire Pot	10
V1 Flying Bomb	0
V2 Long Range Rocket	0
Total	938
Items Per 1,000 Acres	260.7

Evidence from a secondary source shows the statistics regarding the quantity of UXO dropped on Great Yarmouth¹:

Record of German UXO Dropped on the Municipal Borough of Great Yarmouth	
High Explosive (all types)	221 (12)
Parachute Mines	7 (2)
Phosphorus Bombs	7 (1)
Fire Pot	10
Oil Bomb	1
V1 Flying Bomb	0
Unclassified HE Bombs	653 (60)

N.B. Number denoted in brackets are Unexploded Bombs

Detailed records of the quantity and locations of the 1kg incendiary and anti-personnel bombs were not routinely maintained by the authorities as they were frequently too numerous to record. However, an estimated 1,590 of these IBs were recorded in the Municipal Borough of Great Yarmouth.

Although the incendiaries are not particularly significant in the threat they pose, they nevertheless are items of ordnance that were designed to cause damage and inflict injury and should not be overlooked in assessing the general risk to personnel and equipment. The anti-personnel bombs were used in much smaller quantities and are rarely found today but are potentially more dangerous. This table does not include UXO found during or after WWII.

¹ Bowyer, M. *Air Raid the Emergency air offensive against East Anglia 1939-1945* (1986)

9.2.2 Great Yarmouth Bomb Plot Map

This Great Yarmouth Bomb Plot Map (presented in **Annex E**) only records 28 raids between 11/10/1941 and 31/05/1944, taken from the National Archives. It records the closest HE bomb strike to be approximately 115m south-west of the site. Note, this map only depicts a small quantity of the ordnance dropped on the town as Luftwaffe activity was greater between the summers of 1940 and 1941.

9.2.3 Great Yarmouth Bomb Census Map

A bomb census map for the wider area included within a publication (*J. P. Foynes 1994*) was reviewed. A section of this small-scale map (presented in **Annex F**) depicts the locations of bombs and mines dropped on Great Yarmouth throughout the duration of WWII.

It records approximately 8 x HE bomb strikes on or within the site boundary and multiple 1kg IBs to have fallen on site.

However, this map has very few geographical indicators and is of poor quality, therefore should not be considered an accurate representation of the distribution of bomb strikes in and around Great Yarmouth. Note, however it is possible to apply some accuracy when plotting the site due to the gas works location immediately to the east of the site.

9.2.4 WWII-era RAF Aerial Photography

Historical RAF aerial photography of the site was supplied by Norfolk County Council. A post-WWII image is presented in **Annex F**.

This photography, was taken in 1946, and shows the site in its entirety, much as it appears in the OS Mapping. Although of small scale and low resolution it shows the western half of the site to be occupied by large areas of unused open ground, allotment gardens, hard-surfaced roadways and residential properties.

The eastern half of the site is occupied by a number of industrial buildings and hard-surfaced roadways, which appear to have survived the war intact. Note, that there are two smaller areas set back from the quayside which appear to be occupied by open soft ground which may have been used for the storage of materials during the war. An area of clearance is apparent within the western section of the site as is consistent to post-war OS Mapping, and is likely a result of bomb damage.

Note, no HE bomb craters are visible within the open soft ground, however, such features on worked ground (allotments) are likely to have been infilled during the war. Therefore, a UXB entry hole could have gone unnoticed on site.

9.2.5 Abandoned Bombs

A post-air raid survey of buildings, facilities and installations would have included a search for evidence of bomb entry holes. If evidence were encountered, Bomb Disposal Officer teams would normally have been requested to attempt to locate, render safe and dispose of the bomb. Occasionally evidence of UXBs was discovered but due to a relatively benign position, access problems or a shortage of resources the UXB could not be exposed and rendered safe. Such an incident may have been recorded and noted as an Abandoned Bomb.

Given the inaccuracy of WWII records and the fact that these bombs were 'abandoned', their locations cannot be considered definitive, nor the lists exhaustive. The MoD states that 'action to make the devices safe would be taken only if it was thought they were unstable'. It should be noted that other than the 'officially' abandoned bombs, there will inevitably be UXBs that

were never recorded. Dynasafe BACTEC holds no records of officially registered abandoned bombs at or near the site.

9.3 Likelihood of Post-raid UXO Detection

Utilising the available historical bombing records as reviewed in *Section 9.2*, it is possible to make an assessment of the likelihood that evidence of UXO would have been noted on a site during the war and the incident dealt with or recorded at the time. Factors such as bombing density, frequency of access, ground cover, damage and failure rate have been taken into consideration.

9.3.1 Density of WWII Bombing

Bombing density is an important consideration for assessing the possibility that UXO remains in an area. A very high density can for example result in increased levels of damage sustained to structures, greater likelihood of errors in record keeping and a higher risk that UXBs fell over the area.

The site was located within an area of very high bombing density during WWII, with up to 8 x HE bombs likely to have landed on or adjacent to the site boundary. At least 12 further HE bombs are recorded within a 300m radius of the site. In addition, the site is likely to have been affected by 1kg incendiary bombing.

9.3.2 Damage

If structures on a site have been subject to significant bomb or fire damage, rubble and debris are likely to have been present; similarly, a HE bomb strike on open ground is likely to have resulted in a degree of soil disturbance. Under such conditions there is a greater risk of the entry holes of UXBs dropped during subsequent raids being obscured and going unnoticed.

A review of the historical resources suggests that many of the buildings on site survived the war largely intact. Note however, the available aerial photograph does not allow for an accurate assessment of bomb damage to all buildings.

Note, there are multiple areas of clearance apparent within the western section of the site, and a single ruin, suggesting that these areas sustained serious bomb damage. As a result, the affected buildings will have been abandoned for a time, increasing the likelihood of subsequent UXO falling on site unnoticed. Therefore, it can be assumed that, for a time, significant quantities of rubble occupied this area and debris may have been strewn across the site.

9.3.3 Frequency of Access

UXO at sites where human access was infrequent would have a higher chance of being overlooked than at those sites which were subject to greater occupancy. The importance of a site or facility to the war effort is also an important consideration as such sites are likely to have been both frequently accessed and are also likely to have been subject to post-raid checks for evidence of UXO.

The eastern extent of the site was occupied by Fish Wharf, comprising quayside areas and associated buildings / structures during the war. Note, however there is an area of open ground that may have possibly been occupied by dense vegetation/bare earth or used for open air storage during the war. Therefore, decreasing the likelihood of regular / frequent access.

These busy commercial / industrial areas would have been accessed on a daily basis thereby decreasing the risk of any UXB strike evidence going unnoticed. In addition, these areas may have been subject to post-raid checks for UXB entry holes.

The western half of the site was occupied by large areas of ambiguous open ground and allotment gardens. These areas are unlikely to have been accessed as regularly or frequently as the developed portion of the site. Access to the allotments would have varied depending on the season and therefore a UXB could conceivably have fallen here unobserved. This is especially pertinent since many of the German air raids over Great Yarmouth took place at night. Furthermore, the undeveloped parts of the site would not have been subject to specific post-raid searches for UXO.

9.3.4 Ground Cover

The degree and type of groundcover present during WWII would have a significant effect on the visual evidence at ground level which may have indicated the presence of buried UXO.

Evidence of German UXO will have been obvious within the developed, undamaged parts of the study area, as a UXB strike to buildings and hard-standing will still have caused significant damage or an obvious, persistent entry hole, even without detonating. Following any such incident, the UXB would have been reported and subsequently exhumed / removed.

However, had a UXB landed within the allotments, open ground soft, rubble, or area of open air storage on site it could have gone undetected. Note, that the entry hole of an SC50 (the most commonly deployed German HE bomb) could be as little as 20cm in diameter and therefore, easily obscured in dense vegetation.

A UXB entry hole within the river bank mud on site (revealed at low tide) is unlikely to have persisted; the next high tide filling in the hole with water and sediment. Even if evidence of a UXB was observed, it is unlikely to have been reported due to its insignificant position.

A UXB striking the water on site will have been immediately obscured from view and therefore, is unlikely to have been observed, reported and mapped.

Also noteworthy is that during WWII German 1kg incendiary bombs were observed to penetrate to a significant depth when dropped into soft ground. The photograph presented in **Annex H** shows how such a sub-munition (known to have been deployed locally), could have remained undetected in the post-war period.

9.3.5 Bomb Failure Rate

There is no evidence to suggest that the bomb failure rate in the vicinity of the site would have been different from the “approximately 10%” figure normally used.

9.4 Generic Types of WWII German Air-delivered Ordnance

The nature and characteristics of the ordnance used by the Luftwaffe allows an informed assessment of the hazards posed by any unexploded items that may remain today. Detailed illustrations of German air delivered ordnance are presented at **Annex I**.

- **HE Bombs:** In terms of weight of ordnance dropped, HE bombs were the most frequent weapon deployed. Most bombs were 50kg, 250kg or 500kg (overall weight, about half of which was the high explosive) though large bombs of up to 2,000kg were also used. HE bombs had the weight, velocity and shape to easily penetrate the ground intact if they failed to explode. Post-raid surveys would not always have spotted the entry hole or other indications that a bomb penetrated the ground and failed to explode and contemporary ARP documents describe the danger of assuming that damage, actually caused by a large UXB, was due to an exploded 50kg bomb. Unexploded HE bombs therefore present the greatest risk to present-day intrusive works.

- Blast Bombs/Parachute Mines: Blast bombs generally had a slow rate of descent and were extremely unlikely to have penetrated the ground. Non-retarded mines would have shattered on most ground types, if they had failed to explode. There have been extreme cases when these items have been found unexploded, but this was where the ground was either very soft or where standing water had reduced the impact. BACTEC does not consider there to be a significant threat from this type of munition on land.
- Large incendiary bombs: This type of bomb ranged in size from 36kg to 255kg and had a number of inflammable fill materials (including oil and white phosphorus), and a small explosive charge. They were designed to explode and burn close to the surface but their shape and weight meant that they did have penetration capability. If they penetrated the ground complete combustion did not always occur and in such cases, they remain a risk to intrusive works.
- 1kg Incendiary Bombs (IB): These bombs, which were jettisoned from air-dropped containers, were unlikely to penetrate the ground and in urban areas would usually have been located in post-raid surveys. However, if bombs did not initiate and fell in water or dense vegetation, or became mixed with rubble in bomb damaged areas they could have been overlooked. Some variants had explosive heads and these present a risk of detonation during intrusive works.
- Anti-personnel (AP) Bomblets: AP bombs had little ground penetration ability and should have been located by the post-raid survey unless they fell into water, dense vegetation or bomb rubble.
- Specialist Bombs (smoke, flare, etc): These types do not contain high explosive and therefore a detonation consequence is unlikely. They were not designed to penetrate the ground.

9.5 German Air-delivered Ordnance Failure Rate

Based on empirical evidence, it is generally accepted that 10% of the German HE bombs dropped during WWII failed to explode as designed. This estimate is probably based on the statistics of wartime recovered UXBs and therefore will not have taken account of the unknown numbers of UXBs that were not recorded at the time, and is probably an underestimate.

The reasons for failures include:

- Fuze or gain malfunction due to manufacturing fault, sabotage (by forced labour) or faulty installation.
- Clockwork mechanism failure in delayed action bombs.
- Failure of the bomber aircraft to arm the bombs (charge the electrical condensers which supplied the energy to initiate the detonation sequence) due to human error or equipment defect.
- Jettison of the bomb before it was armed or from a very low altitude. Most likely if the bomber was under attack or crashing.

War Office Statistics document that a daily average of 84 bombs which failed to function were dropped on civilian targets in Great Britain between 21st September 1940 and 5th July 1941. 1 in 12 of these (probably mostly fitted with time delay fuzes) exploded sometime after they fell - the remainder were unintentional failures.

There is no evidence to suggest that the bomb failure rate in the vicinity of the study area would have been different from the “approximately 10%” figure normally used.

From 1940 to 1945 bomb disposal teams dealt with a total of 50,000 explosive items of 50kg and over (i.e. German bombs), 7,000 AAA shells and 300,000 beach mines. These operations resulted in the deaths of 394 officers and men.

Media articles relating to recent German UXB finds on land and underwater are presented in **Annex J**.

9.6 Initiation of Unexploded Bombs

Unexploded bombs do not spontaneously explode. All high explosive requires significant energy to create the conditions for detonation to occur. In the case of unexploded German bombs discovered within the construction site environment, there are a number of potential initiation mechanisms:

- Direct impact onto the main body of the bomb: Unless the fuze or fuze pocket is struck, there needs to be a significant impact (e.g. from piling or large and violent mechanical excavation) to initiate a buried iron bomb. Such violent action can cause the bomb to detonate.
- Re-starting the clock timer in the fuze: Only a small proportion of German WWII bombs employed clockwork fuzes. It is probable that significant corrosion has taken place within the fuze mechanism over the last 60 years that would prevent clockwork mechanisms from functioning, nevertheless it was reported that the fuze in a UXB dealt with by 33 EOD Regiment in Surrey in 2002 did re-commence.
- Induction of a static charge, causing a current in an electric fuze: The majority of German WWII bombs employed electric fuzes. It is probable that significant corrosion has taken place within the fuze mechanism over the last 60 years such that the fuze circuit could not be activated.
- Friction impact initiating the (shock-sensitive) fuze explosive: This is the most likely scenario resulting in the bomb detonating.

Annex K details UXB incidents where intrusive works have caused UXBs to detonate, resulting in death or injury and damage to plant.

10 Unexploded Bomb Penetration

10.1 General Considerations

The actual penetration depth of aerial delivered bombs into the ground will have been determined by the mass and shape of the bomb, the velocity and angle of the bomb on impact (dependent on the height of release) and the nature of the ground and ground cover; the softer the ground, the greater the potential penetration. Peat, alluvium and soft clays are easier to penetrate than gravel and sand. Bombs are brought to rest or are commonly deflected by bedrock or large boulders.

10.2 The “j” Curve Effect

An air-dropped bomb falling from normal bombing altitude (say 5,000m) into homogeneous ground will continue its line of flight but turn in an upwards curve towards the surface as it comes to rest. This offset from vertical is generally thought to be about one third of the penetration depth, but can be up to 15m depending on ground conditions or the bomb’s angle of impact.

10.3 Second World War UXB Land Penetration Studies

During WWII, the Ministry of Home Security undertook a major study on actual bomb penetration depths, carrying out statistical analysis on the measured depths of 1,328 bombs as reported by Bomb Disposal, mostly in the London area. They then came to conclusions as to the likely average and maximum depths of penetration of different sized bombs in different geological strata.

The median penetration of 430 x 50kg German bombs in London Clay was 4.6m and the maximum penetration observed for the SC50 bomb was 9m.

They concluded that the largest common German bomb, 500kg, had a likely penetration depth of 6m in sand or gravel but 8.7m in clay. The maximum observed depth for a 500kg bomb was 10.2m and for a 1,000kg bomb 12.7m. Theoretical calculations suggested that significantly greater penetration depths were probable.

10.4 Maximum Bomb Penetration Depth - Land

To assess the maximum bomb penetration depth at the eastern and western (land) extents of the site, the following parameters have been used:

- WWII Geology - 1m of Made Ground, >13m of Sand.
- Impact Angle and Velocity - 80-90° from horizontal and 267 metres per second.
- Bomb Mass and Configuration - The 500kg SC (General Purpose) HE bomb, without retarder units or armour piercing nose. This was the largest of the common bombs used against Britain.

Taking into account the above-mentioned factors it has been assessed that a 500kg bomb would have had an approximate maximum bomb penetration depth of **8-10m** below WWII land level. Penetration depth could potentially have been greater if the UXB was larger (though only 4% of German bombs used in WWII over Britain were of that size). Note that UXBs may be found at any depth between just below the WWII ground level and the maximum penetration depth.

10.5 UXB Penetration through Water

UXB penetration of riverbed (through water) provides a more challenging scenario to model. The key considerations are:

- Bombs hit the water at the terminal velocity of air: 267 metres per second.
- Ignoring surface tension there will be an immediate loss of inertia due to rapid energy losses; sound, wave, splash, bubble formation and cavitation.
- The drag force rapidly decelerates the bomb. If there is sufficient water depth then acceleration will become 0m/s² and terminal velocity through water will be achieved: 11m/s.
- Once the terminal velocity in water is reached the bomb impacts the riverbed as a free-fall penetrator, not necessarily in a nose down orientation.

Analysis of the air-water-soil regime is complex. The current model assumes that 5m of water is required in order to achieve the terminal velocity in water of a 500kg UXB. Impacts at this speed will cause a penetration of 2.3m assuming a riverbed bearing capacity of 75kPa (*Department of The US Army, TM 5-855-1*). However, the bearing capacity of the riverbed sediment within the site boundary is not known.

In order to assess the bomb penetration depth within the river environment, the extreme water depth scenario must be considered; that is, the deepest point of the river at low tide. A current Admiralty Chart for the site was reviewed. This confirms the deepest Chart Datum water depth within the site boundary to be 4.3m.

As the depth is <5m, it can be assumed that a 500kg German UXB landing at any location within the river, at any time of day will strike the river bed with a force sufficient to impact the river bed in a vertical / nose down orientation. As opposed to the “tumbling” nature of items falling through the water column once the terminal velocity has been achieved.

However, the nature of the river sediment within the site boundary is not known both in terms of its precise composition and thickness. This, coupled with the lack of an accurate mathematical model for bomb behaviour through the water column, makes calculation of a maximum penetration depth value within the river environment impossible.

However, the significant decelerating effect caused by the water column on site indicates that even a large German UXB would not be able to penetrate a substantial distance into the Crag Group bedrock underlying the overburden sediment.

11 The Threat from British / Allied Military Ordnance

11.1 General

The following historical and modern facilities / activities / incidents have been considered:

- Army, Navy and RAF Bases / Installations
- Military Training Areas / Weapons Ranges
- Ordnance / Explosives Factories and Storage Depots
- Sites requisitioned for military use
- Military Fortifications and Coastal Defences
- Locations of Army Explosive Ordnance Clearance Tasks
- WWII Anti-Aircraft Batteries
- WWII Pipe Mined Locations and Beach Minefields

The most likely source of British / Allied ordnance is anti-aircraft fire/Home Guard activity, as discussed below.

11.2 Potential Sources of Explosive Ordnance

11.2.1 Anti-Aircraft Artillery

At the start of the war two types of AAA guns were deployed: Heavy Anti-Aircraft Artillery (HAA), using large calibre weapons such as the 3.7” QF (Quick Firing) gun and Light Anti-Aircraft Artillery (LAA) using smaller calibre weapons such as 40mm Bofors gun.

During the early war period, there was a severe shortage of AAA available and older WWI 3” and modified naval 4.5” guns were deployed alongside those available 3.7” weapons. The maximum ceiling height of fire at that time was around 11,000m (for the 3.7” gun and less for other weapons). As the war progressed improved variants of the 3.7” gun was introduced and, from 1942, large 5.25-inch weapons began to be brought into service. These had significantly improved ceiling heights of fire reaching over 18,000m.

The LAA batteries were intended to engage fast low flying aircraft and were typically deployed around airfields or strategic installations. These batteries were mobile and could be moved to new positions with relative ease when required. The most numerous of these was the 40mm Bofors gun which could fire up to 120 x 40mm HE shells per minute to over 1,800m.

The HAA projectiles were high explosive shells, usually fitted with a time delay or barometric pressure fuze to make them explode at a pre-determined height. Before the war all the clockwork fuses used by the Royal Artillery had come from Switzerland. When that source of supply was cut off, Britain had been forced to make its own. After four years of war, the country still lacked the engineering skills to produce a reliable fuse.

This resulted in a considerable number of AA projectiles either exploding prematurely, killing the gunners or failing to explode at all; falling to the ground as UXBs. In January 1944 more people in London were killed by HAA shells than by German bombs. Details of the most commonly deployed WWII AAA projectiles are shown below:

Gun type	Calibre	Shell Dimensions	Shell Weight	HE Fill Weight
3.7 Inch	94mm	94mm x 438mm	12.7kg	1.1kg
4.5 Inch	114mm	114mm x 578mm	24.7kg	1.7kg
40mm	40mm	40mm x 311mm	0.84kg	70g

Although the larger unexploded projectiles could enter the ground they did not have great penetration ability and are therefore likely to be found close to WWII ground level. These shells are frequently mistakenly identified as small German air-delivered bombs, but are differentiated by the copper driving band found in front of the base. With a high explosive fill and fragmentation hazard these items of UXO present a significant risk if encountered. The smaller 40mm projectiles are similar in appearance and effect to small arms ammunition and, although still dangerous, present a lower risk.

Four static HAA batteries were operational within 5km of the site during WWII. With four guns per battery, firing up to ten rounds a minute, HAA batteries could expend numerous shells during even short air raids and therefore as the town was frequently attacked by the Luftwaffe, the risk of unexploded HAA shell contamination within study area is elevated.

Numerous unexploded AA shells were recovered during and following WWII, and are still occasionally encountered on sites today. Illustrations of Anti-Aircraft projectiles and rockets are presented in **Annex L**. Any unexploded AA shell landing in the river would have remained there for a time could have become subsequently buried in sediment.

11.2.2 Home Guard Activity

The Home Guard (HG) was a defence organisation of the British Army, operational between 1940 and 1944. It comprised 1.5 million local volunteers, otherwise ineligible for military service, and acted as a secondary defence force, in case of enemy invasion which was expected during 1940 and 1941. The HG guarded the coastal areas of Britain and other important facilities such as RAF airfields, weapons factories, explosives stores, radar sites, etc.

Due to its coastal location in south-eastern England, Great Yarmouth was considered vulnerable to German invasion and consequently was well defended by Army and HG units, with River Yare and beaches fortified with static defences, minefields and gun positions.

A group of WWII anti-invasion defences, including four pillboxes, a road block and a Spigot Mortar emplacement were present within the northern section of the site on the junction of

Queen Anne's Road and Southtown Road. The central element of the site was a substantial road block, designed to check the progress of tanks rather than act as a check point.

To the south, the road block was flanked by two pillboxes, a Type 22 on the easternmost extent of site boundary, and a Type 24 or variant pillbox on the north side of Queen Anne's Road. The defences were removed and the road resurfaced in August 1945.

Located at the westernmost end of Cromwell Road a Spigot Mortar position and associated Type 24 Pillbox were located. It can be assumed that the installation was sited to guard trackways and bridges across the drains that lay to the north of Queen Anne's Road.

Today, items of WWII ordnance related to the HG are occasionally encountered by members of the public and the construction industry. Experience has shown that the 'housekeeping' of WWII soldiers was often poor with items of faulty, surplus or expended ammunition often burnt, buried, misplaced or otherwise discarded on civilian land (see *Section 12.2*).

Furthermore, HG personnel are known to have purposefully buried caches of ammunition and weapons in tactical positions, to be exhumed and used in case of invasion. This is substantiated by several recent HG UXO finds (see *Annex M*).

Details of the most commonly encountered WWII-era British ammunition (Land Service Ammunition and Small Arms Ammunition) are presented in *Annex N* and *Annex O* respectively.

12 Ordnance Clearance and Post-WWII Ground Works

12.1 General

The extent to which any ordnance clearance activities have taken place on site or extensive ground works have occurred is relevant since on the one hand they may indicate previous ordnance contamination but also may have reduced the risk that ordnance remains undiscovered.

12.2 EOD Bomb Disposal and Clearance Tasks

Dynasafe BACTEC holds a number of official records of explosive ordnance disposal operations during and following WWII, obtained from the Explosive Ordnance Disposal (EOD) Archive Information Office at 33 Engineer Regiment (EOD), British Army. However, no records could be found to indicate that any Army EOD tasks have taken place on site.

No evidence of Royal Navy EOD divers carrying out any UXO disposal tasks in the River Yare (in close proximity to the site) was found.

Note, however that two gardeners discovered a live grenade at Dicken Court (approximately 330m north-east of the site) during garden maintenance operations. This would have likely been buried by the HG as part of a cache that of weapons in case of invasion, and often occurred within vulnerable coastal areas.

12.3 Post War Redevelopment

The eastern half of the site has undergone two phases of post war redevelopment, the first in the 1970's and the second during the 1980's when the site took its current form. Whilst the western half of the site appears to have remained largely untouched since the war, apart from the A12 roundabout and A147 installation during the 1980's and larger commercial properties to the north and east of the site.

Note, that minor dredging works are reported to have occurred on the River Yare in the post-war period. However, the extents of which are unknown at the time of writing this report.

13 The Overall Explosive Ordnance Threat Assessment

13.1 General Considerations

Taking into account the quality of the historical evidence, the assessment of the overall threat to any intrusive works from UXO must evaluate the following risks:

- That the site was contaminated with unexploded ordnance
- That UXO remains on site
- That such items could be encountered during any intrusive works
- That ordnance may be activated by the works operations
- The consequences of encountering or initiating ordnance

13.2 The Risk that the Site was Contaminated with Unexploded Ordnance

For the reasons discussed in *Sections 9 and 11* Dynasafe BACTEC believes that there is a risk that UXO contaminated the study area. This is based on the following:

German UXO:

- The site was located within central Great Yarmouth within an area of very high bombing density during WWII, with up to 8 x HE bombs likely to have landed on or adjacent to the site boundary. At least 12 further HE bombs are recorded within a 300m radius of the site. In addition, the site is likely to have been affected by 1kg incendiary bombing.
- The eastern extent of the site, comprising busy commercial / industrial areas would have been accessed on a daily basis thereby decreasing the risk of any UXB strike evidence going unnoticed. In addition, these areas may have been subject to post-raid checks for UXB entry holes.
- The western half of the site was occupied by large areas of ambiguous open ground and allotment gardens which are unlikely to have been accessed as regularly or frequently. Access to the allotments would have varied depending on the season and therefore, a UXB could conceivably have fallen here unobserved.
- Moreover, there are multiple areas of clearance and a ruin apparent on site, suggesting that these areas sustained serious bomb damage. As a result, the affected buildings will have been abandoned for a time, increasing the likelihood of subsequent UXO falling on site unnoticed. Therefore, it can be assumed that, for a time, significant quantities of rubble occupied this area and debris may have been strewn across the site, increasing the likelihood of a UXB remaining on site. However, had a UXB landed within the allotments, open ground soft, rubble, or area of open air storage on site it could have gone undetected. Note, that the entry hole of an SC50 (the most commonly deployed German HE bomb) could be as little as 20cm in diameter and therefore, easily obscured in dense vegetation.
- A UXB landing in the river during a night time raid will have been immediately obscured from view, beneath the waterline. Consequently, it is unlikely to have been observed, reported and mapped.
- A UXB entry hole within the river bank mud on site (revealed at low tide) is unlikely to have persisted; the next high tide filling in the hole with water and sediment. Even if evidence of

a UXB was observed here and reported, it is highly unlikely to have been recovered by the local bomb disposal unit due to its insignificant location and the impracticalities of deep buried UXB removal in this environment.

British/Allied UXO:

- Due to its coastal location in south-eastern England, Great Yarmouth was considered vulnerable to German invasion and consequently, was well defended by Army and HG units, with River Yare and beaches fortified with static defences, minefields and gun positions.
- A group of WWII anti-invasion defences, including four pillboxes, a road block and a Spigot Mortar emplacement were present within the northern section of the site on the junction of Queen Anne's Road and Southtown Road. The central element of the site was a substantial road block, designed to check the progress of tanks rather than act as a check point. Further defences were located within the site boundary, located at the westernmost end of Cromwell Road a Spigot Mortar position and associated Type 24 Pillbox were located.
- Although these defence installations were located on site, it is considered highly likely that the risk of shallow buried UXO has been mitigated on site due to post war development.
- Note, that four HAA batteries were situated within a 5km radius of the site during WWII. For the same reasons as given above, it is quite possible that an unexploded AA shell or rocket could have landed in the river on site and remained there.

13.3 The Risk that Unexploded Ordnance Remains on Site

Land - Within the footprint of post-war ground works, the risk of small, shallow buried UXO (LSA, SAA, AA shells and German 1kg incendiaries) remaining will have been partly mitigated since any such items could have been encountered and removed during soil stripping / levelling, foundations etc.

Only within the volume of any post-war basement level bulk excavations and at the precise locations of any post-war pile foundations / boreholes, will the risk from deeper buried German HE UXBs have been completely mitigated. Therefore, it is conceivable that such a weapon could reside within virgin / untouched geology, beneath and amongst any such post-WWII ground works, down to the maximum bomb penetration depth.

The risk from UXO contamination within the eastern extent of the site and pre-war buildings has been assessed as minimal and therefore the risk from UXO remaining is minimal.

River - It has been assessed that a HE UXB falling in the river will likely have achieved full burial within the overburden sediment and may also have penetrated the Crag Group bedrock. Consequently, such a UXB will have remained in situ up to the present day, largely unaffected by environmental conditions. Also, any large partially buried UXBs on site are less likely to be affected by environmental conditions as a result of their significant mass.

Tidal riverbed environments are mobile in nature and therefore as a result of water currents, any small items of UXO (British AA shells and German 1kg IBs) residing on or near the riverbed surface could experience migration. This is evidenced by the large quantity of munitions that are washed up on beaches around the UK, every year. The wider River Yare environment will have been subject to the same UXO contamination conditions as the site during WWII and therefore although riverbed UXO could have migrated out of the site since WWII, equally, additional UXO could have migrated into the site.

13.4 The Risk that Ordnance may be Encountered during the Works

Land - The most likely scenarios under which a UXO could be encountered during construction works is during piling, drilling operations or bulk excavations for basement levels. The overall risk will depend on the extent of the works, such as the numbers of boreholes/piles (if required) and the volume of the excavations.

Since an air-dropped bomb may come to rest at any depth between just below ground level and its approximate penetration depth there is also a chance that such an item could be encountered during shallow excavations (for services or site investigations) into the original WWII ground level.

If the proposed works are due to be undertaken within post war fill material / made ground, the risk of encountering WWII UXBs is low. However, if works are to be undertaken below WWII ground level this risk is significantly higher.

The risk of UXO remaining within the eastern extent of the site and pre-war buildings has been assessed as minimal, therefore the risk from UXO being encountered during the proposed works is minimal.

River – Minor dredging works on the River Yare have been identified to have taken place, however it is not known to what extent these would have occurred within the site boundary. Therefore, these activities could have partly mitigated the risk from UXO within the river environment, however it is conceivable that UXO could have subsequently been washed into the site boundary. Therefore, the risk of encountering UXO during the proposed works remains partially unmitigated. The proposed investigatory works will be to a depth beyond the maximum bomb penetration depth, therefore if UXO is situated at the location of the borehole, it will be encountered.

13.5 The Risk that Ordnance may be Initiated

The risk that UXO could be initiated if encountered will depend on its condition, how it is found and the energy with which it is struck. The most violent activity on most construction sites is percussive piling. As a result, items that are shallow buried present a slightly lower risk than those that are deep buried, since the force of impact is usually lower and they are more likely to be observed – when immediate mitigating actions can be taken.

13.6 The Consequences of Encountering or Initiating Ordnance

Clearly the consequences of an inadvertent detonation of UXO during construction operations would be catastrophic with a serious risk to life, damage to plant and a total site shutdown during follow-up investigations.

Since the risk of initiating ordnance is significantly reduced if appropriate mitigation measures are undertaken, the most important consequence of the discovery of ordnance will be economic. This would be particularly so in the case of high profile locations and could involve the evacuation of the public.

The unexpected discovery of ordnance may require the closing of the site for any time between a few hours and a week with a potentially significant cost in lost time. Note also that the suspected find of ordnance, if handled solely through the authorities, may also involve loss of production since the first action of the Police in most cases will be to isolate the locale whilst awaiting military assistance, even if this turns out to have been unnecessary.

13.7 Dynasafe BACTEC's Assessment

Taking into consideration the findings of this study, Dynasafe BACTEC considers the risk on the site to be heterogeneous and can therefore be divided into **Low**, **Medium** and **High** Risk Zones. These are described below and illustrated on a Risk Map, presented in **Annex P**.

Low Risk Zone:

- Buildings and hard standing that survived the war intact.

Type of Ordnance	Level of Risk			
	Negligible	Low	Medium	High
German WWII High Explosive Bombs		✓		
German WWII 1kg Incendiary Bombs		✓		
British Anti-Aircraft Shells		✓		
British Small Arms and Land Service Ammunition		✓		

Medium Risk Zone:

- Open soft ground that would not have been accessed regularly nor frequently.
- Areas of substantial bomb damage.
- Buffer Area to incorporate the "J-Curve" Buffer Zone.

Type of Ordnance	Level of Risk			
	Negligible	Low	Medium	High
German WWII High Explosive Bombs			✓	
German WWII 1kg Incendiary Bombs			✓	
British Anti-Aircraft Shells			✓	
British Small Arms and Land Service Ammunition			✓	

High Risk Zone:

- Occupied by the River Yare.

Type of Ordnance	Level of Risk			
	Negligible	Low	Medium	High
German WWII High Explosive Bombs				✓
German WWII 1kg Incendiary Bombs			✓	
British Anti-Aircraft Shells			✓	
British Small Arms and Land Service Ammunition		✓		

14 Proposed Risk Mitigation Strategy

14.1 General

Dynasafe BACTEC believes the following risk mitigation measures should be deployed to support the proposed works at the Southtown, Great Yarmouth site.

14.2 Scope Specific Risk Mitigation Measures

All Risk Zones:

- **Site Specific Explosive Ordnance Safety and Awareness Briefings to all personnel conducting intrusive works:** A specialised briefing is always advisable when there is a possibility of explosive ordnance contamination. It is an essential component of the Health & Safety Plan for the site and conforms to requirements of CDM Regulations 2015. All personnel working on the site should be instructed on the identification of UXB, actions to be taken to alert site management and to keep people and equipment away from the hazard. Posters and information of a general nature on the UXB threat should be held in the site office for reference and as a reminder.
- **The Provision of Unexploded Ordnance Site Safety Instructions:** These written instructions contain information detailing actions to be taken in the event that unexploded ordnance is discovered. They are to be retained on site and will both assist in making a preliminary assessment of a suspect object and provide guidance on the immediate steps to be taken in the event that ordnance is believed to have been found.

Medium Risk Zones:

- **Explosive Ordnance Disposal (EOD) Engineer presence on site to support shallow intrusive works:** When on site the role of the EOD Engineer would include; monitoring works using visual recognition and instrumentation and immediate response to reports of suspicious objects or suspected items of ordnance that have been recovered by the ground workers on site; providing Explosive Ordnance Safety and Awareness briefings to any staff that have not received them earlier and advise staff of the need to modify working practices to take account of the ordnance threat, and finally to aid Incident Management which would involve liaison with the local authorities and Police should ordnance be identified and present an explosive hazard.
- **Handheld Intrusive Magnetometer Survey of all borehole locations down to the maximum bomb penetration depth:** As part of the EOD Engineer presence on site, Dynasafe BACTEC can deploy intrusive magnetometry techniques to provide staged clearance ahead of all the borehole locations.

High Risk Zone:

- **Non-Intrusive Magnetometer and Side Scan UXO Survey:** A Magnetometer and high-resolution Side Scan Survey should be conducted over the proposed works area to identify any ferrous anomalies (potential UXO) on or near to the riverbed surface. This will provide clear areas for the placement of barge legs or anchors. It also allows for the identification of non-ferrous near surface obstructions which may hamper the proposed works.
- **Intrusive Magnetometer Survey - Down-hole Vallon Probing ahead of Marine Boreholes:** A down-hole Vallon magnetometer is lowered to the estuary bed first to scan a radius for ferrous anomalies. Provided the river bed is clear, boreholing is conducted to 1m. Nonferrous sleeving must be used with the Vallon lowered down the sleeve to clear the next metre ahead of the borehole. This sequence is repeated until bomb penetration depth is reached, then boreholing can continue unrestricted. Sleeving would be expected to extend from the JU Barge deck to river bed to ensure drill bit relocates the borehole each time it is withdrawn.

14.3 Further Recommended Measures should the Scope of Works Change:

- **Intrusive Magnetometer Survey of all pile / boreholes locations down to the maximum bomb penetration depth:** Dynasafe BACTEC can deploy a range of intrusive magnetometry techniques to clear ahead of all the pile locations. The appropriate technique is governed by a number of factors, but most importantly the site's ground conditions. The appropriate survey methodology would be confirmed once the enabling works have been completed. A site meeting would be required between BACTEC and the client to determine the methodology suitable for this site. Target investigation or avoidance will be recommended as appropriate.
- **Pre-Piling Intrusive Magnetometer Survey: TFG Clearance ahead of Piling:** A TFG magnetometer survey probe will scan 1m at a time for ferrous anomalies ahead of a rotary drill. This process is repeated down to the max bomb penetration depth. If a ferrous mass is located the TFG survey would have to relocate however, this would clear the way prior to the borehole survey. Having cleared the location, piling can then be conducted on that position unrestricted.
- **Intrusive Magnetometer Survey: Down-hole Vallon Probing ahead of Piling:** A down-hole Vallon magnetometer is lowered to the estuary bed first to scan a radius for ferrous anomalies. Provided the river bed is clear, piling is conducted to 1m. Nonferrous sleeving must be used with the Vallon lowered down the sleeve to clear the next metre ahead of the borehole. This sequence is repeated until bomb penetration depth is reached, then piling can continue unrestricted.

Dynasafe BACTEC Limited

19th September 2017

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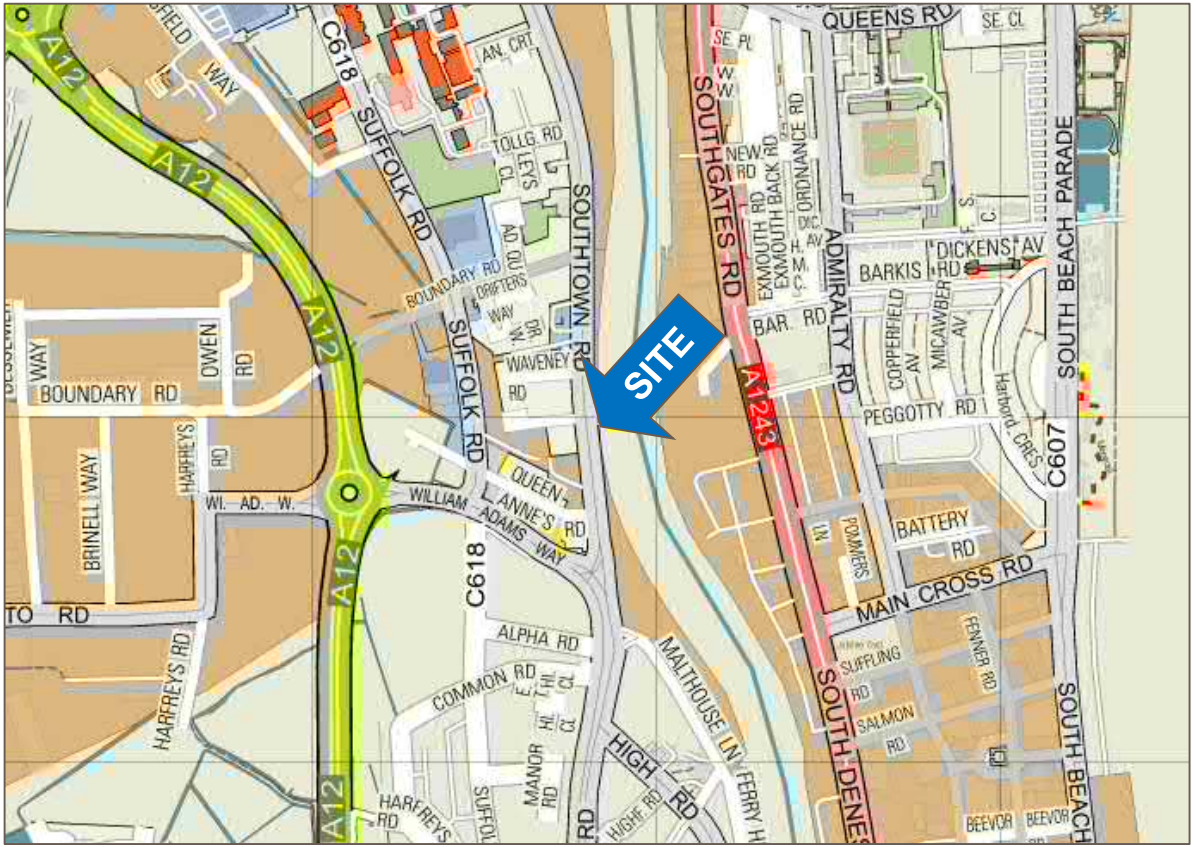
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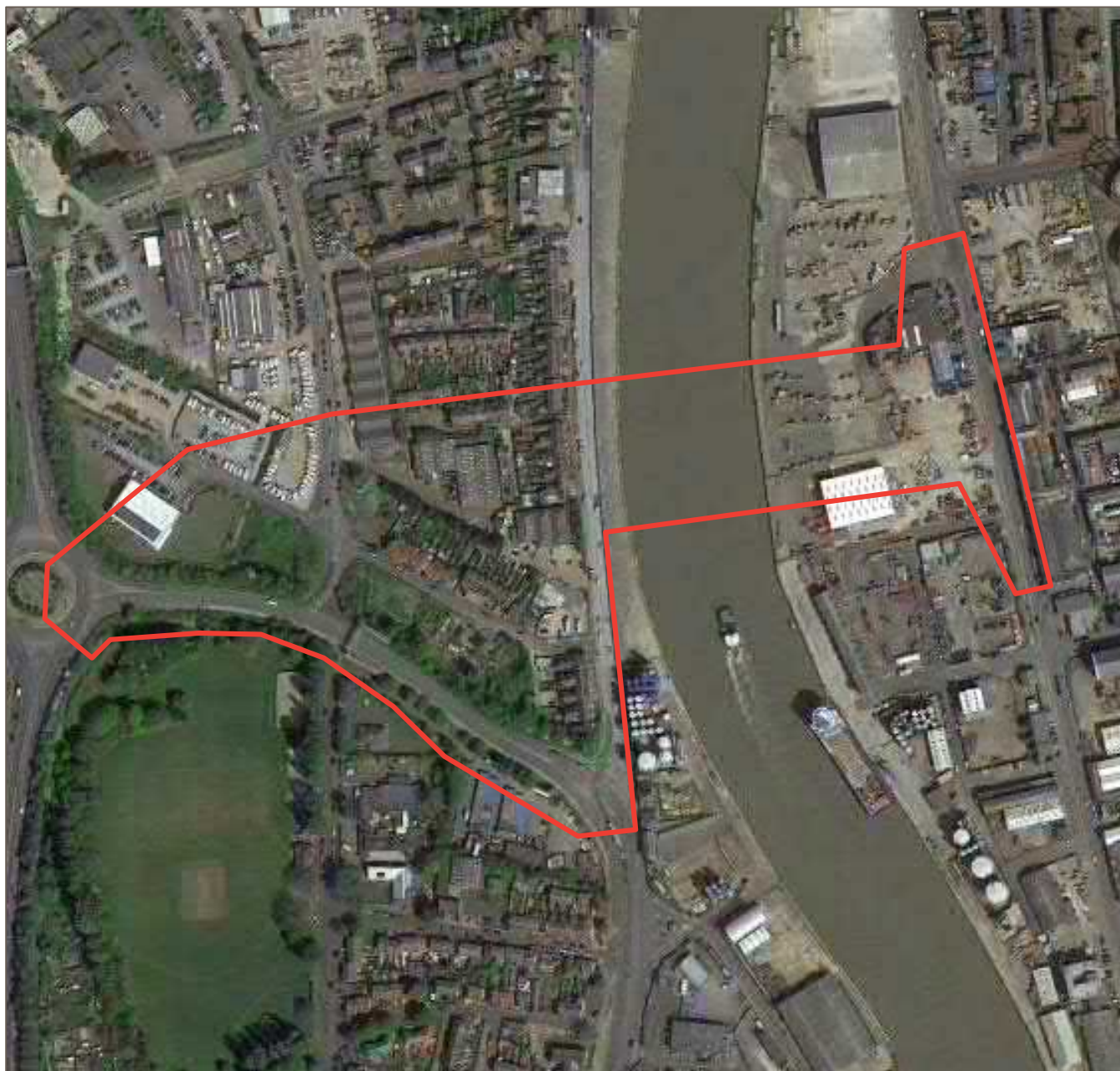
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Report Reference:
7307TA

Client:
WSP UK Limited
Project:
Southtown, Great Yarmouth





— Approximate site boundary

Report Reference:

7307TA

Client:

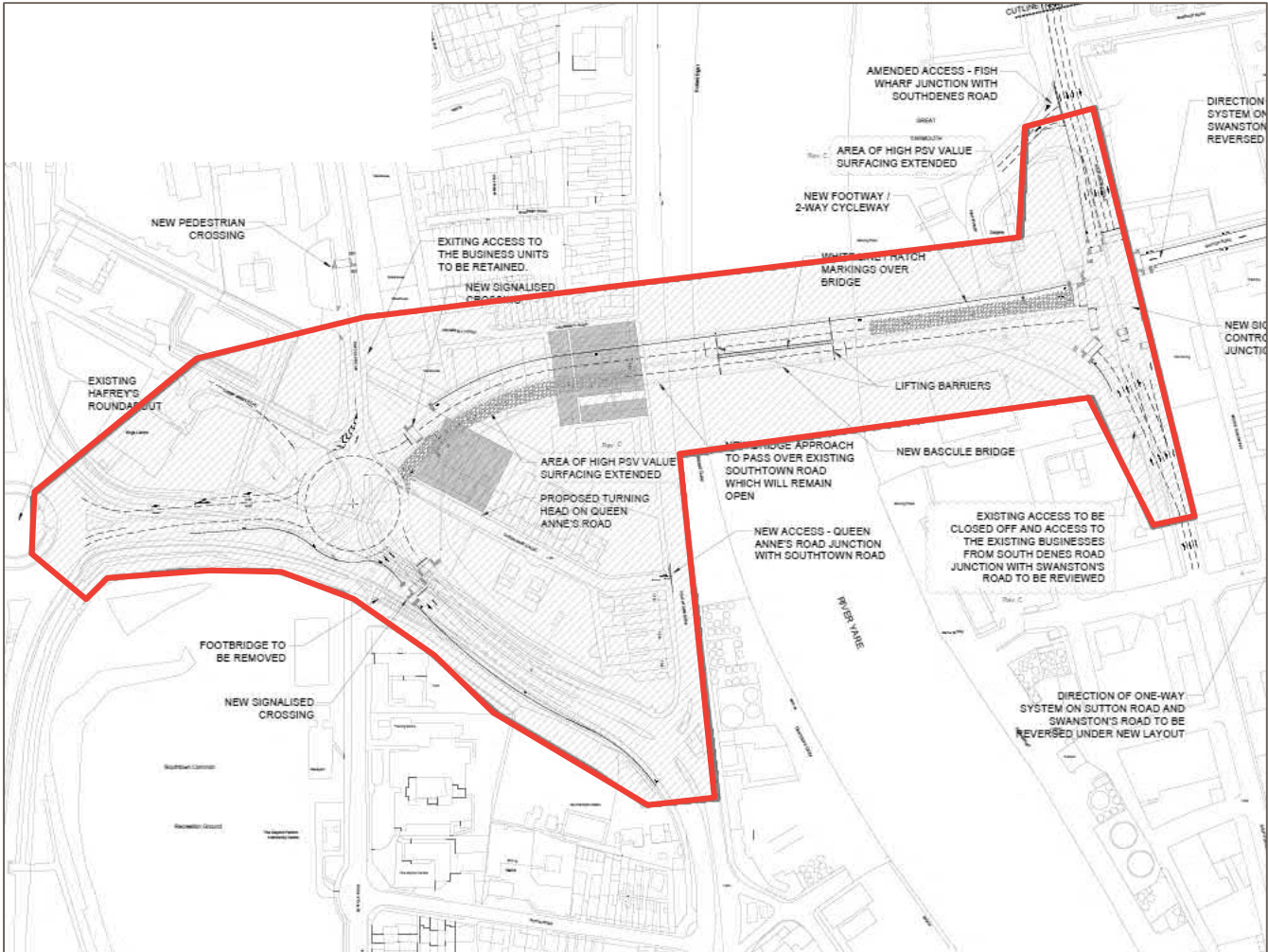
WSP UK Limited

Project:

Southtown, Great Yarmouth



Source: Google Earth™ Mapping Services



Approximate site boundary

Report Reference:
7307TA

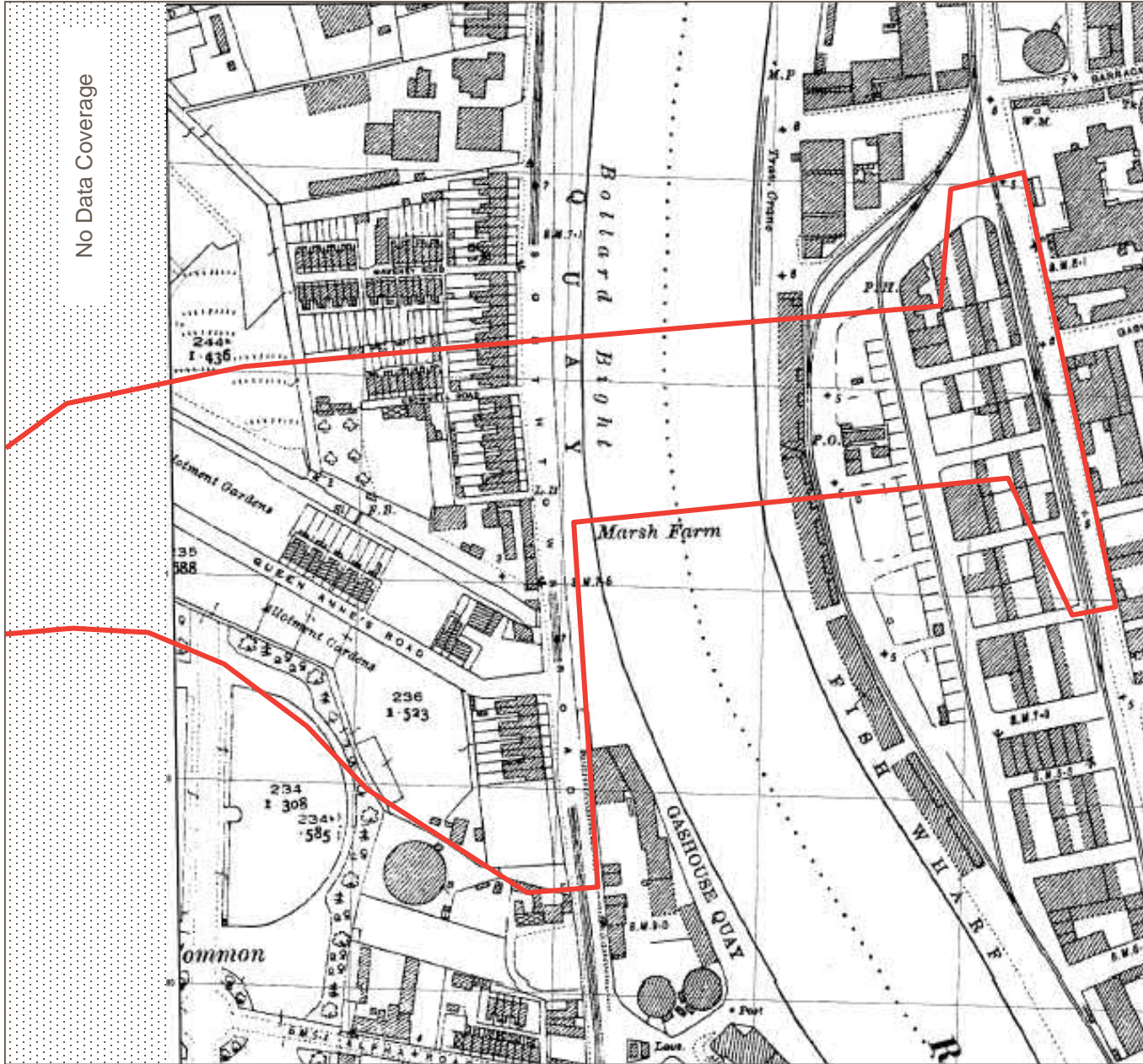
Client:
Project:

WSP UK Limited

Southtown, Great Yarmouth



Source: WSP UK Limited



— Approximate site boundary

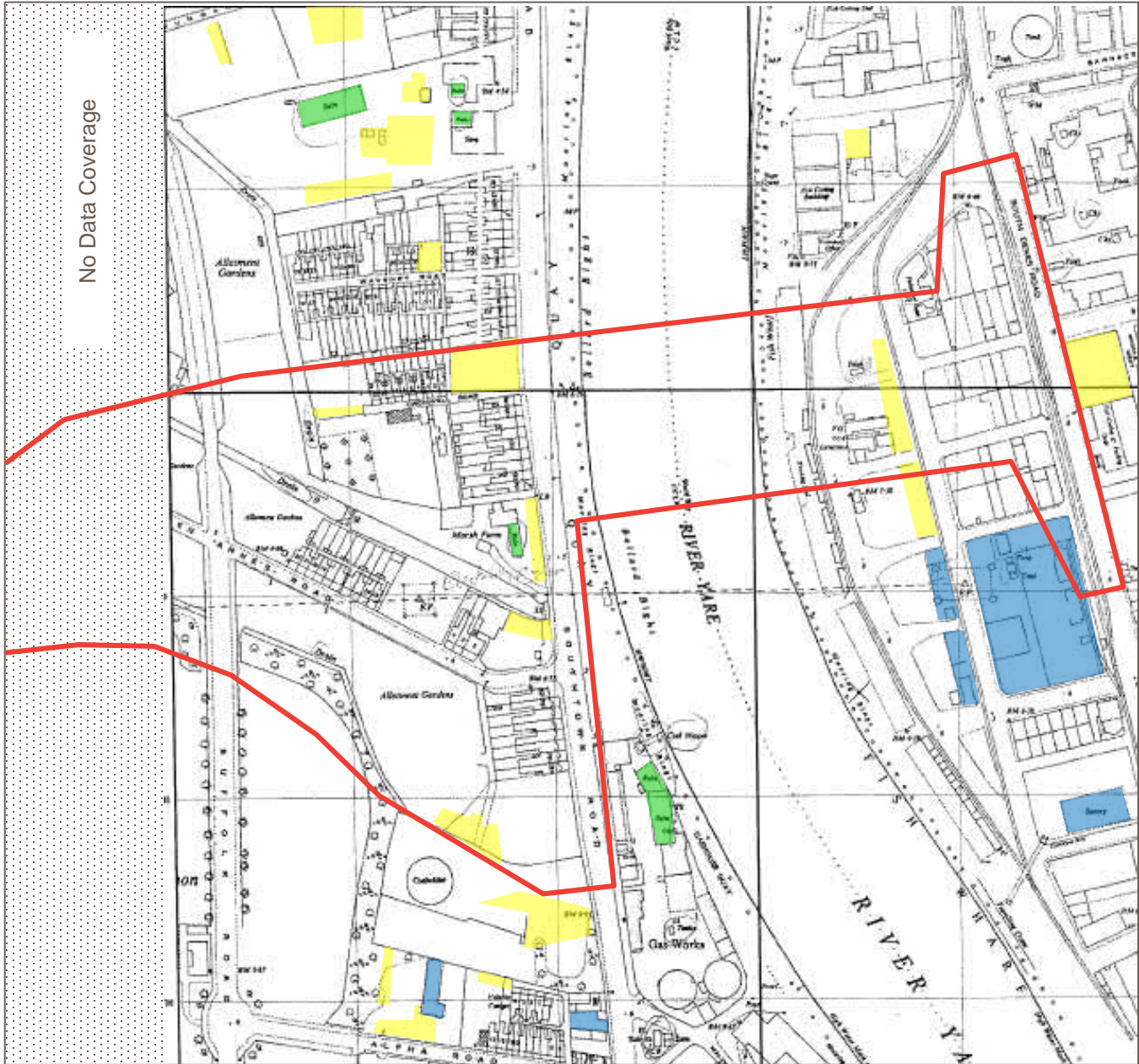
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Source: Landmark Maps



No Data Coverage

- Approximate site boundary
- Clearance
- Redevelopment
- Ruins

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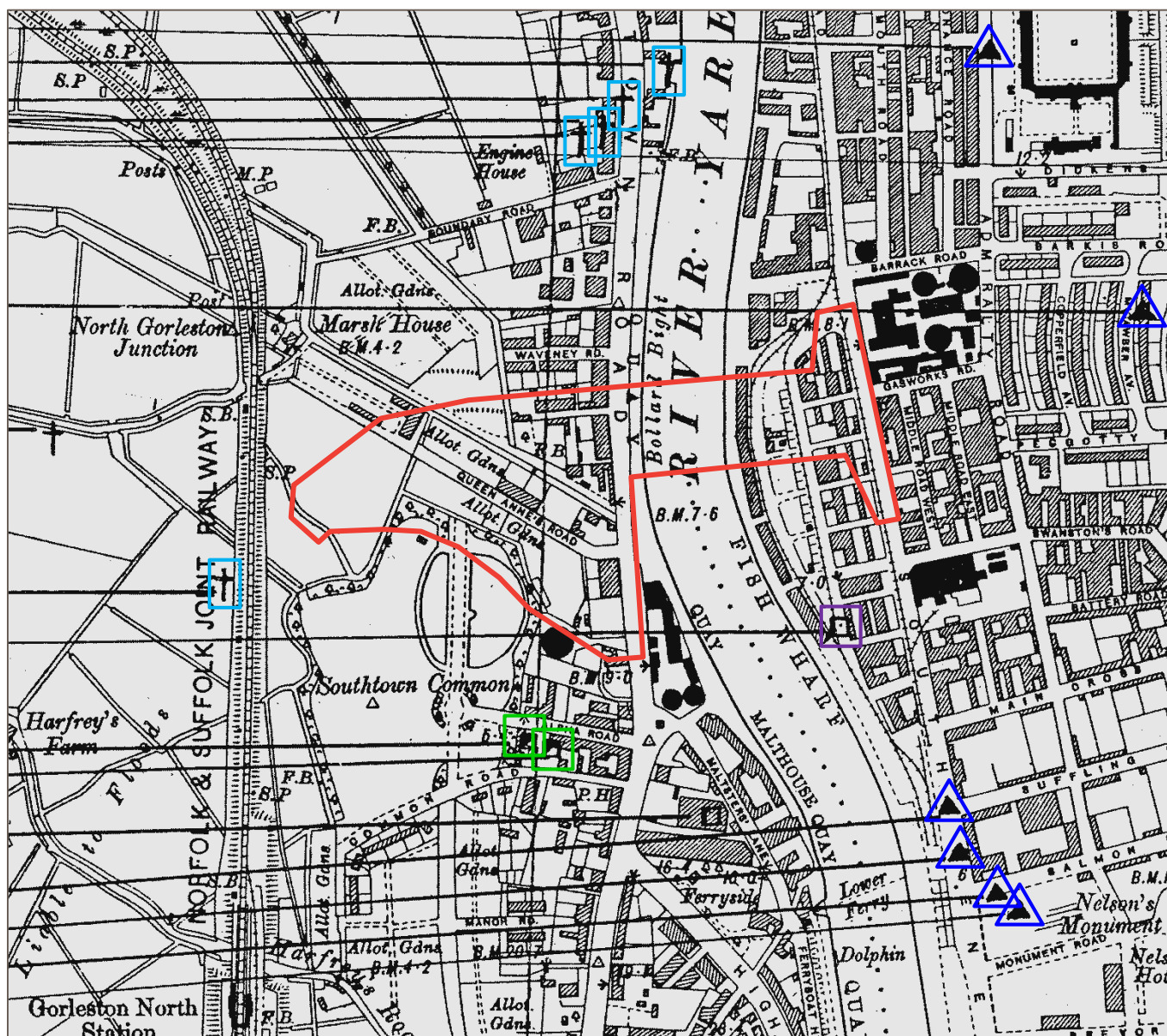
Client:
Project:

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Southtown, Great Yarmouth



Source: Landmark Maps



- Approximate site boundary
- 250kg HE bomb strike
- 500kg HE bomb strike
- Parachute Mine strike
- Unclassified HE bomb strike

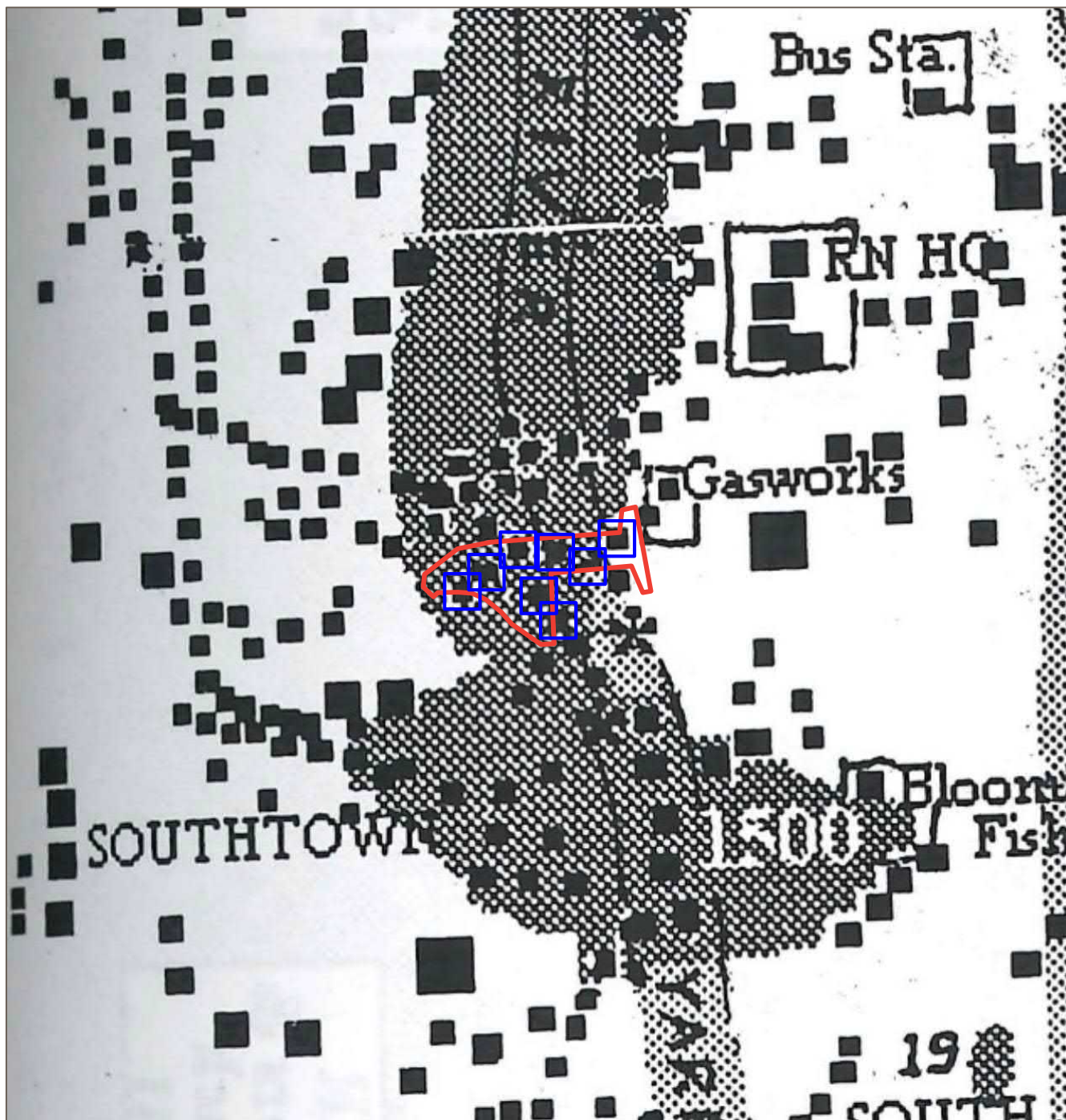
EXPLODED	UNEXPLODED
OIL BOMB	
50 KG.	
250 KG.	
500 KG.	
1000 KG.	
PARA MINE	
1800 KG.	
2500 KG. OR LARGER	



Report Reference:
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 Approximate site boundary
 HE Bomb Strike

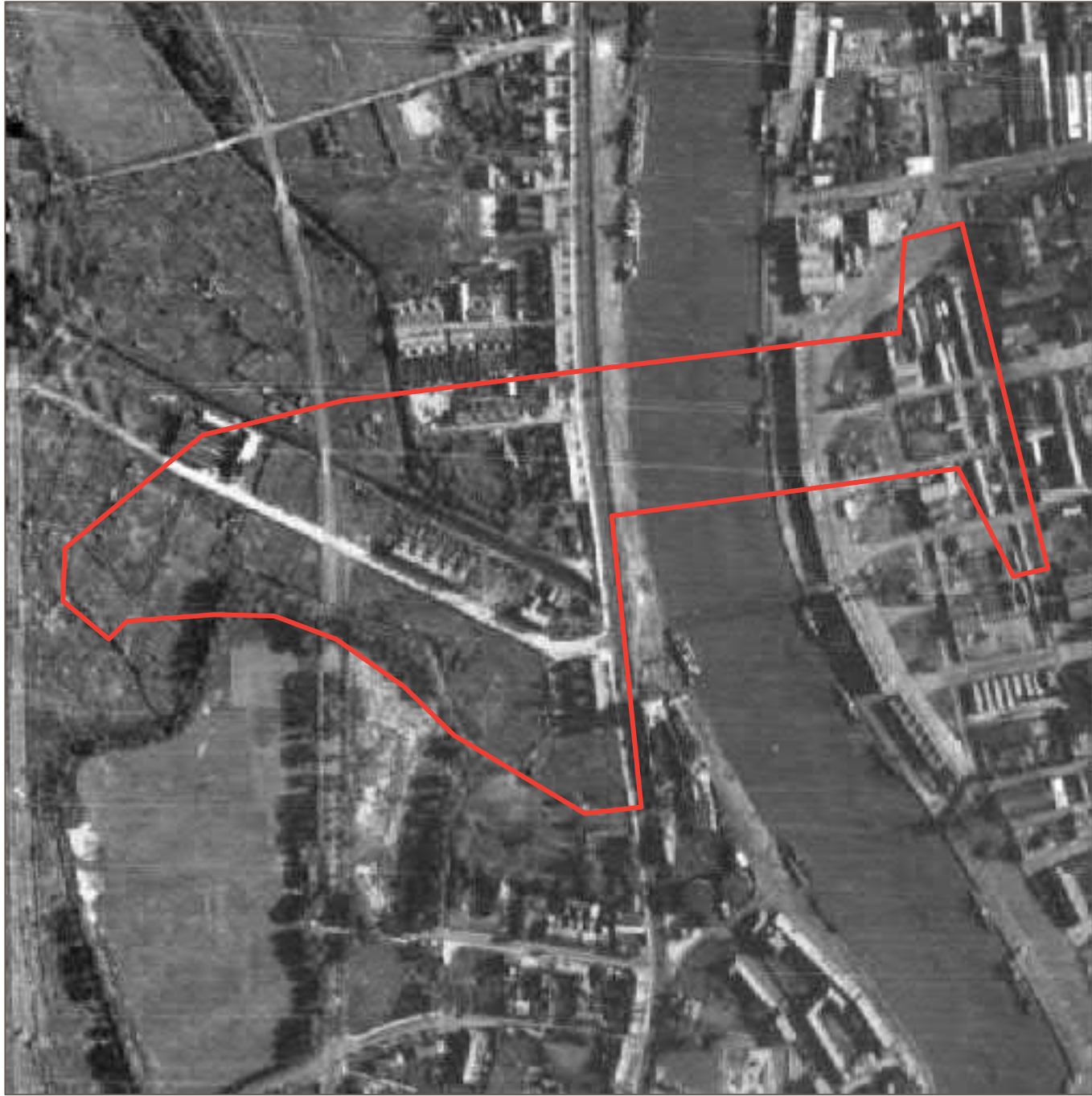
 HE bomb
 Mine
 Incendiary bomb cluster (& number)
 0 1/2 1 mile

Report Reference:
7307TA

Client: WSP UK Limited

Project: Southtown, Great Yarmouth





— Approximate site boundary

Report Reference:

7307TA

Client:

WSP UK Limited

Project:

Southtown, Great Yarmouth



Source: Norfolk County Council



1kg German Incendiary Bomb next to a 30cm ruler

Report Reference:

7307TA

Client:

WSP UK Limited

Project:

Southtown, Great Yarmouth



Source: Heritage-Images

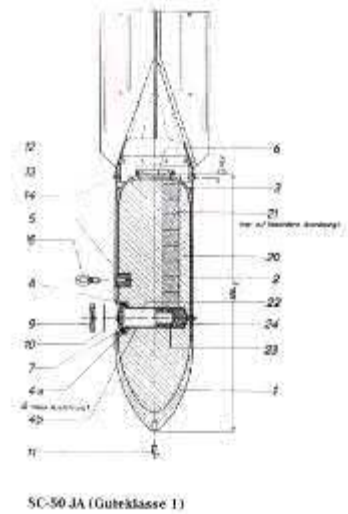
Most Commonly Deployed German Bombs

SC 50

Bomb Weight: 40-54kg (110-119lb)
Explosive Weight: c25kg (55lb)
Fuze Type: Impact fuze/electro-mechanical time delay fuze
Bomb Dimensions: 1,090 x 280mm (42.9 x 11.0in)
Body Diameter: 200mm (7.87in)
Use: Against lightly damageable materials, hangars, railway rolling stock, ammunition depots, light bridges and buildings up to three stories.
Remarks: The smallest and most common conventional German bomb. Nearly 70% of bombs dropped on the UK were 50kg.



50kg bomb, London Docklands



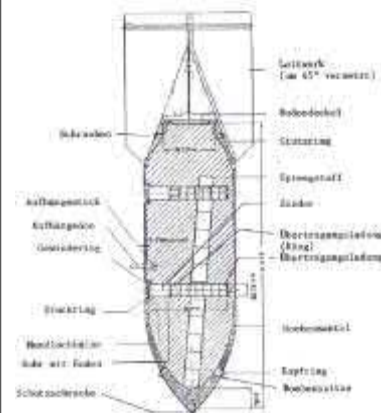
SC-50 JA (Guteklasse 1)

SC 250

Bomb weight: 245-256kg (540-564lb)
Explosive weight: 125-130kg (276-287lb)
Fuze type: Electrical impact/mechanical time delay fuze.
Bomb dimensions: 1640 x 512mm (64.57 x 20.16in)
Body diameter: 368mm (14.5in)
Use: Against railway installations, embankments, flyovers, underpasses, large buildings and below-ground installations.



250kg bomb, Hawkinge



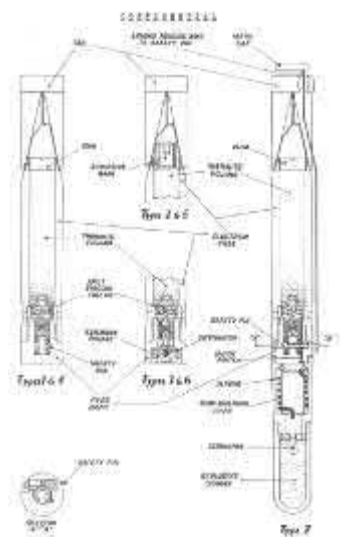
SC-250 JA (Güterboote 1)

1kg Incendiary Bomb

Bomb weight: 1.0 and 1.3kg (2.2 and 2.87lb)
Filling: 680gm (1.3lb) Thermite
Fuze type: Impact fuze
Bomb dimensions: 350 x 50mm (13.8 x 1.97in)
Body diameter: 50mm (1.97in)
Use: As incendiary – dropped in clusters against towns and industrial complexes
Remarks: Jettisoned from air-dropped containers. Magnesium alloy case. Sometimes fitted with high explosive charge



1. Scaffold pipe
2. Incendiary 1kg bomb
3. Incendiary bomb recently found on site in UK



GERMAN 1kg INCENDIARY & MODIFICATIONS (INCLUDING 1.3 and 2.2 Kg)

Report Reference:
7307TA

Client:
WSP UK Limited
Project:
Southtown, Great Yarmouth



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Giant WWII bomb dug up by builders in London

A massive evacuation procedure is carried out in Bermondsey, south London, after the 1,000lb explosive measuring 5ft long was uncovered



Mother-of-two digs up unexploded WWII bomb in garden and casually flings it on the rubbish thinking it was an old exhaust pipe

- Carole Fisher-White, 56, unearthed a mortar shell in her back garden
• It was only when sons said it looked like a bomb that the penny dropped
• Royal Navy bomb disposal team called to defuse the device
• The 29mm Spigot Mortar was an infantry anti-tank weapon
• Also known as the Blacker Bombard it was used by the Home Guard



Unexploded Second World War grenade discovered by a curious dog

Police and Army bomb disposal experts were called to the address in Peckholt Avenue, Heald Green. A dog called Snoopy has sniffed out a suspected Second World War grenade in a backport garden. Police and Army bomb disposal experts were called to the address in Peckholt Avenue, Heald Green. The dog took the grenade to nearby parkland and destroyed it in a controlled explosion.



Page last updated at 14:23 GMT, Thursday, 5 June 2008 15:23 UK BBC

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Unexploded bomb 'started to tick'

An unexploded World War II bomb started to tick and ooze liquid as experts tried to defuse it, police have said.

The large bomb was found in a river at Sugar House Lane, near Bromley-by-Bow Tube station in east London, on Monday.

Rush-hour travel was disrupted as overnight work to make the bomb safe continued into Thursday morning.



"It measures approximately the size and length of a man, and weighs around 1,000kg (2,200lb).



Road closed after German bomb found in Axminster garden

By Exeter Express and Echo | Posted June 22, 2014



A major road in Axminster has been closed after an air-dropped German bomb was found in a garden.

Page last updated at 14:45 GMT, Friday, 22 May 2009 15:45 UK

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Building site WWII bomb exploded



Building site WWII bomb exploded

A controlled explosion has been carried out on a World War II bomb found on a building site in East Sussex.

The 110lb (50kg) SC50 bomb, thought to have been dropped from a German aircraft in 1940 or 1941, was found at the Hollenden House.

Royal Navy clearance divers dispose of 70-year old German bomb

Posted on August 4, 2013



The team of four from the Southern Diving Unit 1 at HM Naval Base Devonport, Plymouth, blew up the air-dropped bomb in-situ in a controlled explosion where it was found by contractors for SW Water laying a mains in a field at St Eval Kart Circuit near Wadebridge, north Cornwall yesterday.

Table with Report Reference: 7307TA, Client: WSP UK Limited, Project: Southtown, Great Yarmouth



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WW2 bomb found in Portsmouth harbour

22 February 2017 Hampshire & Isle of Wight

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A World War Two bomb containing 290lb (131kg) of "high explosives" has been found in Portsmouth harbour.

The ordnance was discovered by a dredger in the water at about 03:00 GMT, the Royal Navy said.

Specialist divers at the scene said the bomb posed a "very serious threat". It was towed out to sea and detonated.

All ferries were stopped and trains between Portsmouth and Southsea station and Portsmouth Harbour were suspended, but have since started running again.

There were also extensive road closures in the area, affecting access to Gunwharf Quays.

The Royal Navy said the device, believed to be a German SC250 that weighs 500lb (227kg), was removed from the harbour before being "safely" blown up in the sea off the Isle of Wight.

Lt Mike St Pierre, the officer leading the bomb disposal team, had said: "Despite being old, these devices can pose a very serious threat."

MailOnline

Portsmouth harbour is sealed off with hundreds of people evacuated and ferries halted after a 500lb unexploded WWII bomb was found on the sea bed

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By JOSEPH CURTIS FOR MAILONLINE

PUBLISHED: 17:00, 16 November 2016 | UPDATED: 19:49, 16 November 2016



The Royal Navy today destroyed an unexploded 500lb German World War Two bomb which closed Portsmouth harbour for six hours when dredging workers discovered it on the sea bed.

Contractors completing works ready for the arrival of the Royal Navy's new 65,000 tonne state-of-the-art ship HMS Queen Elizabeth discovered the German UXB torpedo while dredging Portsmouth Harbour, Hampshire, this morning.

Bomb disposal experts rushed to the scene after it was brought to the surface while work was carried out west of Victory Jetty.

The bomb was towed from Portsmouth Harbour, Hants, out to open waters 1.5 miles east of the Isle of Wight.

Report Reference:

7307TA

Client:

WSP UK Limited

Project:

Southtown, Great Yarmouth

Source: www.dailymail.co.uk / www.bbc.co.uk

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World War Two bomb removed from River Thames and exploded

© 20 January 2017 | London



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The device was identified as a German SD 50kg bomb

An unexploded 50kg World War Two bomb found in the River Thames has been removed and exploded.

The operation by the Royal Navy and Metropolitan Police forced Waterloo Bridge, Westminster Bridge and Victoria Embankment in central London to shut.

A Ministry of Defence spokesman said the WW2 device had been towed along the river to Tilbury, Essex, where it was safely detonated.

Police had been called to the river at 17:15 GMT on Thursday.

The device has been identified as a German SD 50kg bomb, a small armour-piercing ordnance dropped from an aircraft.

The Port of London Authority said the suspected bomb measured 2ft by 1ft (60cm x 30cm).

Report Reference:

7307TA

Client:

WSP UK Limited

Project:

Southtown, Great Yarmouth

Source: www.bbc.co.uk



1994

RESCUE workers search for survivors after a Second World War bomb exploded at a building site in Berlin, killing three people and injuring at least eight others.

A fire brigade spokesman said he feared the final death toll could be higher. One worker was still missing, believed to be trapped under a machine. "We've

Blown up by history

found human remains 100 metres away but we can't tell if they belong to the dead already found," the spokesman said.

The blast, set off by drilling work on Frankfurter Allee, one of east Berlin's busiest avenues, trapped

workers under building machinery and sent huge chunks of concrete tumbling through the air.

A large office block was being built on the site of the explosion which sent shoppers scrambling for shelter and paralysed

dense afternoon traffic. One eyewitness said: "There was a bang, then silence, and then it started raining stones and dirt."

Dozens of cars within a 250-metre radius were wrecked and the top two floors of a nearby apartment block caved in.

Radio reports claimed that the total number of injured stood at 14.



2008



2006

World War II bomb kills three in Germany

Three people have been killed and six injured trying to defuse a World War II bomb in central Germany.

Workers building a sports stadium had earlier unearthed the bomb in the town of Goettingen.

It was not immediately clear why the bomb, reportedly weighing 500kg (1,100lb), had detonated.

Unexploded WWII bombs dropped by Allied planes are frequently found in Germany, though it is unusual for them to explode unexpectedly.



2010



The bomb went off as the machine lifted up earth and debris

A World War Two bomb has exploded at a construction site near a west German town, killing a man and injuring eight others, police say.

The explosion occurred after a digger accidentally struck the device during excavation work in Euskirchen in the state of North Rhine-Westphalia.

The machine's operator died on the spot. Two of those hurt were critically wounded, the dpa news agency reports.

2014



2006

Top Left: WWII bomb killed 3 and injured 8 in Berlin – 1994.

Middle Left: WWII bomb killed 3 in Goettingen, Germany – 2010.

Bottom Left: Excavator operator killed by WWII bomb in Euskirchen, Germany – 2014.

Top Right: WWII bomb injures 17 at construction site in Hattingen, Germany - 2008.

Middle Right: A highway construction worker in Germany accidentally struck a WWII bomb, killing himself and wrecking several passing cars - 2006.

Bottom Right: Destroyed piling rig and dump truck after detonation of WWII UXB in Austria - 2006.

Related

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		Southtown, Great Yarmouth

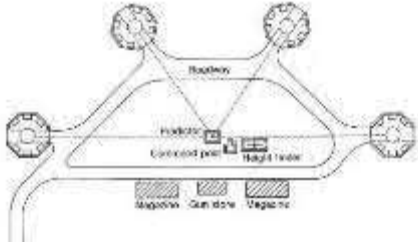


3.7 inch Anti-Aircraft Projectile

Weight: 12.7kg (28lb)
 Dimensions: 94 x 360mm (3.7 x 14.7in)
 Carriage: Mobile and Static Versions
 Rate of Fire: 10-20 rounds per minute
 Ceiling: 9-18,000m (29-59,000ft)
 Muzzle Velocity: 792m/s (2,598ft/s)
 Remarks: 4.5 inch projectiles were also commonly utilised



This AA shell was uncovered on a construction site in North London in February 2009.



Layout plan for a typical HAA battery site.



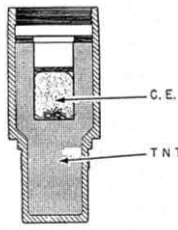
Hyde Park 1939 3.7 Inch QF gun on mobile mounting



3.7 inch AA Projectile Minus Fuze

Rockets / Unrotating Projectiles

Weight: Overall: 24.5kg (54lb) Warhead: 1.94kg (4.28lb)
 Dimensions: 1930mm x 82.6mm (76 x 3.25in)
 Carriage: Mobile – transported on trailers
 Ceiling: 6770m (22,200ft)
 Maximum Velocity: 457mps (1,500 fps)



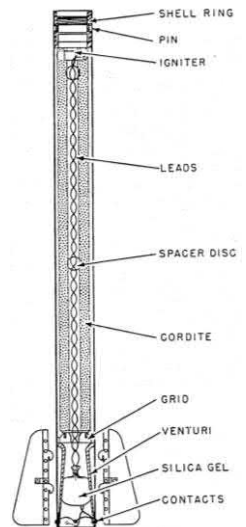
MK II HE Shell (3.5kg)



Rocket Battery in action



Home Guard soldiers load an anti-aircraft rocket at a 'Z' Battery



2' U.P AA Rocket

40mm Bofors Gun Projectile

Weight: 0.86kg (1.96lb)
 Dimensions: 40mm x 310mm (1.6in x 12.2in)
 Rate of Fire: 120 rounds per minute
 Ceiling: 23,000ft (7000m)
 Muzzle Velocity: 2,890 ft/s (881m/s)
 Remarks: Mobile batteries – normally few records of where these guns were located



Unexploded 40mm Bofors projectile



40mm Bofors gun and crew at Stanmore in Middlesex, 28 June 1940.



Report Reference: 7307TA	Client: WSP UK Limited
	Project: Southtown, Great Yarmouth



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NEWS

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23 July 2010 Last updated at 18:28

Covert British troops 'could have buried' WWII devices

World War II incendiary devices found on a building site in Gloucestershire could have been left by covert British troops, according to researchers.



The bombs were put into vats of water to make them safe

More than 20 phosphorus bombs were unearthed in Birdlip after a digger hit one, causing it to burst into flames.

A former worker at the site said he saw a Home Guard officer burying objects there 65 years ago.

The Coleshill Auxiliary Research Team said auxiliary officers often used Home Guard uniforms as cover.

Thursday, September 10 2015

KM KentOnline
The UK's fastest-growing regional news network


Army bomb disposal team called to Blacksole Bridge in Herne Bay

by Aidan Barlow abarlow@thekmgroupp.co.uk 08 July 2015

It was like a scene from Dad's Army when Army bomb disposal experts found wartime explosives made by the Home Guard in makeshift bottles.

A team was called to the Blacksole Bridge in Herne Bay after the wartime bombs were found.

The team from the Royal Logistics Corps set up a 30 metre exclusion zone for pedestrians around the railway embankment after the suspected homemade phosphorous bombs were found.



MailOnline

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Treasure hunter stumbles on deadly Dad's Army bomb cache


By MAIL ONLINE REPORTER
Last updated at 4:06 PM on 9th July 2010

Comments (0) Add to My Stories

A treasure hunter escaped serious injury when he unearthed a cache of bombs that were buried by the Home Guard during the darkest days of World War 2.

The weapons - primed to go off when they made contact with the air - were secreted on a beach by a Captain Mainwaring of the day.

Loaded with dangerous benzene and phosphorus, the Dad's Army-style team would have used them in battle against Nazi troops in the event of invasion.




'Are you sure that's wise?': The Home Guard's stash of bombs finally goes off, 70 years later

Eastbourne Herald

10/09/15 11°C to 21°C Sunny Like us Follow us Place your Ad Subscribe

VIDEO: Explosion after 80 grenades detonated in Eastbourne



16:31 Monday 13 April 2015

Marked 'AW Bomb 1940' the grenades were thought to have been phosphorus incendiary grenades created as improvised anti-tank weapons when Britain was facing invasion following the army's evacuation from Dunkirk in 1940.

He said, "I remember the grenades being buried. It was part of the Home Guard stash, it was put there in case we were invaded. It had to be in 1943. There were a lot of them [stashes], they were all over the place."

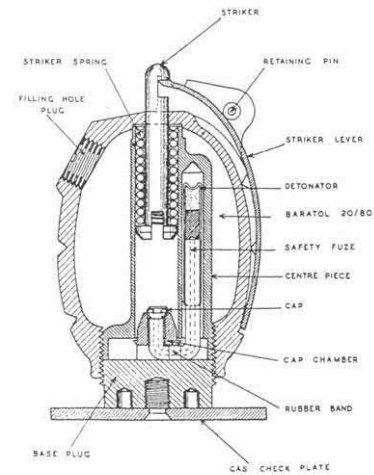
Report Reference: 7307TA	Client: WSP UK Limited
	Project: Southtown, Great Yarmouth



Source: Various news sources

No. 36 'Mills' Grenade

Weight: 0.7kg filled (1lb 6oz)
 Type: Hand or discharger, fragmentation
 Dimensions: 95 x 61mm (3.7 x 2.4in)
 Filling: Alumatol, Amatol 2 or TNT
 Remarks: 4 second hand-throwing fuse with approximate 30m range. First introduced May 1918.



Grenade, .303 inch rifle, No. 36M, Mark I.

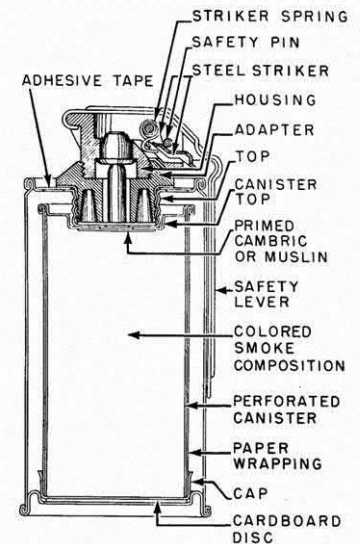
No. 69 Grenade

Weight: 0.38kg filled (0.8lb)
 Type: Percussion/Blast
 Date Introduced: December 1940
 Remarks: Black Bakelite body. Blast rather than fragmentation type. After unscrewing the safety cap, a tape is held when throwing the grenade releasing the safety bolt in the throwing motion. Detection is problematic due to its very low metal content.



Typical Smoke Grenade

Dimensions: Approx. 65 x 115mm (2.5 x 4.5in)
 Type: Smoke
 Date Introduced: Current MoD issue
 Remarks: Smoke grenades are used as ground-to-ground or ground-to-air signalling devices, target or landing zone marking devices, and screening devices for unit movement.



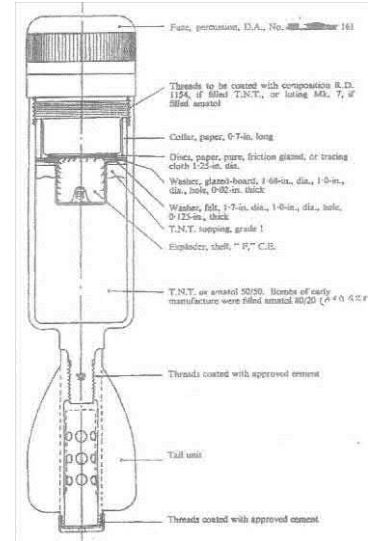
Report Reference:
7307TA

Client: WSP UK Limited
 Project: Southtown, Great Yarmouth



Typical 2 inch High Explosive Mortar

Bomb Weight: 1.02kg (2.25lb)
 Type: High Explosive
 Dimensions: 51 x 290mm (2in x 11.4in)
 Filling: 200g RDX/TNT
 Maximum Range: 457m (500yds)
 Remarks: Fitted with an impact fuze which detonates the fuze booster charge (exploder) and, in turn, the high explosive charge. The main charge shatters the mortar bomb body, producing near optimum fragmentation and blast effect at the target.



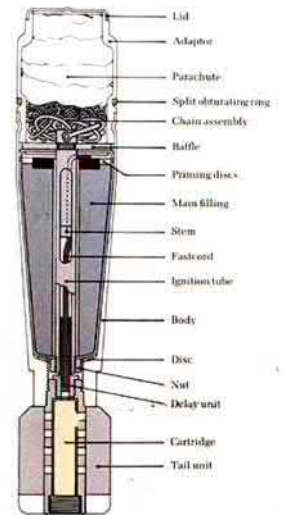
Typical 3 inch Smoke Mortar

Type: Smoke
 Dimensions: c490 x 76mm (19.3in x 3in)
 Filling: Typically white phosphorous
 Maximum Range: 2515m (2,750yds)
 Remarks: On impact, the fuze functions and initiates the bursting charge. The bursting charge ruptures the mortar bomb body and disperses the white phosphorous filler. The white phosphorous produces smoke upon exposure to the air.



Typical 2 inch Illuminating Mortar

Type: Illum.
 Dimensions: 51 x 290mm
 Filling: Various
 Remarks: The expulsion charge ignites and ejects the candle assembly. A spring ejects the parachute from the tail cone. The parachute opens, slowing the descent of the burning candle which illuminates the target.

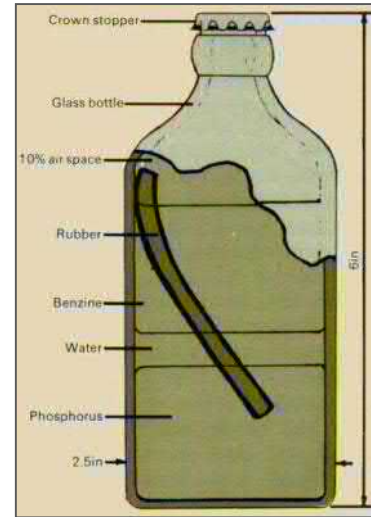


Report Reference: 7307TA	Client: WSP UK Limited
	Project: Southtown, Great Yarmouth



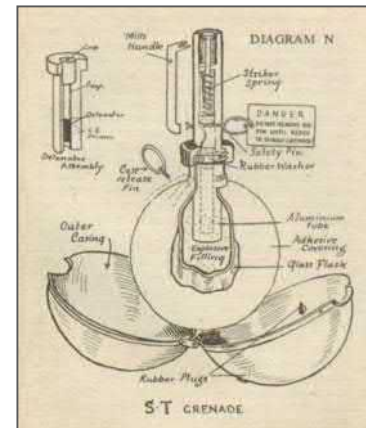
Self Igniting Phosphorous (SIP) Grenades

Filling: White Phosphorous and Benzene
Remarks: The grenade comprised a glass bottle with a total volume of approximately one pint. It was filled with White Phosphorus, benzene, a piece of rubber and water. Over time the rubber dissolved to create a sticky fluid which would self ignite when the bottle broke. Fired by hand or Northover Projector. Sometimes called the "A & W" (Albright & Wilson) grenade.



No 74 Grenade (Sticky Bomb)

Remarks: Designed as an anti-tank grenade and used by the Home Guard. The grenade consisted of a glass ball on the end of a Bakelite (plastic) handle. Inside the glass ball was an explosive filling whilst on the outside was a very sticky adhesive covering. Until used, this adhesive covering was encased in a metal outer casing.



Flame Fougasse Bomb

Remarks: A Flame Fougasse was a weapon in which the projectile was a flammable liquid, typically a mixture of petrol and oil. It was usually constructed from a 40-gallon drum dug into the roadside and camouflaged. Ammonal provided the propellant charge which, when triggered, caused the weapon to shoot a flame 3m (10ft) wide and 27m (30 yards) long. Initially a mixture of 40% petrol and 60% gas oil was used, this was later replaced by an adhesive gel of tar, lime and petrol known as 5B.



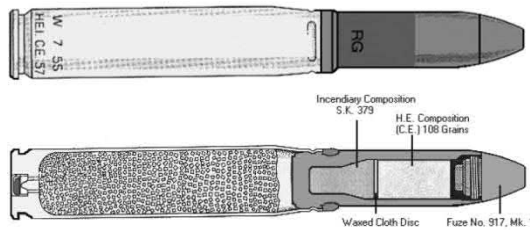
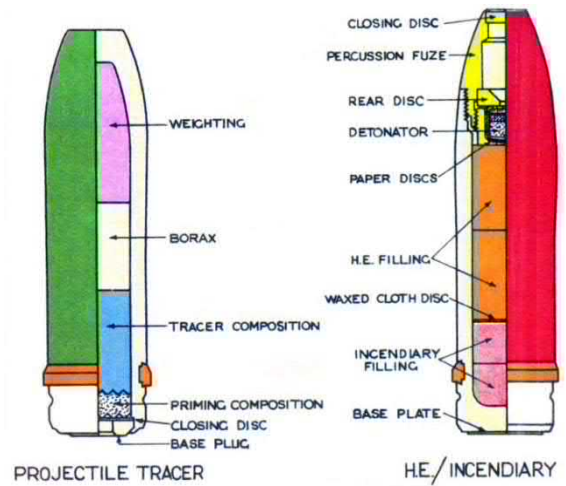
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20mm Hispano HEI Ammunition

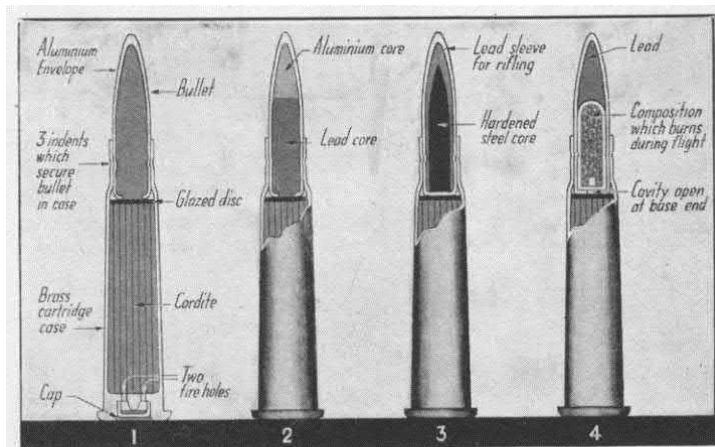
Type: Live canon round
 Markings: Upper half of projectile painted 'buff' colour, lower half is red.
 Cartridge Weight: 256 grams
 Dimensions: Total cartridge / projectile length - 182mm
 Fuzed: Contact fuze – No.253, No.254 or No.917
 Filling: 108 grains of contact explosive + 68 grains of SR.379 incendiary composition.
 Threat: Explosives within unspent cartridge as well as the projectile.
 Deployment: Royal Navy, RAF and British Army Light Anti-Aircraft guns. Also RAF aircraft canons.
 Remarks: Cartridges are belted or supplied lose in cartons.



COLOUR IDENTIFICATION		
BRITISH		
NATURE OF SHELL	H.E. FILLING	COLOUR
H.E. TRACER	T.N.T.	Blue
H.E.	T.N.T.	Orange
PROJ. PRACTICE		Purple
PROJ. TRACER		Green
H.E. INCENDIARY	T.N.T.	Red
H.E. INCENDIARY TRACER	T.N.T.	Green

.303" Ammunition

Type: Rifle / machine gun round
 Markings: Regular round - none. Tracer round – red Primer
 Bullet Weight: 150 - 180 grams
 Dimensions: Total cartridge /projectile length - 78mm
 Filling: Regular round – none. Tracer round - small incendiary fill
 Threat: Explosive cordite within unspent cartridge
 Deployment: Royal Navy, RAF and British Army Light Anti-Aircraft guns, machine guns and rifles. Standard British and Commonwealth military cartridge from 1889 until the 1950s.
 Remarks: Cartridges are belted or supplied lose in cartons.



TYPES OF SMALL ARMS AMMUNITION
 Fig. 1. Four types of ammunition used by modern infantry. 1 and 2 are ball cartridges, 3 is an armour-piercing bullet, and 4 a tracer bullet which burns and makes its flight visible.

Report Reference:	Client:	WSP UK Limited Southtown, Great Yarmouth
7307TA	Project:	



Appendix E

**STATIC CONE PENETRATION TEST
REPORT**

IN SITU

SITE INVESTIGATION

STATIC CONE PENETRATION TEST FACTUAL REPORT

CLIENT
PROJECT

NORFOLK PARTNERSHIP LABORATORY

GREAT YARMOUTH 3RD RIVER CROSSING



Project	Great Yarmouth 3rd River Crossing
Project No.	1180180
Client	Norfolk Partnership Laboratory
Address	Community and Environmental Services, County Hall Annex, Martineau Lane, Norwich NR1 2SG

Attention: Mr Bumstead

Dear Mr Bumstead,

We have pleasure in providing a digital copy of our report and data in AGS format for the above project.

We hope that you are satisfied with the performance of our staff, equipment and reporting on this project. If you should have any queries about any aspect of the works carried out, please do not hesitate to contact us. We look forward to being of service to you in the future.

Yours faithfully,

In Situ Site Investigation Limited



Darren Ward

Director

Report Issue



Issue	Date	Description	Prepared	Sign	Checked	Sign
02	19/04/2018	Final	Rachel Cleaver		Darren Ward	

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1.0 INTRODUCTION

In Situ Site Investigation Limited (In Situ) was engaged in a geotechnical site investigation at Great Yarmouth 3rd River Crossing at the request of Norfolk Partnership Laboratory (the client). The site investigation consisted of completing 5 *Static Piezocone Penetration Tests (CPTU)* to provide information on the soil conditions and derived geotechnical parameters at:

Fish Wharf

Off South Denes Road

Gt Yarmouth

NR30 3LP

All test locations were provided by the client, as shown on the site map, in *Appendix A.1*. The tests were stopped when they reached the target depth as per the client's technical specifications or for other technical reasons, as detailed in *Appendix A.2* and on each CPTU log.

The fieldwork was carried out from 19/03/2018 to 20/03/2018 as per the client's request.

The work on site and the final factual reporting have been undertaken in accordance with the international technical standard *BS EN ISO 22475-1:2012*.

2.0 FIELDWORK

2.1 CONE PENETRATION TESTS

The fieldwork activity is summarised in Table 2.1.

Table 2.1 Fieldwork Summary	
CPT Operator/s	Darren Hughes and Andrew Evans
Date Started	19/03/2018
Date Finished	20/03/2018
In Situ S.I. Project Manager	Darren Ward
Main Contractor's Site Manager	Martyn Bumstead

2.1.1 Rig Information

Details of CPTU rig used in this project are shown in Table 2.2. Full data sheet for the rig is presented in *Appendix A.3*.

Table 2.2 Rig Summary	
Rig Name	Rig Description
CPT 010	21 Tonne Wheeled CPT Rig

2.1.2 CPTU Cone

Details of electric CPTU cone (Type TE2) used in this project conforming to the requirements of Application Class 2 of *ISO 22476-1:2012*, are shown in Table 2.3.

Table 2.3 Cone Summary		
Number	Cross-section area	Filter position
P15CFPT _{XY} 70080	15cm ²	u ₂

A full datasheet of the cone used is shown in *Appendix A.4*.

The cone's measured parameters are shown in Table 2.4.

Table 2.4 Completed Fieldwork Summary

5 CPTU to a maximum depth of 36.00m. Each test measured Cone Resistance, q_c , Sleeve Friction, f_s , Porewater Pressure in the shoulder position, u_2 , Inclination in X and Y axes.

Provision of factual report with estimated soil type, derived geotechnical parameters and AGS data.

2.1.3 CPTU Cone Calibration

The cone resistance and sleeve friction are recorded by calibrated load cells in the cone. The CPTU load cells and pressure transducers are regularly calibrated in line with ISO 22476-1:2012 standard by the cone manufacturer. The cone calibration certificate for the cone used at this site are presented in *Appendix A.5*.

2.1.4 CPTU Cone Saturation

The pore water pressure is recorded using a calibrated pressure transducer located in the piezocone. To ensure pore water pressure measurements are not affected by the presence of air in the measuring transducer, a de-airing procedure is carried out prior to each test. The cone and filter are saturated using a glycerine fluid with a viscosity of 10,000CST.

2.1.5 Test Procedure

The tests are carried out in accordance with the *International Standard for Electrical Cone and Piezocone Penetration Test (ISO 22476-1:2012)*.

The final depths of the tests were determined by either completion to the specified test depth or when the maximal safe capacity of the equipment was reached. A schedule of the tests performed is shown in *Appendix A.2*, which has been compiled from the operators' daily progress reports.

The data is transmitted from the digital CPTU through an umbilical cable that runs through the push rods to the data acquisition system. Results are displayed instantaneously on the computer logging screen. The results are recorded on the computer hard disc.

The rate of penetration is kept constant at 2cm/s $\pm 10\%$ except when penetrating very dense or hard strata. Before each test is carried out zero values are taken of the cone to check if it is within calibration. At the end of each test, zero values are taken again to see if there has been any drift during the test. These values are inspected during the post processing stage. This is a quality check on the data and the testing procedure. Individual test zero values are shown on their corresponding test results in *Appendix B* and *C*.

2.1.6 In Situ Pore Pressure (u_0)

The in situ or hydrostatic pore pressure is required for the calculation of several derived parameters included in this report. These values are presented on the pore pressure plot, *Form 01*, which is included in *Appendix B*. For this report, the values were estimated by our client.

2.2 DISSIPATION TESTS

As per the client's request, 5 dissipation tests were performed at the required depth. A summary table of the dissipation tests is presented in *Appendix D*.

The dissipation test is carried out by pausing the penetration at a point when there is excess porewater pressure. This excess pore pressure generated around the cone will then start to dissipate, and the decay of pore pressure with time is recorded. The rate of dissipation depends upon the coefficient of consolidation, which in turn depends on the compressibility and permeability of the soil and on the diameter of the probe. It is common to record the time to reach 50% dissipation, t_{50} . If the equilibrium pore pressure is required, the dissipation test is continued until no further dissipation is observed. This can occur rapidly in sands, but may take many hours in plastic clays.

The data recorded from the dissipation tests on site is used to calculate the consolidation characteristics, as shown in *Appendix D*.

2.3 POSITIONING

Positioning and surveying of all investigated locations was the responsibility of the client. The site map and position of the tests are presented in *Appendix A.1*. All tests coordinates are included in the summary sheet in *Appendix A.2*.

3.0 CONE PENETRATION MEASURED PARAMETERS

All measured parameters of tests carried with the CPTU cone are shown in *Appendix B* and all the information about data processing and results are given in sections 3.1, 3.2 and 3.3.

3.1 DATA PROCESSING

The measured parameters, cone end resistance, q_c , sleeve friction, f_s , porewater pressure measurements with filter in shoulder position, u_2 and inclination for x and y axis, I_x , I_y , were recorded for every 10 mm of penetration keeping a constant speed of 20 mm/s \pm 5 mm/s, which may slightly change when the cone is penetrating hard strata.

The measured data from the site works is processed and presented using specialised CPT software. The interpretations on the CPTU results were carried out following the recommendations of *Lunne et al. (1997)*, *Robertson (2015)* and *BS EN ISO 22475-1:2012*. Measured parameters, mentioned in *Sections 3.2* and *3.3*, were used to derive all the geotechnical parameters, which are presented in *Chapter 4.0*. The soil behaviour type method used on this report is *Robertson et al (1986)*, shown in *Figure 3.2*.

3.1.1 Zero Measurements

Before and after each CPTU test, zero measurements are recorded for each channel of the cone. The zero measurements are presented on the logs in *Appendix B* and *C*. This is a routine quality check carried out on site.

3.2 MEASURED PARAMETERS

3.2.1 Cone Resistance (q_c)

Cone resistance, q_c , is measured as the total force acting on the cone, divided by the projected area of the cone. The results are presented in MPa, on *Log 01*, in *Appendix B*, scale 0-20 MPa with a minor scale printing on the same graph at 0-4 MPa.

3.2.2 Sleeve Friction (f_s)

Sleeve friction, f_s , is measured as the total frictional force acting on the friction sleeve divided by its surface area. The results are presented in kPa, on *Log 01*, in *Appendix B*, using a scale of 0-500 kPa.

3.2.3 Porewater pressure (u_2)

The pore pressure, u_2 , is measured during the test. If the material is free draining and saturation is maintained it will normally measure hydrostatic pore pressure. In materials that are not free draining, it will record the total pore pressure (hydrostatic plus any excess pore pressures generated) created by the cone penetration through this material.

The filter element can be mounted in one of three positions. For all tests carried out in this project the filter was mounted in the u_2 position (see *Figure 3.1*).

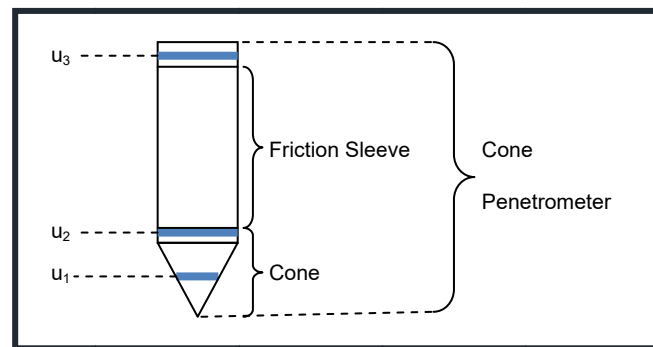


Figure 3.1: Diagram showing pore pressure filter locations (after Lunne et al., 1997)

3.2.4 Inclination (I_x, I_y)

The CPT rig was set up to obtain a thrust direction as near as possible to vertical. The CPTU cones have inclinometers incorporated to measure the non-verticality of the test. For test depths less than 15 m, significant non-verticality is unusual, provided the initial thrust direction is vertical.

3.3 ESTIMATED SOIL BEHAVIOUR TYPE

3.3.1 Friction Ratio (R_f)

The friction ratio, R_f is the ratio between the sleeve friction and the cone resistance (Lunne et al., 1997).

$$\text{Friction Ratio } (R_f) = \left(\frac{\text{Sleeve Friction } (f_s)}{\text{Cone Resistance } (q_c)} \right) \times 100$$

3.3.2 Estimated Soil Behaviour Type (SBT)

The estimation of soil behaviour type, *SBT*, using measurements of cone resistance and sleeve friction is based upon the variations of the friction ratio and cone resistance. The

friction ratio varies depending upon whether the soil is cohesive or granular. The cone resistance varies depending on the strength and densities of the soil.

The interpretation used in this report is *Robertson et al. (1986)*, which is shown in Figure 3.2. The results are presented on *Log 01*, in *Appendix B*.

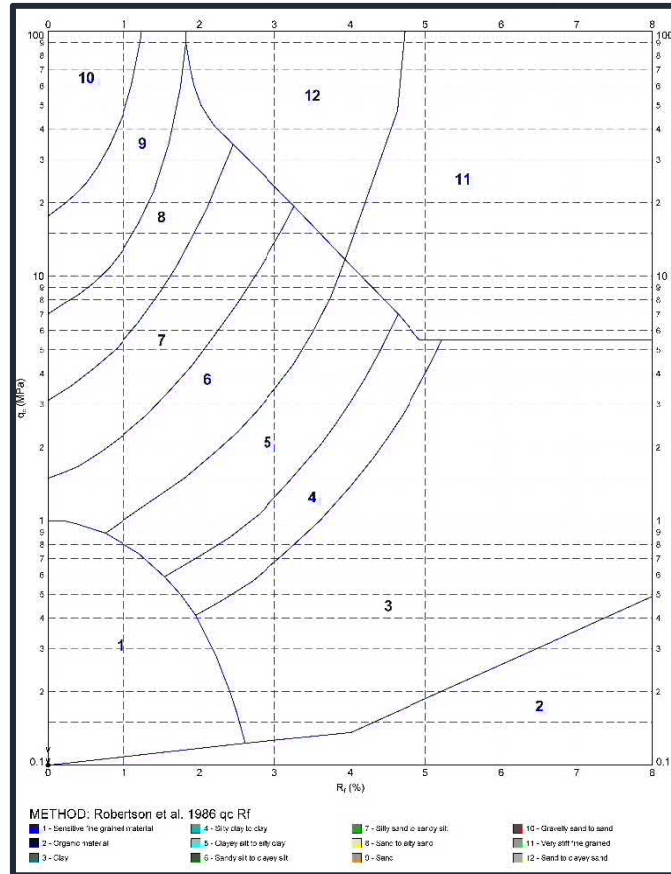


Figure 3.2: Robertson et al., 1986 soil behaviour type chart.

3.3.3 Pore Pressure Ratio (B_q)

Pore pressure ratio, B_q is the ratio between the measured pore pressure generated during penetration and the corrected cone resistance minus the total overburden stress.

Pore pressure ratio as defined by *Senneset and Janbu (1985)* is defined as:

$$B_q = \frac{u_2 - u_0}{q_t - \sigma_{vo}}$$

where

- u_2 is pore pressure measured between the cone and the friction sleeve
- u_0 is equilibrium pore pressure
- σ_{vo} is total overburden stress
- q_t is cone resistance corrected for unequal end area effects

3.4 APPLIED CORRECTIONS

3.4.1 Corrected Cone Resistance (q_t)

For each penetration test, the measured cone resistance, q_c , can be corrected for the “unequal area effect” due to the influence of the ambient pore water pressure acting on the cone.

The correction has been applied using the following equation by Lunne et al., 1997:

$$q_t = q_c + [u_2 \cdot (1 - \alpha)]$$

where

α is the cone area ratio

The cone used on this project has a cone area ratio of 0.79. This value is geometrically measured.

3.4.2 Depth Correction

All tests in the report have been corrected for depth difference caused by inclination. This has been calculated using the method described in ISO 22476-1:2012.

To calculate the corrected depth the following formula is used:

$$z = \int_0^l C_{inc} \cdot dl$$

where

z is penetration depth, in m

l is penetration length, in m

C_{inc} is correction factor for the effect of the inclination of the CPTU relative to the vertical axis.

The equation for calculating the correction factor for the influence of the inclination for a bi-axial inclinometer is:

$$C_{inc} = \frac{1}{\sqrt{(1 + \tan^2 \beta_1 + \tan^2 \beta_2)}}$$

where

β_1 is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane, in degrees

β_2 is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane that is perpendicular to the plane of angle β_1 , in degrees

4.0 GEOTECHNICAL DERIVED PARAMETERS

A number of empirical correlations can be used to derive geotechnical parameters from CPTU data. This report includes only the parameters which are described in this chapter. The results of all correlations used to obtain the geotechnical derived parameters are presented on *Log 02* and *Log 03* in *Appendix C*.

Please note that each empirical correlation is derived for a certain type of soil, and may not be appropriate for all the soil types encountered on this project.

4.1 SOIL BEHAVIOUR TYPE INDEX (I_c)

The soil behaviour type index, I_c , was derived by *Jefferies and Davies (1991)*, and was created to simplify the application of CPTU SBT chart shown in *Chapter 3, Figure 3.2*. This approach has been modified for use with the *Robertson (1990)* normalised CPT soil classification chart, *Figure 4.1*. The normalised cone parameters Q_t and F_r (for definitions see *Appendix A6 Symbol List*) can be combined into one Soil Behaviour Type Index, I_c , (Lunne et al., 1997).

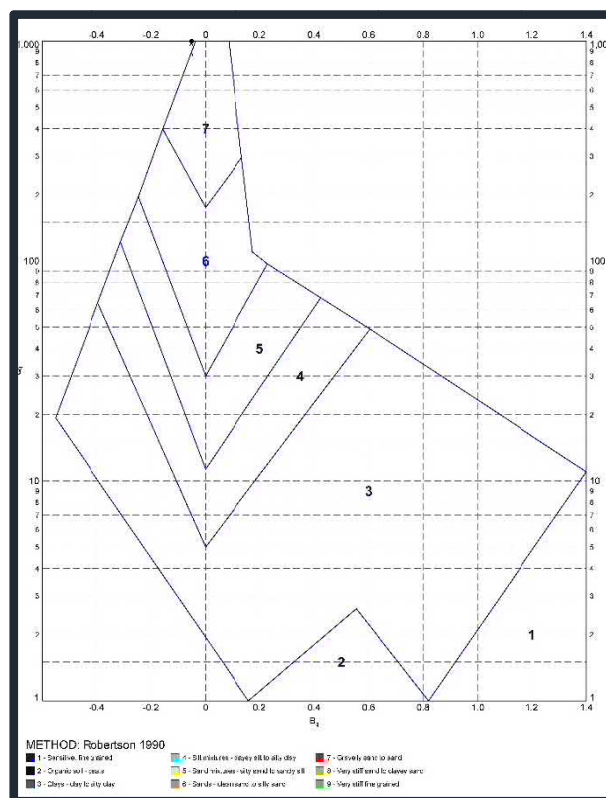


Figure 4.1: Robertson 1990 soil behaviour type chart.

The soil behaviour type index, I_c , can then be defined using *Robertson (2010)* formula, given below:

$$I_c = ((3.47 - \log Q_t)^2 + (\log F_r + 1.22)^2)^{0.5}$$

where

Q_t is the normalized cone resistance which represents the simple normalization with a stress exponent (n) of 1.0, which applies well to clay-like soils

F_R is the normalized friction ratio, in %

The boundaries of soil behaviour type are then given in terms of the index, I_c , presented in *Table 4.1* below.

The soils behaviour type index does not apply to zones 1, 8 and 9. The profiles of I_c provide a simple guide to the continuous variation of soil behaviour type in a given soil profile based on CPTU results, with a reliability greater than 80% compared with soil samples (*Robertson, 2015*).

Zone	Soil Behaviour Type	I_c
1	Sensitive fine grained	N/A
2	Organic Soils – clay	>3.6
3	Clays – silty clay to clay	2.95 – 3.6
4	Silt mixtures – clayey silt to silty clay	2.60 – 2.95
5	Sand mixtures – silty sand to sandy silt	2.05 – 2.6
6	Sands – clean sand to silty sand	1.31 – 2.05
7	Gravelly sand to dense sand	<1.31
8	Very stiff sand to clayey sand*	N/A
9	Very stiff fine grained *	N/A

* Heavily overconsolidated or cemented

Table 4.1: Normalized CPTU Soil Behaviour Type (SBT_n) Index values, I_c . (*Robertson, 2010*)

4.2 N VALUE OF STANDARD PENETRATION TEST (SPT) (N_{60})

The derived N value of SPT, N_{60} , is strongly and directly related to the cone resistance, q_c .

In this report the N_{60} value is derived using the following correlations, developed by *Robertson and Wride (1998)* and *Jefferson and Davies (1998)*

- 1) *Robertson & Wride (1998)*

$$N_{60} = \frac{q_c}{8.5 \cdot p_a \left(1 - \frac{I_c}{4.6}\right)}$$

- 2) *Jefferson and Davies (1993)*

$$N_{60} = \frac{q_c}{0.85 \cdot \left(1 - \frac{I_c}{4.75}\right)}$$

where

- q_c is the cone resistance
- p_a is the atmospheric pressure equal to 100 kPa
- I_c is the soil behaviour type index calculated as given in *section 4.1*

It is suggested that this method provides a better estimation of the N value than the actual SPT test, due to its poor repeatability. But in fine grained soil with high sensitivity these methods of estimating N_{60} may overestimate it (*Jefferies and Davies, 1991*).

4.3 RELATIVE DENSITY (D_r)

Relative density, D_r , is an intermediate parameter for coarse grained soils, widely used to describe sand deposits. All the research on deriving the relative density from CPTU tests results are carried out for **clean predominantly quartz sands**. The studies have shown that CPTU resistance in granular soils is controlled by sand relative density, in situ effective stresses and compressibility. The more compressible sands tend to give lower penetration resistance for a given relative density than less compressible sands.

In this report relative density is calculated using the methods suggested by *Baldi et al., (1986)*, *Jamiolkowski et al., (2001)* and *Kulhawy and Mayne (1990)* as shown in the equations below:

- 1) *Baldi et al., (1986)*

$$D_r = \frac{1}{C_2} \cdot \ln \left(\frac{q_c \cdot Wehr}{C_1 \cdot (\sigma'_{v0})^{0.55}} \right) \cdot 100$$

where

C_1 is a consolidation coefficient which is 157 for normally consolidated soils and 181 for over consolidated soils

C_2 is a consolidation coefficient which is 2.41 for normally consolidated soils and 2.46 for over consolidated soils

Wehr is a correction coefficient for calcareous soils

2) Jamilkowski et al., (2001)

$$D_r = 100 \cdot \left[0.268 \cdot \ln \left(\frac{q_t / \sigma_{atm}}{\sqrt{\sigma'_{v0} / \sigma_{atm}}} \right) + C_1 \right]$$

where

C_1 is a compressibility coefficient which is -0.675 for average compressible soils, ≤ 1.0 for high compressible soils and carbonate or calcareous sands and ≥ -2.0 for low compressible soils

q_t is corrected cone resistance

σ_{atm} is the atmospheric pressure

3) Kulhawy and Mayne, (1990)

$$D_r = \left[\frac{q_{c1}}{305 \cdot C_1 \cdot OCR^{0.18} \cdot (1.2 + 0.05 \cdot \log(t/100))} \right]^{0.5} \cdot 100$$

where

q_{c1} is the cone resistance corrected for initial vertical effective stress and atmospheric pressure, calculated by the following formula

$$q_{c1} = \frac{q_c}{\sqrt{\sigma'_{v0} \cdot \sigma_{atm}}}$$

where

q_c is the cone resistance in *kPa*

σ'_{v0} is the initial vertical effective stress in *kPa*

C_1 is a compressibility coefficient which is -0.91 for low compressible sands, 1.0 for medium compressible sands and 1.09 for high compressible sands

t is time in years

4.4 FRICTION ANGLE (ϕ')

Friction angle, ϕ' , is used to express the shear strength of uncemented, coarse grained soils. In this report friction angle is derived by the correlations of *Mayne and Campanella (2005)*, *Robertson and Campanella (1983)* and *Kulhawy and Mayne (1990)*.

- 1) Mayne and Campanella, (2005)

$$\phi' = 29.5^0 \cdot B_q^{0.121} \cdot [0.256 + 0.336 \cdot B_q + \log Q_t]$$

where

B_q is the pore pressure ratio, calculated as in Session 3.3

Q_t is the normalized cone resistance

- 2) Roberston and Campanella, (1983)

$$\phi' = \tan^{-1} \left(0.1 + 0.38 \cdot \log \left(\frac{q_t}{\sigma'_{v0}} \right) \right)$$

where

q_c is the cone resistance in *kPa*

σ'_{v0} is the initial vertical effective stress in *kPa*

- 3) Kulhawy and Mayne, (1990)

$$\phi' = 17.6^0 + 11.0^0 \cdot \log(q_{t1})$$

where

q_{t1} is the corrected cone resistance corrected for initial vertical effective stress and atmospheric pressure, calculated by the following formula

$$q_{t1} = \frac{q_t}{\sqrt{\sigma'_{v0} \cdot \sigma_{atm}}}$$

The method suggested by *Mayne and Campanella (2005)* will not provide reliable results for heavily overconsolidated soils, fissured geomaterials and highly cemented or structures clays. This approach gives reliable results when pore pressure is positive and varies $0.1 < B_q < 1.0$. The correlation suggested by *Robertson and Campanella (1983)* estimates the peak friction angle for uncemented, unaged, moderately compressible, predominately quartz sands. For sands of higher compressibility the method will tend to predict low friction angles. The method suggested by *Kulhawy and Mayne (1990)* is an alternate relationship for clean, rounded, uncemented, quartz sands.

4.5 FINES CONTENT (FC)

The fines content, FC , in this report is estimated using two different methods, one from *Robertson and Wride (1998)* and the other, *Suzuki et al (1998)* as presented below:

- 1) Robertson and Wride (1998)

$$I_c < 1.26: FC = 0$$

$$1.26 \leq I_c \leq 3.5: FC(\%) = 1.75I_c^{3.25} - 3.7$$

$$3.5 < I_c: FC = 100\%$$

- 2) Suzuki et al (1998)

$$FC(\%) = 2.8I_c^{2.6}$$

where

I_c is the soil behaviour type index, calculated as in section 4.1

4.6 UNDRAINED SHEAR STRENGTH (s_u)

Estimation of undrained shear strength, s_u , from CPTU tests using corrected cone resistance is carried out using the following correlation from *Lunne et al. (1981)*:

$$S_u = \frac{(q_t - \sigma_{v0})}{N_{kt}}$$

where

N_{kt} is the empirical cone factor, which varies from 10 (6 for very soft sensitive fine grained soils) to 20. In this report 3 values are considered: 15, 17.5 and 20. N_{kt} tends to increase with increasing plasticity and decrease with increasing soil sensitivity. It decreases as B_q increases. (*Lunne et al., 1997*)

σ_{v0} = total overburden stress.

This report only presents the undrained shear strength data on soils with soil behaviour type index, I_c values greater than 2.60.

The value of undrained shear strength, s_u to be used in analysis depends on the design problem. In general, the simple shear direction of loading often represents the average undrained strength. For larger, moderate to high risk projects, where high quality field and laboratory data may be available, site specific correlations should be developed based on appropriate and reliable values of s_u .

4.7 SENSITIVITY (S_t)

The sensitivity, S_t of clays is defined as the ratio of undisturbed peak undrained shear strength to totally remoulded undrained shear strength.

In this report S_t is calculated using two correlations developed by *Schmertmann (1978)* and *Mayne (2007)*.

- 1) Schmertmann (1978)

$$S_t = \frac{s_u}{s_{u(rem)}} = \frac{q_t - \sigma_v}{N_{kt}} \left(\frac{1}{f_s} \right)$$

where

$s_{u(rem)}$ is the remoulded undrained shear strength. It can be assumed equal to the sleeve resistance, f_s .

- 2) Mayne (2007)

$$S_t = \frac{0.073 \cdot (q_t - \sigma_{v0})}{f_s}$$

For relatively sensitive clays, $S_t > 10$, the value of f_s can be very low and not very accurate, hence the estimate of sensitivity should be used as a guide only.

4.8 SOIL UNIT WEIGHT (γ)

Soil unit weight, γ in this report is calculated by using one method for sands, considered under dry conditions and two methods for clays, considered under saturated conditions. These relationships are developed by *Mayne (2007)* and the equations are presented below:

- 1) Mayne (2007)

Dry unit weight for sands:

$$\gamma_{dry} = 1.89 \cdot \log(q_{t1}) + 11.82$$

Saturated unit weight for clays method 1

$$\gamma_{sat} = 8.32 \cdot \log(V_s) - 1.61 \cdot \log(z)$$

Saturated unit for clays method 2

$$\gamma_{sat} = 2.60 \cdot \log(f_s) + 15 \cdot G_s - 26.5$$

where

q_{t1} is the corrected cone resistance corrected for initial vertical effective stress and atmospheric pressure, calculated by the following formula:

$$q_{t1} = \frac{q_t}{\sqrt{\sigma'_{v0} \cdot \sigma_{atm}}}$$

z is the depth

V_s is the shear wave velocity, calculated as $V_s = 118.8 \cdot \log(f_s) + 18.5$

G_s is the specific gravity of solids, typically between 2.40 and 2.90

4.9 STATE PARAMETER (ψ)

The state parameter, ψ is defined as the difference between the current void ratio, e and the void ratio at critical state e_{cs} , at the same mean effective stress for granular soils.

The problem of evaluating the state parameter from CPTU response is complex and depends on several soil parameters, including shear stiffness, shear strength, compressibility and plastic hardening. (*Jefferis and Been, 2006*)

In this report, the state parameter is calculated based on five methods as follows:

- 1) Been et al. (1987)

$$\psi = -\frac{\ln\left(\frac{Q_p}{k}\right)}{m}$$

and

$$Q_p = \left(\frac{3Q_t}{1 + 2K_0}\right)$$

where

Q_t is the normalized cone resistance

K_0 is the coefficient of lateral earth pressure

- 2) Shuttle and Jefferies (1998)

$$\psi = -\frac{\ln\left(\frac{Q_p}{k}\right)}{m}$$

where

$$k = \left((3.79 + 1.12 \ln(I_r)) (1 + 1.06(M - 1.25)) (1 - 0.30(N - 0.2)) (H/1000)^{0.326} (-1.55(\lambda - 0.01)) \right)^{1.45}$$

$$m = 1.45 (1.04 + 0.46 \ln(I_r)) (1 - 0.4(M - 1.25)) (1 - 0.30(N - 0.2)) (H/100)^{0.15} (1 - 2.21(\lambda - 0.01))$$

where

Q_t is the normalised cone resistance

I_r is rigidity index

K_0	is the coefficient of lateral earth pressure
M	is critical state ratio
N	is dilation parameter
H	is plastic hardening modulus;
λ	is slope CSL line

3) Shuttle and Jefferies (1998)

The state parameter calculated according this third method is similar to state parameter calculated as presented in the second method, except for the rigidity index that is calculated as follows:

$$I_r = I_{r100} \left(\frac{P_a}{\sigma'_{v0}} \right)^{0.5}$$

where

I_{r100}	is rigidity index in reference pressure
P_a	is the reference pressure equal to 100 kPa
σ'_{v0}	is effective vertical overburden stress

4) Plewes (1992)

$$\psi = - \frac{\ln \left(\frac{Q_p / (1 - B_q)}{k'} \right)}{m'}$$

where

$$k' = M \left(3 + \frac{0.85}{\lambda} \right)$$

$$m' = 11.9 - 13.3\lambda$$

$$\lambda = \frac{F_r}{10}$$

where

Q_t	is the normalized cone resistance
B_q	is pore pressure ratio
K_0	is the coefficient of lateral earth pressure
F_R	is normalized friction ratio
M	is critical state ration

5) Been and Jefferies (1992)

$$\psi = - \frac{\ln \left(\frac{Q_p / (1 - B_q)}{k'} \right)}{m'}$$

where

$$k' = M \left(3 + \frac{0.85}{\lambda} \right)$$

$$m' = 11.9 - 13.3\lambda$$

$$\lambda = \frac{1}{34 - 10I_c}$$

For high-risk projects a detailed interpretation of CPTU results using laboratory results and numerical modelling can be appropriate (e.g. *Shuttle and Cunning, 2007*), although soil variability can complicate the interpretation procedure. For low risk projects and in the initial screening for high-risk projects there is a need for a simple estimate of soil state.

Plewes et al (1991) provided a means to estimate soil state using the normalized soil behaviour type, *SBT_n* chart suggested by *Jefferies and Davies (1991)*. *Jefferies and Been (2006)* suggested that soils with a state parameters less than -0.05 are dilative at large strains.

4.10 IN SITU STRESS RATIO (K_0)

There are various estimations to determine in situ stress ratio, K_0 , from CPTU in fine grained soils. In this report the methods suggested by *Mayne (2007)* and *Kulhawy and Mayne (1990)* are used, as given below:

- 1) Mayne (2007)

$$K_0 = (1 - \sin\phi')OCR^{\sin\phi'}$$

$$\text{Max } K_0 = K_p = \frac{(1 + \sin\phi')}{(1 - \sin\phi')}$$

$$K_0 = 0.192\left(\frac{q_t}{\sigma_{atm}}\right)^{0.22}\left(\frac{\sigma_{atm}}{\sigma_{v0}}\right)^{0.22}OCR^{0.27}$$

where

OCR is the overconsolidation ration, calculated as presented in session 4.12

- 2) Kulhawy and Mayne (1990)

$$K_0 = 0.1\left(\frac{q_t - \sigma_{v0}}{\sigma_{v0}'}\right)$$

These approaches are generally limited to mechanically overconsolidated, fine grained soils. As considerable scatter exists in the database used for these correlations, in moderate to high risk projects further tests should be performed and these correlations must be considered only as a guide.

4.11 OVERCONSOLIDATION RATIO (OCR)

Overconsolidation ratio, OCR is defined as the ratio of the maximum past effective consolidation stress and the present effective overburden stress:

$$OCR = \frac{\sigma'_p}{\sigma'_{v0}}$$

This definition is appropriate for mechanically overconsolidated soils, where the only change has been the removal of overburden stress. For cemented and aged soils the *OCR* may represent the ratio of the yield stress and the present effective overburden stress.

In this report σ'_p is calculated based on six methods as presented below:

- 1) Mayne (1995)

$$\sigma'_p = 0.33(q_t - \sigma_{v0})$$

- 2) Chen & Mayne (1996)

$$\sigma'_p = 0.53\Delta u$$

- 3) Mayne (2005)

$$\sigma'_p = 0.6(q_t - u_2)$$

- 4) Robertson (2009)

$$\sigma'_p = 0.25(Q_t^{1.25} - \sigma'_{v0})$$

- 5) Mayne (2005)

$$\sigma'_p = \left[\frac{0.192 \left(\frac{q_t}{\sigma_{atm}} \right)^{0.125}}{(1 - \sin\phi') \left(\frac{\sigma'_{v0}}{\sigma_{atm}} \right)^{0.31}} \right]^{\left(\frac{1}{\sin\phi' - 0.27} \right)} \sigma'_{v0}$$

- 6) Mayne (2007)

$$\sigma'_p = 0.101 \sigma_{atm}^{0.102} (G_0)^{0.478} \sigma'_{v0}{}^{0.420}$$

For larger, moderate to high risk projects, where additional high quality field and laboratory data may be available, site specific correlations should be developed based in consistent and relevant values of *OCR*.

4.12 SMALL STRAIN YOUNG MODULUS (E_0)

Deriving small strain undrained Young's modulus, E_0 , from CPTU is difficult. There is insufficient data available to make a direct correlation, and it is recommended that c_u should be derived, then E_U estimated, as a rough order of value from one of the available correlations between E_U and c_u (Meigh, 1987).

In this report the small strain Young's modulus is derived as follows:

- 1) Defined from elastic theory:

$$E_0 = 2(1 + \nu)G_0$$

where

ν is the Poisson ratio, equal to 0.2

G_0 is the small strain shear modulus calculated by the formula given below:

$$G_0 = 1634 \left(\frac{q_c}{\sqrt{\sigma'_{v0}}} \right)^{-0.75} q_c$$

2) Calculated based on the degree of loading, q_c , effective stress and reduction factor

$$E_0 = \alpha q_c$$

where

α is calculated from degree of loading, q_c , effective stress and reduction factor, given in Figure 4.2

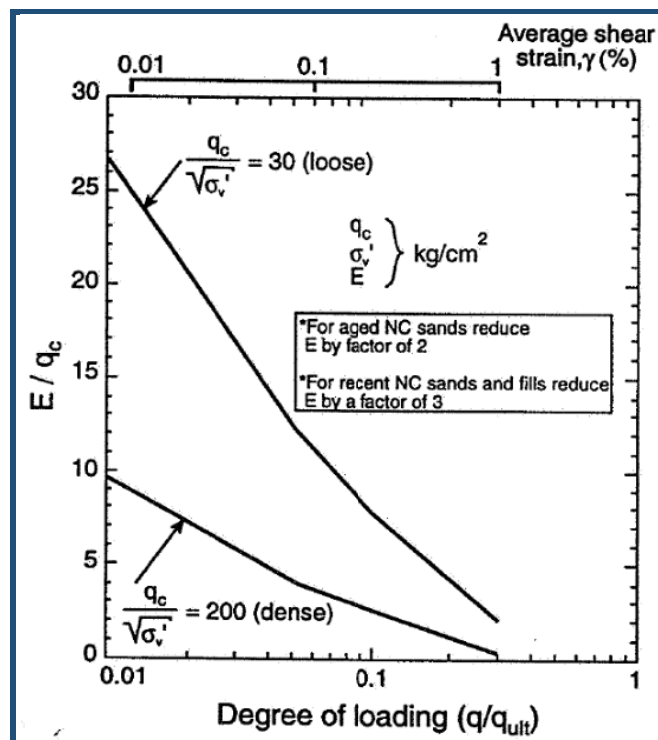


Figure 4.2: Estimation of equivalent Young's modulus for sand based on degree of loading (Robertson, 1990)

4.13 CONSTRAINED MODULUS (M)

Constrained Modulus, M , can be estimated by CPTU using the following empirical relationship:

$$M = \alpha_M(q_t - \sigma_{v0})$$

where

α_M varies with soil plasticity and natural water content for a wide range of fine grained soils and organic soils. *Meigh (1987)* suggested that α_M lies in the range of 2 to 8, whereas *Mayne (2001)* suggested the value of 5.

Robertson (2001) suggested that α_M varies with Q_t , such that:

When $I_c > 2.2$ (fine grained soils) use: $\alpha_M = Q_t$ when $Q_t < 14$
 $\alpha_M = 14$ when $Q_t > 14$

When $I_c < 2.2$ (coarse grained soils) use: $\alpha_M = 0.0188[10^{(0.55I_c+1.68)}]$

In this report the Constrained Modulus, M , is calculated after *Kulhawy and Mayne (1990)* using the equation below:

$$M = 8.25(q_t - \sigma_{v0})$$

Also an alternative method is included in the results, developed by *Burns and Mayne (2002)* using the following relationship:

$$M = 0.02G_0$$

4.13.1 Equivalent Oedometer Coefficient of Compressibility (m_v)

Equivalent oedometer coefficient of compressibility, m_v can be calculated directly by the Constrained Modulus, M , as follows:

$$m_v = \frac{1}{M}$$

4.14 SMALL STRAIN SHEAR MODULUS (G_0)

Elastic theory states that the small strain shear modulus, G_0 , can be determined from the following equation:

$$G_0 = \rho v_s^2$$

where

ρ is the mass density of the soil
 v_s is the shear wave velocity

In this report the small strain shear modulus, G_0 , will be presented calculated by the three methods shown below, developed by *Rix & Stoke (1992)*, *BE* and *UB Rix & Stoke (1992)*, respectively.

$$G_0 = 1634 \left(\frac{q_c}{\sqrt{\sigma'_{v0}}} \right)^{-0.75} q_c$$

$$G_0 = \frac{\gamma_{bulk}}{g} v_s^2$$

where

- q_c is the net cone tip resistance in kPa
- σ'_{v0} is the effective initial vertical stress in kPa
- γ_{bulk} is the bulk density of the soil
- v_s is the shear wave velocity

This correlation of G_0 is applicable to all soil types.

4.14.1 Mass Density of Soil (ρ)

Mass density of soil, ρ , is defined as:

$$\rho = \frac{\gamma}{g}$$

where

- γ is the elastic stiffness of the soils at shear strain less than $10^{-4}\%$, $\gamma < 10^{-4}\%$.

4.15 HIDRAULIC CONDUCTIVITY (k)

An approximate estimate of soil hydraulic conductivity of coefficient of permeability, k , can be made from an estimate of soil behaviour type using the CPTU *SBT chart*, and presented in the table below:

SBT Zone	SBT	Range of k (m/s)	SBT _n I _c
1	Sensitive fine grained	3×10^{-10} to 3×10^{-8}	NA
2	Organic soils-clay	1×10^{-10} to 1×10^{-8}	$I_c > 3.60$
3	Clay	1×10^{-10} to 1×10^{-9}	$2.95 < I_c < 3.60$
4	Silt Mixture	3×10^{-9} to 1×10^{-7}	$2.60 < I_c < 2.95$
5	Sand Mixture	1×10^{-7} to 1×10^{-5}	$2.05 < I_c < 2.60$
6	Sand	1×10^{-5} to 1×10^{-3}	$1.31 < I_c < 2.05$
7	Dense sand to gravelly sand	1×10^{-3} to 1	$I_c < 1.31$
8	*Very dense/ stiff soil	1×10^{-8} to 1×10^{-3}	NA
9	*Very stiff fine grained soil	1×10^{-9} to 1×10^{-7}	NA

*Overconsolidated and/ or cemented

Table 4.2: Estimated soil permeability (k) based on the CPTU SBT chart by Roberston (2009)

The average relationship between soil permeability, k and $SBT_n I_c$, shown in *Table 4.1*, can be represented by the following relationships:

$$\begin{aligned} \text{When } 1.0 < I_c \leq 3.27 & \quad k = 10^{(0.952-3.04I_c)} \\ \text{When } 3.27 < I_c \leq 4.0 & \quad k = 10^{(-4.52-1.37I_c)} \end{aligned}$$

In this report, the hydraulic conductivity is given using 2 methods, *Robertson et al. (1986)* and *Robertson et al. (1990)*, considering both minimum and maximum values for each method.

The hydraulic conductivity (permeability), k , values, minimum and maximum, defined after soil behaviour type *Robertson et al. (1986)* are presented in *Table 4.3*, below:

SBT Zone	Soil Behaviour Type (SBT)	Range of hydraulic conductivity, k (m/s)
1	Sensitive fine grained	3×10^{-9} to 3×10^{-8}
2	Organic soils	1×10^{-8} to 1×10^{-6}
3	Clay	1×10^{-10} to 1×10^{-9}
4	Silty CLAY to CLAY	3×10^{-9} to 1×10^{-8}
5	Clayey SILT to silty CLAY	1×10^{-8} to 1×10^{-7}
6	Sandy SILT to clayey SILT	1×10^{-7} to 1×10^{-6}
7	Silty SAND to sandy SILT	1×10^{-5} to 1×10^{-6}
8	SAND to silty SAND	1×10^{-5} to 1×10^{-4}
9	SAND	1×10^{-4} to 1×10^{-3}
10	Gravelly SAND to SAND	1×10^{-3} to 1
11	Very stiff fine grained	1×10^{-8} to 1×10^{-6}
12	SAND to clayey SAND	3×10^{-7} to 3×10^{-4}

Table 4.3: Estimated soil permeability (k) based on SBT chart by *Robertson et al. (1986)*

The hydraulic conductivity (permeability), k , minimum and maximum values, defined after soil behaviour type by *Robertson et al. (1990)* are presented in *Table 4.4*, here below:

SBT Zone	Soil Behaviour Type (SBT)	Range of hydraulic conductivity, k (m/s)
1	Sensitive fine grained	3×10^{-9} to 3×10^{-8}
2	Organic soils	1×10^{-8} to 1×10^{-6}
3	Clay	1×10^{-10} to 1×10^{-9}
4	Silt Mixture	3×10^{-9} to 1×10^{-7}
5	Sand Mixture	1×10^{-7} to 1×10^{-5}
6	Sand	1×10^{-5} to 1×10^{-3}
7	Gravelly sands to dense sands	1×10^{-3} to 1

8	Very stiff sand to clayey sand	1×10^{-8} to 1×10^{-6}
9	Very stiff fine grained	1×10^{-8} to 1×10^{-6}

Table 4.4: Estimated soil permeability (*k*) based on SBT chart by Robertson et al. (1990).

4.16 CONSOLIDATION CHARACTERISTICS

All the results of consolidation characteristics calculated using the formulas below are presented in *Appendix D*.

4.16.1 Rigidity Index (I_R)

The rigidity index, I_R , for fine materials is defined using the following formula, developed by *Mayne (2001)*:

$$I_R = \exp \left[\left(\frac{1.5}{M} + 2.925 \right) \left(\frac{q_t - \sigma_{v0}}{q_t - u_2} \right) \right] - 2.925$$

where

M is the Cam Clay constant, slope of the critical state line defined as:

$$M = \frac{6 \sin \phi'}{3 - \sin \phi'}$$

where

ϕ' is the internal friction angle.

The second method used to define the rigidity index, I_R , for fine material is based on plasticity index and overconsolidation ratio, *OCR*, and calculated after the relationship developed by *Keaveny and Mitchel (1986)* as follows:

$$I_R = \frac{\exp(0.0435(137 - PI))}{[1 + \ln\{1 + 0.385(OCR - 1)^{3.2}\}]^{0.8}}$$

where

PI is the plasticity index of the soil, equal to 20.

OCR is the overconsolidation ratio of the soil

4.16.2 Coefficients of consolidation (c_h , c_v)

The coefficient of consolidation is interlinked with the hydraulic conductivity through the formula below:

$$c = \frac{kM}{\gamma_w}$$

where

M is the 1-D constrained modulus relevant to the problem (i.e. unloading, reloading, virgin loading, etc)

γ_w is the unit weight of water
 k is the hydraulic conductivity

In geotechnical practice it is very difficult to measure c and k , because due to soil anisotropy c and k have different values in the horizontal, c_h and k_h and vertical c_v and k_v direction. The relevant design values depend on drainage and loading direction.

The coefficient of consolidation can be estimated by measuring the dissipation or rate of decay of pore pressure with time after a stop in CPTU penetration. The coefficient of consolidation should be interpreted at 50% dissipation, using the following formula:

$$c = \left(\frac{T_{50}}{t_{50}}\right)r_0^2$$

where

T_{50} is theoretical time factor
 t_{50} is measured time for 50% dissipation
 r_0 is penetrometer radius

In soils of very low permeability the time for dissipation can be decreased by using smaller diameter probes. A theoretical solution for this cases is given by *Teh and Houlsby (1991)* and it is compared with data from around the world by *Robertson et al. (1992)*, as shown in *Figure 4.3*.

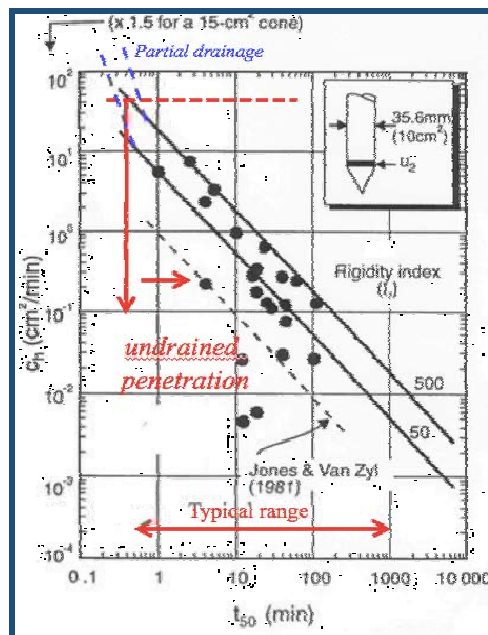


Figure 4.3: Average laboratory c_h values and CPTU results

(after *Robertson et al. 1992*, *Teh and Houlsby theory* shown as solid lines for $I_R = 50$ and $I_R = 500$).

c_h estimation is controlled by soil stress history, sensitivity, anisotropy, rigidity index (relative stiffness), fabric and history. In overconsolidated soils, the pore pressure behind the cone

tip can be low or negative, results in dissipation data that can initially rise before decreasing to the equilibrium values. Care is required to ensure the dissipation test to end at the right moment of time, not stopped prematurely after the initial rise.

An approximate estimate of the coefficient of consolidation in the vertical direction can be obtained using the ratios of permeability in the horizontal and vertical direction given in the section on hydraulic conductivity, since:

$$c_v = c_h \left(\frac{k_v}{k_h} \right)$$

For relative short dissipations, the dissipation results can be plotted on a square-root time scale. The gradient of the initial straight line in m, where:

$$c_h = \left(\frac{m}{M_T} \right)^2 r^2 I_r^{0.5}$$

where

M_T is 1.15 for u_2 position and 10 cm² cone ($r=1.78$ cm).

4.17.3 Coefficients of permeability (hydraulic conductivity, k_h , k_v)

The horizontal coefficient of permeability can be estimated from the following expression:

$$k_h = \frac{\gamma_w}{2.3\sigma'_{v0}} RR c_h$$

where

RR is the compression ratio in the overconsolidated range. It represents the strain per log cycle of effective stress during recompression and can be determined from laboratory consolidation tests ($0.5 \times 10^{-2} < RR < 2 \times 10^{-2}$ was recommended by Baligh and Levadoux).

Robertson et al. (1992a) presented a summary of available data from dissipation tests and laboratory determined k_h values.

Nature of clay	k_h/k_v
No macrofabric, or only slightly developed macrofabric, essentially homogeneous deposits	1 to 1.5
From fairly well to well developed macrofabric, e.g. sedimentary clays with discontinuous lenses and layers of more permeable material	2 to 4
Varved clays and other deposits containing embedded and more or less continuous permeable layers	3 to 15

Table 4.4: Range of field values of k_h/k_v for soft clays (from Jamiolkowski et al., 1985).

Estimation of soil permeability from CPTU and dissipation data is subject to much uncertainty and should be used as a guide only.

5.0 CPTU RESULTS APPLICATIONS

5.1 SOIL PROFILING AND APPLICATIONS IN GEOTECHNICAL DESIGN

5.1.1 Soil Behaviour Type

The major applications of CPTU are on *soil behaviour type and soil profiling*. Typically, the cone resistance, q_c is high in sands and low in clays, and the friction ratio, $R_f = f_s/q_t$ is low in sands and high in clays. The CPTU cannot be expected to provide accurate predictions of soil type based on *physical characteristics*, e.g. *grain size distribution*, but provides a guide to the *mechanical characteristics*, including: *strength*, *stiffness*, and *compressibility* of the soils, or the *soil behaviour type*, *SBT*.

The most commonly used CPTU soil behaviour type chart, suggested by *Robertson et al. (1986)* uses the basic CPTU measured parameters of cone resistance, q_c and friction ratio, R_f . The chart is global in nature and can provide reasonable predictions of soil behaviour type for CPTU testing. The expected overlap in some zones is modified in the interpretations of this report somewhat based on previous experience or local knowledge of the site.

Since both the penetration resistance and sleeve resistance increase with depth due to the increase in effective overburden stress, the CPTU data requires normalization for overburden stress for very shallow and/or very deep tests. A popular CPTU soil behaviour chart based on normalized CPTU data is firstly proposed by *Robertson (1990)*. The chart identifies general trends in ground response, such as: *increasing soil density*, *OCR*, *age* and *cementation* for granular soils, and *increasing stress history*, *OCR* and *soil sensitivity* for cohesive soils.

A more general normalized CPTU *SBT* chart, using large strain *soil behaviour* descriptions, proposed by *Robertson (2012)* is shown in *Figure 5.1*.

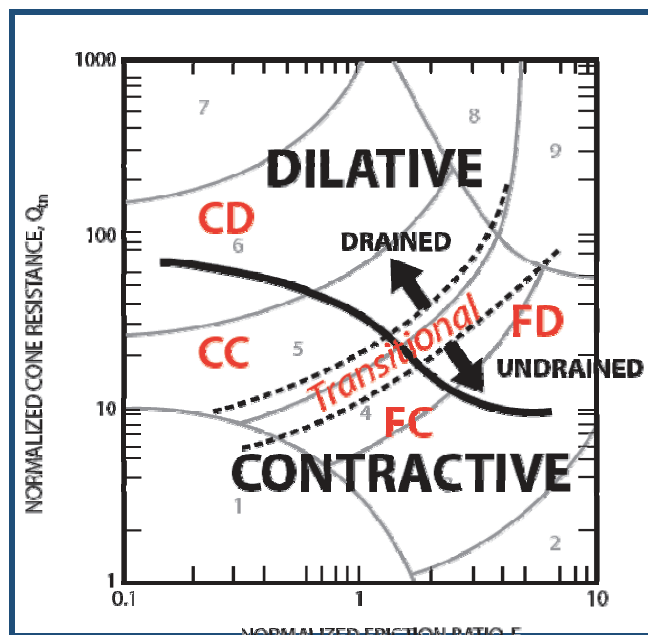


Figure 5.1: Normalized CPTU Soil Behaviour Type (SBT_n) chart, $Q_{tn}-F_R$ using general large strain soil behaviour description (Robertson, 2012).

*

- CD is coarse grained dilative soil-predominately drained CPTU
- CC is coarse grained contractive soil-predominately drained CPTU
- FD is fine grained dilative soil-predominately undrained CPTU
- FC is fine grained contractive soil-predominately undrained CPTU

5.1.2 Soil Profiling

CPTU is an excellent test for soil profiling. The continuous monitoring of pore pressure during the cone penetration improves the soil stratigraphy descriptions. The pore pressure develops in response to the soil type being penetrated in the area where the pore pressure element is located. Soft, firm or stiff clays and contractive silts can show very high pore pressure. Very stiff overconsolidated clays and dilative silts can give very low or negative pore pressures same as very dense silty sands.

The thin layers of sand, or silt in a thick layer of clay, or thin layers of clay or silt in a thick layer of sand are easily distinguished during a CPTU test, which will give a response time sufficiently fast to observe pore pressure changes even in the very thin layers of soils (< 5mm), depending on the response of soil to the advancing of cone.

The sandy soils tend to produce high cone resistance and low friction ratio, whereas soft clayey soils tend to produce low cone resistance and high friction ratio. Organic soils such as peat tend to have very low cone resistance and very high friction ratio. Soils with high horizontal stresses (*high OCR*) tend to have higher cone resistance and friction ratio.

CPTU is an excellent tool to classify the soils based on their behaviour type, and not based on grain size distribution. (Douglas and Olser, 1981)

The measurements of sleeve friction, f_s are often less reliable than the measurements of cone resistance, q_c (Lunne *et al.*, 1986), but to overpass these problems pore pressure parameter ratio, B_q , and the classification charts based on it, which are also presented in *Appendix A.9*, are used when necessary.

For more reliability in soil profiling, the soil interpretations in this report are carried out based on three parameters measured on site, cone resistance, sleeve friction and pore pressure and three derived geotechnical parameters soil behaviour type index for all soils, undrained shear strength for cohesive soils and relative density for granular soils.

Generally, soils that fall in zones 8, 9 and 10 of *Robertson et al (1986)* chart (6 and 7 of *Robertson (1990)* chart) represent approximately drained penetration, whereas, soils in zones 1, 2, 3, 4, 5 and 6 of *Robertson et al (1986)* chart (1, 2, 3 and 4 of *Robertson (1990)* chart) represent approximately undrained penetration. Soils in zones 7, 11 and 12 of *Robertson et al (1986)* (5, 8 and 9 of *Robertson (1990)* chart) may represent partially drained penetration. The classification is often influenced by changes in *stress history, in situ stresses, sensitivity, stiffness, mineralogy*, etc. An advantage of pore pressure measurements during cone penetration is the ability to evaluate drainage conditions more directly. (Lunne *et al.*, 1997)

The information about the rate and manner of excess pore pressures during the dissipations significantly helps the accurate classification in the corresponding depths of dissipation tests. In very stiff, overconsolidated clayey soils, the pore pressure behind the cone is very low and sometimes negative of the equilibrium pore pressure, u_0 , whereas the pore pressure on the face of the cone is very large due to the large increase in normal stresses created by the cone penetration. When penetration is stopped in overconsolidated clays, pore pressure recorded behind the cone may initially increase before decreasing to the equilibrium pore pressure. The rise is caused by local equalization of the high pore pressure gradient around the cone.

Cone penetration in fine grained soils, such as clays and silts, is generally undrained. Cone penetration tests under undrained conditions generate high pore pressure and this reading is extremely useful, because it affects both cone resistance and sleeve friction measurements. These parameters should be corrected using the measured pore pressure.

CPTU in coarse grained soils, such as sandy or gravelly soils is generally drained. In these conditions there is no excess pore pressure generated as a result of cone penetration. Relative density has been used as the main parameter for description of sandy deposits.

5.1.3 Applications in geotechnical design

CPTU measured parameters are used to derive geotechnical parameters, which are the input in several geotechnical analyses. An alternate approach is to directly apply CPTU results to the geotechnical calculations.

As a guide, *Table 5.1* shows a summary of the applicability of CPTU results for direct design applications. The ratings shown in the table have been assigned based on current experience and represent a qualitative evaluation of the confidence level assessed to each design problem and general soil type. Details of ground conditions and project requirements can influence these ratings.

Type of soil	Pile Design	Bearing Capacity	Settlement	Compaction Control	Liquefaction
Sand	A-B	A-B	B-C	A-B	A-B
Clay	A-B	A-B	B-C	C-D	A-B
Intermediate Soils	A-B	B-C	B-C	B-C	A-B

Table 5.1: Perceived applicability of CPTU for various direct design problems.

- A is high
- B is high to moderate
- C is moderate
- D is moderate to low

6.0 REFERENCES

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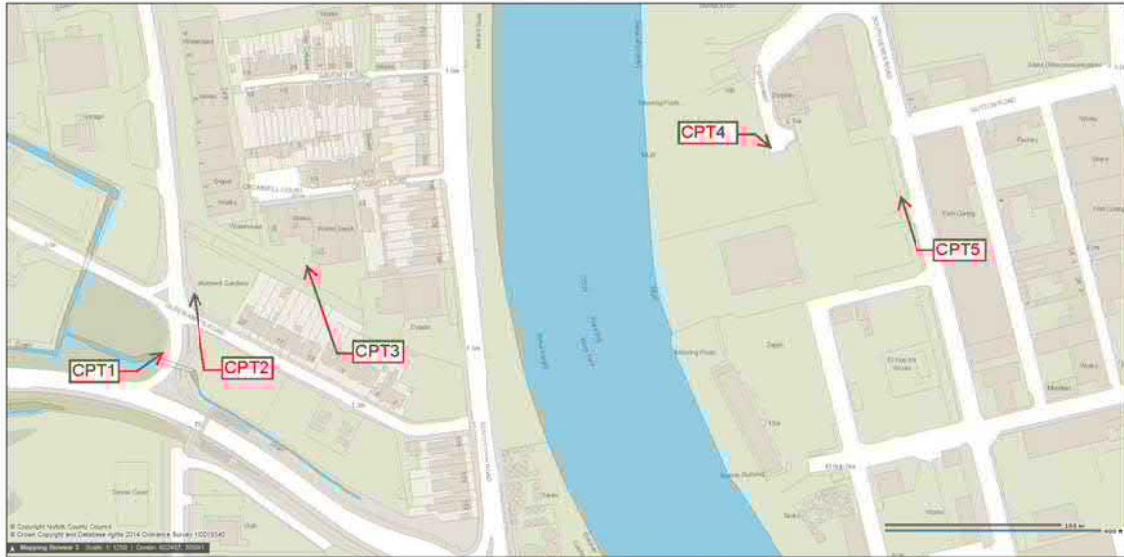
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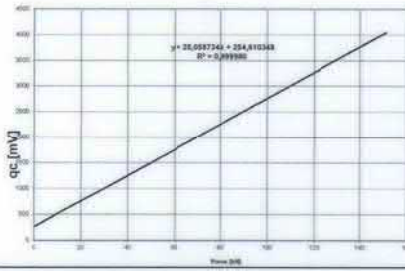
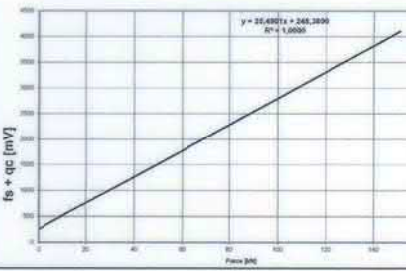
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APPENDIX A

APPENDIX A1 – Site Map



APPENDIX A2 – Cone Calibration Certificate

 <p>Down to Earth</p>		<p>Gouda Geo-Equipment B.V. Satellietbaan 8 2181 MH Hillegom The Netherlands</p> <p>Tel. + 31 (0)715.318.475 E-mail: info@gouda-geo.com</p>	
<h2>Certificate of Calibration</h2> <p>Certificate No. CMI 18.01.1582</p>			
<p>Instrument</p> <p>Instrument Type: Electrical Subtraction Cone Manufacturer: GGE Model No.: DP15 CFPTxy Serial No.: 70080</p>		<p>Calibration Result: Certified</p> <p>Date Calibrated: 12-1-2018 Next Due Date: 12-7-2018</p>	
<p>Used Calibration Procedure: GGCEP004, ISO22476</p>		<p>Location: Hillegom (The Netherlands)</p>	
<p>Customer</p> <p>In Situ</p>			
<p>Calibration Instruments</p>			
<p>Instrument Type: Volt/mA Loop Calibrator Manufacturer: Fluke Model No.: 715 Serial No.: 9408105 Accuracy: 0.01% + 2 Counts Date Calibrated: December 13, 2017 Next Due Date: December 13, 2018 Calibrated By: Manufacturer Traceability: 1992911</p>		<p>Instrument Type: Load-cell + amplifier Manufacturer: Futek Model No.: LCF500 + IAA100 Serial No.: 668966 + 695054 Accuracy: 0.060% Date Calibrated: December 15, 2017 Next Due Date: December 15, 2018 Calibrated By: Futek Traceability: 1712150070</p>	
<p>Calibration Conditions</p>			
<p>Environmental conditions whilst performing the calibration:</p>		<p>Ambient Temperat: 21,6 °C Relative Humidity: 33,9 %</p>	
<p>Condition of Calibrated Apparatus when Received: Fair</p>			
<p>Measurement Parameters</p>			
<p>zero value: 256 mV Full scale: 3759 @ 150kN</p>		<p>zero value: 256 mV Full scale: 3822 @ 150kN</p>	
			
<p>Remarks</p>			
<p>Data "As Received" = "As Left" unless otherwise noted. Calibration data for this item was derived from one or more of the following sources: the Nederlands Meetinstituut (NMI) or other national laboratory, a natural physical constant, or a ratio technique. The data is on file at the NMI. This calibration is compliant with Gouda Geo-Equipment's internal quality system, internal calibration procedure and meets the requirements of standard ISO22476.</p> <p>The Calibration Interval will vary from customer use and different conditions. All calibrations are verified at a moment in time; and confirmed within controlled temperature and humidity specified standards. Gouda Geo-Equipment is not responsible for future calibrations. Improper use of the apparatus (e.g. dropping) may cause loss of calibration.</p>			
<p>Calibration performed by:</p> <p>Ing. Johan van Stijn (Senior Engineer)</p>		<p>Approved by:</p> <p>Ir. Rob Hogervorst (Technical Director)</p>	
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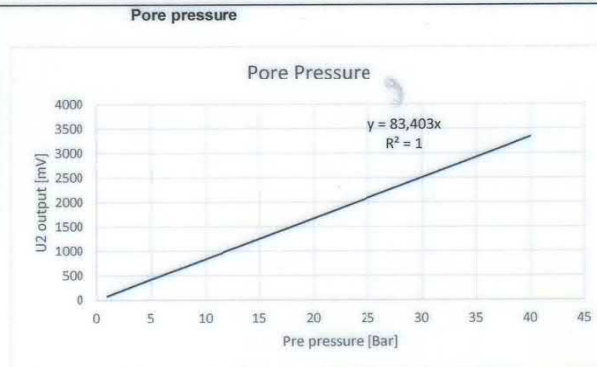
Certificate of Calibration

Certificate No. CMI 18.01.1582

Instrument		Calibration Result: Certified
Instrument Type:	Electrical Subtraction Cone	
Manufacturer:	GGE	
Model No.:	DP15 CFPTxy	Date Calibrated: 12-1-2018
Serial No.:	70080	Next Due Date: 12-7-2018
Used Calibration Procedure: GGEC004, ISO22476		Location: Hillegom (The Netherlands)

AMB = +/-1Bar = 335mV

U2 [bar]	U2 [mV]
1	77
5	422
10	833
15	1251
20	1665
25	2085
30	2502
35	2919
40	3338



Calibration performed by:

Ing. Johan van Stijn
(Senior Engineer)

Approved by:

Ir. Rob Hogervorst
(Technical Director)

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Model No.:	DP15 CFPTxy	
Serial No.:	70080	
Used Calibration Procedure: GGCEP004, ISO22476		Location: Hillegom (The Netherlands)

Inclinometer

Degrees	Ix [mV]	Degrees	Iy [mV]
20	1436	20	1658
19	1485	19	1698
18	1519	18	1751
17	1563	17	1796
16	1597	16	1844
15	1641	15	1879
14	1680	14	1927
13	1724	13	1977
12	1768	12	2016
11	1812	11	2074
10	1856	10	2113
9	1885	9	2167
8	1934	8	2197
7	1973	7	2250
6	2022	6	2294
5	2066	5	2343
4	2110	4	2397
3	2153	3	2441
2	2187	2	2485
1	2231	1	2524
0	2276	0	2583
-1	2324	-1	2627
-2	2363	-2	2676
-3	2412	-3	2725
-4	2451	-4	2774
-5	2490	-5	2813
-6	2534	-6	2867
-7	2578	-7	2911
-8	2631	-8	2950
-9	2670	-9	3004
-10	2719	-10	3048
-11	2758	-11	3101
-12	2802	-12	3131
-13	2841	-13	3180
-14	2881	-14	3229
-15	2929	-15	3268
-16	2968	-16	3322
-17	3017	-17	3361
-18	3056	-18	3415
-19	3100	-19	3444
-20	3129	-20	3493

Calibration setting X 1270 Y 1376

Calibration performed by:
Ing. Johan van Stijn
(Senior Engineer)

Approved by:
Ir. Rob Hogervorst
(Technical Director)

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APPENDIX A3 – Project Summary Sheet

CPT Tests Summary Sheet

HOLE ID	Final Depth (m)	Date of Test	Cone Used	Test Remarks
CPT 01	30.00	20/03/2018	P15-CFPT _{xy} 70080	Test completed at target depth.
CPT 02	30.00	19/03/2018	P15-CFPT _{xy} 70080	Test completed at target depth.
CPT 03	32.44	19/03/2018	P15-CFPT _{xy} 70080	Test refused on total pressure.
CPT 04	36.00	19/03/2018	P15-CFPT _{xy} 70080	Test stopped due to buckling rods.
CPT 05	30.01	20/03/2018	P15-CFPT _{xy} 70080	Test completed at target depth.

Dissipation Tests Summary Sheet

HOLE ID	Dissipation No.	Depth of Dissipation (m)	Cone Used	Filter Position	Remarks
CPT 01	1	3.46	P15-CFPT _{xy} 70080	U2	Test OK
CPT 01	2	4.00	P15-CFPT _{xy} 70080	U2	Test OK
CPT 02	1	2.40	P15-CFPT _{xy} 70080	U2	Test OK
CPT 03	1	4.60	P15-CFPT _{xy} 70080	U2	Test OK
CPT 04	1	30.99	P15-CFPT _{xy} 70080	U2	Test OK

APPENDIX A4 – CPT Rig Datasheet

RIGS

21 TONNE WHEELED RIG (CPT010)

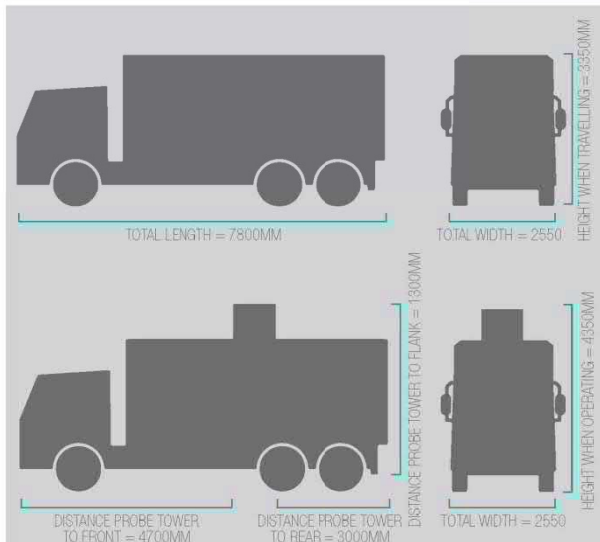
This rig is ideal for geotechnical testing on hardstanding sites such as car parks, motorways and docks. Fitted with reflective yellow and red chevrons, these high visibility rear markings meet the 'Chapter 8' requirements for vehicles working on highways. In addition, there are beacons fitted to the front and strobes to the back corners to ensure further safety and visibility for night work on the motorways. This efficient truck is capable of pushing to a depth of 30 to 40 metres depending on the ground conditions of the site. Furthermore, the interior is large enough to house our MiHpt equipment for environmental testing.

CPT RIG DETAILS

DRIVE SYSTEM	6 X 2 WHEELED DRIVE
TOTAL WEIGHT	21 TONNES
GROUND BEARING PRESSURE	75KPA
CPT RAM THRUST CAPACITY	20 TONNES
MAXIMUM PENETRATION	30-40M DEPENDING ON THE GROUND CONDITIONS.
PERFORMANCE RATES	100-150M CF TESTING A DAY, DEPENDING ON ACCESS TO POSITIONS.
TYPICAL SITES FOR THIS RIG	HARDSTANDING SITES E.G. ROADS INCLUDING MOTORWAYS, CAR PARKS, DOCKS. DRY NON HARDSTANDING SITES.



CPT RIG DIMENSIONS



APPENDIX A5 – Symbol List

English

a	is area ratio of the cone ($= A_n/A_c$)
A	is area
A_c	is projected area of the cone
A_n	is cross sectional area of load cell or shaft
A_s	is area of friction sleeve
A_{sb}	is bottom end area of friction sleeve
A_{st}	is top end area of friction sleeve
B_q	is pore pressure parameter ($= (u_2 - u_0)/(q_t - \sigma_{v0})$)
c_h	is horizontal coefficient of consolidation
c_v	is vertical coefficient of consolidation
D	is diameter
D_r	is relative density ($= \frac{e_{max}-e}{e_{max}-e_{min}} \times 100\%$)
e	is void ratio
e_{max}	is maximum void ratio
e_{min}	is minimum void ratio
E	is Young's modulus
f_s	is unit sleeve friction resistance
f_t	is sleeve friction corrected for pore pressure effects
F_s	is total force acting on friction sleeve
F_R	is normalized friction ratio ($= f_s/(q_t - \sigma_{v0})$)
FoS	is factor of safety
FC	is fines content
g	is acceleration due to gravity
G_0	is initial or maximum shear modulus, shear stiffness
I_c	is soil behavior type index
I_r	is rigidity index ($= G/s_u$)
I_p	is plasticity index
k	is coefficient of permeability
k_h	is coefficient of permeability in horizontal direction
k_v	is coefficient of permeability in vertical direction
K_0	is coefficient of earth pressure at rest ($= \sigma'_{h0}/\sigma'_{v0}$)
L	is length
m_v	is coefficient of volume change
M	is constrained deformation modulus
M7.5	is earthquake magnitude of 7.5 Richter scale
N	is number of blows of SPT
N_{60}	is SPT energy ratio
N_k	is cone factor
N_{ke}	is cone factor
N_{kt}	is cone factor
$N_{\Delta u}$	is cone factor
p_a	is reference stress ($= 100 \text{ kPa}$)
q_c	measured cone resistance
q_e	effective cone resistance ($= q_t - u_2$)
q_n	is net cone resistance ($= q_t - \sigma_{v0}$)

q_t	is corrected cone resistance ($= q_c - (1 - a)u_2$)
Q_c	is total force acting on the cone
Q_t	is normalized cone resistance ($= q_t - \sigma_{v0} / \sigma'_{v0}$)
R_f	is friction ratio ($= (f_t/q_t) \times 100\%$ or alternatively $= (f_t/q_t) \times 100\%$)
s_u	is undrained shear strength
s_{ur}	is remoulded undrained shear strength
S_t	is sensitivity
t	is time
t_{50}	is time for 50% dissipation of excess pore water pressure
T_{50}	is time factor at $U = 50\%$
u	is pore water pressure
u_0	is in situ pore pressure
u_1	is pore pressure measured on the cone
u_2	is pore pressure measured behind the cone
u_3	is pore pressure measured behind sleeve friction
Δu	is excess pore water pressure
U	is normalized excess pore pressure
V_s	is shear wave velocity
z	is depth

Greek

α	is constant
α	is cone roughness
β	is constant
β_1	is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane, in degrees
β_2	is the angle between the vertical axis and the projection of the axis of the CPTU on a vertical plane that is perpendicular to the plane of angle β_1 , in degrees
γ	is unit weight of soil
γ_w	unit weight of water
Δ	is change
Δu	is excess pore pressure ($= u - u_0$)
μ	is Poisson's ratio
ρ	is density
ψ	is state parameter
σ, σ'	is normal stress (total, effective)
σ_h, σ'_h	is horizontal stress (total, effective)
σ_v, σ'_v	is horizontal stress (total, effective)
$\sigma_{v0}, \sigma'_{v0}$	is overburden stress (total, effective)
T_{av}	average cyclic shear stress
T_{cy}	cyclic shear stress
φ'	effective friction angle

APPENDIX A6 – Abbreviations

ASTM	is American Society for Testing and Materials
CPTU	Cone Penetration Test with Pore Pressure Measurement (Piezocone Test)
CRR	Cyclic Resistance Ratio
CSR	Cyclic Stress Ratio
GWT	Ground Water Table
NC	Normally Consolidated
OC	Overconsolidated
OCR	Overconsolidation Ratio
PL	Limit Pressure
SDMT	Seismic Dilatometer Marchetti
SPT	Standard Penetration Test
TC	Technical Committee

APPENDIX A7 – Glossary

CPT

Cone Penetration Test.

Cone

The part of the cone penetrometer on which the end bearing is developed.

Cone Penetrometer

The assembly containing the *cone*, *friction sleeve*, any other sensors and measuring systems, as well as the connections to the *push-rods*.

Cone resistance, q_c

The total force acting on the cone, Q_c , divided by the projected area of the cone, A_c .
 $q_c = Q_c / A_c$

Corrected cone resistance, q_t

The *cone resistance*, q_c corrected for pore water pressure effects.

Corrected sleeve friction, f_t

The *sleeve friction* corrected for pore water pressure effects on the ends of the *friction sleeve*.

Data acquisition system

The system used to measure and record the measurements made by the *cone penetrometer*.

Dissipation Test

A test when the decay of the pore water pressure is monitored during a pause in penetration.

Filter element

The porous element inserted into the cone penetrometer to allow transmission of the pore water pressure to the pore pressure sensor, while maintaining the correct profile of the *cone penetrometer*.

Friction ratio, R_f

The ratio, expressed as a percentage of the *sleeve friction*, f_s , to the *cone resistance*, q_c , both measured at the same depth.

Friction reducer

A local enlargement on the push-rod surface, placed at a distance above the cone penetrometer, and provided to reduce the friction on the *push-rods*.

Friction sleeve

The section of the *cone penetrometer* upon which the *sleeve friction* is measured.

Normalized cone resistance, Q_c or Q_t

The *cone resistance* expressed in a non dimensional form and taking account of stress changes *in situ*, $Q_c = (q_c - \sigma_{v0}) / \sigma'_{v0}$, or when the *corrected cone resistance* is used $Q_t =$

$(q_t - \sigma_{v0}) / \sigma'_{v0}$. Where σ_{v0} and σ'_{v0} are the total and effective vertical stress respectively.

Net cone resistance, q_n

The *corrected cone resistance* minus the vertical total stress. $q_n = q_t - \sigma_{v0}$

Normalized friction ratio, F_r

The *sleeve friction* normalized by the *net cone resistance*.

Piezocone

A *cone penetrometer* containing a pore pressure sensor.

Pore pressure, u

The pore pressure generated during penetration and measured by a pore pressure sensor, u_1 when measured on the cone, u_2 when measured just behind the cone and u_3 when measured just behind the friction sleeve.

Pore pressure ratio, B_q

The *net pore pressure* normalized with respect to the *net cone resistance*.

Push-rods

The thick-walled tubes or rods used for advancing the cone penetrometer.

Rig machine

The equipment which pushes the cone penetrometer and rods into the ground.

Sleeve friction, f_s

The total frictional force acting on the *friction sleeve*, F_s , divided by its *surface area*, A_s .

$$f_s = F_s / A_s$$

APPENDIX A8 – Soils Description Tables

GRANULAR SOILS (Sands and Gravels)

Description	Relative Density D_r (%)	SPT N value, N_{SPT}
Very Loose	0 – 15	0 - 4
Loose	15 – 35	4 - 10
Medium Dense	35 – 65	10 - 30
Dense	65 – 85	30 - 50
Very Dense	>85	>50

COHESIVE SOILS (Clays and Silts)

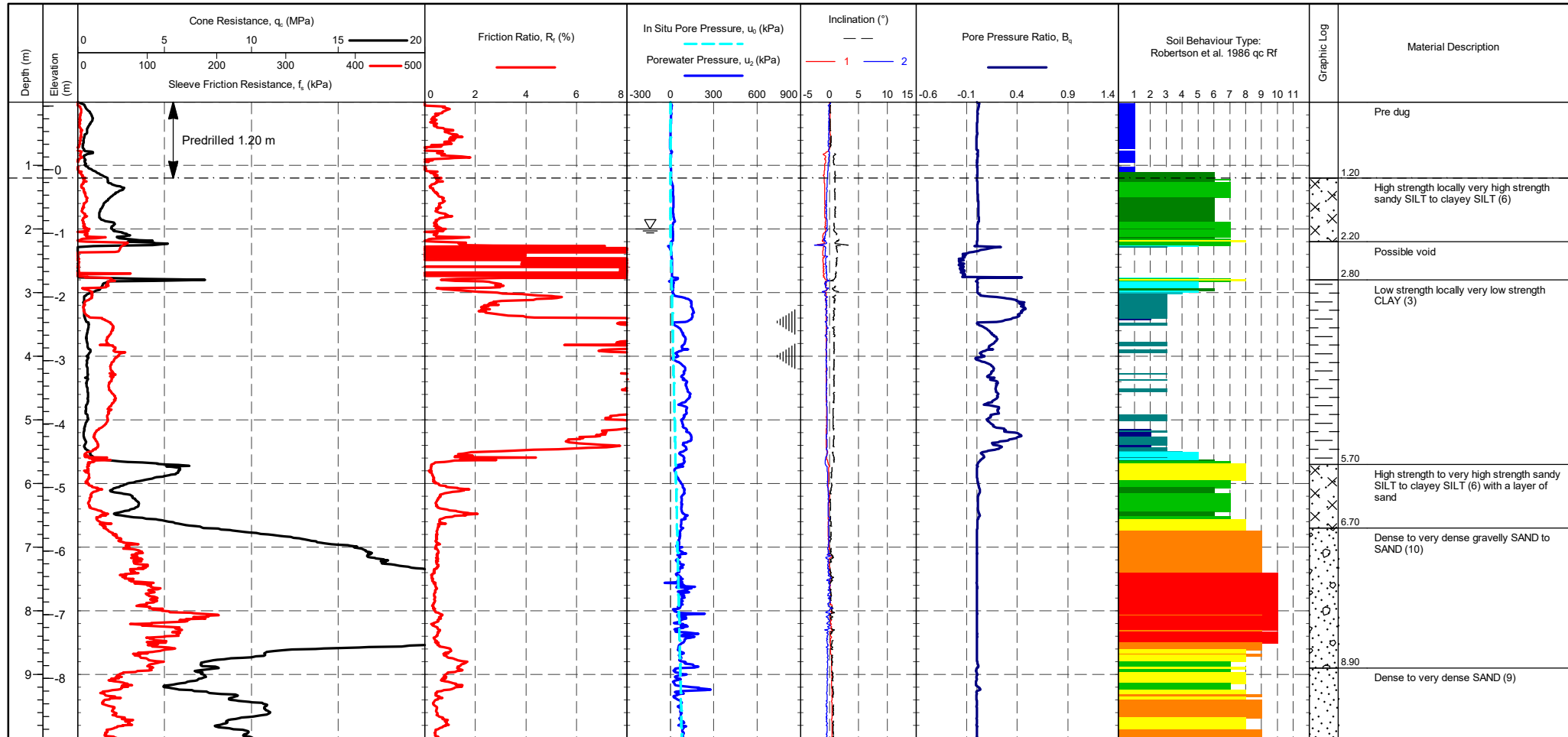
Term based on measurement	Undrained Shear Strength Classification, s_u (kPa)
Extremely low	<10
Very low	10 - 20
Low	20 - 40
Medium	40 - 75
High	75 - 150
Very high	150 - 300
Extremely high	>300

APPENDIX B

Cone Penetration Measured Parameters

PointID : **CPT 01**

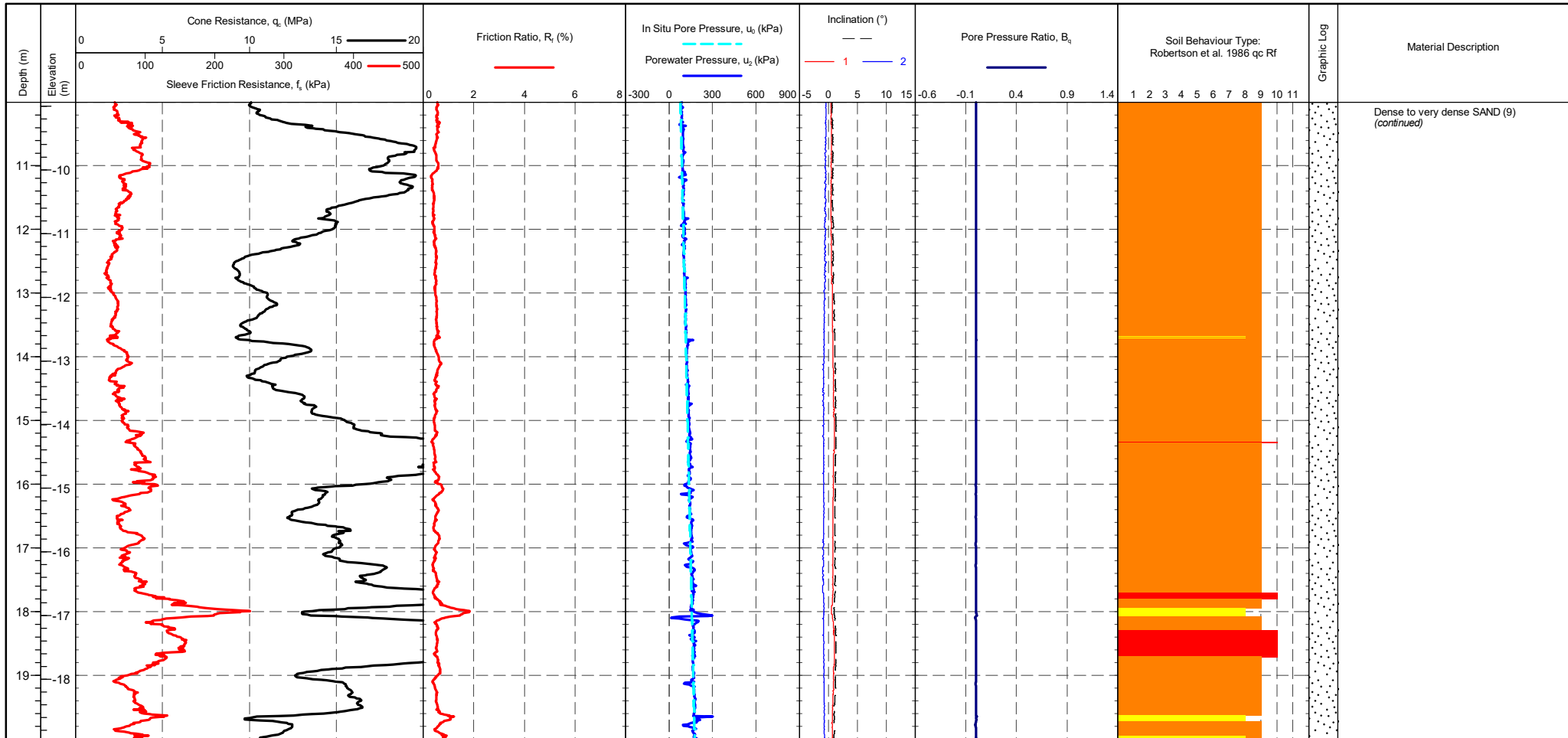
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652228.0 m NORTHING : 305894.9 m ELEVATION : 1.06 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 1 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
--	--	--	---



CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 01 WEATHER : Overcast & Cold	Transducer Tip Sleeve Pore Pressure 2 X-Y Inclinometer	CPTU ZERO VALUES Pre Post Difference	METHOD : Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravelly SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	Groundwater Level Dissipation Test
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PointID
CPT 01

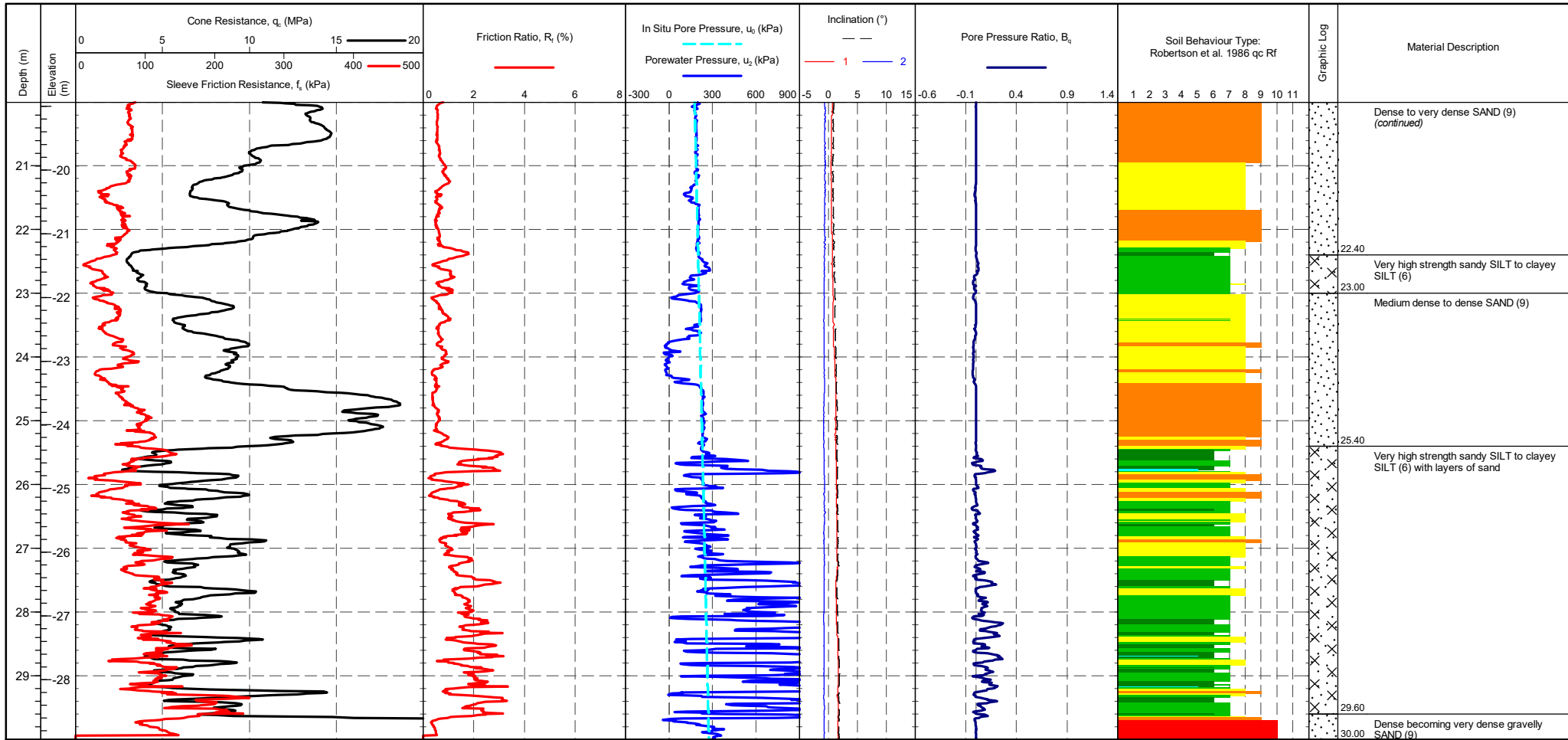
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652228.0 m NORTHING : 305894.9 m ELEVATION : 1.06 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 2 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
--	--	--	---



CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 01 WEATHER : Overcast & Cold	Transducer Tip Sleeve Pore Pressure 2 X-Y Inclinometer	CPTU ZERO VALUES Pre Post Difference	METHOD : Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravely SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	 Groundwater Level Dissipation Test
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PointID
CPT 01

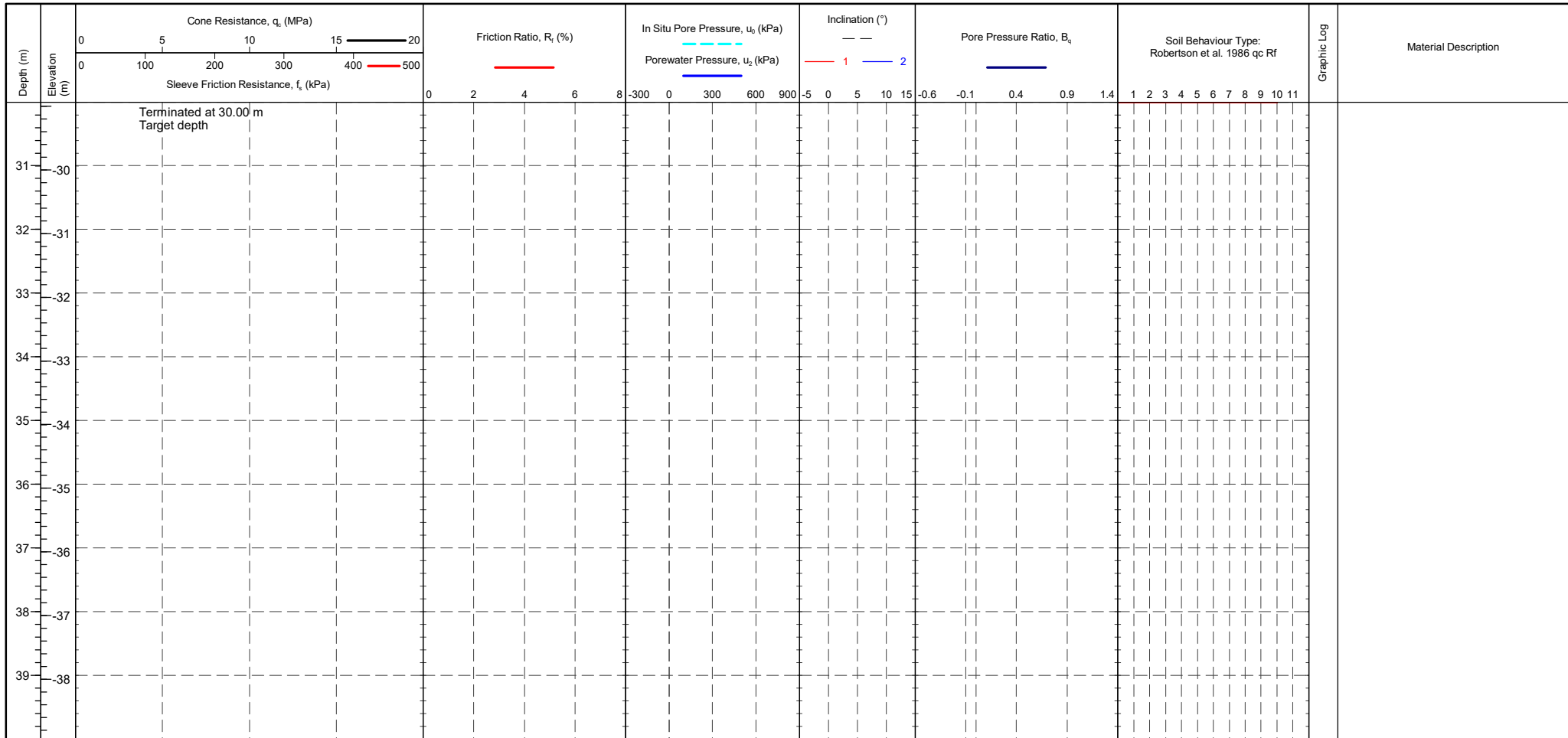
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652228.0 m NORTHING : 305894.9 m ELEVATION : 1.06 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 3 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 01 WEATHER : Overcast & Cold	Transducer Tip Sleeve Pore Pressure 2 X-Y Inclinometer	CPTU ZERO VALUES Pre Post Difference	METHOD : Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravely SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	 Groundwater Level Dissipation Test
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PointID
CPT 01

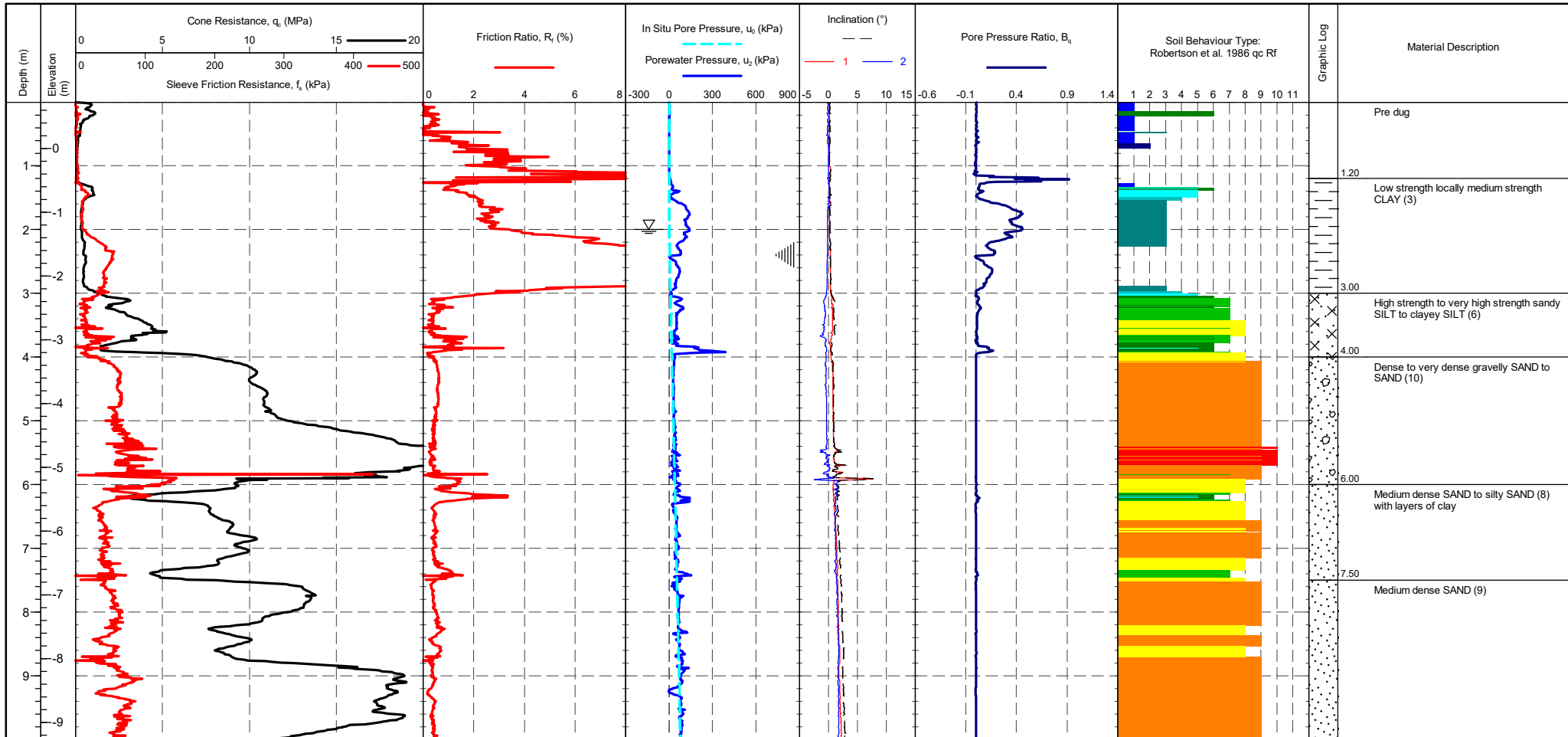
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652228.0 m NORTHING : 305894.9 m ELEVATION : 1.06 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 4 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 01 WEATHER : Overcast & Cold	Transducer Tip Sleeve Pore Pressure 2 X-Y Inclinator	CPTU ZERO VALUES Pre Post Difference	METHOD : Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravely SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	 Groundwater Level Dissipation Test
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PointID
CPT 02

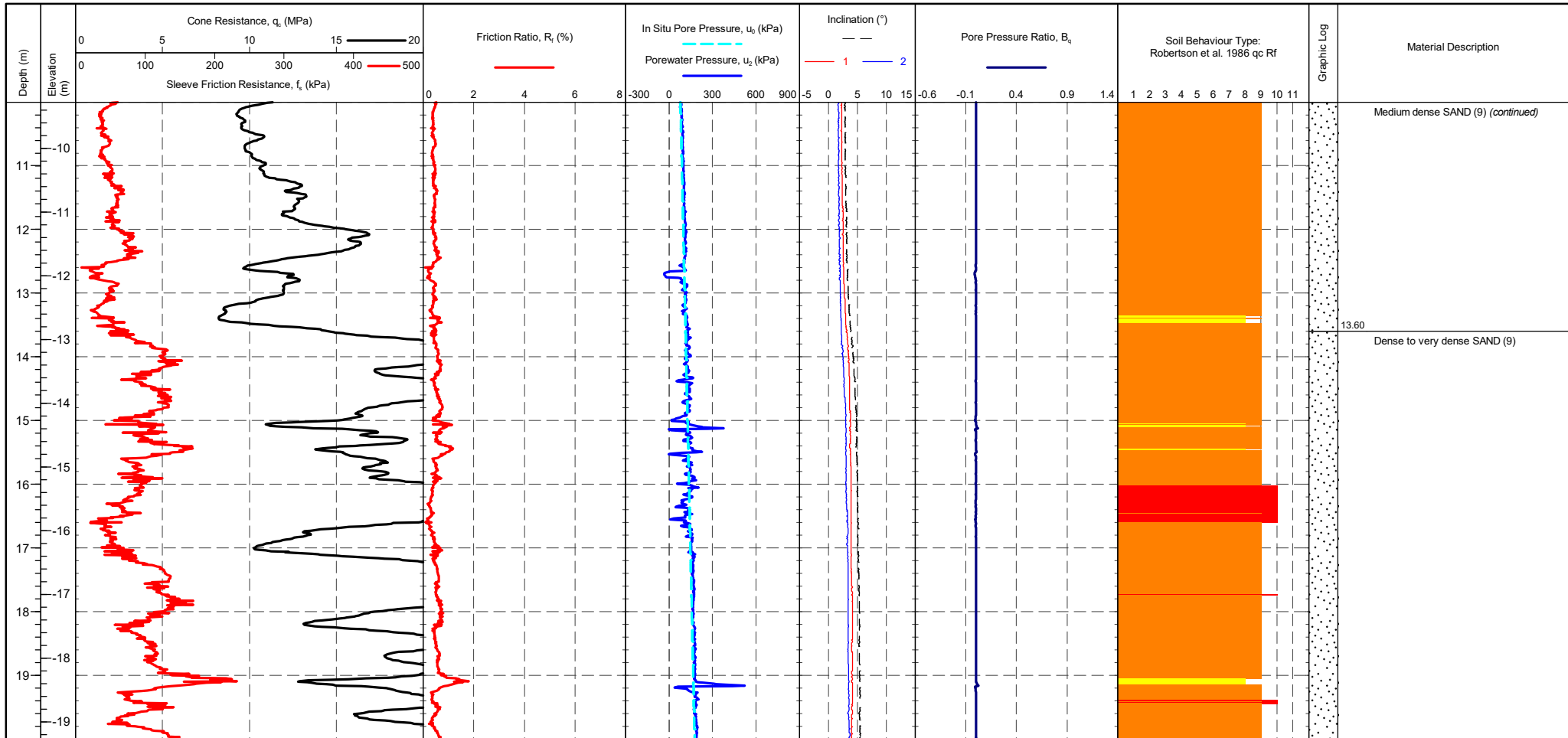
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652244.0 m NORTHING : 305934.2 m ELEVATION : 0.73 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 1 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 02 WEATHER : Sunny & Cold	Transducer Tip Sleeve Pore Pressure 2 X-Y Inclinator	CPTU ZERO VALUES Pre Post Difference	METHOD : Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravelly SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	Groundwater Level Dissipation Test
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PointID : **CPT 02**

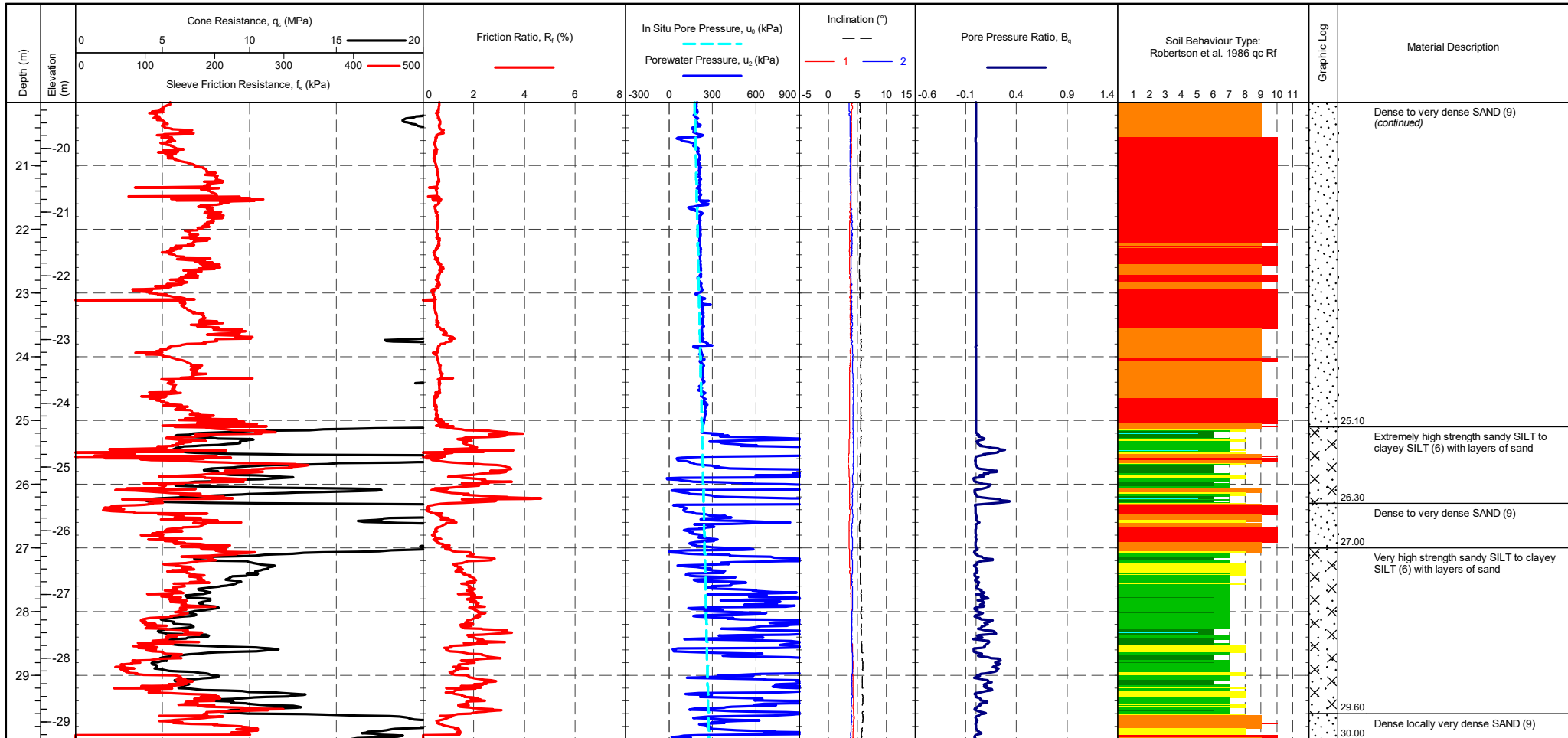
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652244.0 m NORTHING : 305934.2 m ELEVATION : 0.73 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 2 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 02 WEATHER : Sunny & Cold	Transducer Tip Sleeve Pore Pressure 2 X-Y Inclinator	CPTU ZERO VALUES Pre Post Difference	METHOD : Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravely SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	 Groundwater Level Dissipation Test
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PointID
CPT 02

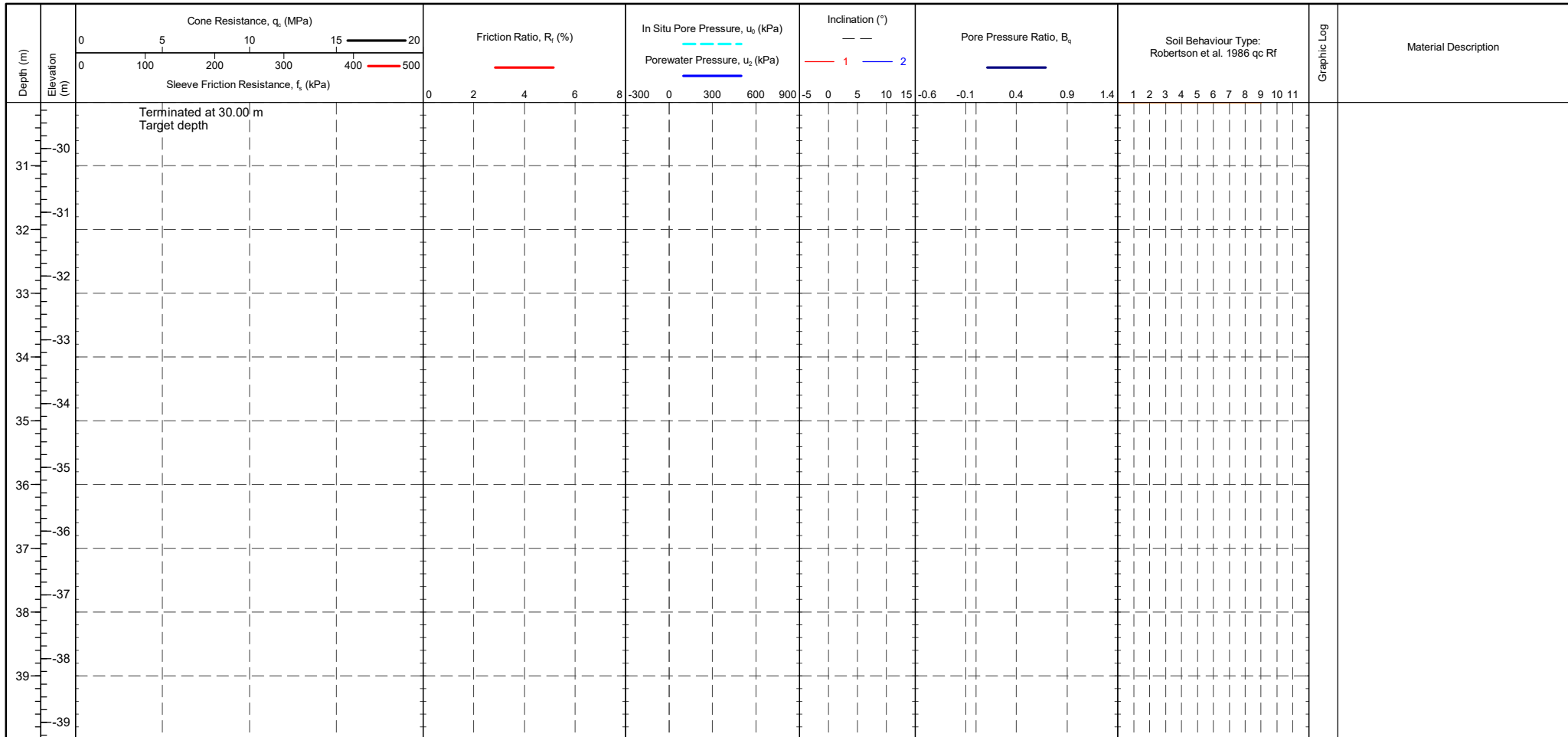
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652244.0 m NORTHING : 305934.2 m ELEVATION : 0.73 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 3 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 02 WEATHER : Sunny & Cold	Transducer Tip Sleeve Pore Pressure 2 X-Y Inclinator	CPTU ZERO VALUES Pre Post Difference	METHOD : Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravely SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	 Groundwater Level Dissipation Test
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PointID
CPT 02

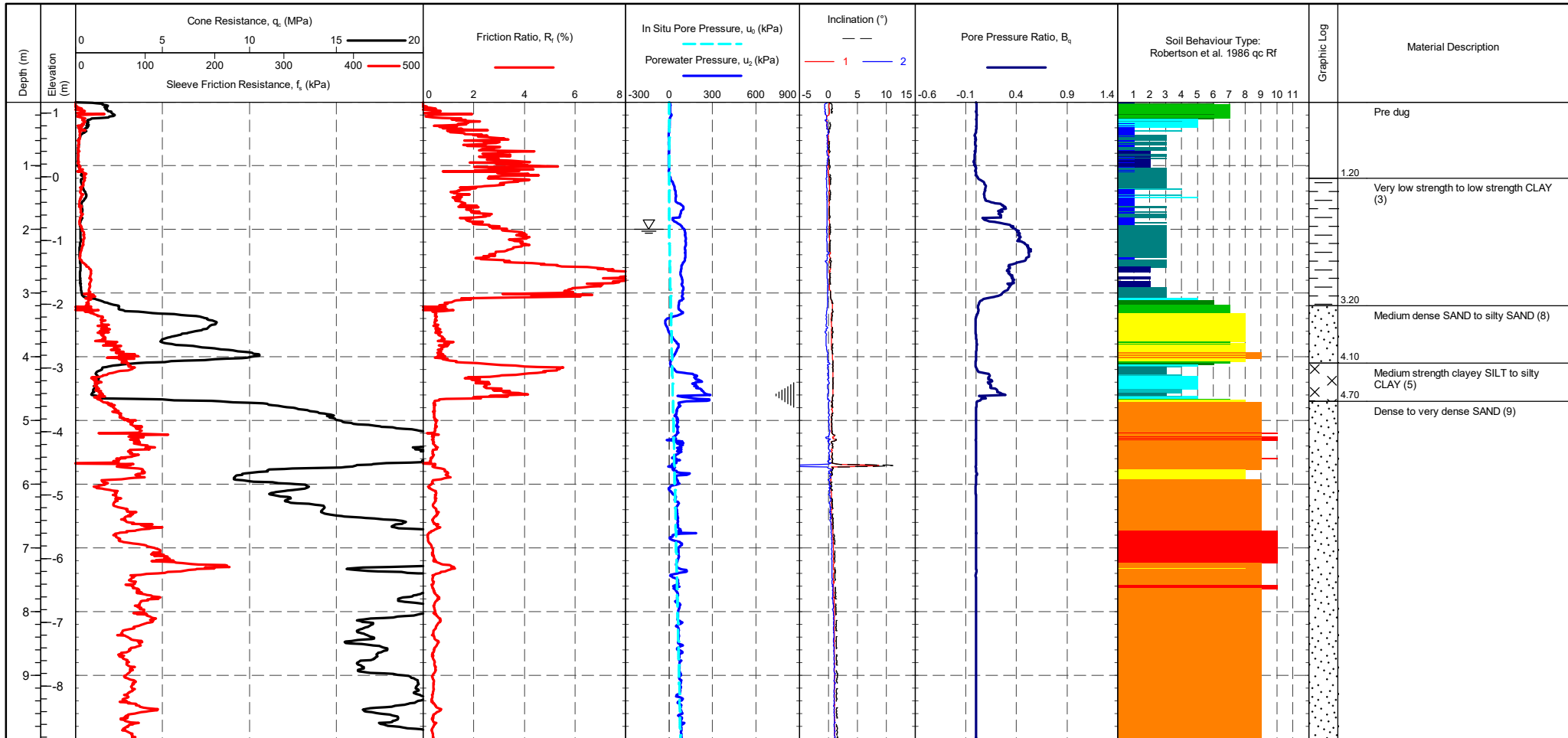
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652244.0 m NORTHING : 305934.2 m ELEVATION : 0.73 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 4 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 02 WEATHER : Sunny & Cold	Transducer Tip Sleeve Pore Pressure 2 X-Y Inclinator	CPTU ZERO VALUES Pre Post Difference	METHOD : Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravely SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	 Groundwater Level Dissipation Test
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PointID
CPT 03

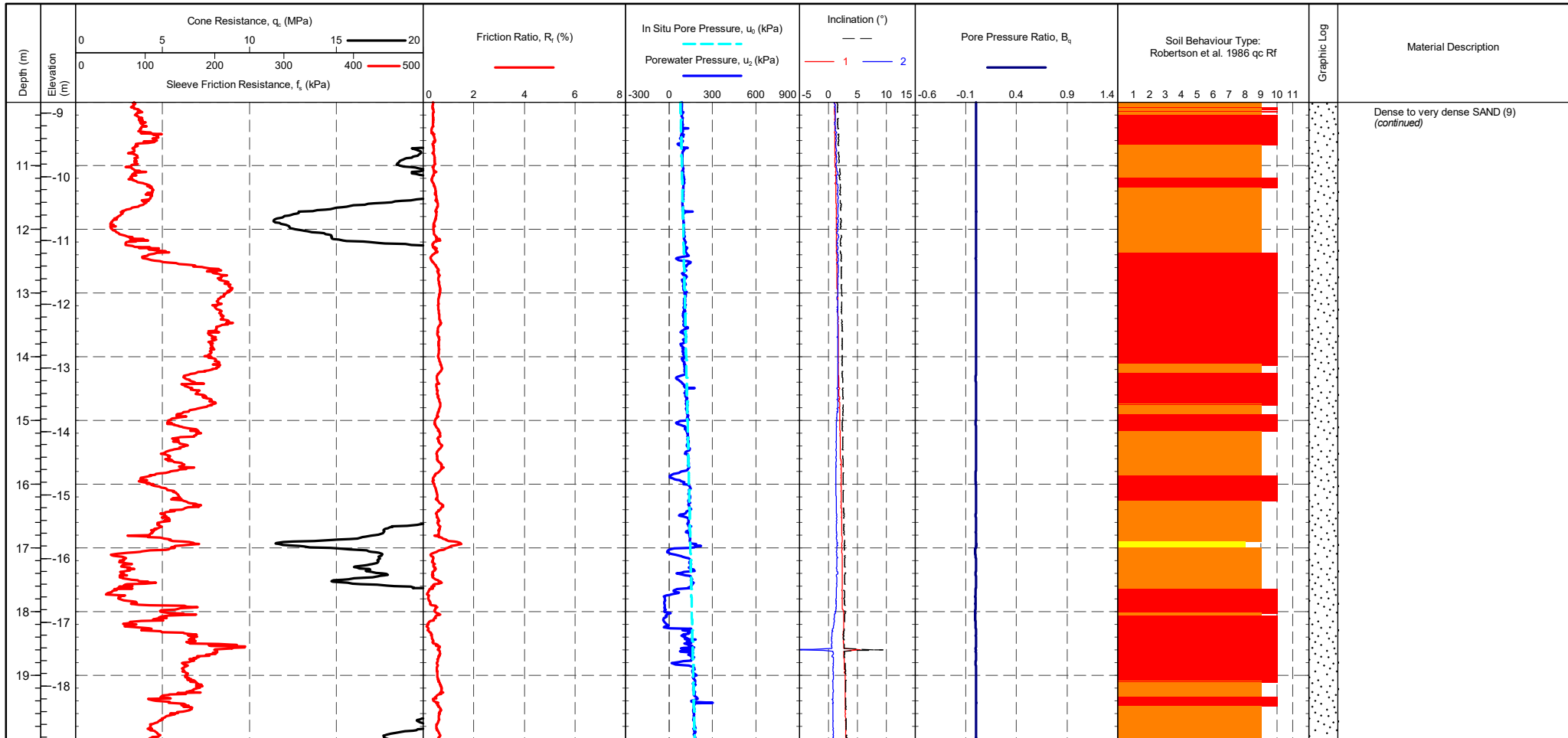
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652308.0 m NORTHING : 305950.5 m ELEVATION : 1.17 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark : 1 Test refused on total pressure.	SHEET : 1 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 03 WEATHER : Sunny & Cold	Transducer Tip Sleeve Pore Pressure 2 X-Y Inclinometer	CPTU ZERO VALUES Pre Post Difference	METHOD : Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravely SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	Groundwater Level Dissipation Test
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PointID
CPT 03

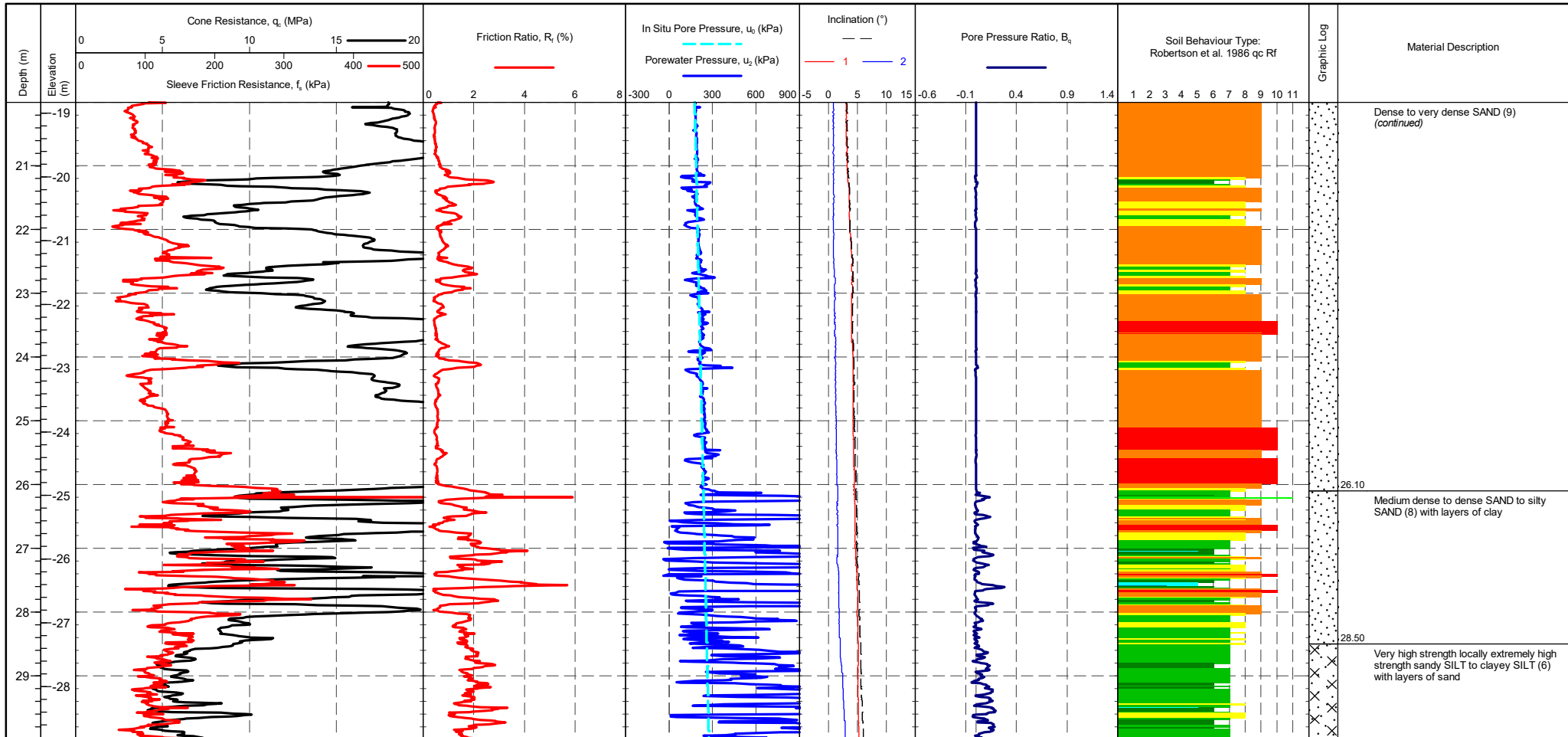
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652308.0 m NORTHING : 305950.5 m ELEVATION : 1.17 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark : 1 Test refused on total pressure.	SHEET : 2 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 03 WEATHER : Sunny & Cold	Transducer Tip Sleeve Pore Pressure 2 X-Y Inclinometer	CPTU ZERO VALUES Pre Post Difference	METHOD : Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravely SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	 Groundwater Level Dissipation Test
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PointID
CPT 03

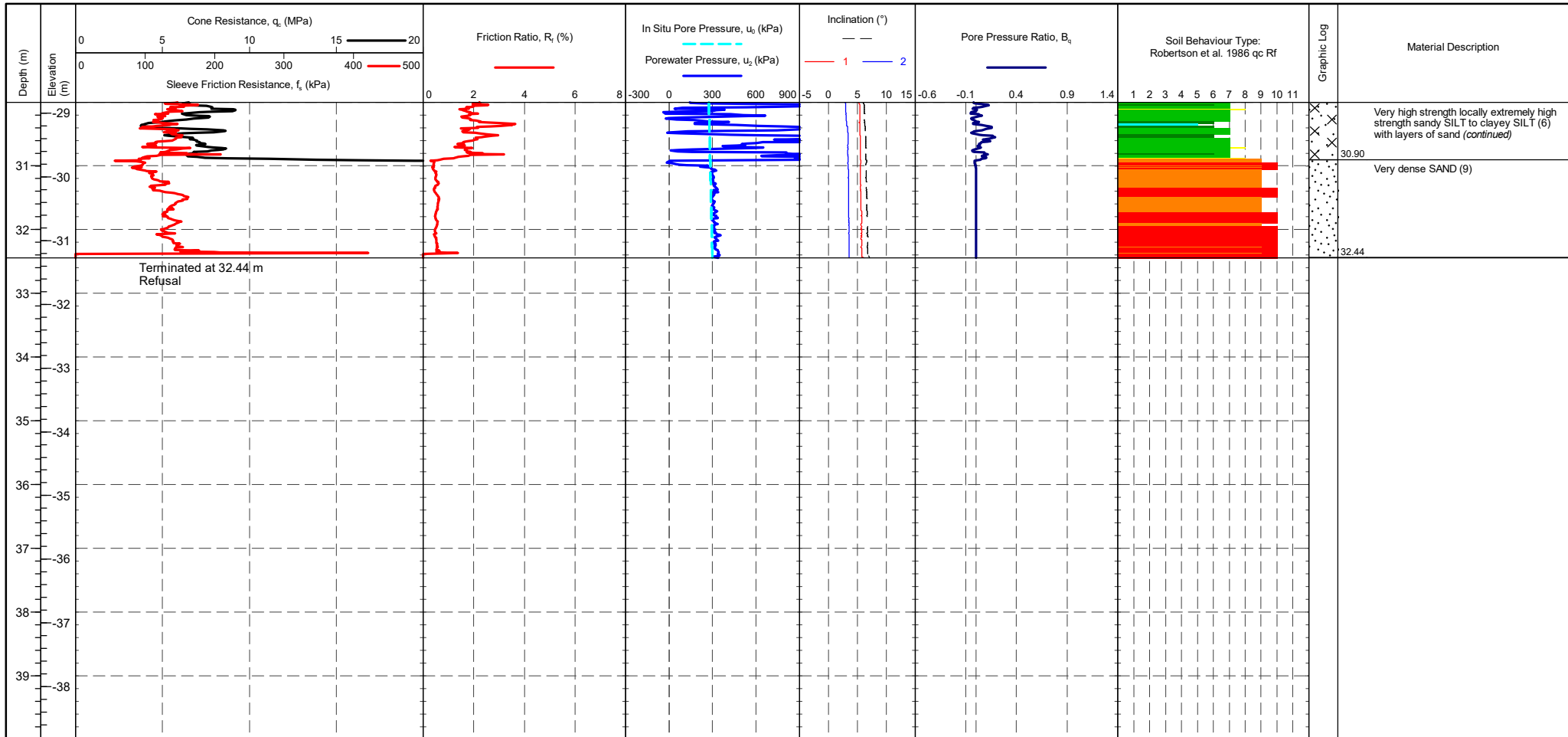
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652308.0 m NORTHING : 305950.5 m ELEVATION : 1.17 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark : 1 Test refused on total pressure.	SHEET : 3 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 03 WEATHER : Sunny & Cold	Transducer Tip Sleeve Pore Pressure 2 X-Y Inclinator	CPTU ZERO VALUES Pre Post Difference	METHOD : Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravely SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	 Groundwater Level Dissipation Test
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PointID
CPT 03

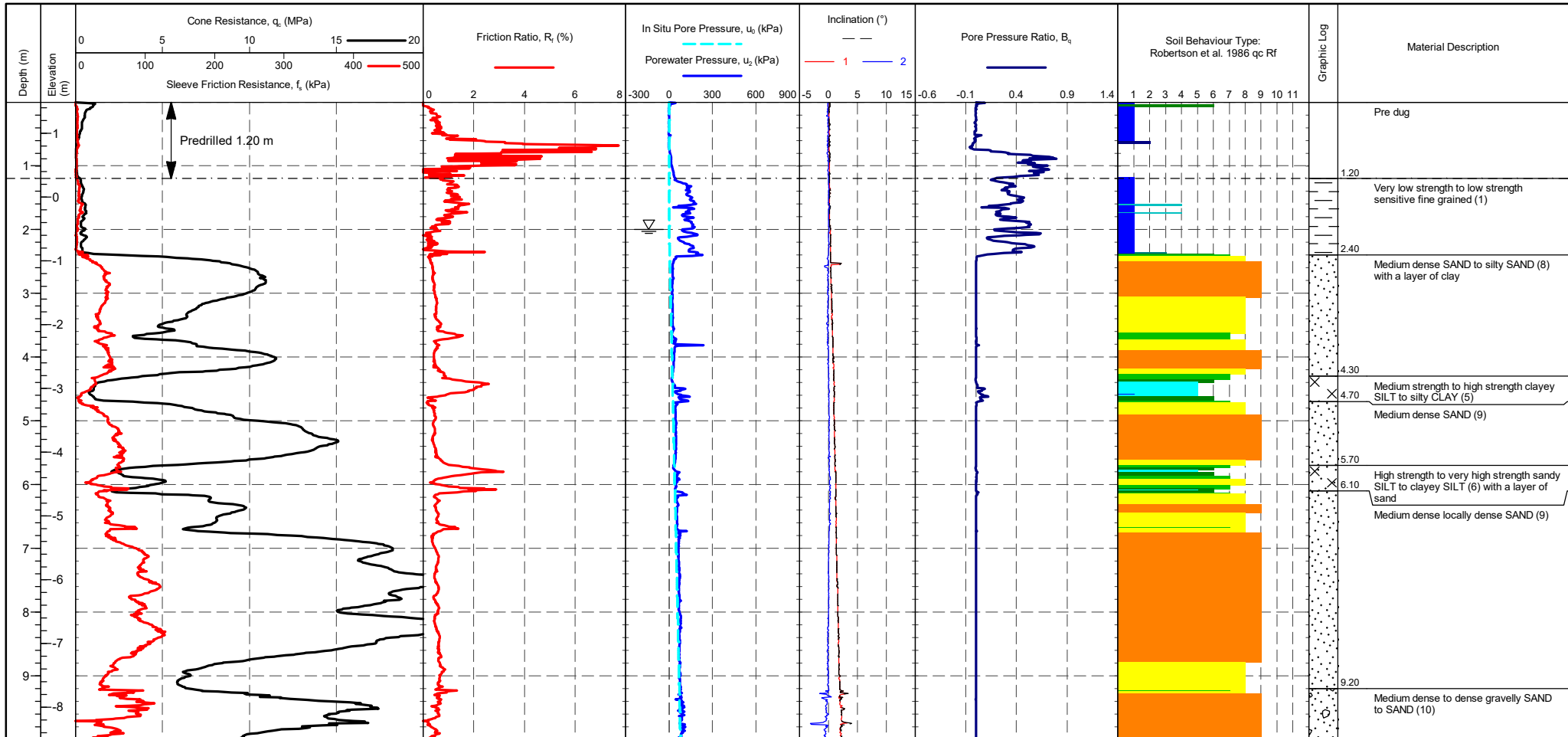
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652308.0 m NORTHING : 305950.5 m ELEVATION : 1.17 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark : 1 Test refused on total pressure.	SHEET : 4 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 03 WEATHER : Sunny & Cold	Transducer Tip Sleeve Pore Pressure 2 X-Y Inclinator	CPTU ZERO VALUES Pre Post Difference	METHOD : Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravely SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	 Groundwater Level Dissipation Test
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PointID
CPT 04

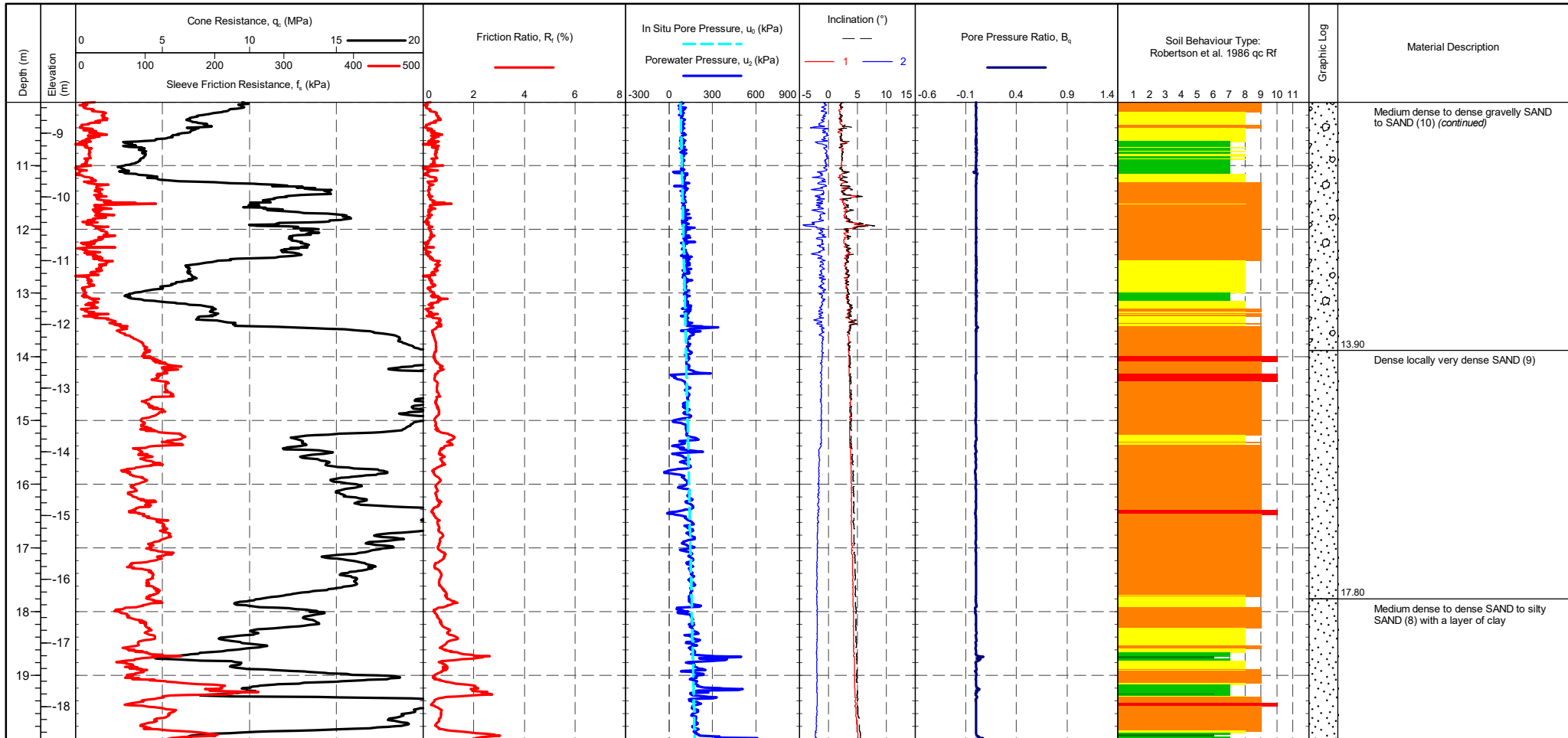
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652571.6 m NORTHING : 306018.0 m ELEVATION : 1.49 m CHECKED BY : LD TERMINATION REASON : Machine Limit	Remark : 7 Test stopped due to buckling rods.	SHEET : 1 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1:2012
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 04 WEATHER : Sunny & Cold	Transducer Tip Sleeve Pore Pressure 2 X-Y Inclinometer	CPTU ZERO VALUES Pre Post Difference	METHOD : Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravely SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	 Groundwater Level Dissipation Test
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PointID
CPT 04

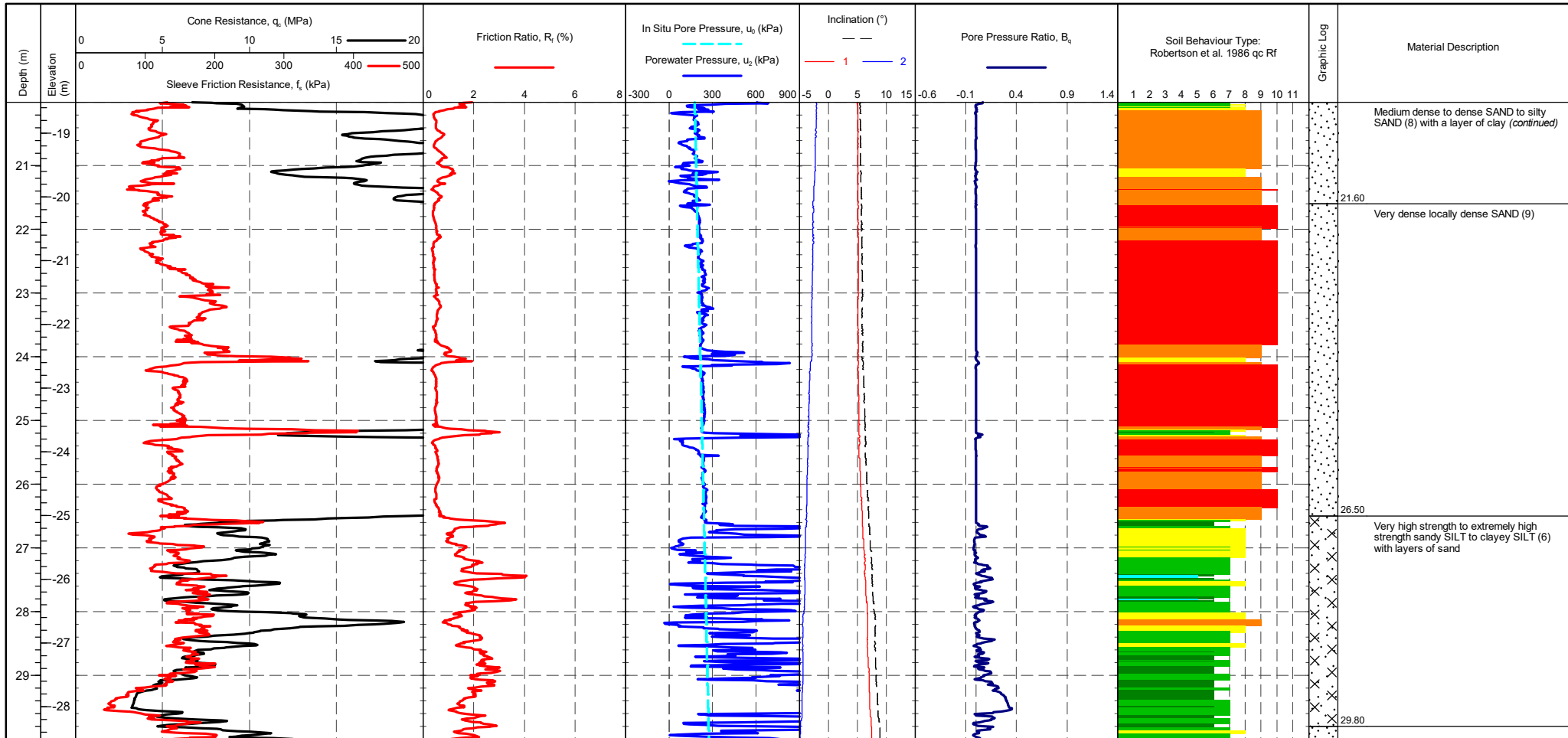
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652571.6 m NORTHING : 306018.0 m ELEVATION : 1.49 m CHECKED BY : LD TERMINATION REASON : Machine Limit	Remark : 7 Test stopped due to buckling rods.	SHEET : 2 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1:2012
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 04 WEATHER : Sunny & Cold	Transducer Tip Sleeve Pore Pressure 2 X-Y Inclinometer	CPTU ZERO VALUES Pre Post Difference	METHOD : Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravely SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	Groundwater Level Dissipation Test
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PointID
CPT 04

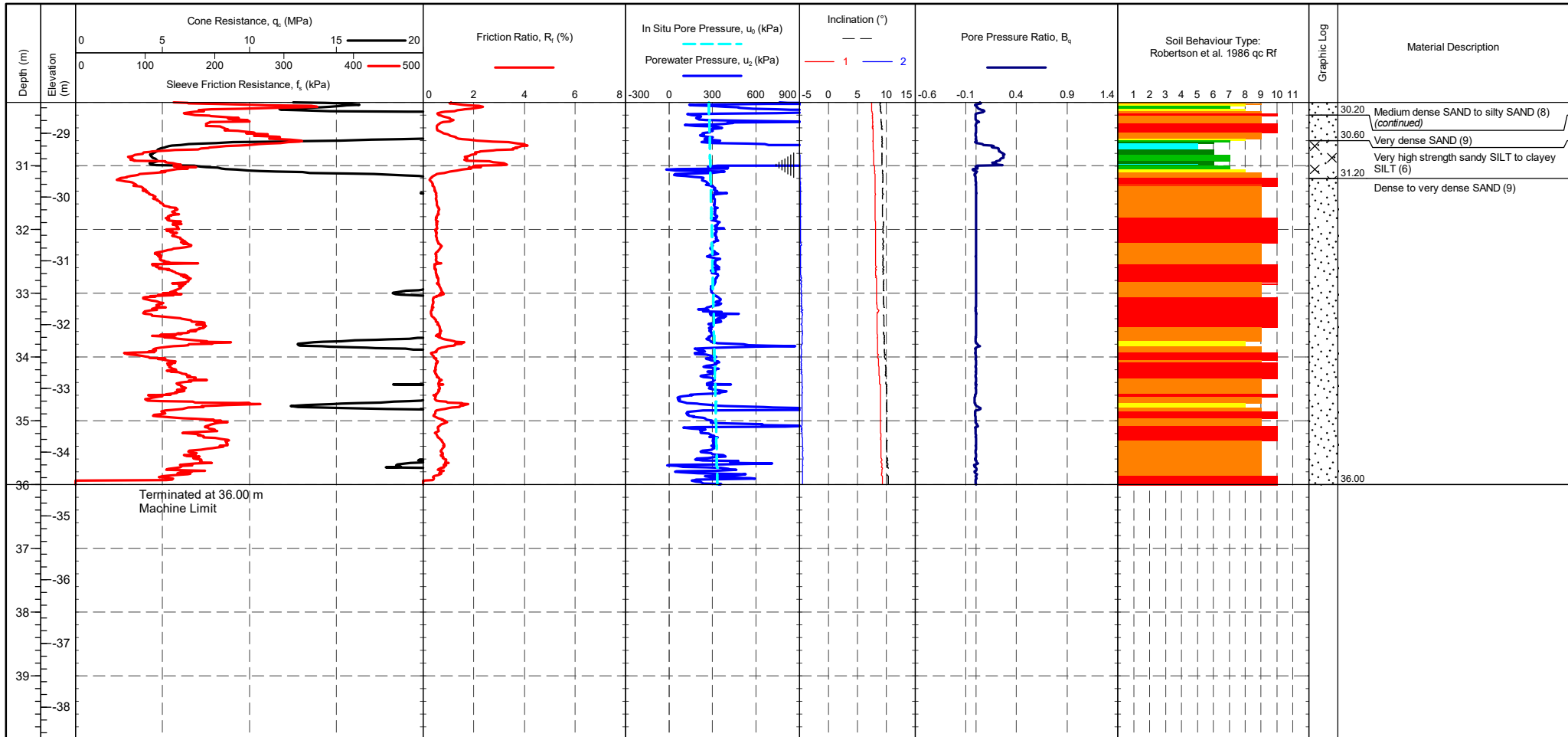
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652571.6 m NORTHING : 306018.0 m ELEVATION : 1.49 m CHECKED BY : LD TERMINATION REASON : Machine Limit	Remark : 7 Test stopped due to buckling rods.	SHEET : 3 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1:2012
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 04 WEATHER : Sunny & Cold	Transducer Tip Sleeve Pore Pressure 2 X-Y Inclinator	CPTU ZERO VALUES Pre Post Difference	METHOD : Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravely SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	 Groundwater Level Dissipation Test
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PointID
CPT 04

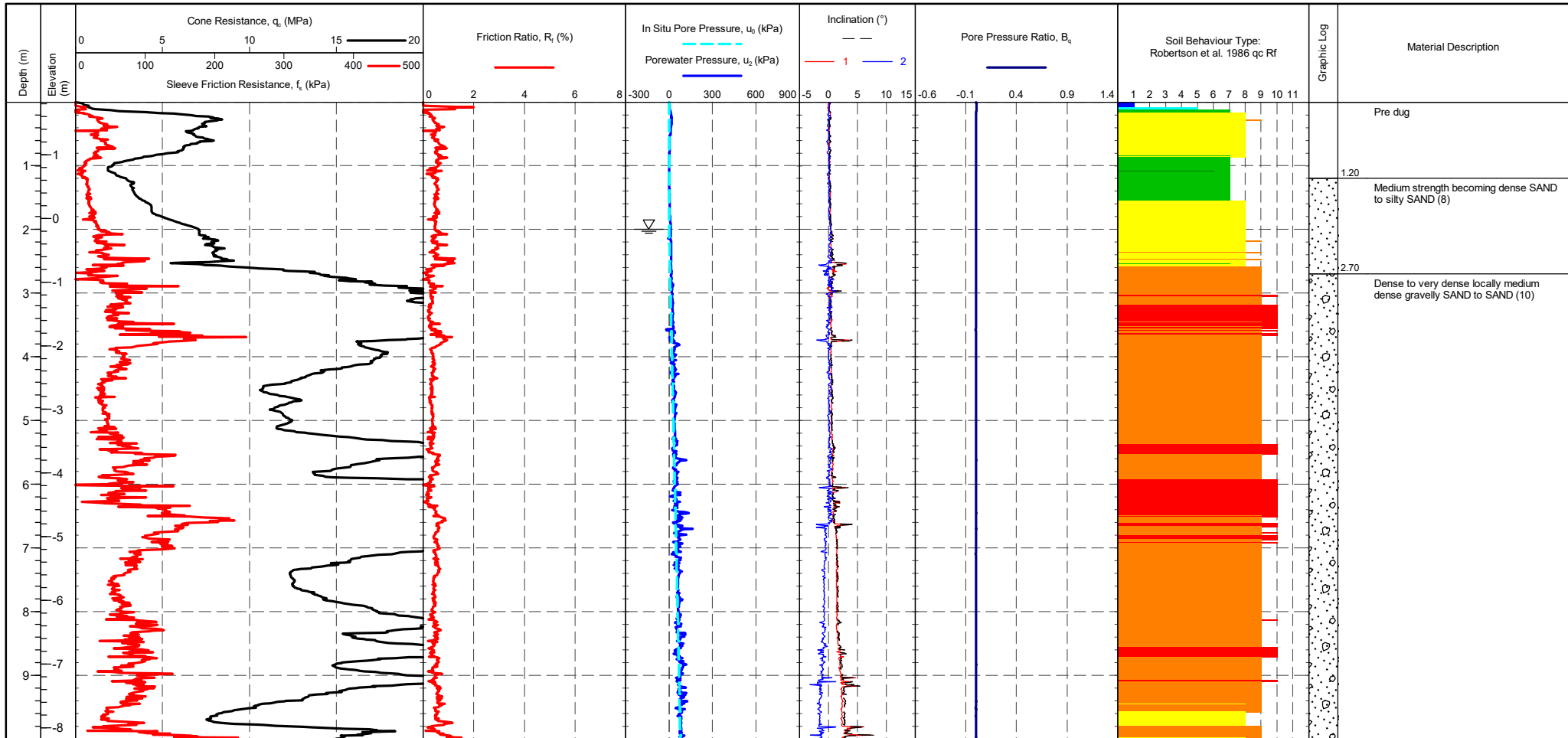
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652571.6 m NORTHING : 306018.0 m ELEVATION : 1.49 m CHECKED BY : LD TERMINATION REASON : Machine Limit	Remark : 7 Test stopped due to buckling rods.	SHEET : 4 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1:2012
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 04 WEATHER : Sunny & Cold	Transducer Tip Sleeve Pore Pressure 2 X-Y Inclinator	CPTU ZERO VALUES Pre Post Difference	METHOD : Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravely SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	 Groundwater Level Dissipation Test
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PointID : **CPT 05**

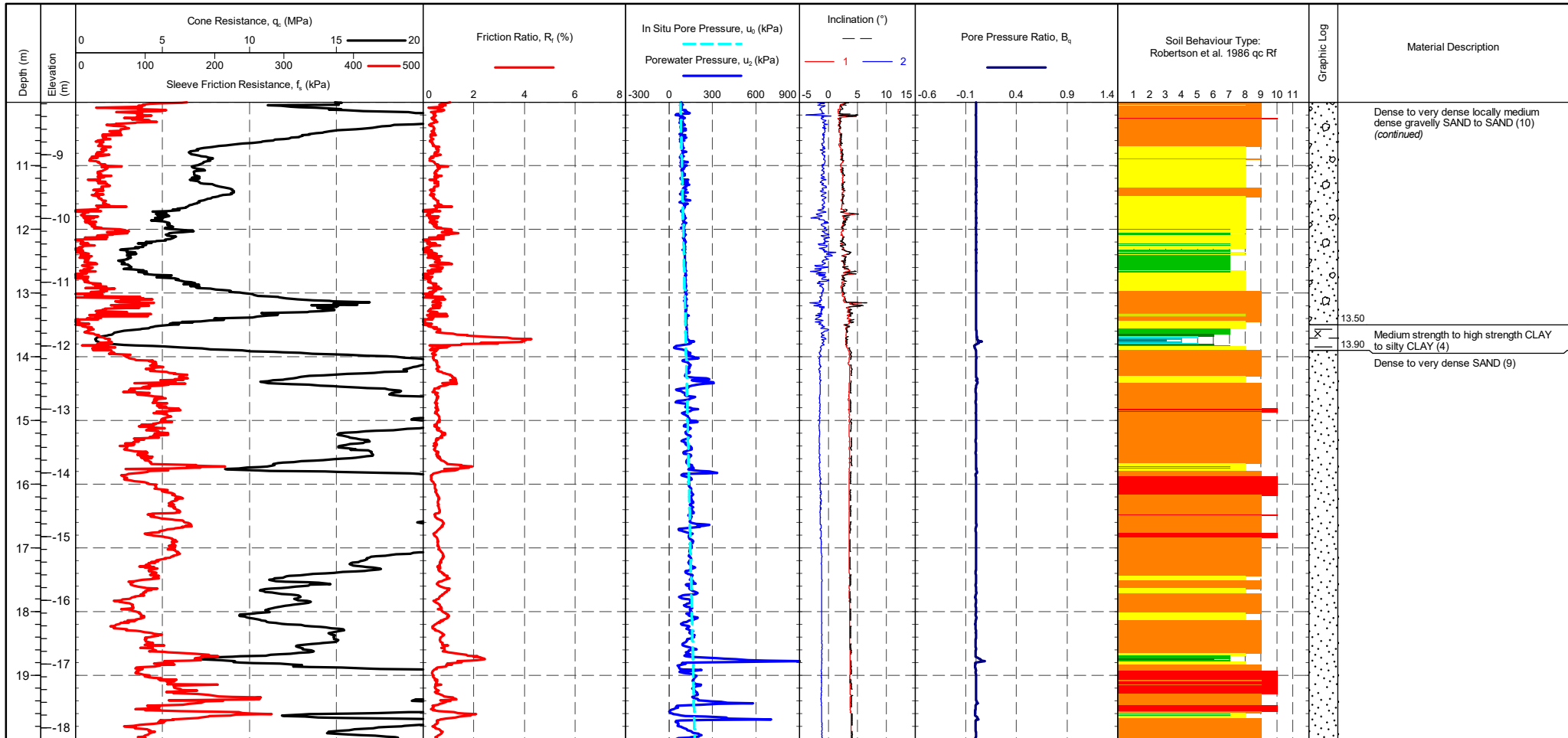
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652646.1 m NORTHING : 305984.8 m ELEVATION : 1.83 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 1 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 05 WEATHER : Overcast & Cold	Transducer Tip Sleeve Pore Pressure 2 X-Y Inclinometer	CPTU ZERO VALUES Pre Post Difference	METHOD : Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravely SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	Groundwater Level Dissipation Test
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PointID : **CPT 05**

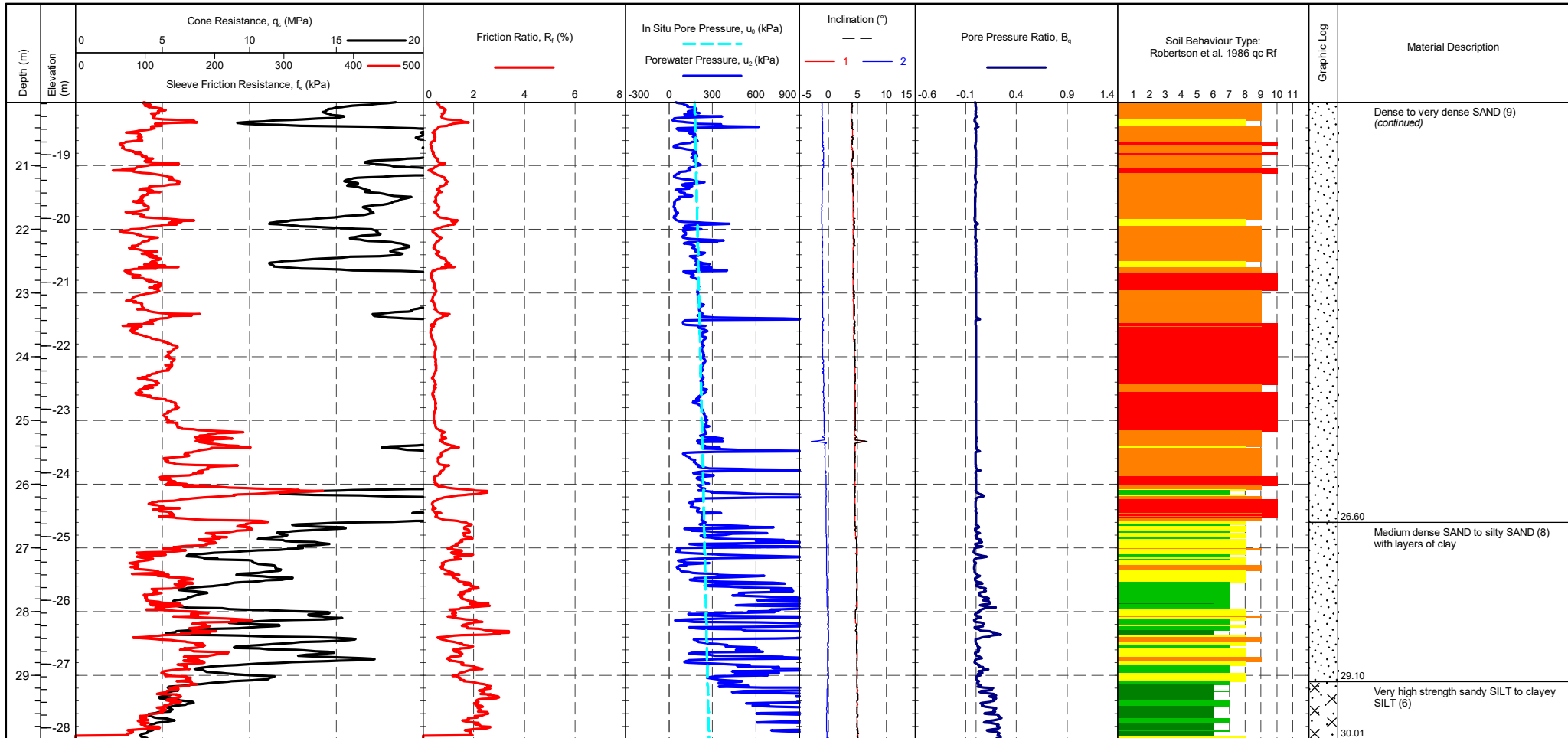
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652646.1 m NORTHING : 305984.8 m ELEVATION : 1.83 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 2 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 05 WEATHER : Overcast & Cold	Transducer Tip Sleeve Pore Pressure 2 X-Y Inclinometer	CPTU ZERO VALUES Pre Post Difference	METHOD : Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravely SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	Groundwater Level Dissipation Test
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PointID
CPT 05

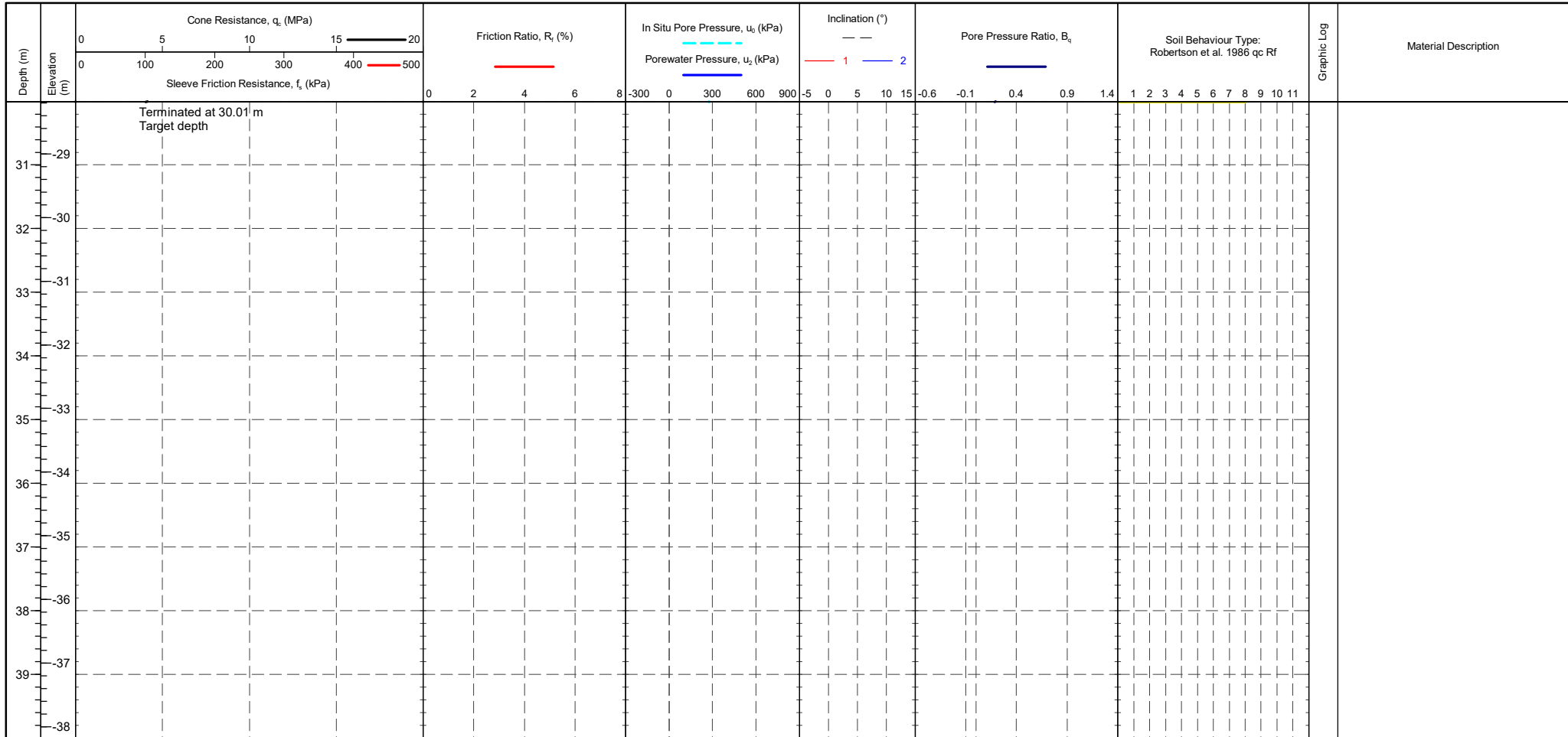
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652646.1 m NORTHING : 305984.8 m ELEVATION : 1.83 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 3 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 05 WEATHER : Overcast & Cold	Transducer Tip Sleeve Pore Pressure 2 X-Y Inclinator	CPTU ZERO VALUES Pre Post Difference	METHOD : Robertson et al. 1986 qc Rf 1 - Sensitive fine grained material 2 - Organic material 3 - CLAY 4 - Silty CLAY to CLAY 5 - Clayey SILT to silty CLAY 6 - Sandy SILT to clayey SILT 7 - Silty SAND to sandy SILT 8 - SAND to silty SAND 9 - SAND 10 - Gravely SAND to SAND 11 - Very stiff fine grained 12 - SAND to clayey SAND	 Groundwater Level Dissipation Test
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PointID
CPT 05

CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652646.1 m NORTHING : 305984.8 m ELEVATION : 1.83 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 4 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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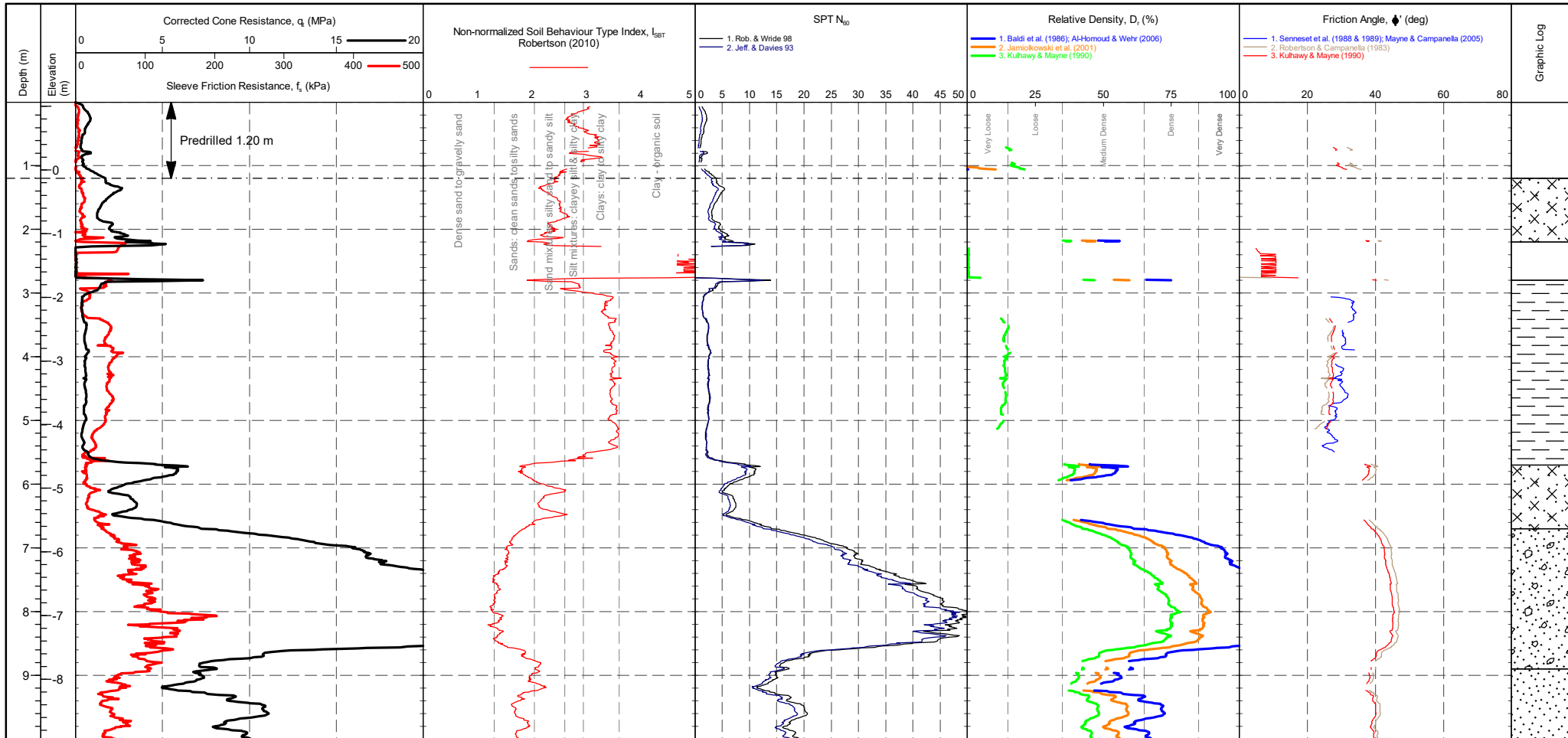
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APPENDIX C

Geotechnical Derived Parameters

PointID : **CPT 01**

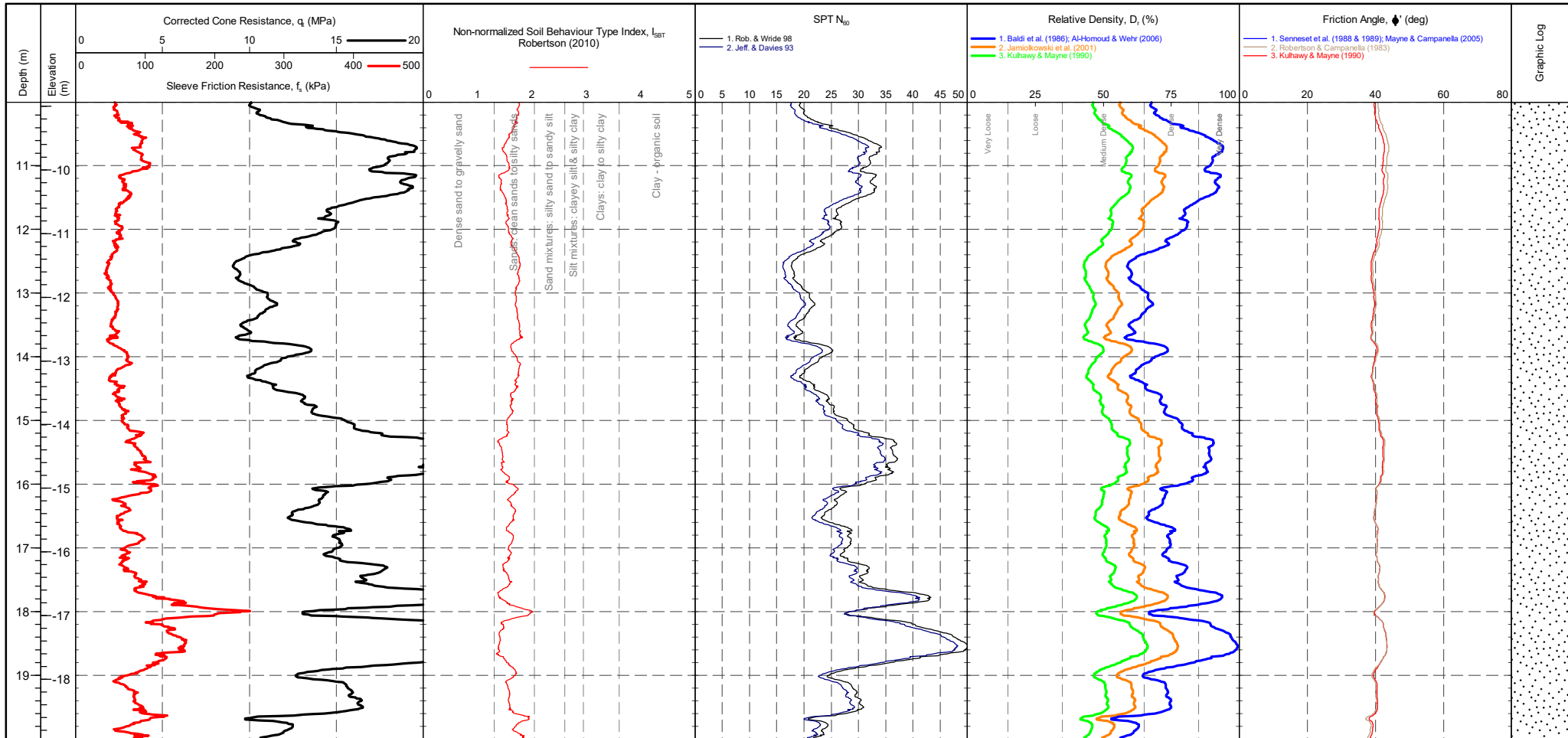
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652228.0 m NORTHING : 305894.9 m ELEVATION : 1.06 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 1 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 01 WEATHER : Overcast & Cold	CPTU ZERO VALUES Transducer : Pre Post Difference Tip : Sleeve : Pore Pressure 2 : X-Y Inclinometer :	Groundwater Level Dissipation Test
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PointID
CPT 01

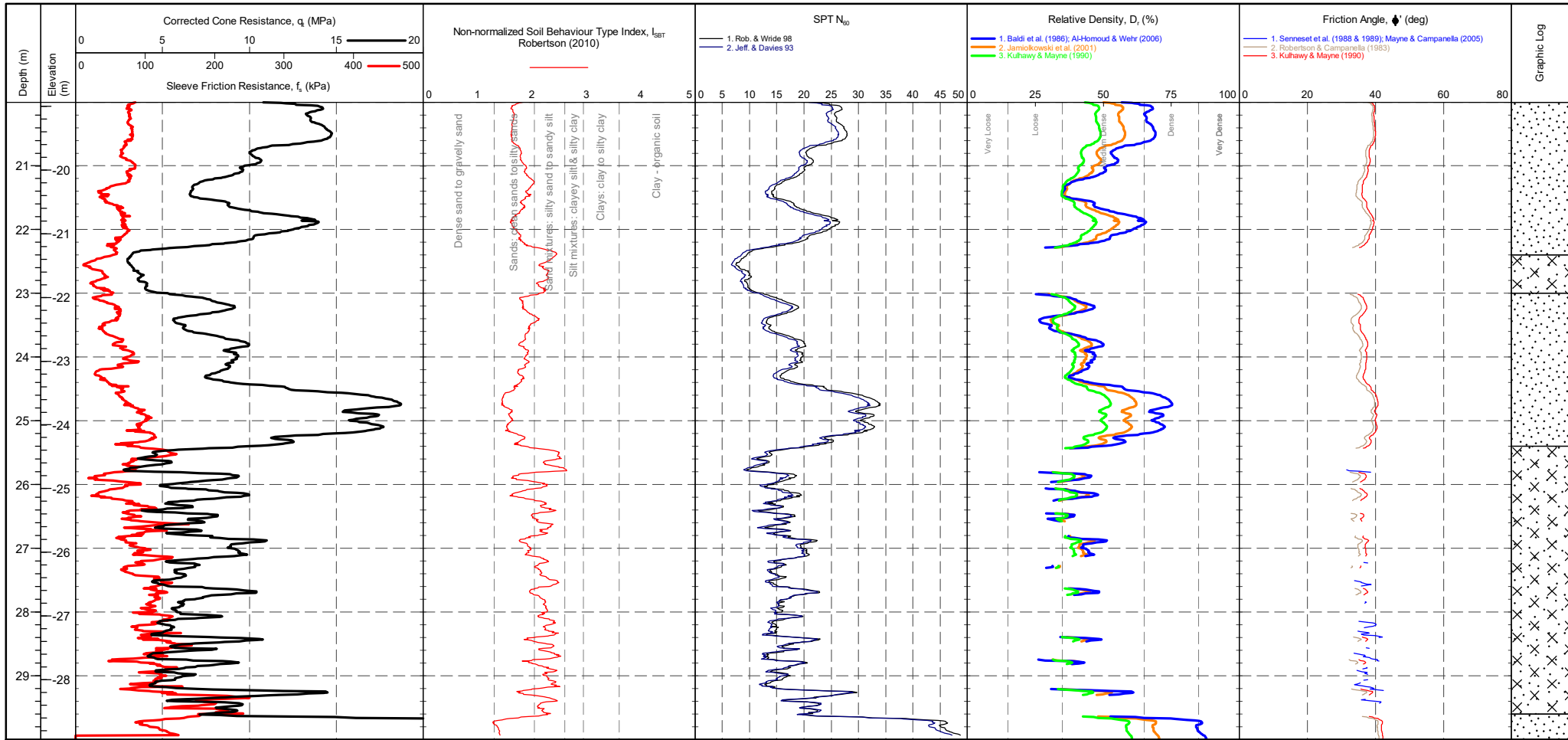
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652228.0 m NORTHING : 305894.9 m ELEVATION : 1.06 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 2 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 01 WEATHER : Overcast & Cold	CPTU ZERO VALUES <table border="1"> <thead> <tr> <th>Transducer</th> <th>Pre</th> <th>Post</th> <th>Difference</th> </tr> </thead> <tbody> <tr> <td>Tip</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Sleeve</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Pore Pressure 2</td> <td></td> <td></td> <td></td> </tr> <tr> <td>X-Y Inclinometer</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Transducer	Pre	Post	Difference	Tip				Sleeve				Pore Pressure 2				X-Y Inclinometer				Groundwater Level Dissipation Test
Transducer	Pre	Post	Difference																				
Tip																							
Sleeve																							
Pore Pressure 2																							
X-Y Inclinometer																							

PointID
CPT 01

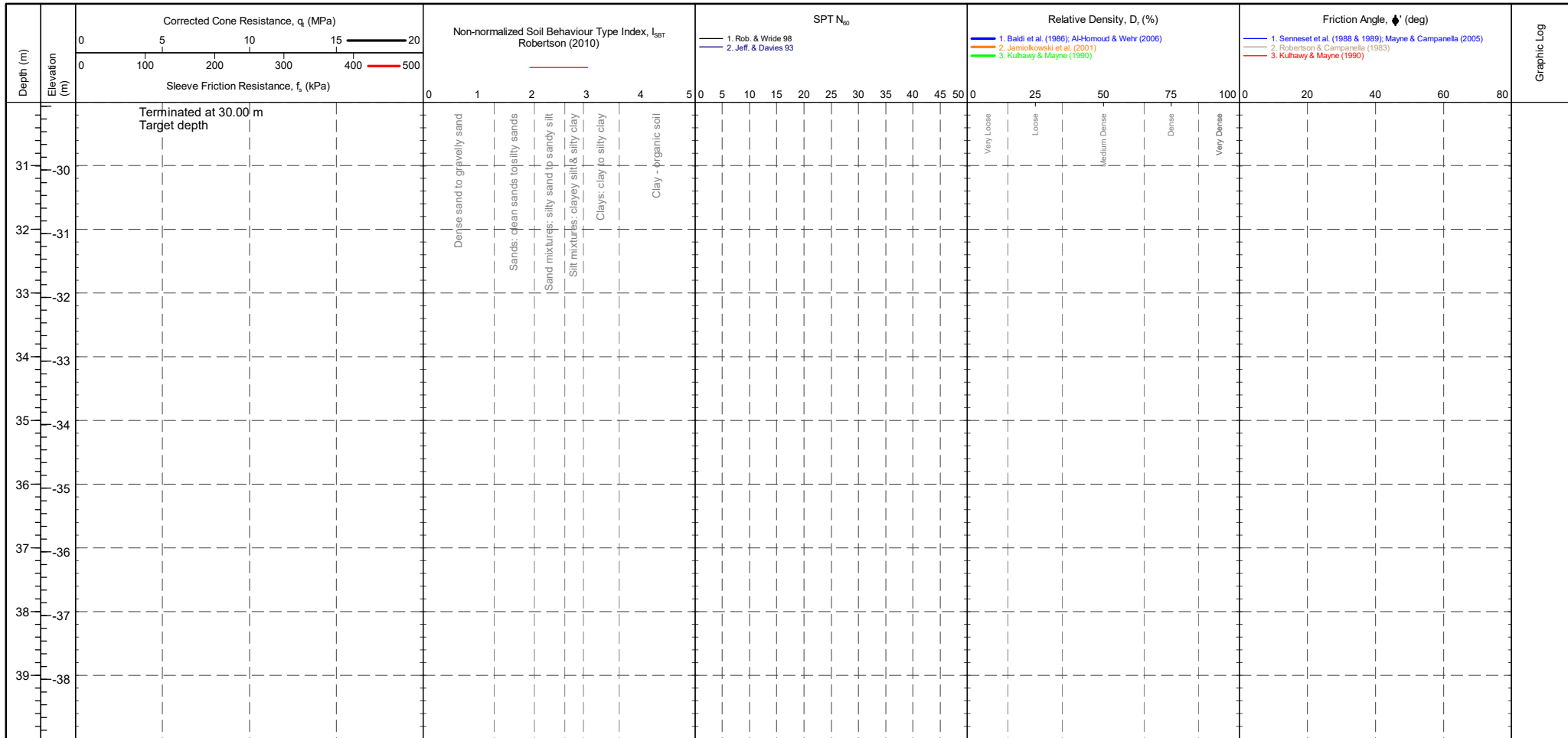
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 01 WEATHER : Overcast & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 01

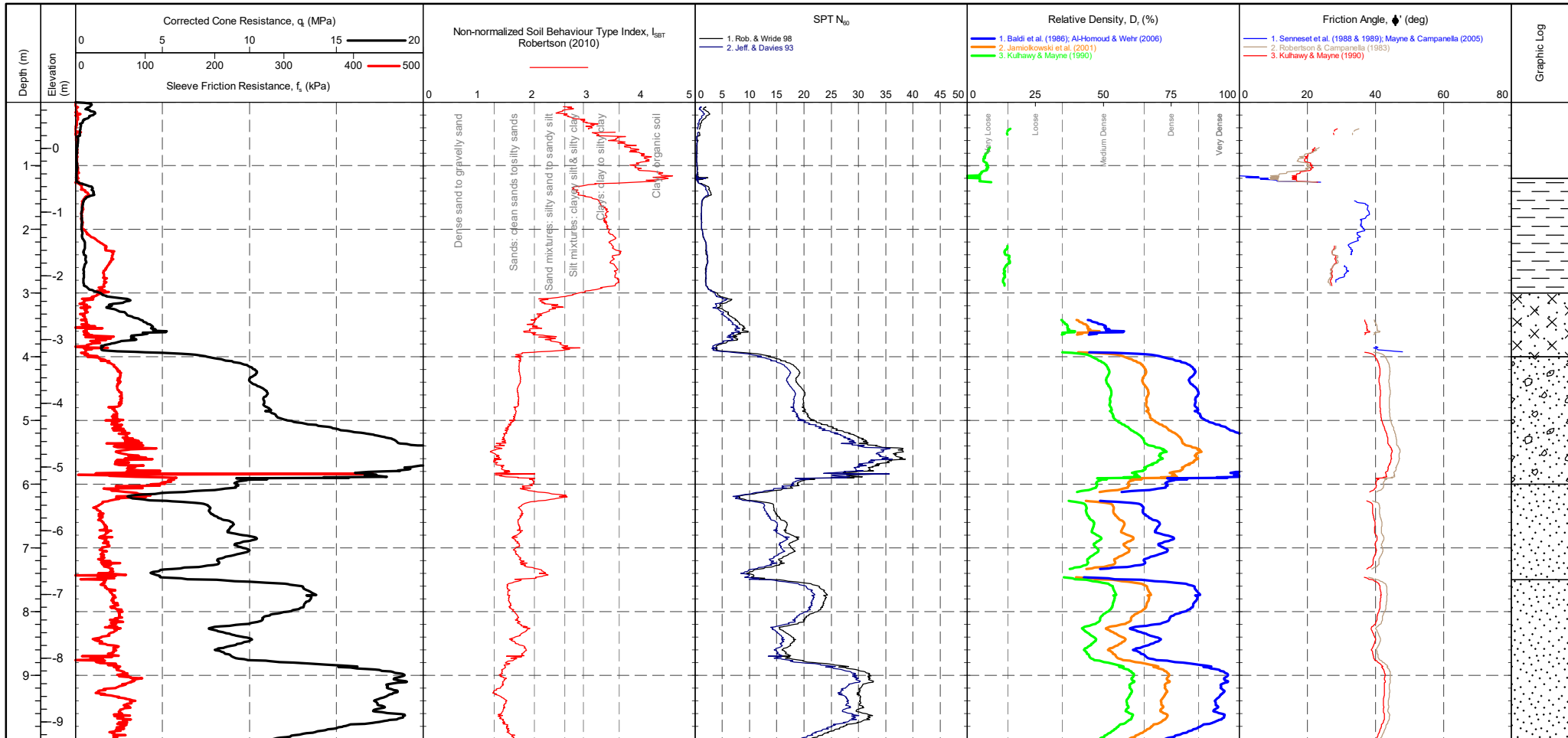
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652228.0 m NORTHING : 305894.9 m ELEVATION : 1.06 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 4 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 01 WEATHER : Overcast & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID : **CPT 02**

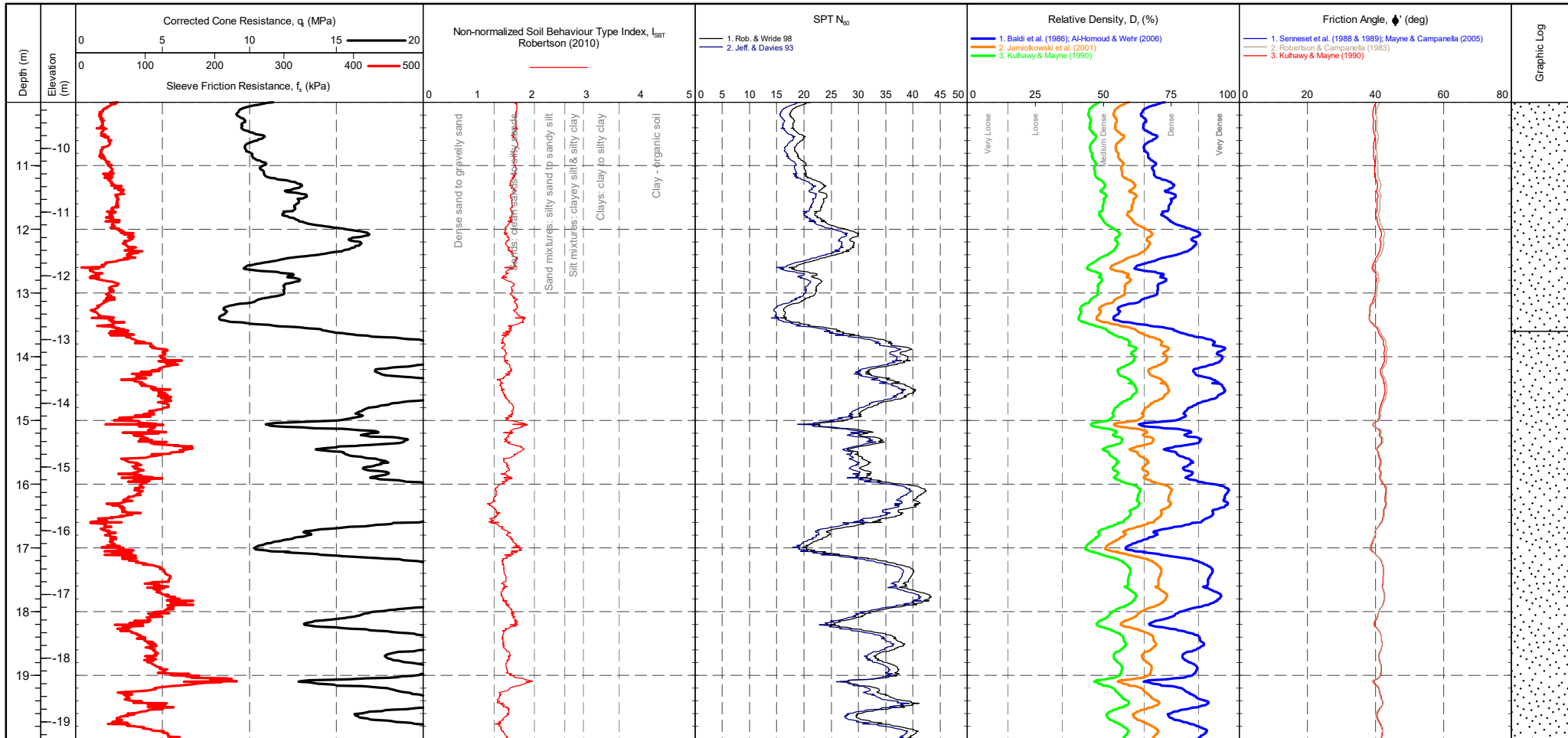
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652244.0 m NORTHING : 305934.2 m ELEVATION : 0.73 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 1 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 02 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer : Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID : **CPT 02**

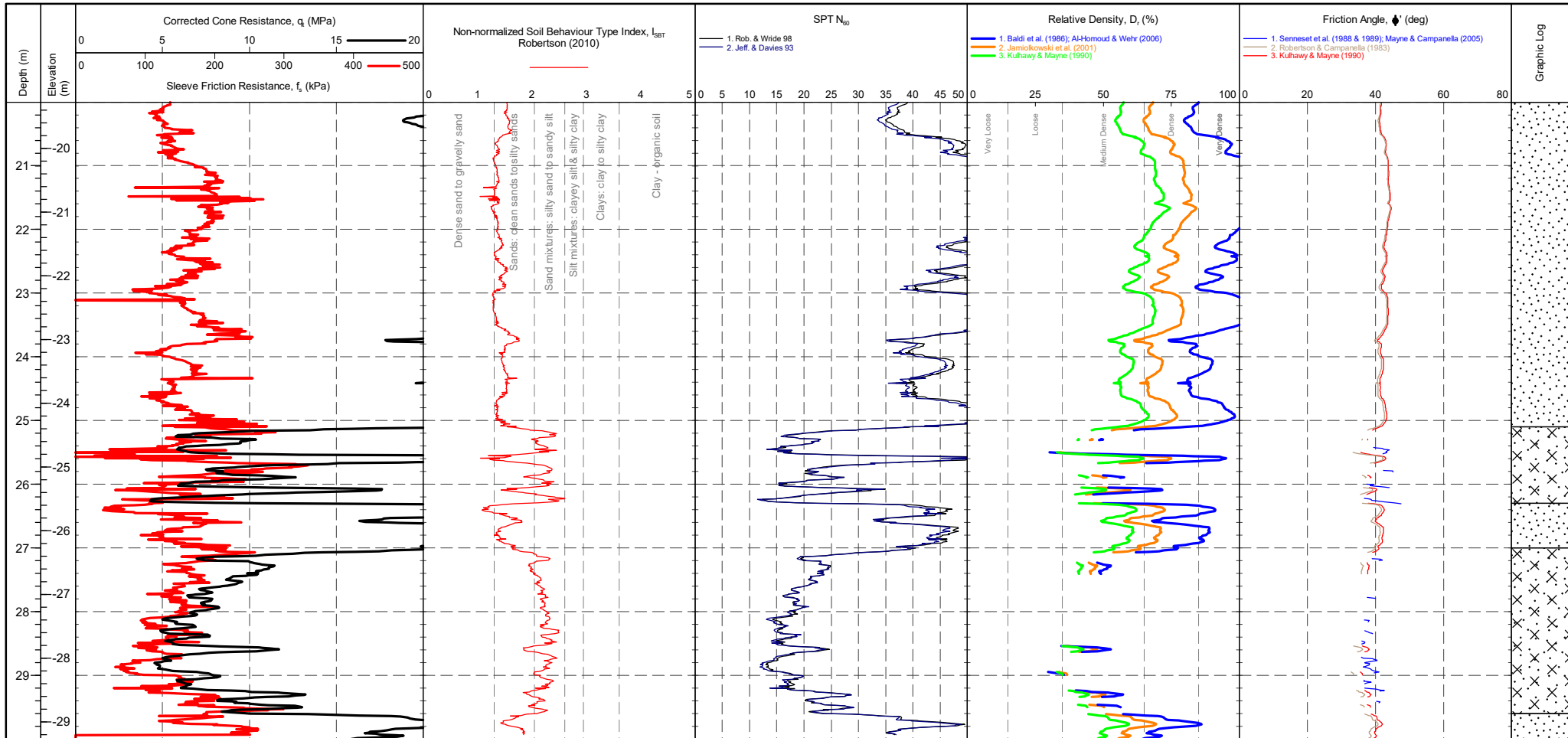
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652244.0 m NORTHING : 305934.2 m ELEVATION : 0.73 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 2 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 02 WEATHER : Sunny & Cold	CPTU ZERO VALUES <table border="1"> <thead> <tr> <th>Transducer</th> <th>Pre</th> <th>Post</th> <th>Difference</th> </tr> </thead> <tbody> <tr> <td>Tip</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Sleeve</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Pore Pressure 2</td> <td></td> <td></td> <td></td> </tr> <tr> <td>X-Y Inclinometer</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Transducer	Pre	Post	Difference	Tip				Sleeve				Pore Pressure 2				X-Y Inclinometer				Groundwater Level Dissipation Test
Transducer	Pre	Post	Difference																				
Tip																							
Sleeve																							
Pore Pressure 2																							
X-Y Inclinometer																							

PointID
CPT 02

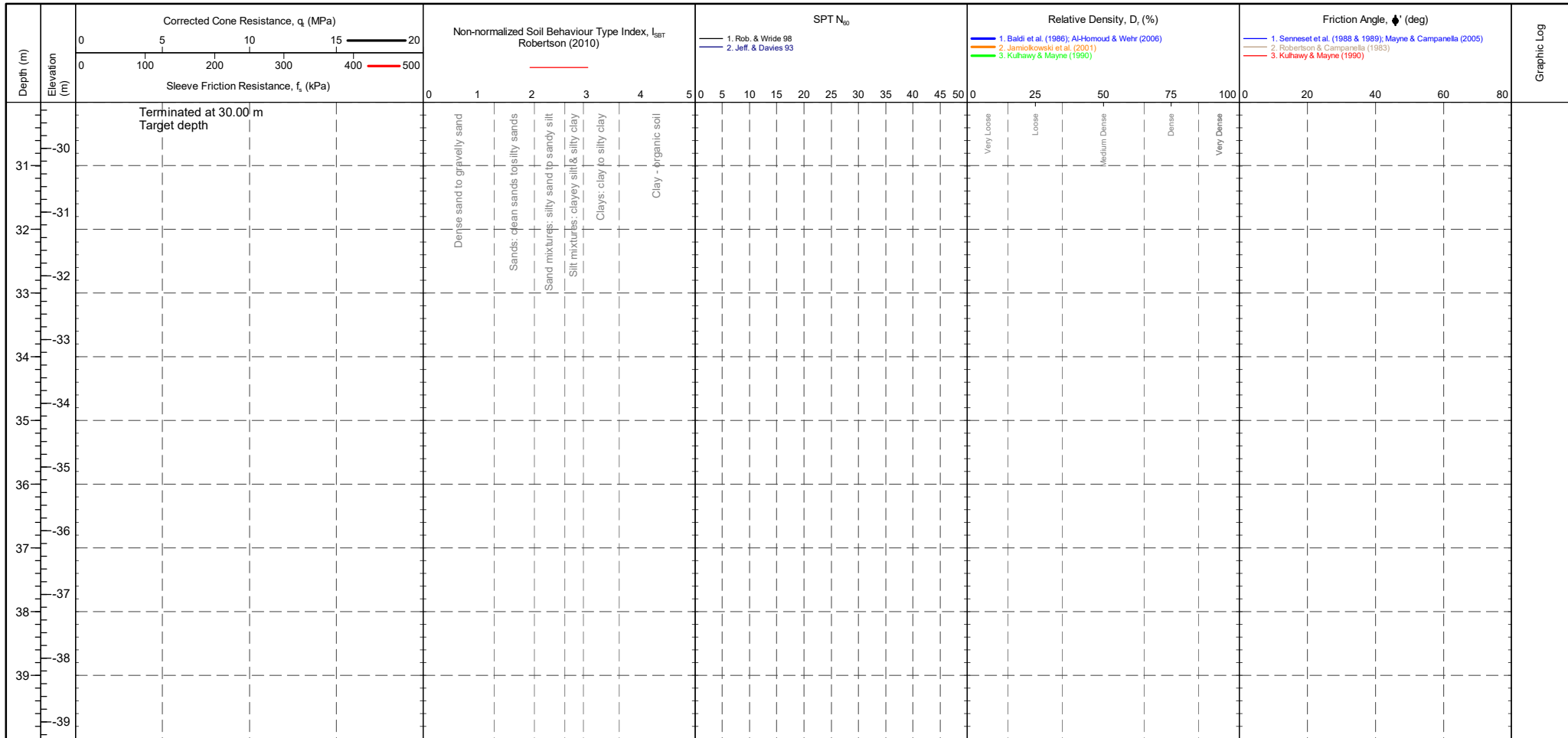
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652244.0 m NORTHING : 305934.2 m ELEVATION : 0.73 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 3 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 02 WEATHER : Sunny & Cold	CPTU ZERO VALUES <table border="1"> <tr> <th>Transducer</th> <th>Pre</th> <th>Post</th> <th>Difference</th> </tr> <tr> <td>Tip</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Sleeve</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Pore Pressure 2</td> <td></td> <td></td> <td></td> </tr> <tr> <td>X-Y Inclinometer</td> <td></td> <td></td> <td></td> </tr> </table>	Transducer	Pre	Post	Difference	Tip				Sleeve				Pore Pressure 2				X-Y Inclinometer				Groundwater Level Dissipation Test
Transducer	Pre	Post	Difference																				
Tip																							
Sleeve																							
Pore Pressure 2																							
X-Y Inclinometer																							

PointID
CPT 02

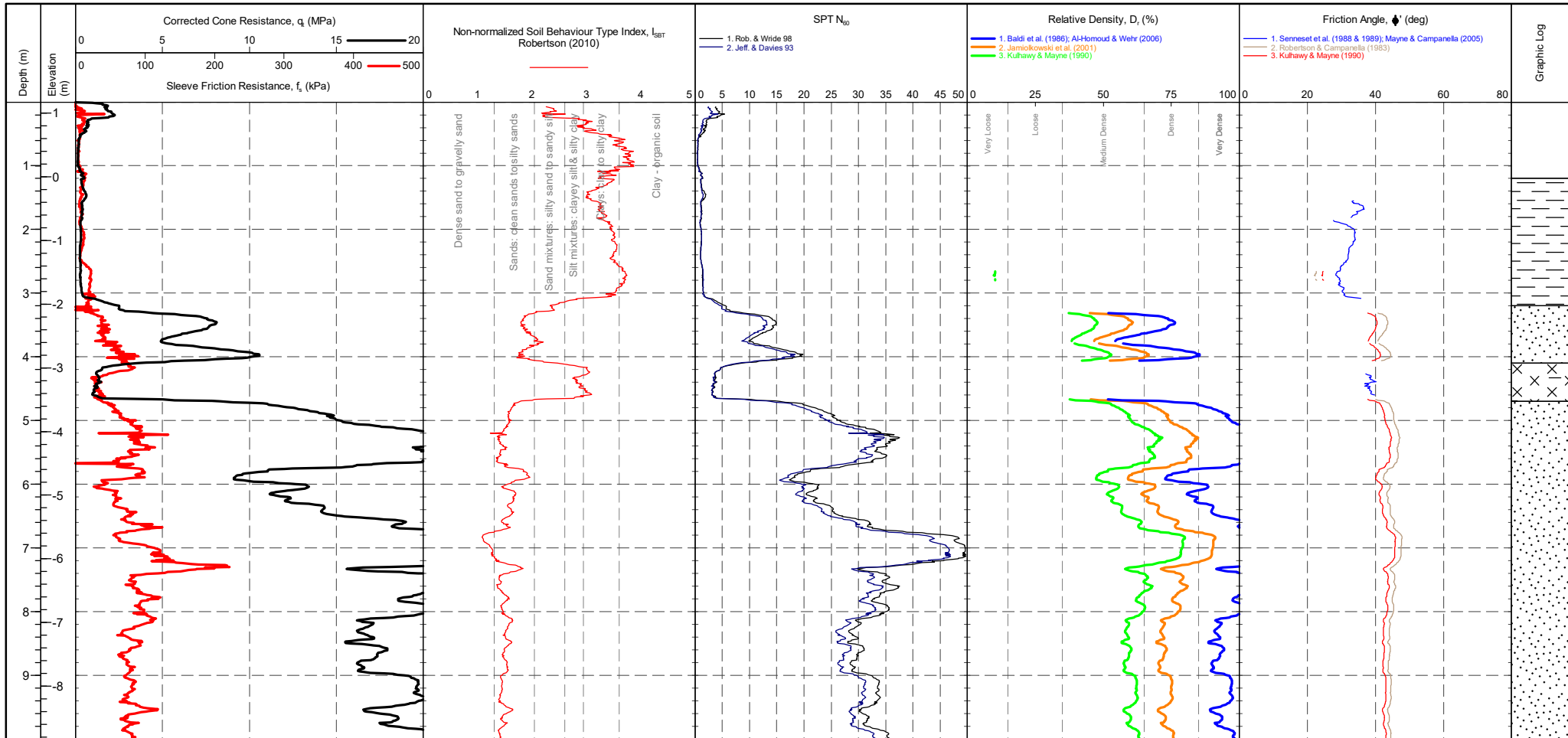
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652244.0 m NORTHING : 305934.2 m ELEVATION : 0.73 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 4 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 02 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 03

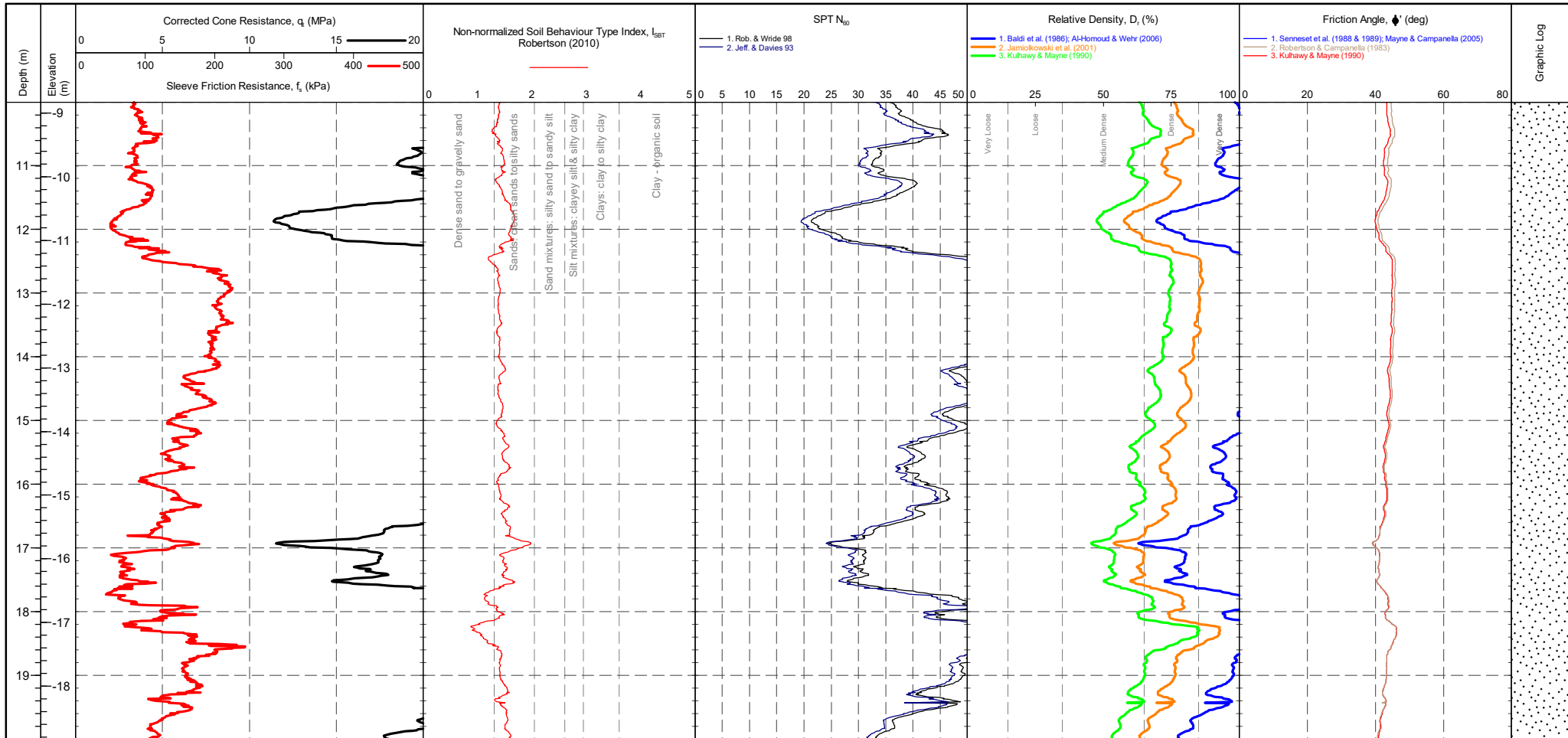
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 03 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
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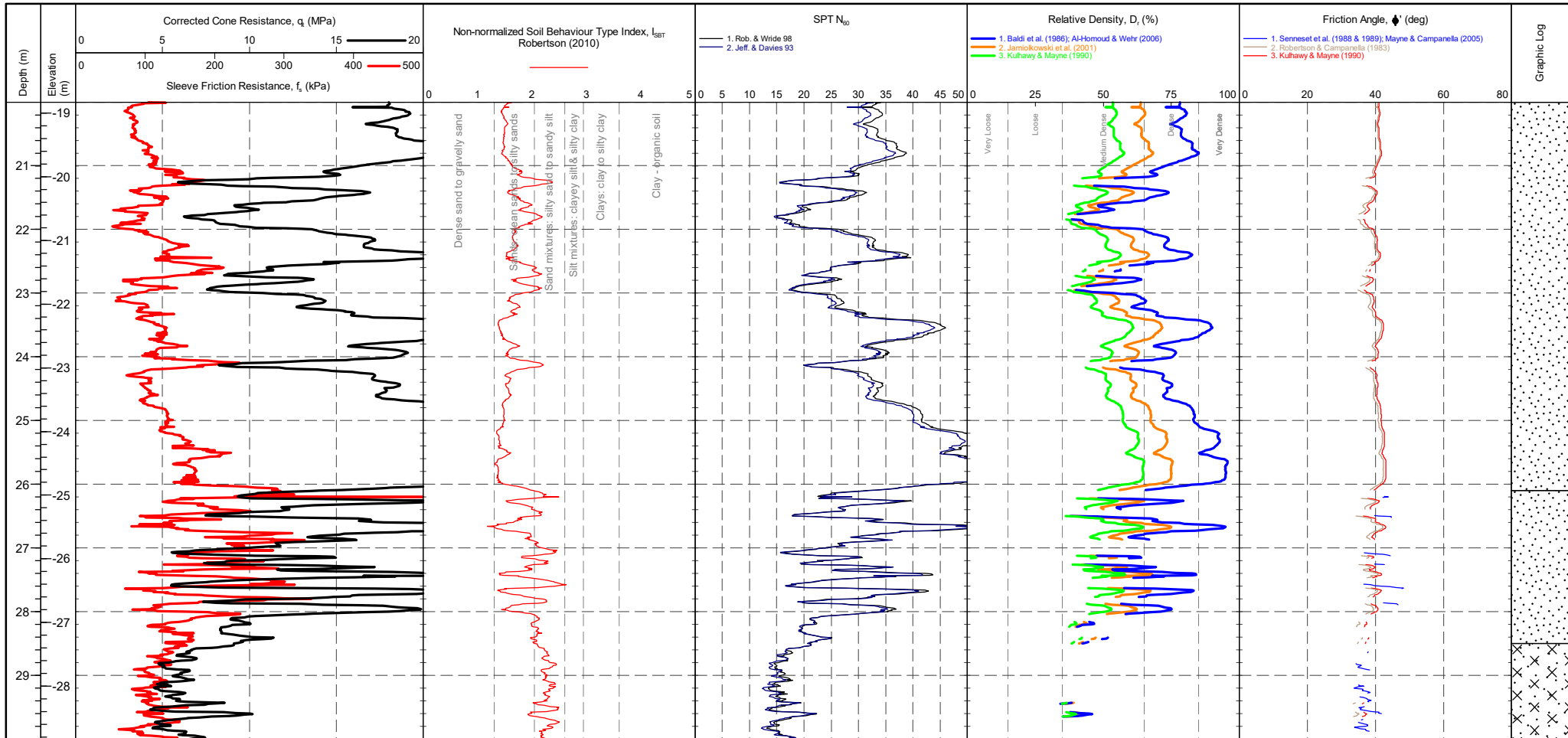
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 03 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 03

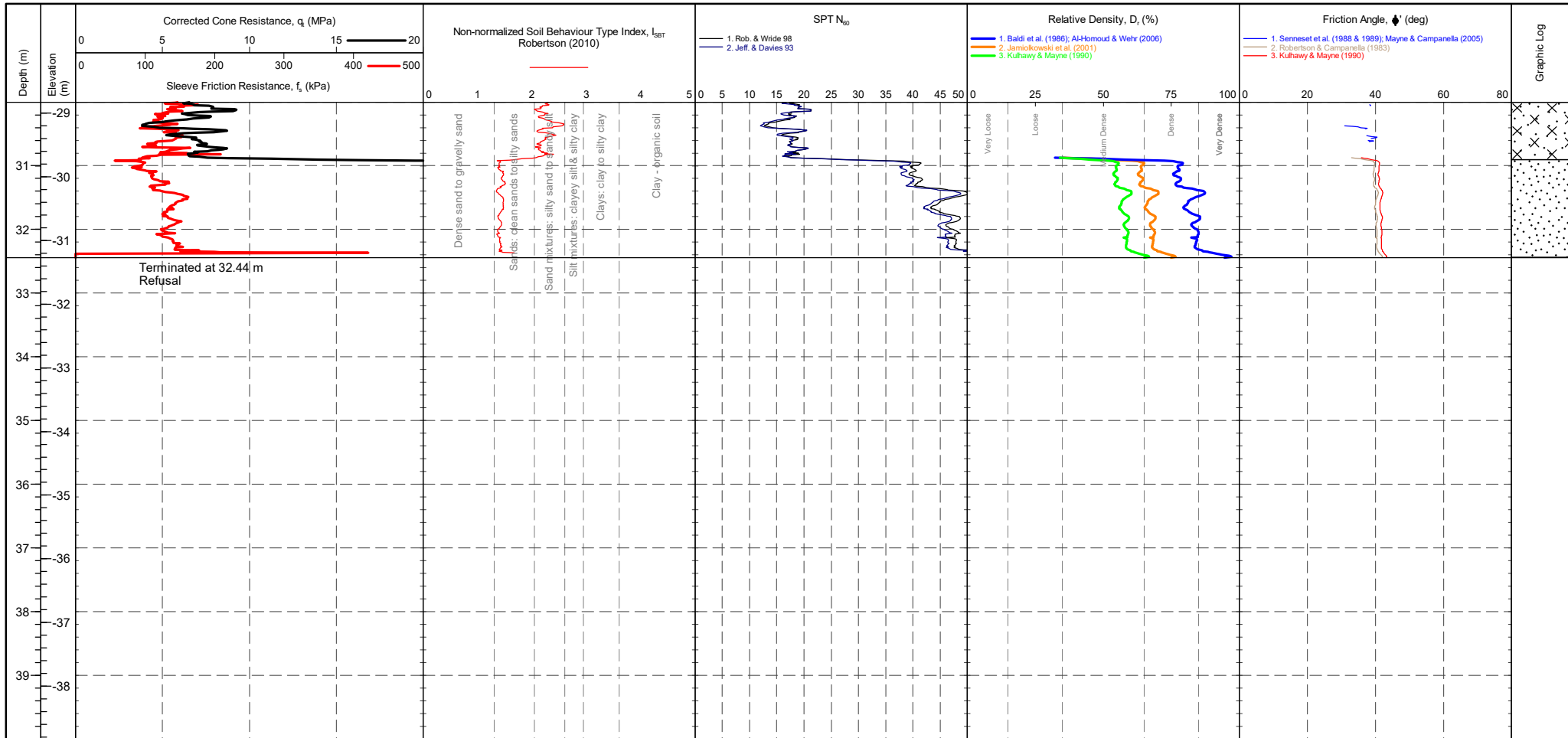
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 03 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 03

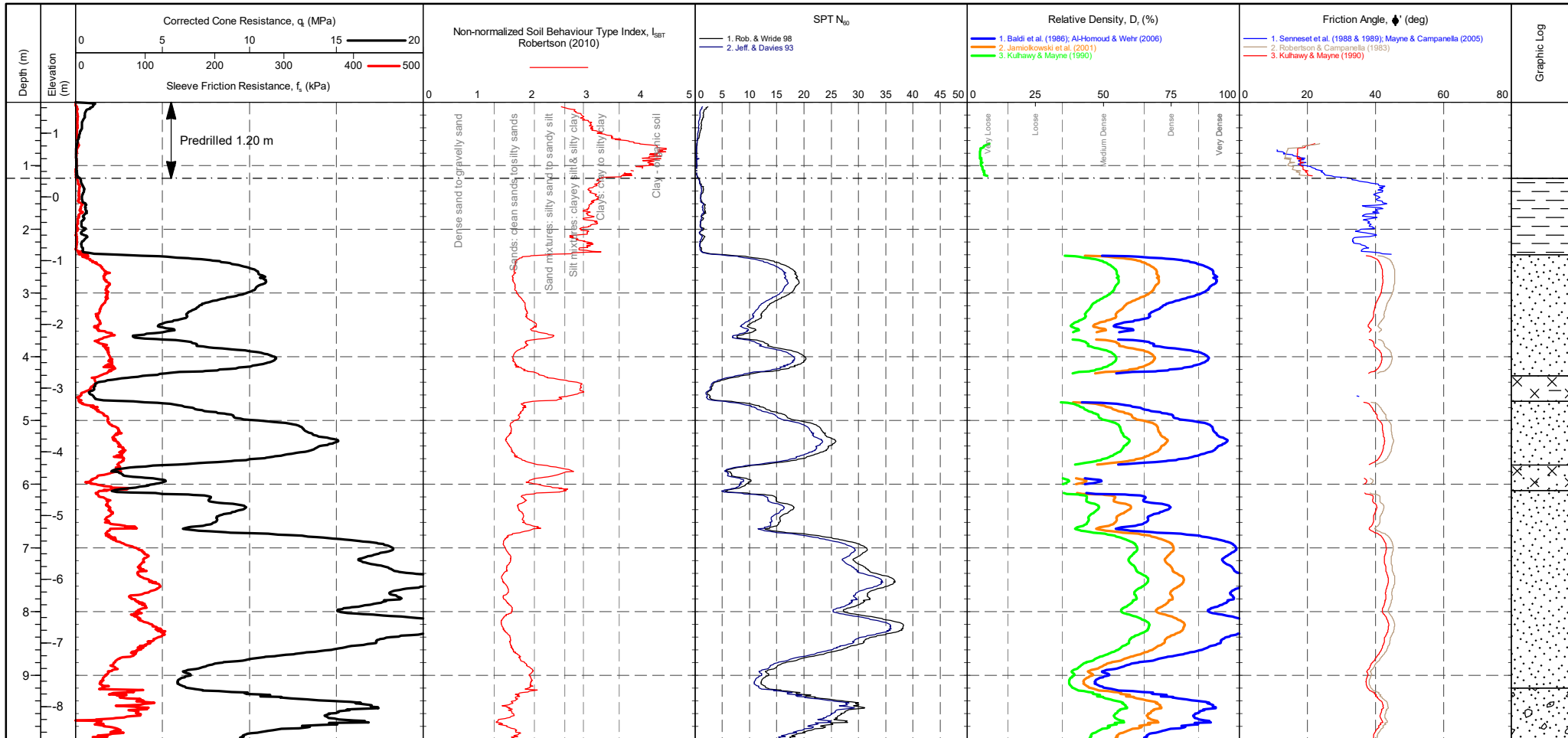
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652308.0 m NORTHING : 305950.5 m ELEVATION : 1.17 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark : 1 Test refused on total pressure.	SHEET : 4 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 03 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 04

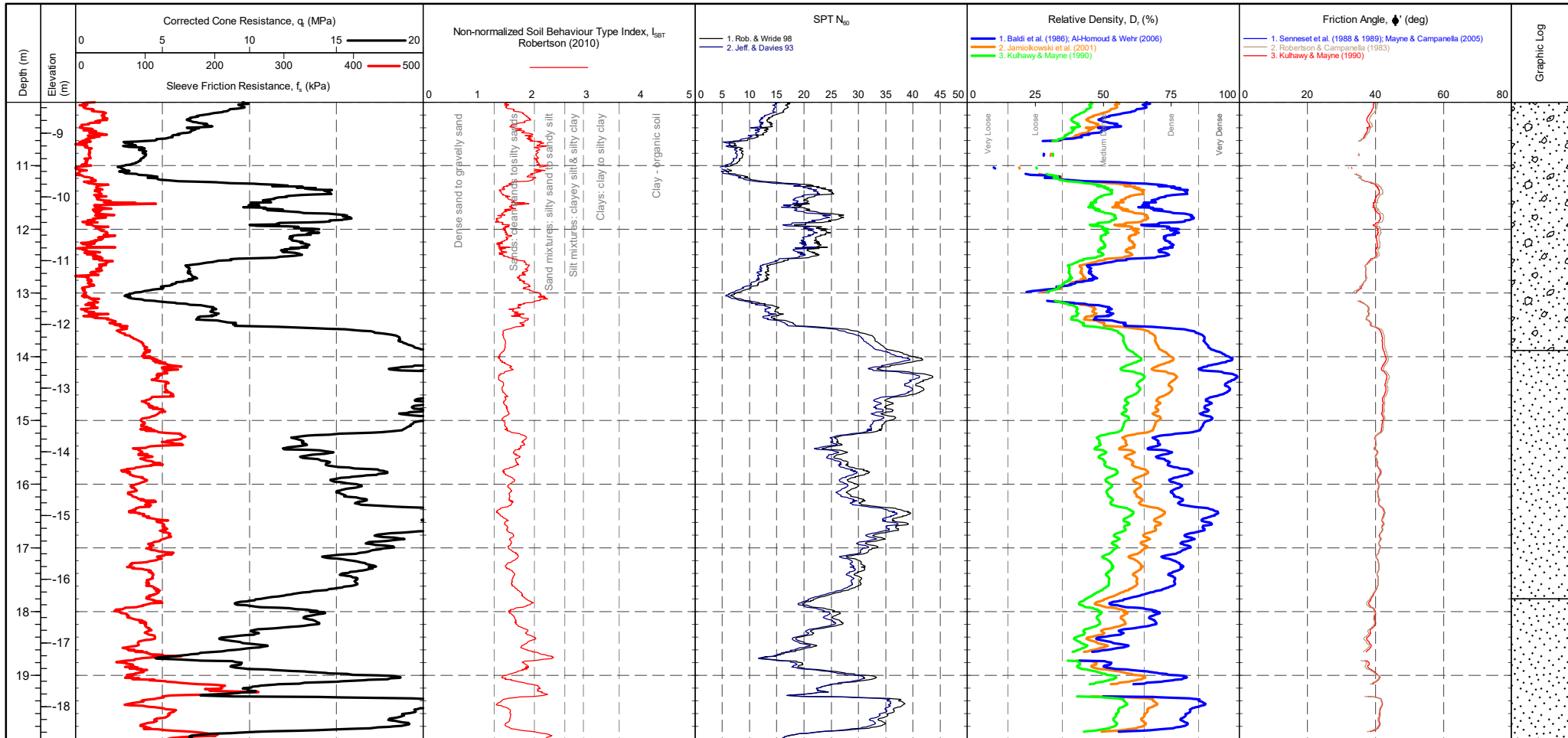
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 04 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 04

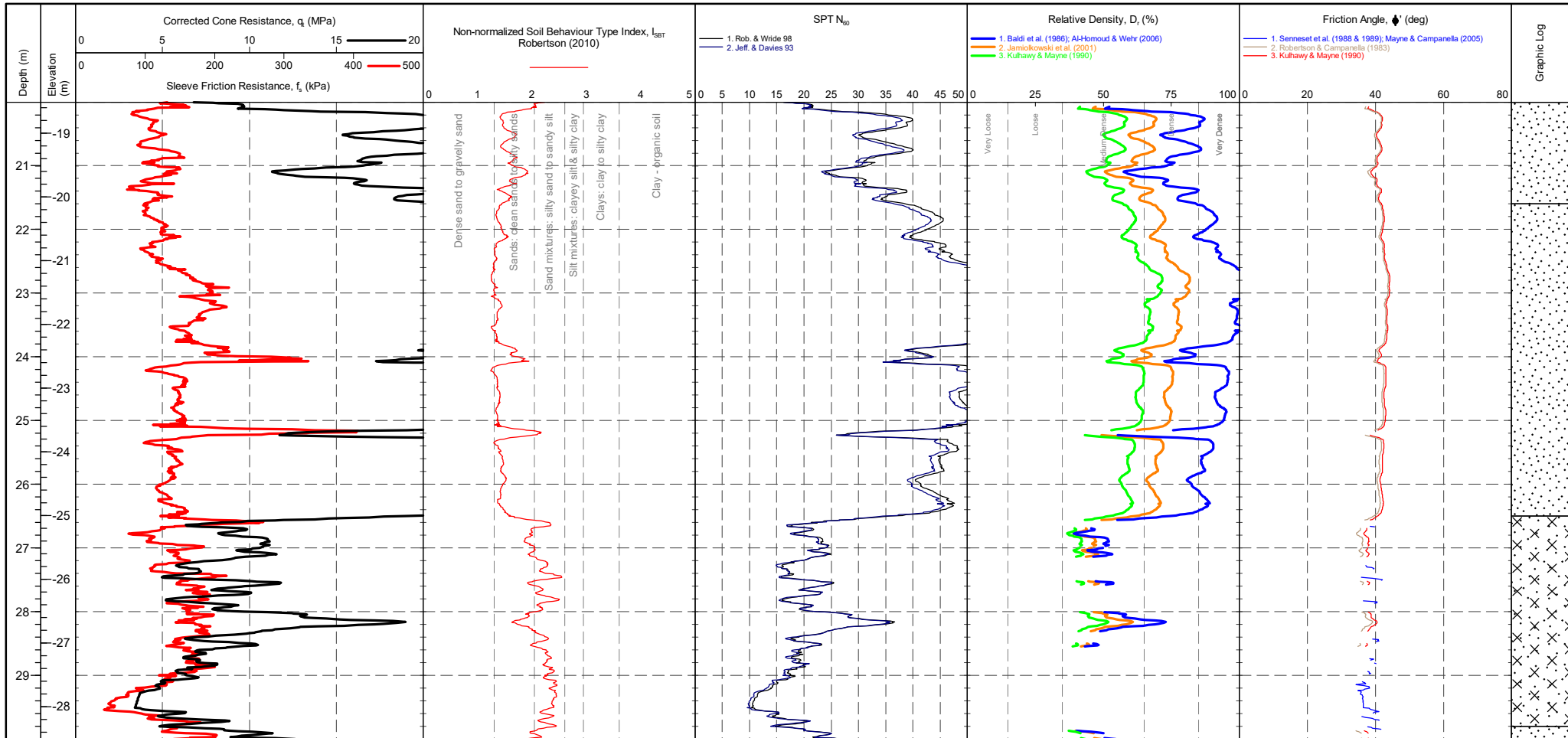
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652571.6 m NORTHING : 306018.0 m ELEVATION : 1.49 m CHECKED BY : LD TERMINATION REASON : Machine Limit	Remark : 7 Test stopped due to buckling rods.	SHEET : 2 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1:2012
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 04 WEATHER : Sunny & Cold	Transducer Tip Sleeve Pore Pressure 2 X-Y Inclinometer	CPTU ZERO VALUES Pre Post Difference	Groundwater Level Dissipation Test
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PointID
CPT 04

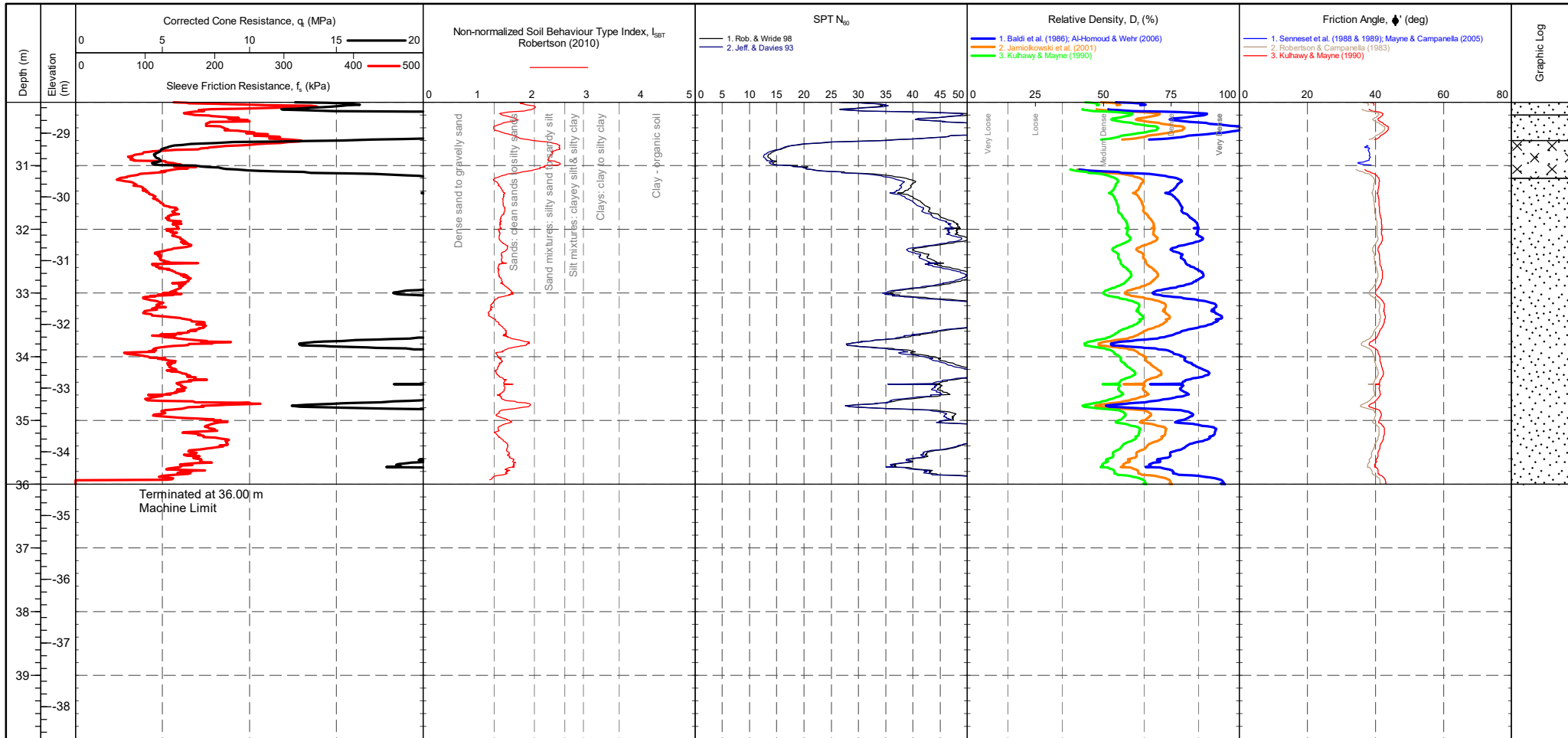
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 04 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 04

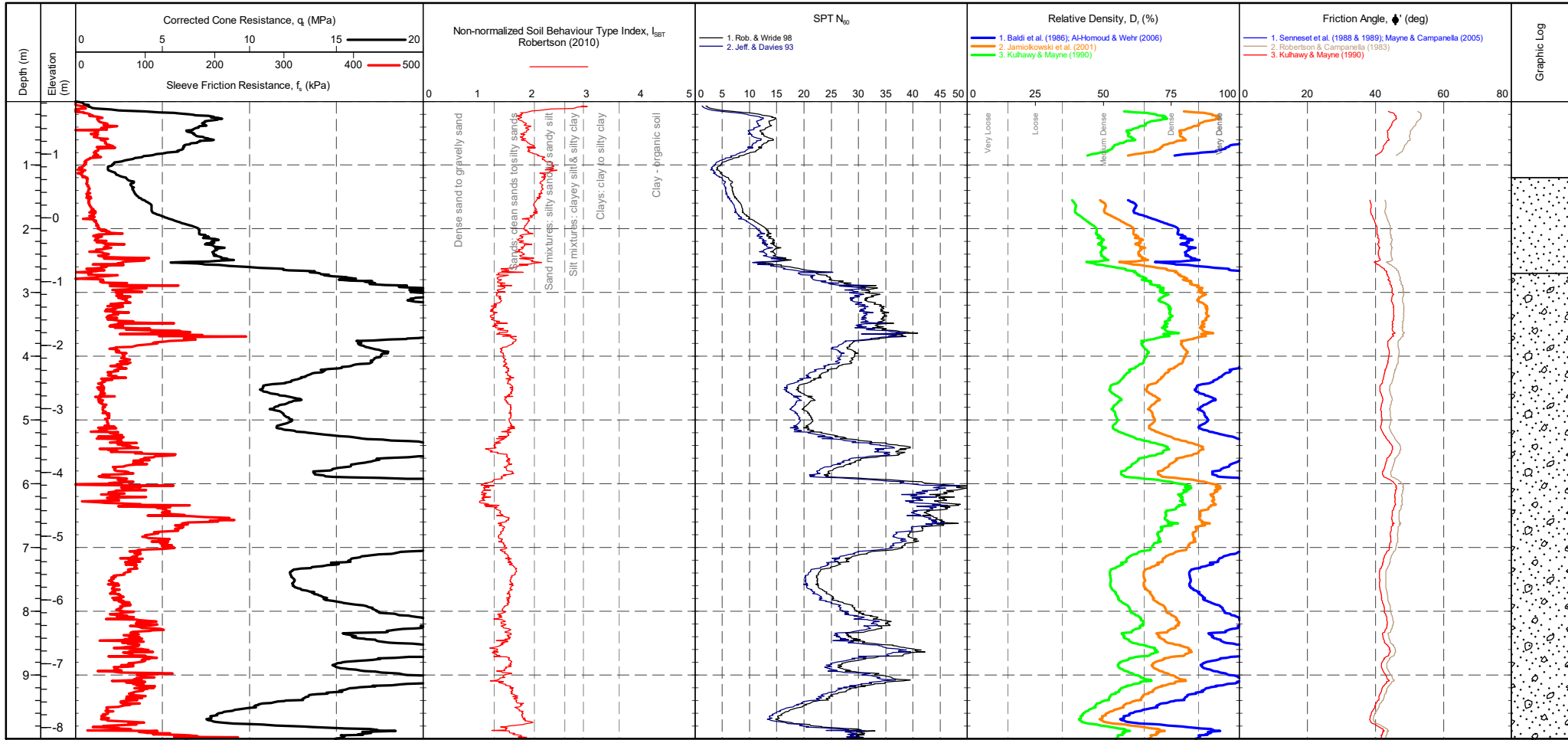
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652571.6 m NORTHING : 306018.0 m ELEVATION : 1.49 m CHECKED BY : LD TERMINATION REASON : Machine Limit	Remark : 7 Test stopped due to buckling rods.	SHEET : 4 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1:2012
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 04 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID : **CPT 05**

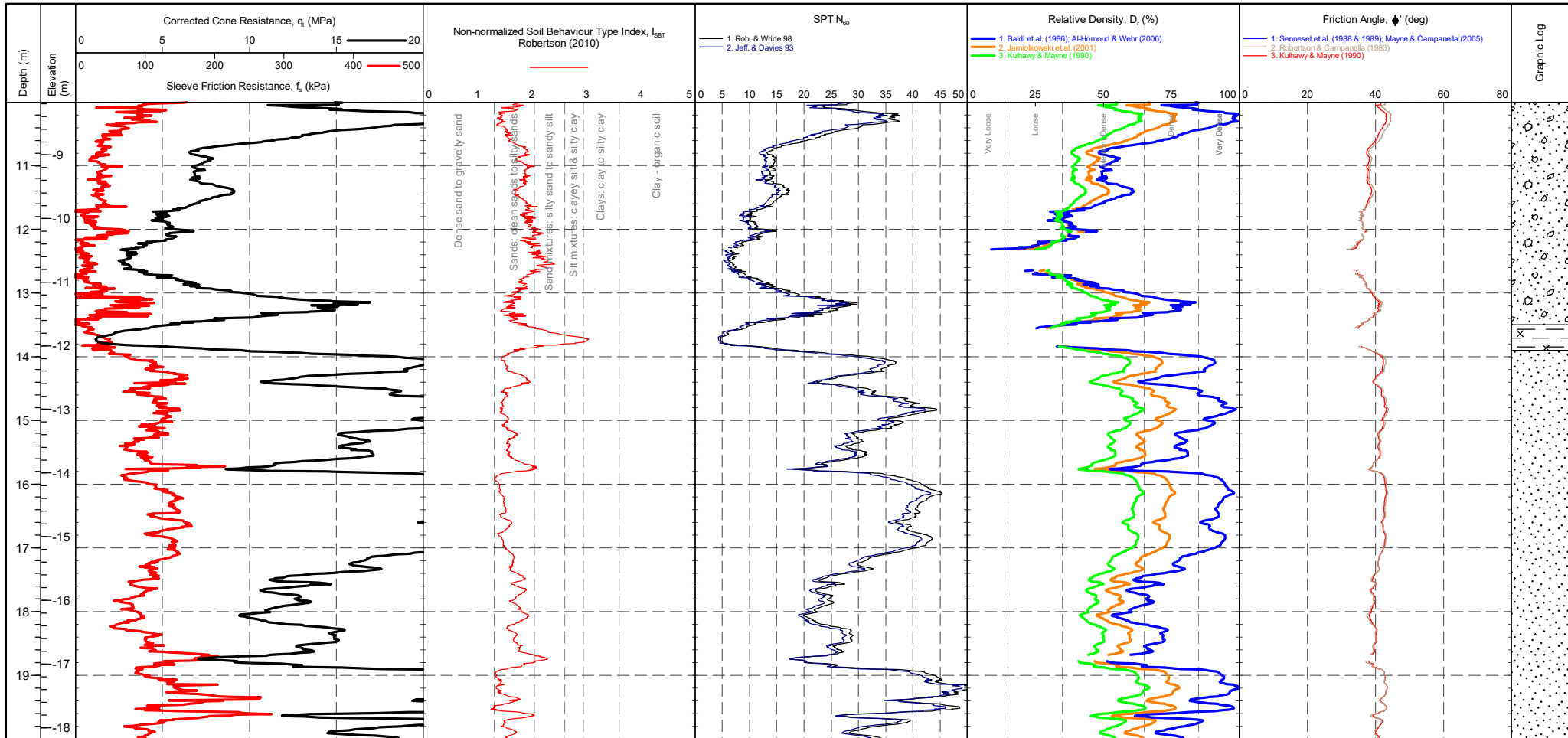
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652646.1 m NORTHING : 305984.8 m ELEVATION : 1.83 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 1 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 05 WEATHER : Overcast & Cold	CPTU ZERO VALUES Transducer : Pre Post Difference Tip : Sleeve : Pore Pressure 2 : X-Y Inclinometer :	Groundwater Level Dissipation Test
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PointID
CPT 05

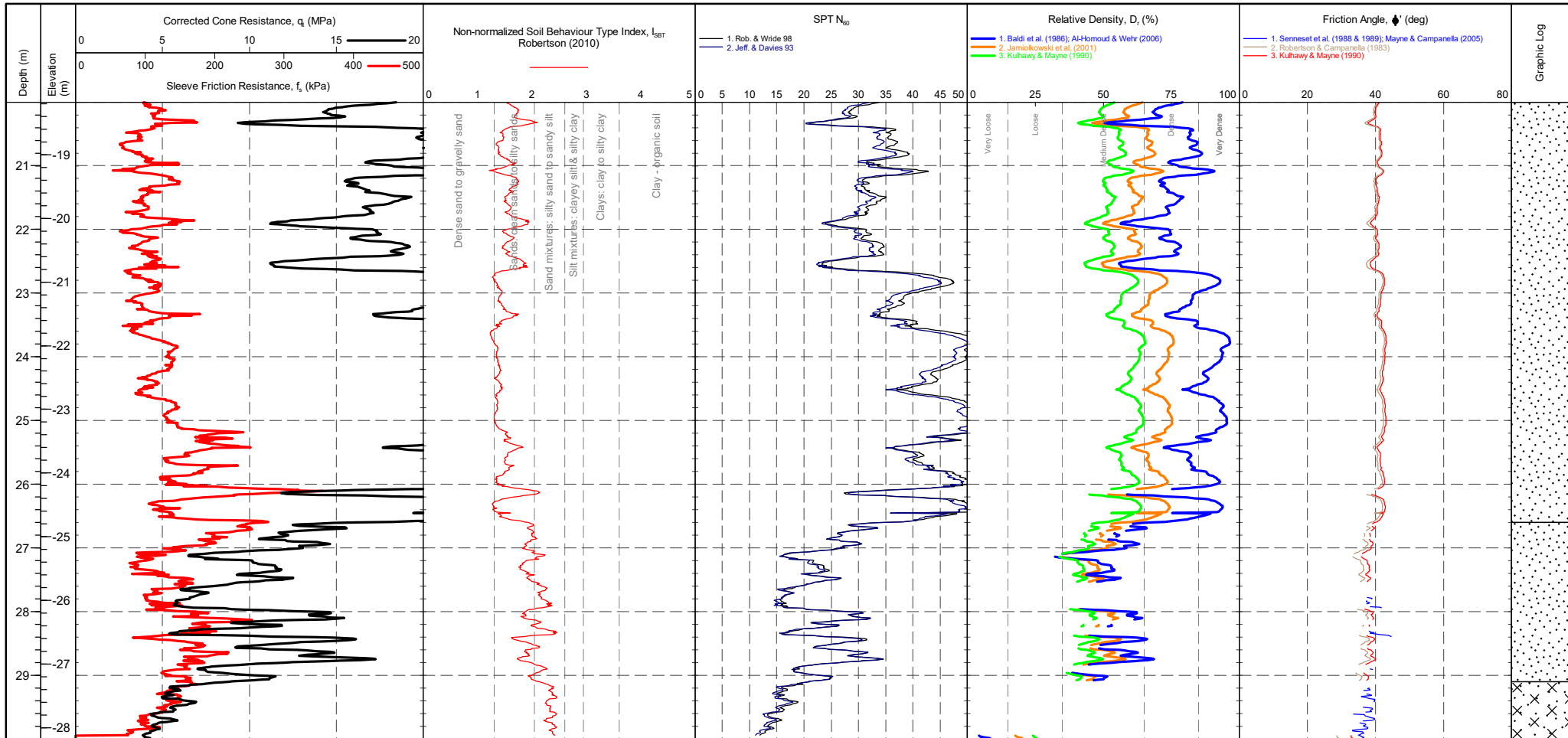
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652646.1 m NORTHING : 305984.8 m ELEVATION : 1.83 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 2 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 05 WEATHER : Overcast & Cold	CPTU ZERO VALUES Transducer Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Pre Post Difference	Groundwater Level Dissipation Test
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PointID
CPT 05

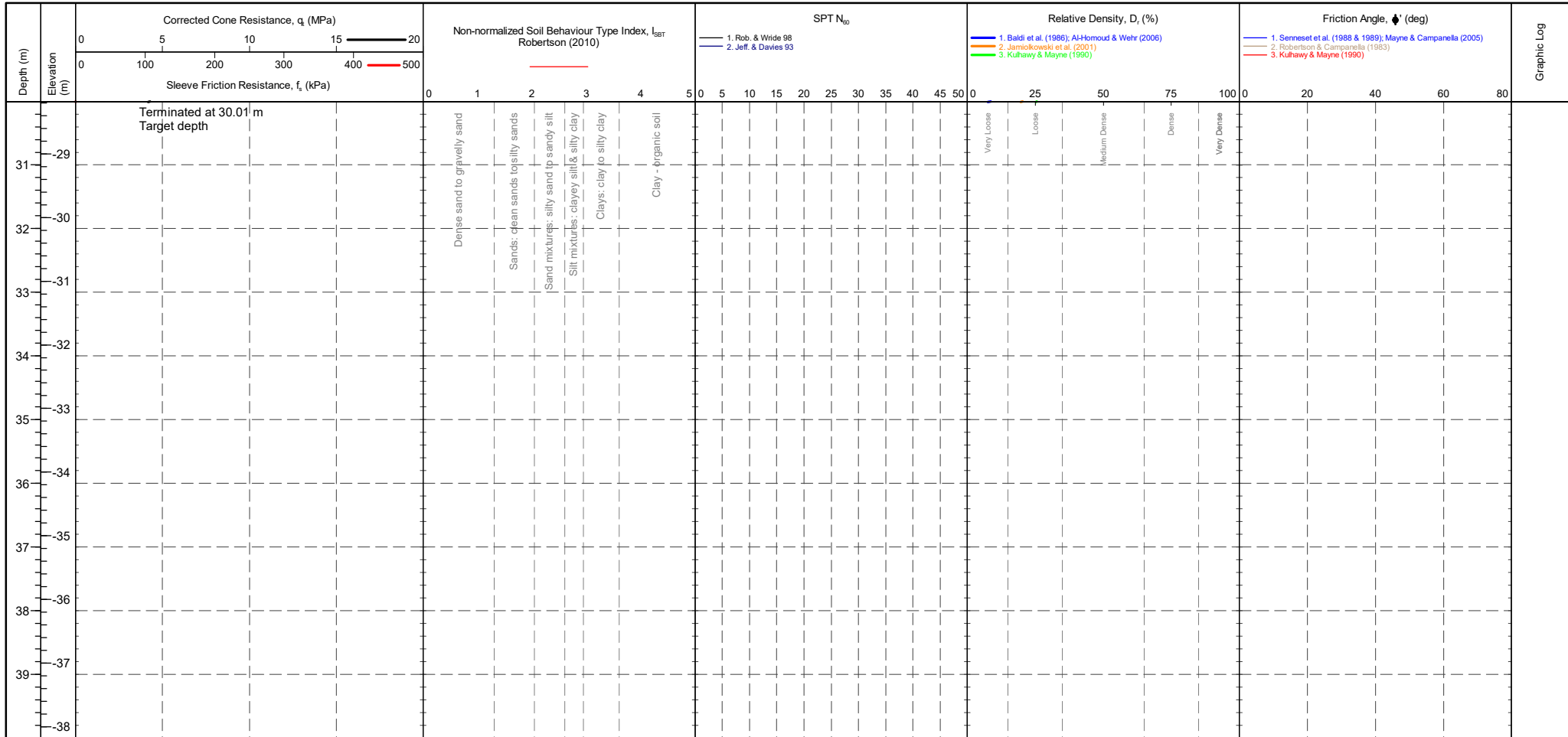
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652646.1 m NORTHING : 305984.8 m ELEVATION : 1.83 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 3 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 05 WEATHER : Overcast & Cold	CPTU ZERO VALUES <table border="1"> <tr> <th>Transducer</th> <th>Pre</th> <th>Post</th> <th>Difference</th> </tr> <tr> <td>Tip</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Sleeve</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Pore Pressure 2</td> <td></td> <td></td> <td></td> </tr> <tr> <td>X-Y Inclinometer</td> <td></td> <td></td> <td></td> </tr> </table>	Transducer	Pre	Post	Difference	Tip				Sleeve				Pore Pressure 2				X-Y Inclinometer				Groundwater Level Dissipation Test
Transducer	Pre	Post	Difference																				
Tip																							
Sleeve																							
Pore Pressure 2																							
X-Y Inclinometer																							

PointID
CPT 05

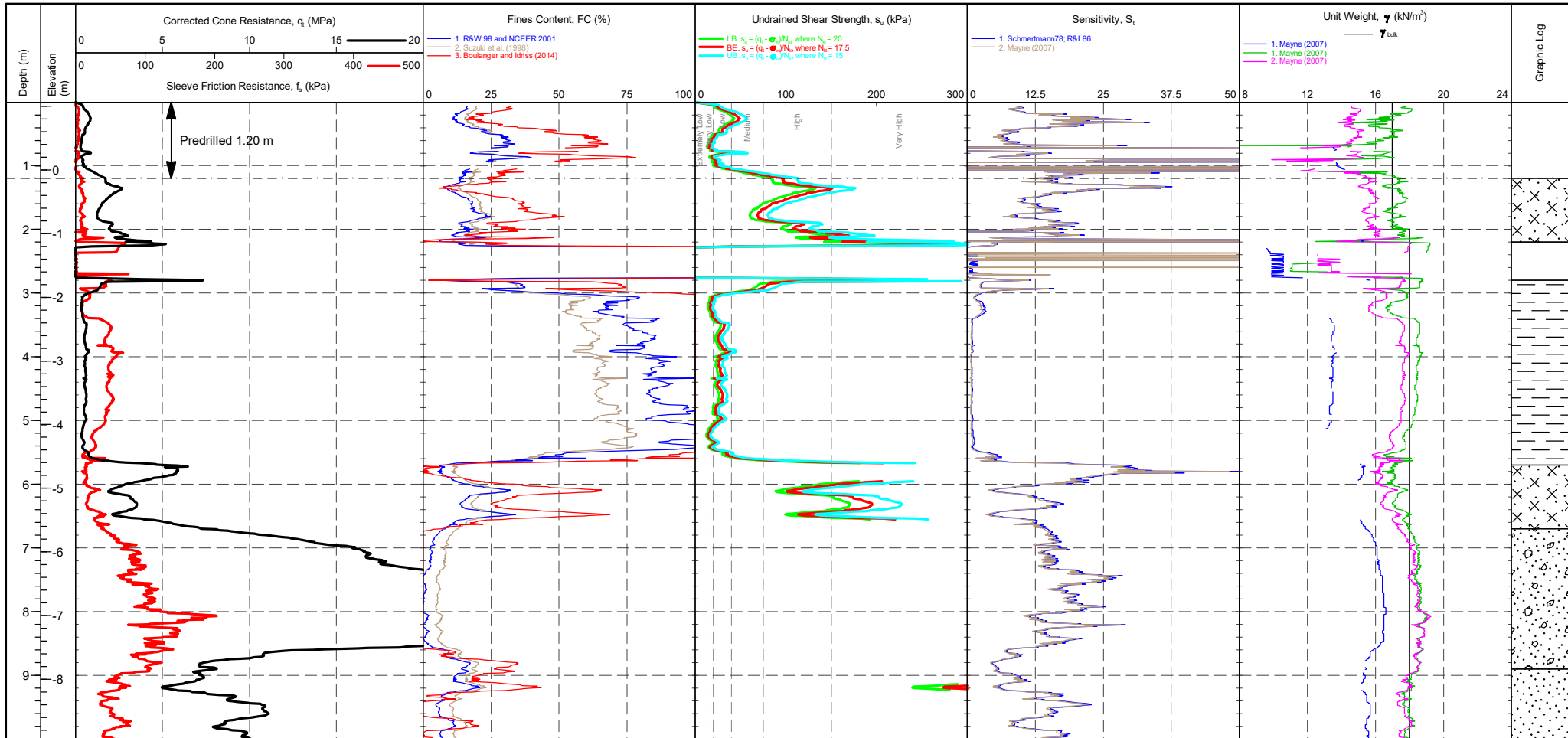
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652646.1 m NORTHING : 305984.8 m ELEVATION : 1.83 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 4 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 05 WEATHER : Overcast & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID : **CPT 01**

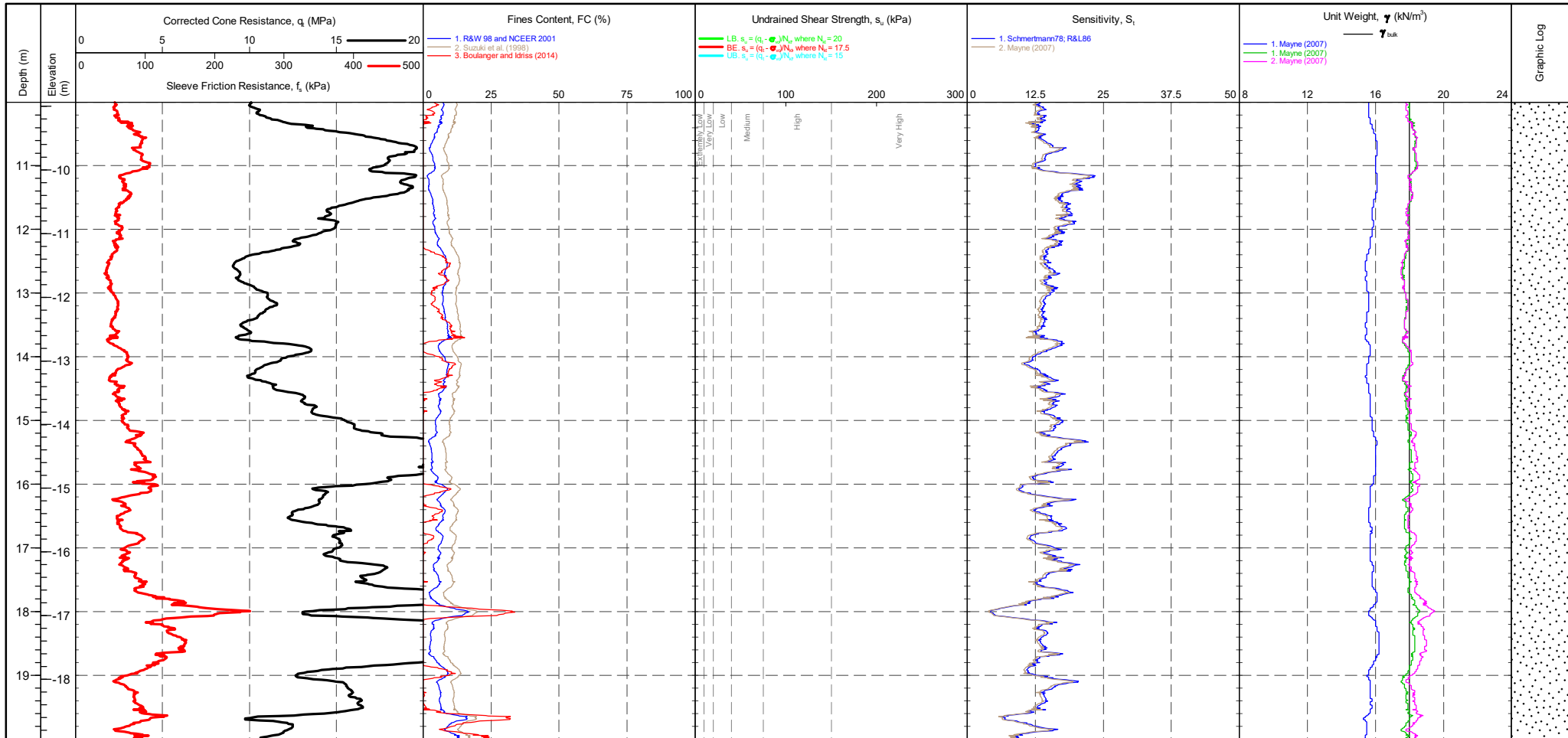
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652228.0 m NORTHING : 305894.9 m ELEVATION : 1.06 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 1 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 01 WEATHER : Overcast & Cold	CPTU ZERO VALUES Transducer : Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 01

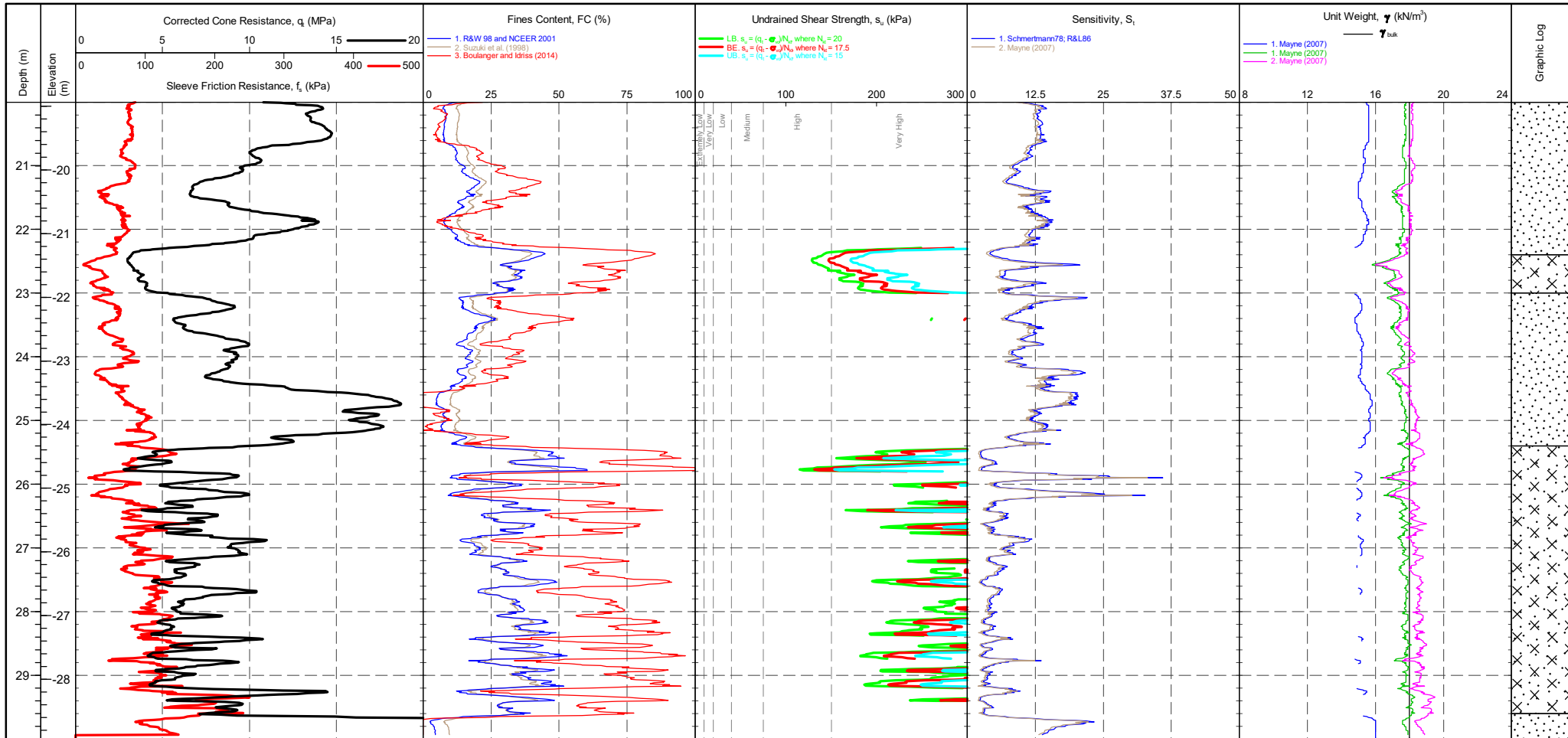
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652228.0 m NORTHING : 305894.9 m ELEVATION : 1.06 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 2 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 01 WEATHER : Overcast & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID : **CPT 01**

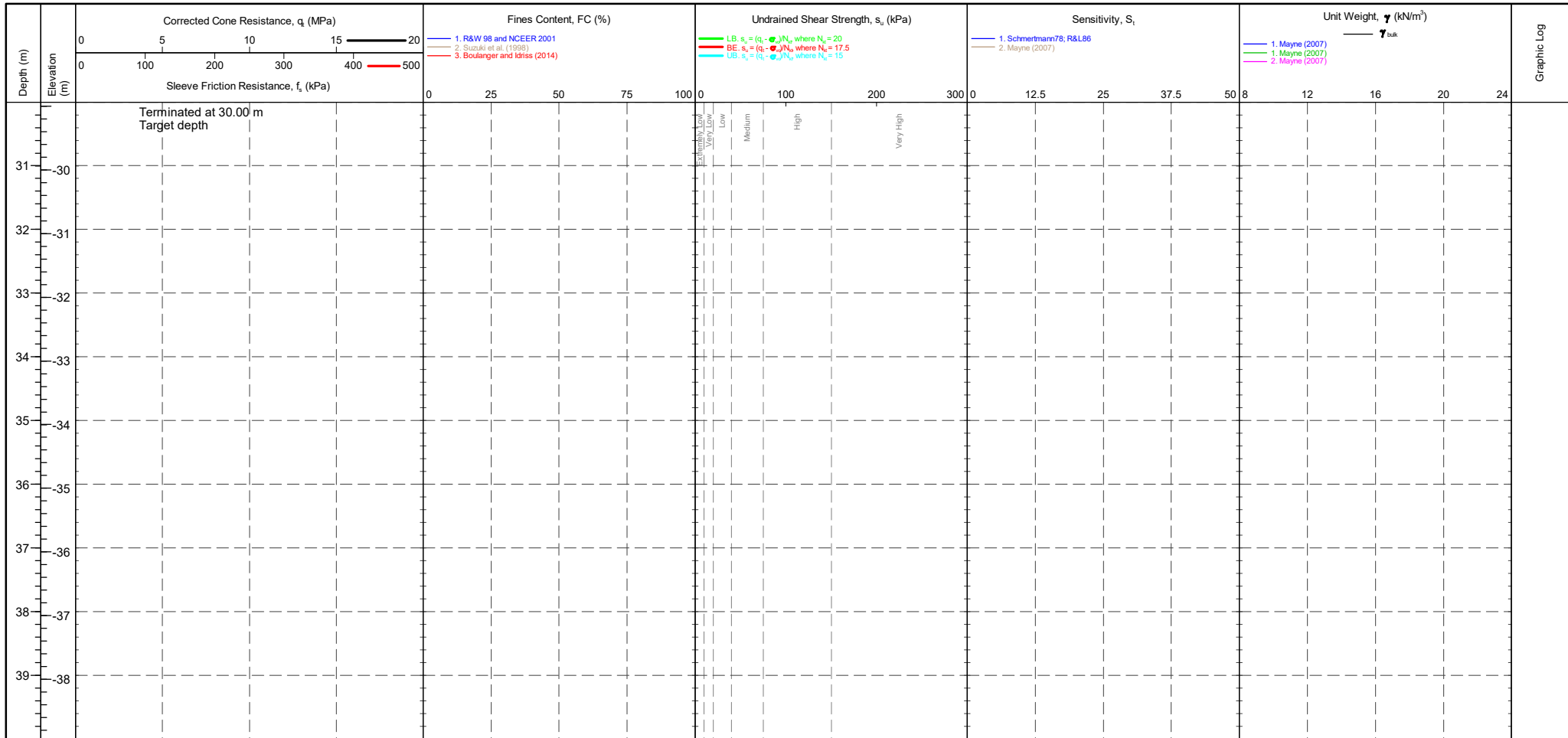
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652228.0 m NORTHING : 305894.9 m ELEVATION : 1.06 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 3 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 01 WEATHER : Overcast & Cold	Transducer Tip Sleeve Pore Pressure 2 X-Y Inclinometer	CPTU ZERO VALUES Pre Post Difference	Groundwater Level Dissipation Test
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PointID
CPT 01

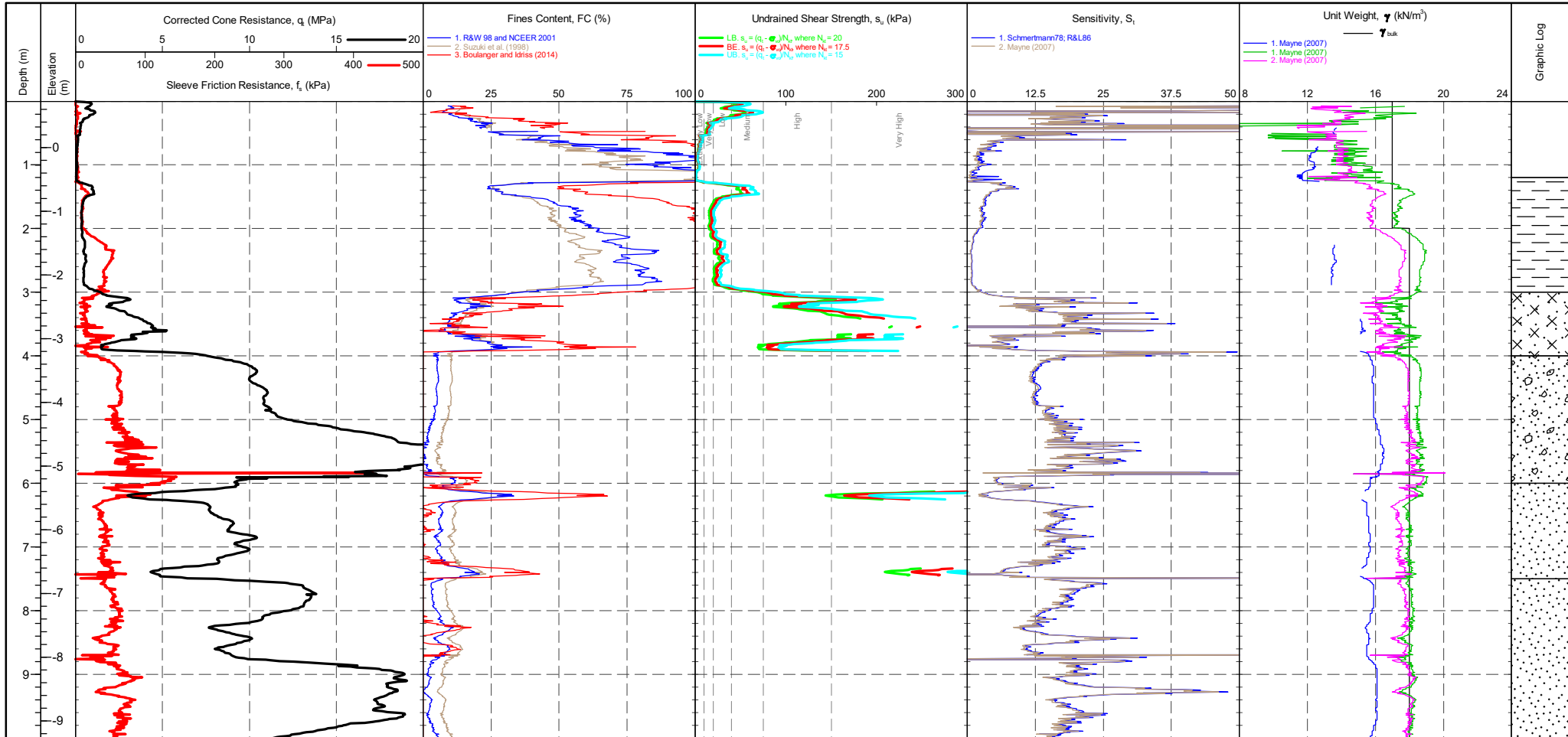
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652228.0 m NORTHING : 305894.9 m ELEVATION : 1.06 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 4 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Waller; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 01 WEATHER : Overcast & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 02

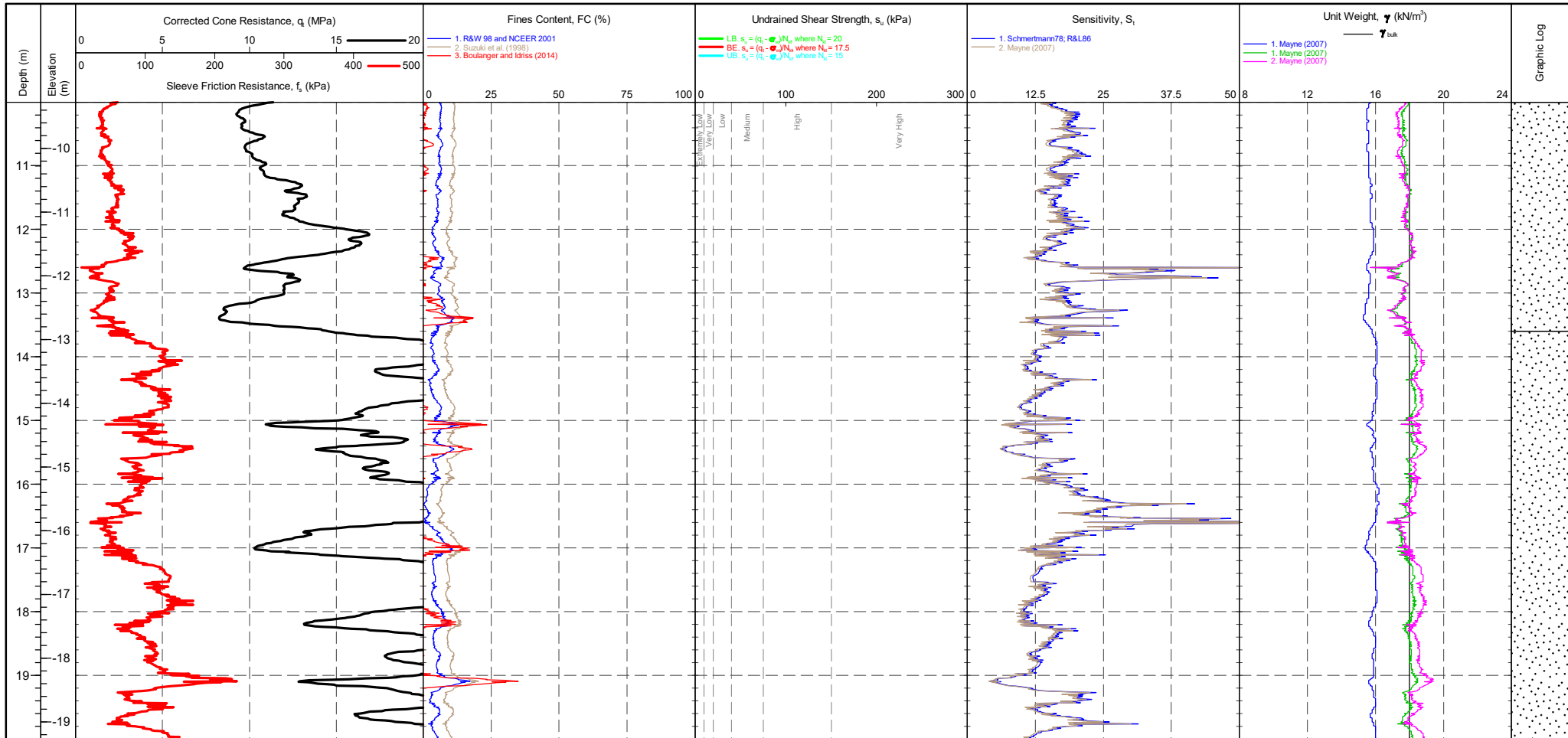
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652244.0 m NORTHING : 305934.2 m ELEVATION : 0.73 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 1 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 02 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 02

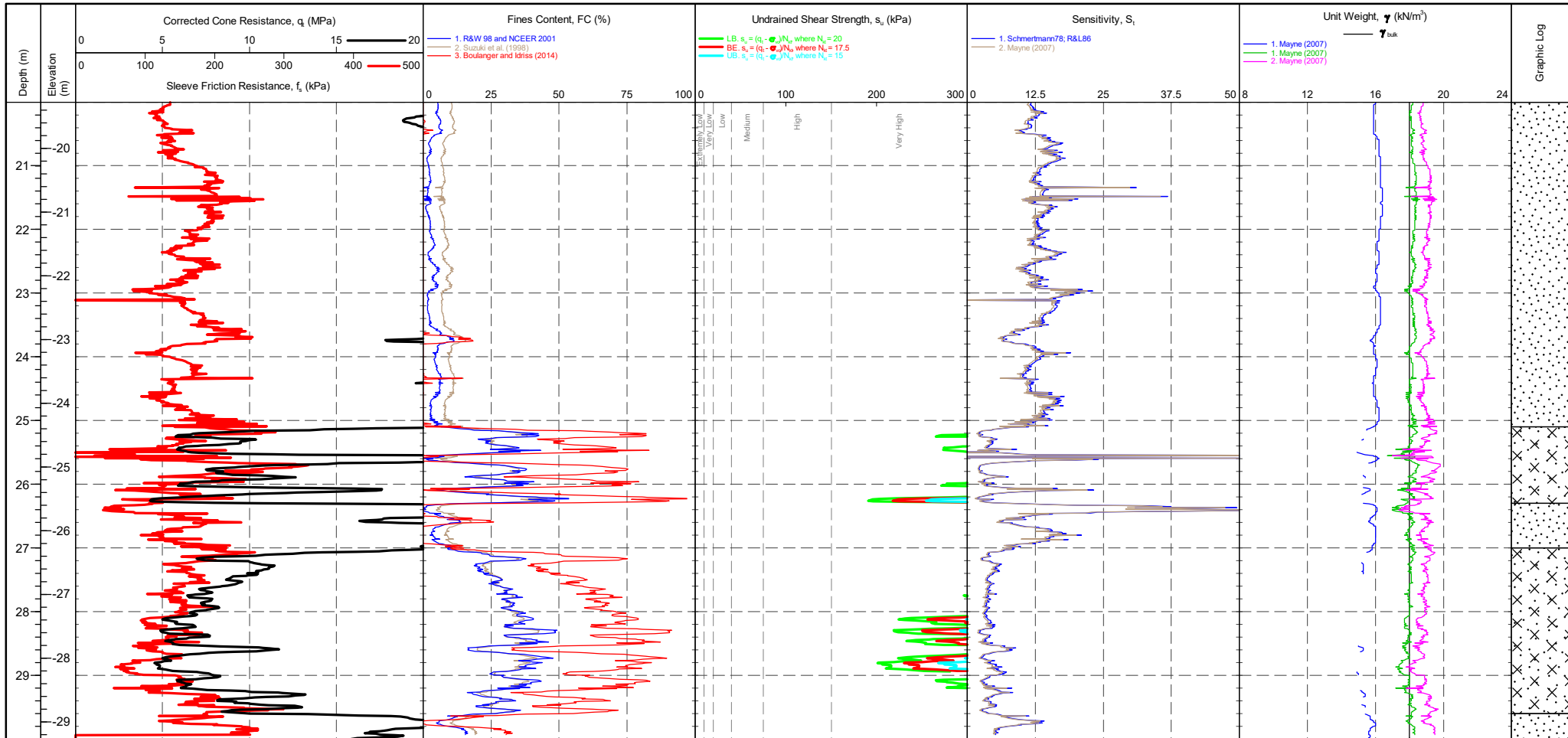
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652244.0 m NORTHING : 305934.2 m ELEVATION : 0.73 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 2 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 02 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 02

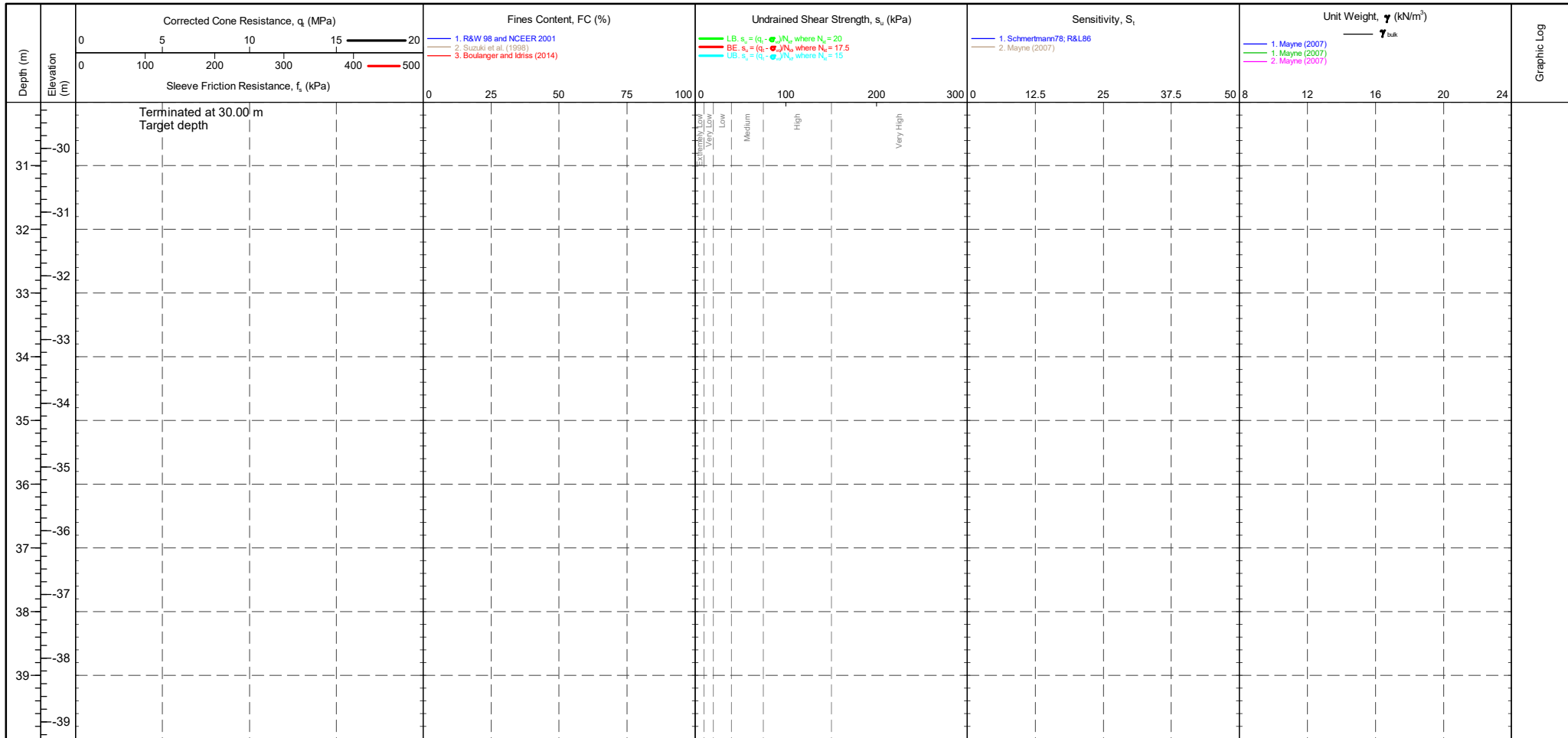
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652244.0 m NORTHING : 305934.2 m ELEVATION : 0.73 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 3 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 02 WEATHER : Sunny & Cold	Transducer Tip Sleeve Pore Pressure 2 X-Y Inclinometer	CPTU ZERO VALUES Pre Post Difference	Groundwater Level Dissipation Test
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PointID
CPT 02

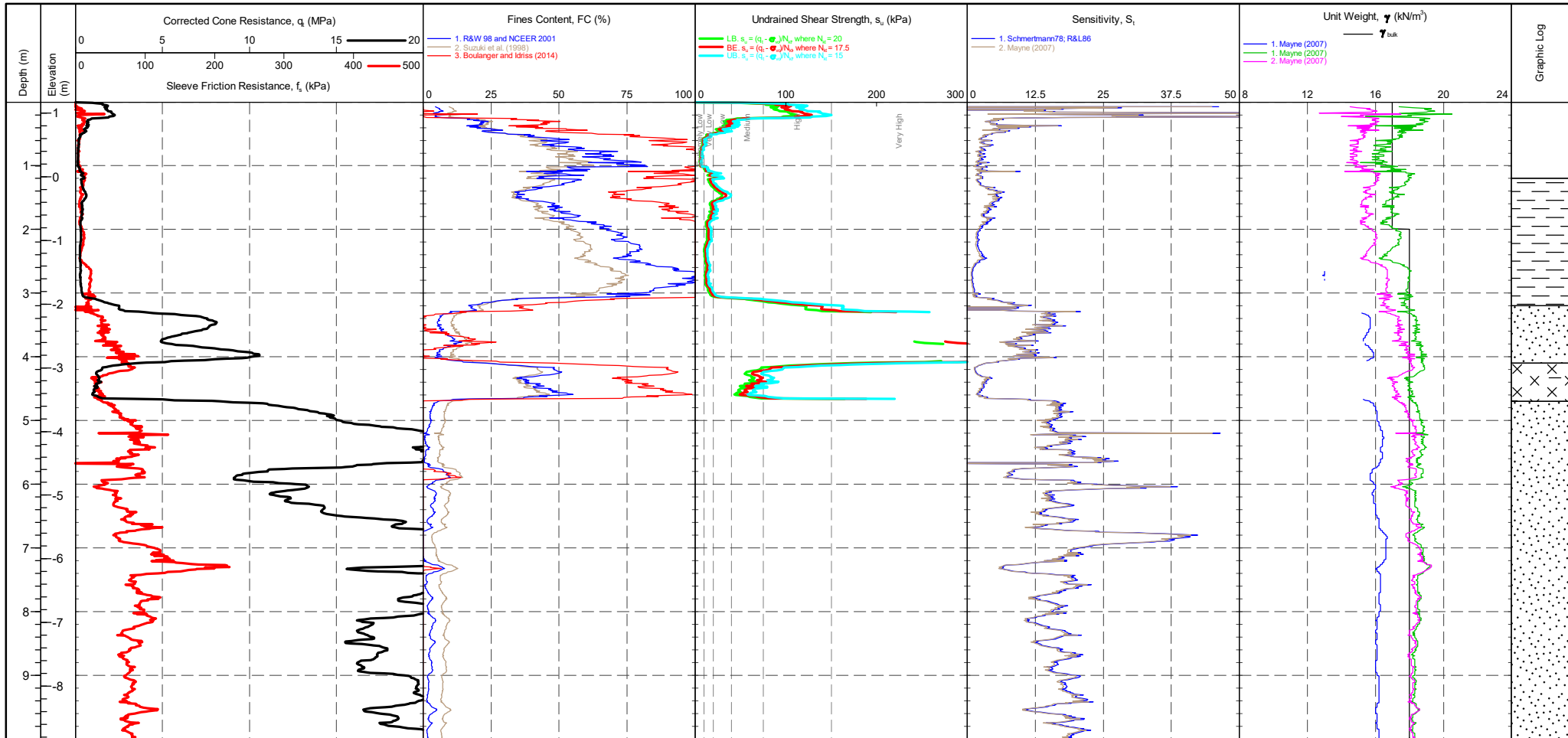
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652244.0 m NORTHING : 305934.2 m ELEVATION : 0.73 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 4 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 02 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 03

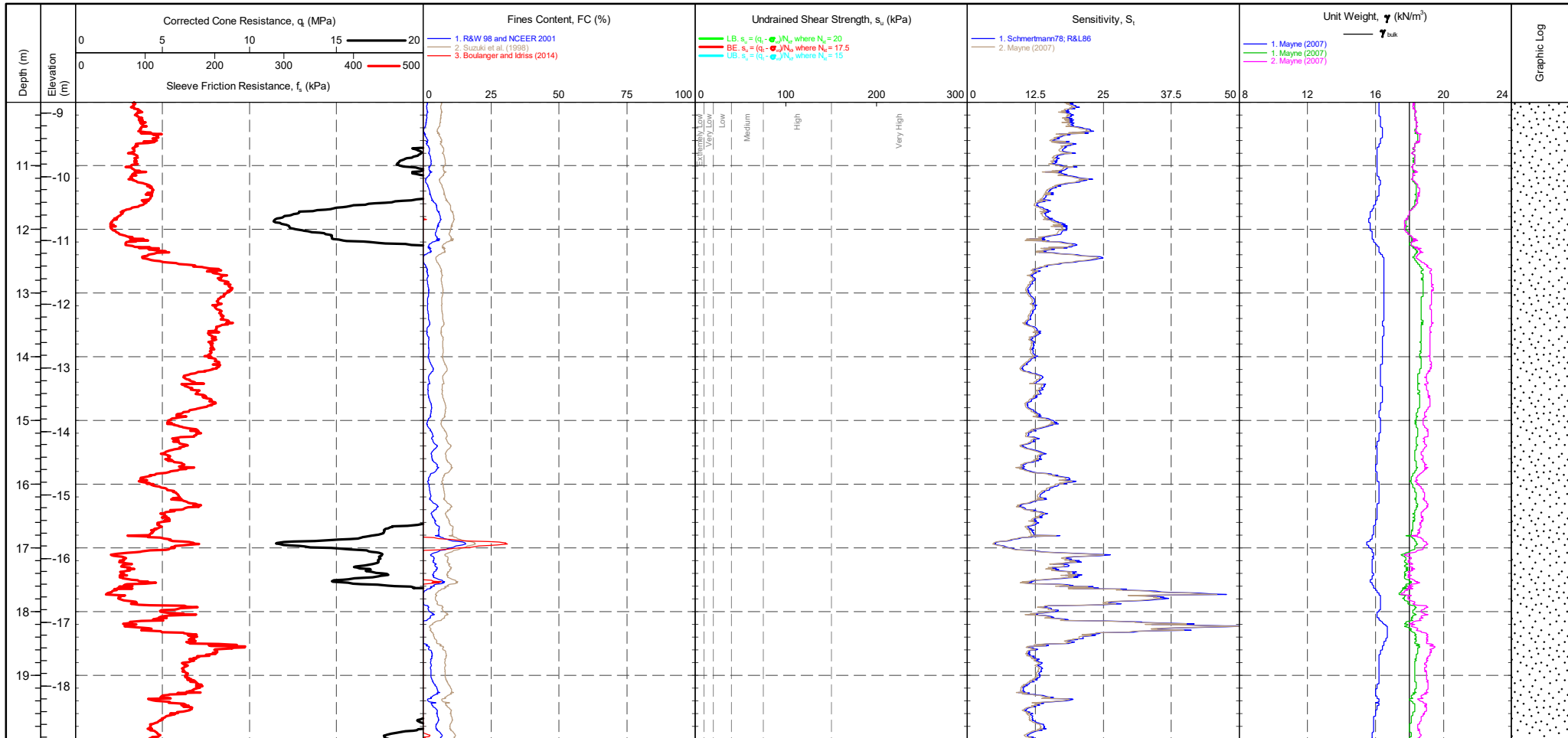
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652308.0 m NORTHING : 305950.5 m ELEVATION : 1.17 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark : 1 Test refused on total pressure.	SHEET : 1 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 03 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 03

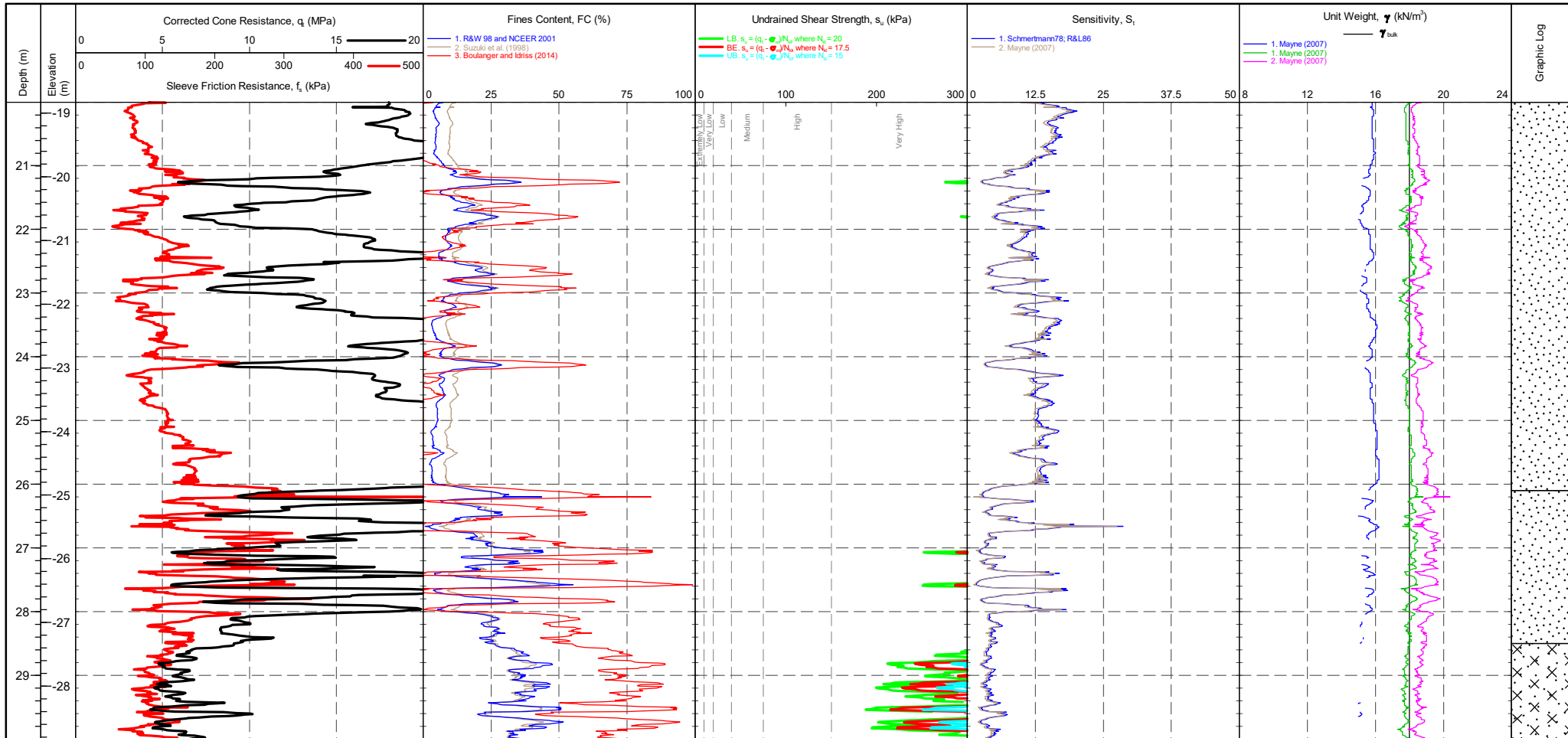
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652308.0 m NORTHING : 305950.5 m ELEVATION : 1.17 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark : 1 Test refused on total pressure.	SHEET : 2 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 03 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 03

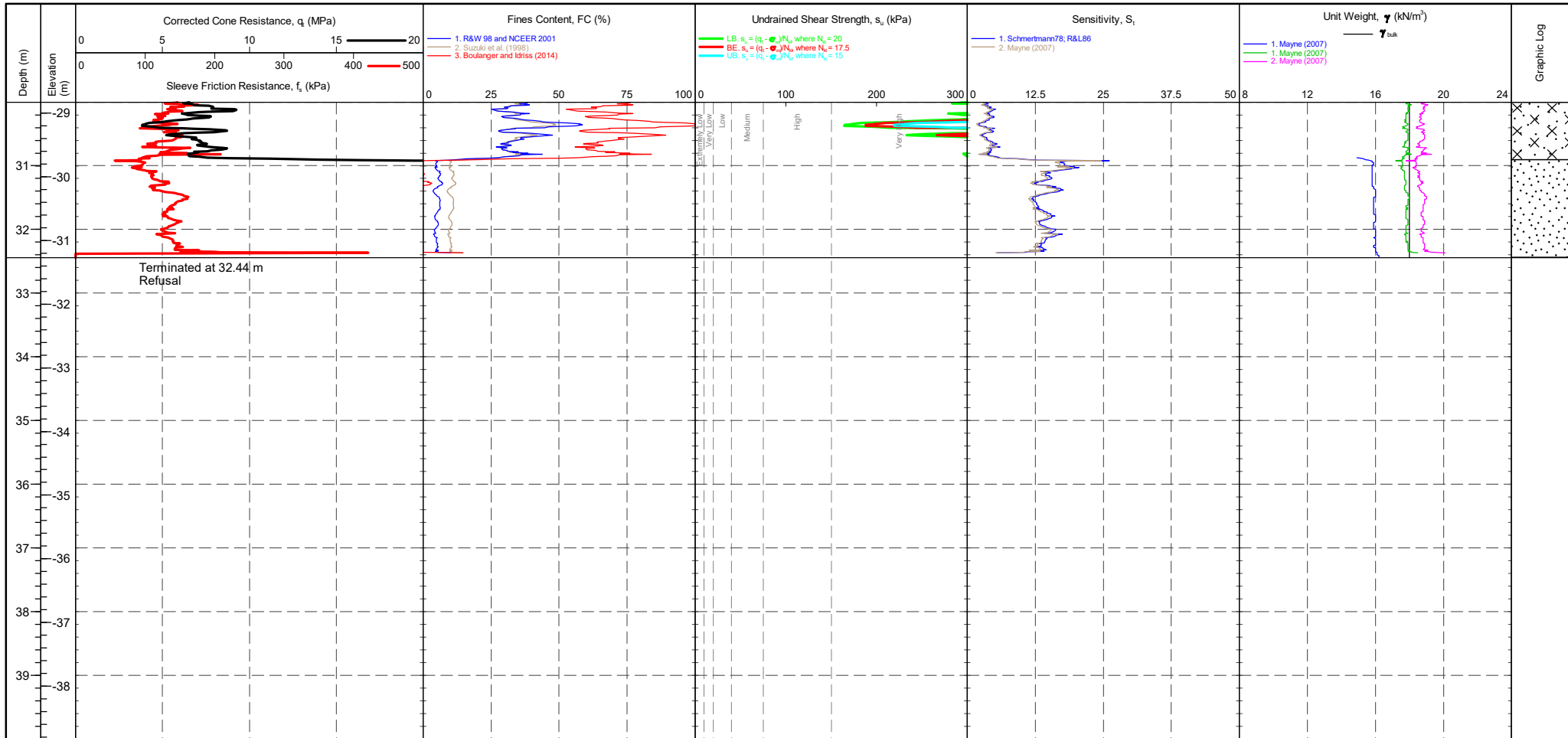
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652308.0 m NORTHING : 305950.5 m ELEVATION : 1.17 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark : 1 Test refused on total pressure.	SHEET : 3 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 03 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 03

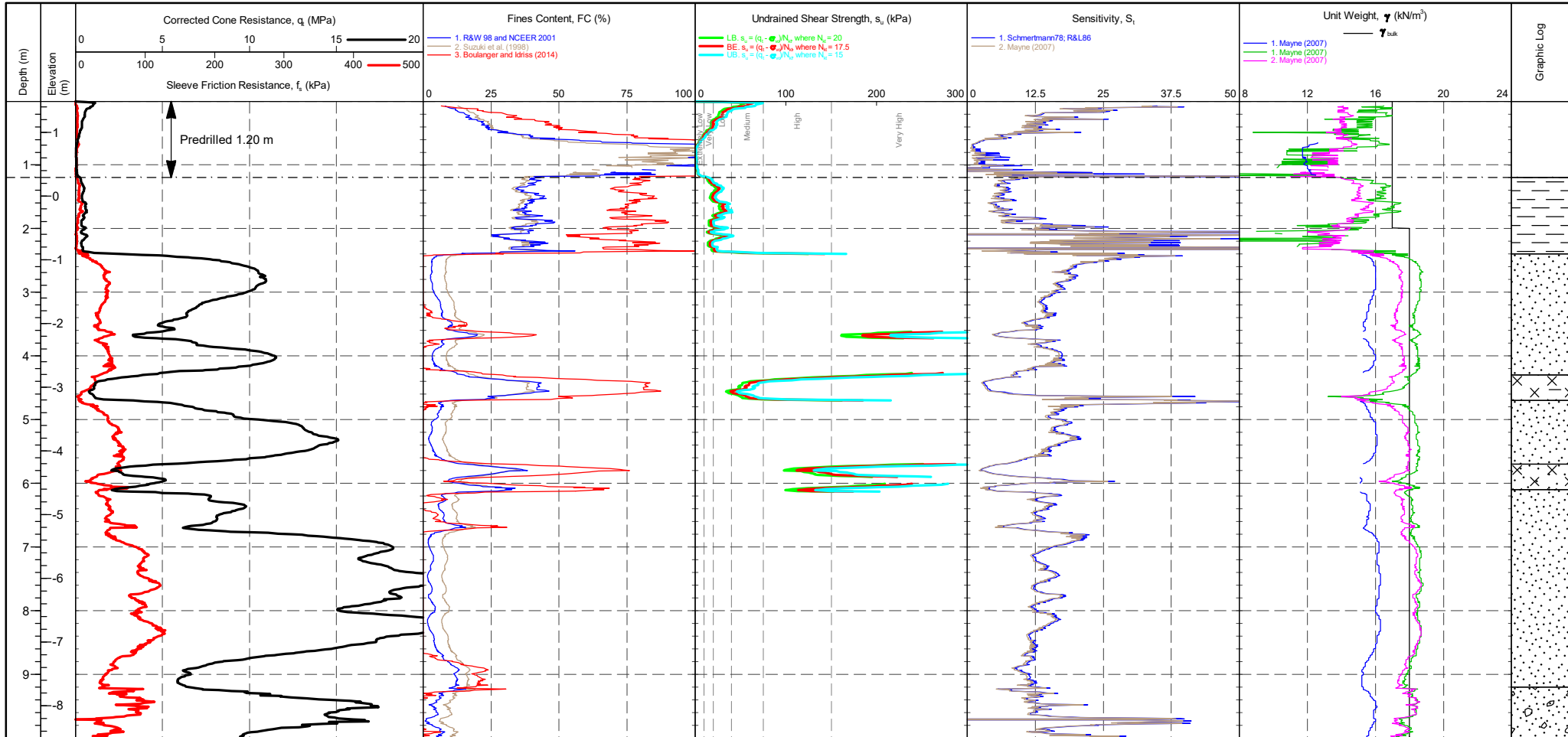
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652308.0 m NORTHING : 305950.5 m ELEVATION : 1.17 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark : 1 Test refused on total pressure.	SHEET : 4 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 03 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 04

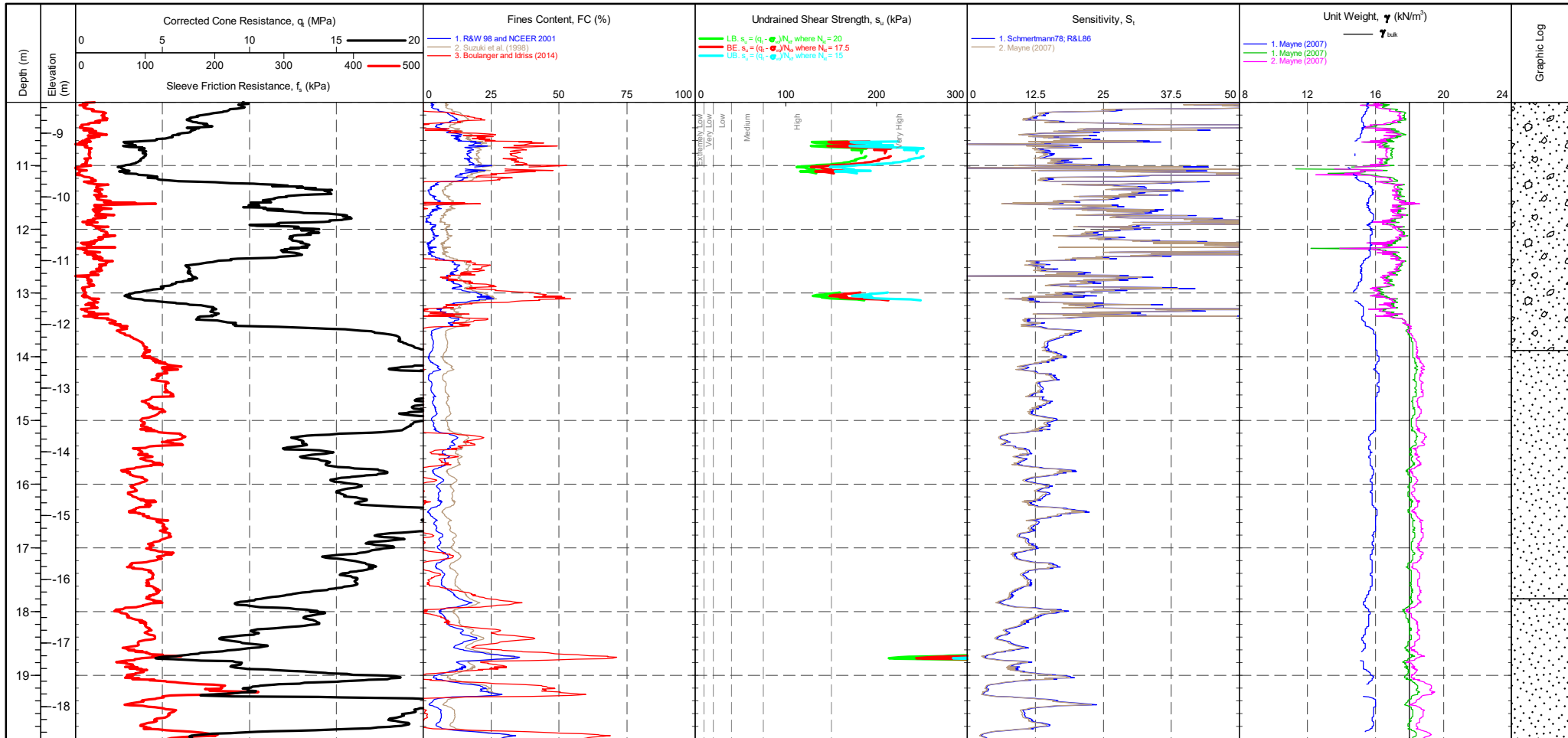
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652571.6 m NORTHING : 306018.0 m ELEVATION : 1.49 m CHECKED BY : LD TERMINATION REASON : Machine Limit	Remark : 7 Test stopped due to buckling rods.	SHEET : 1 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1:2012
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 04 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 04

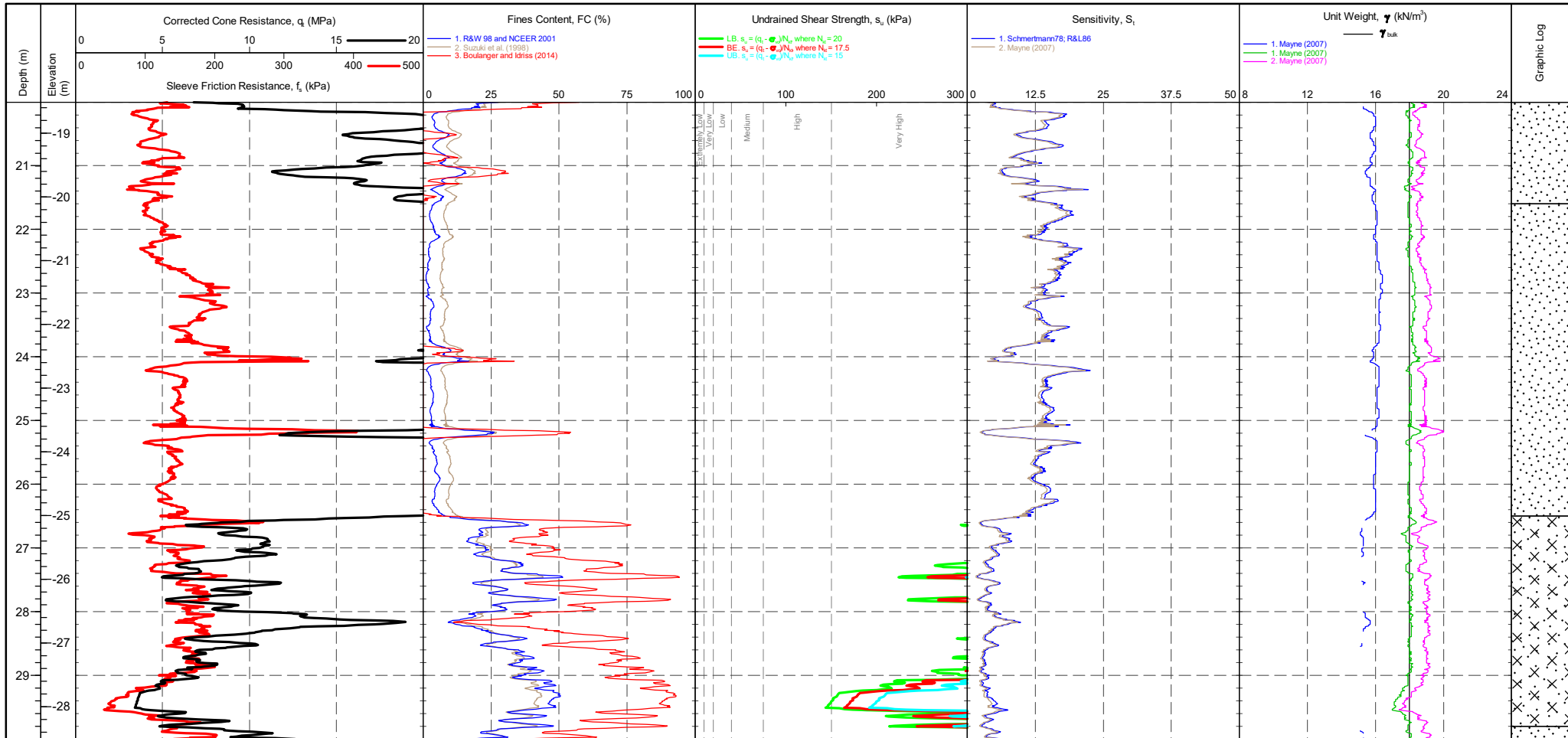
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652571.6 m NORTHING : 306018.0 m ELEVATION : 1.49 m CHECKED BY : LD TERMINATION REASON : Machine Limit	Remark : 7 Test stopped due to buckling rods.	SHEET : 2 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1:2012
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



CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 04 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 04

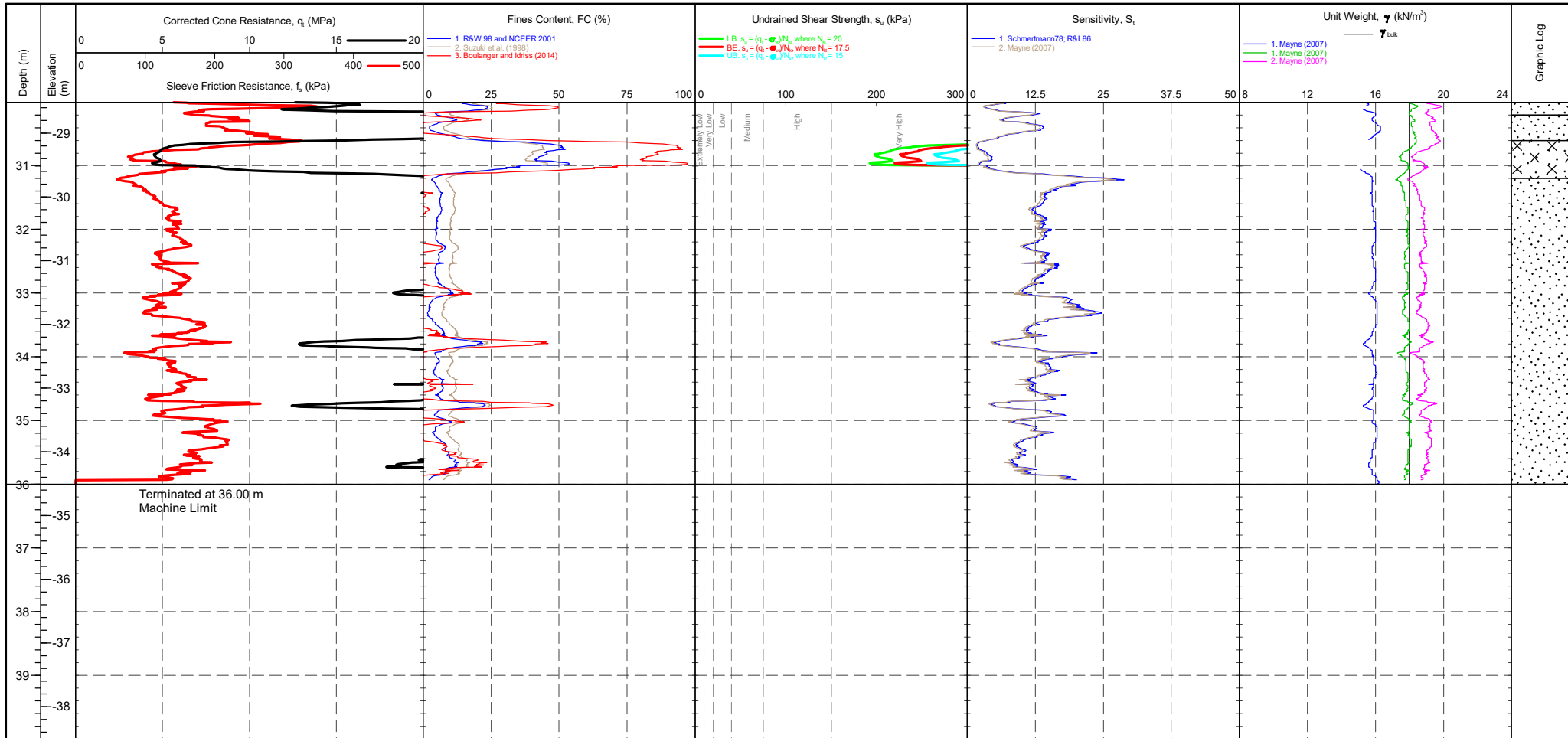
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652571.6 m NORTHING : 306018.0 m ELEVATION : 1.49 m CHECKED BY : LD TERMINATION REASON : Machine Limit	Remark : 7 Test stopped due to buckling rods.	SHEET : 3 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1:2012
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 04 WEATHER : Sunny & Cold	Transducer Tip Sleeve Pore Pressure 2 X-Y Inclinometer	CPTU ZERO VALUES Pre Post Difference	 Groundwater Level  Dissipation Test
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PointID
CPT 04

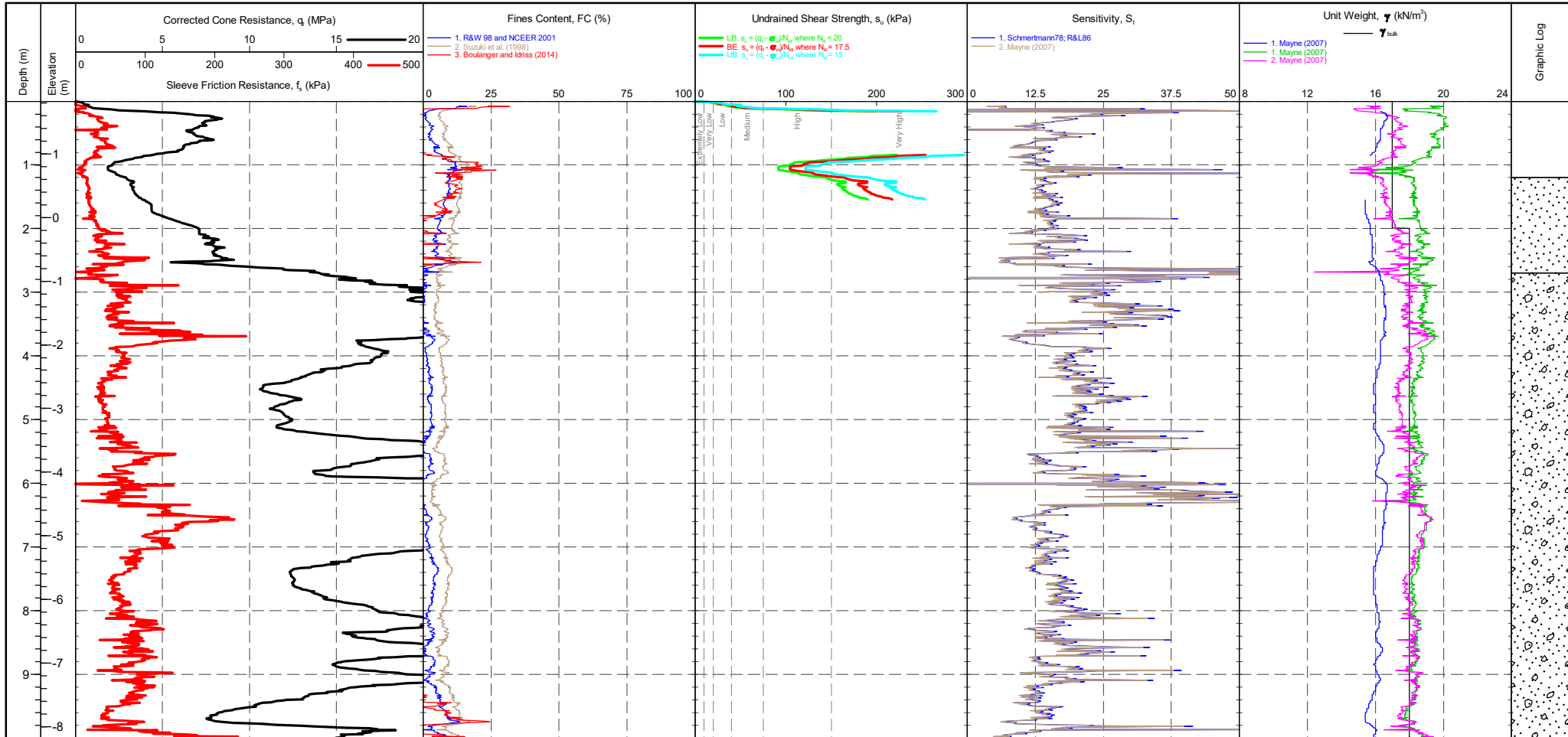
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652571.6 m NORTHING : 306018.0 m ELEVATION : 1.49 m CHECKED BY : LD TERMINATION REASON : Machine Limit	Remark : 7 Test stopped due to buckling rods.	SHEET : 4 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1:2012
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 04 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 05

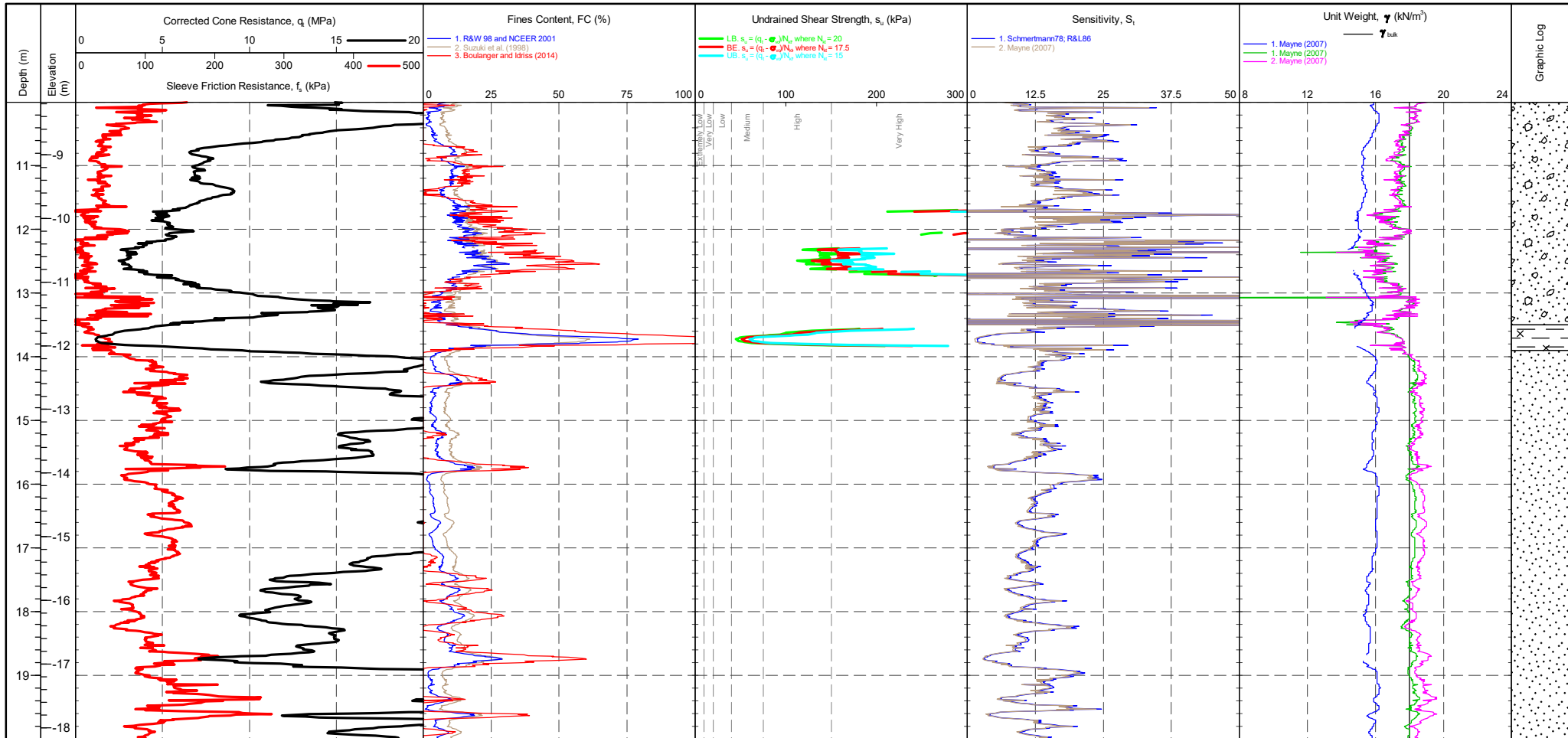
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652646.1 m NORTHING : 305984.8 m ELEVATION : 1.83 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 1 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 05 WEATHER : Overcast & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 05

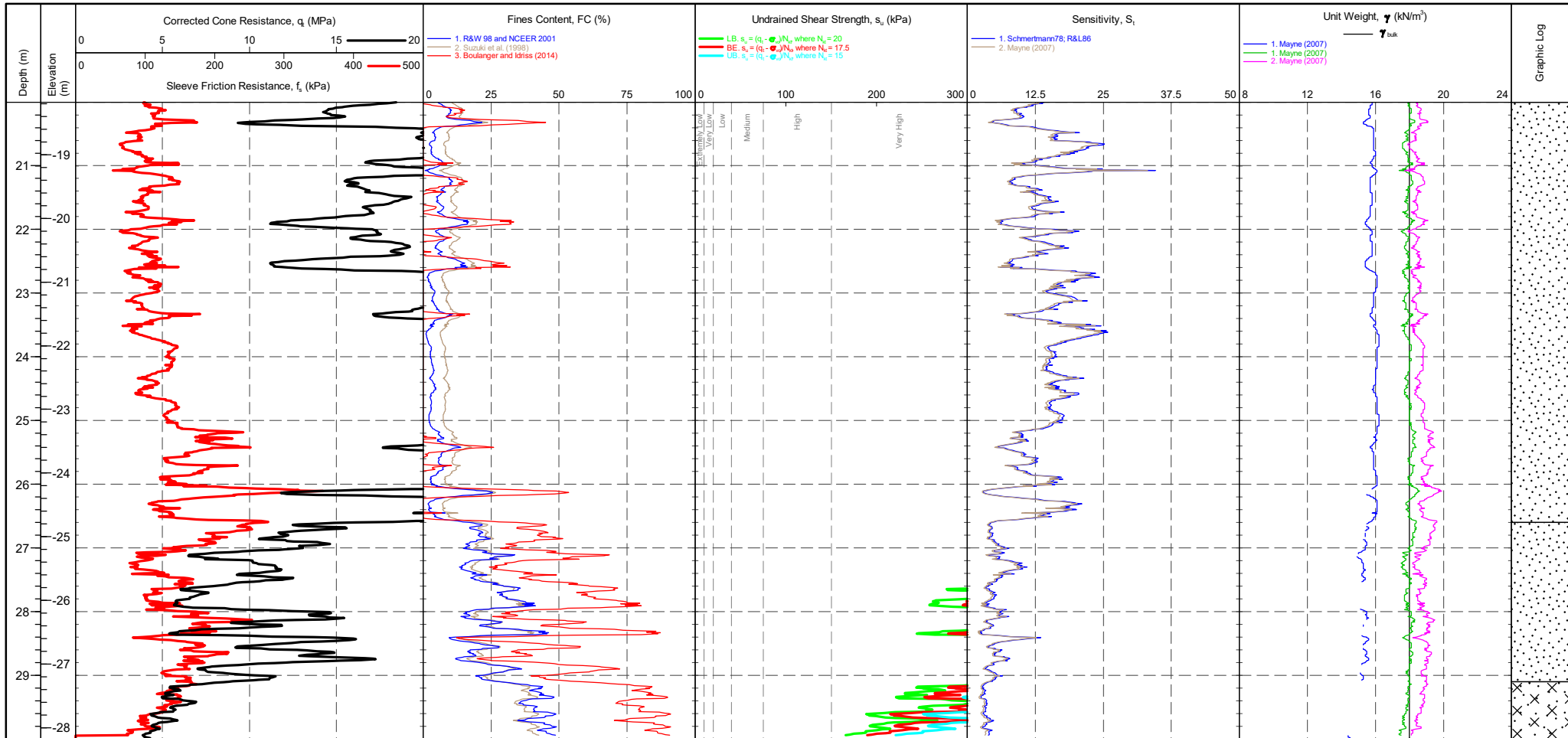
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652646.1 m NORTHING : 305984.8 m ELEVATION : 1.83 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 2 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 05 WEATHER : Overcast & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 05

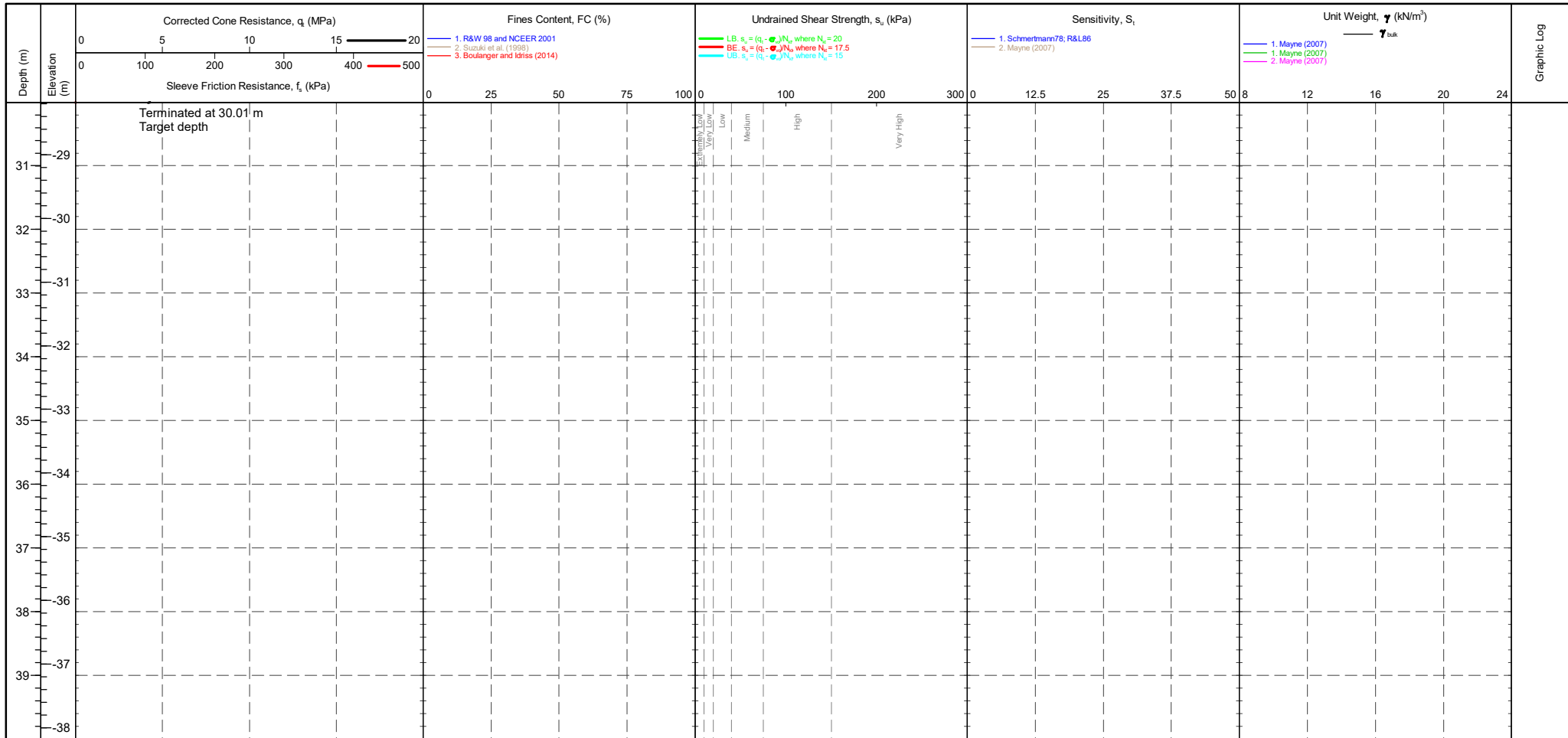
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652646.1 m NORTHING : 305984.8 m ELEVATION : 1.83 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 3 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 05 WEATHER : Overcast & Cold	Transducer Tip Sleeve Pore Pressure 2 X-Y Inclinometer	CPTU ZERO VALUES Pre Post Difference	Groundwater Level Dissipation Test
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PointID
CPT 05

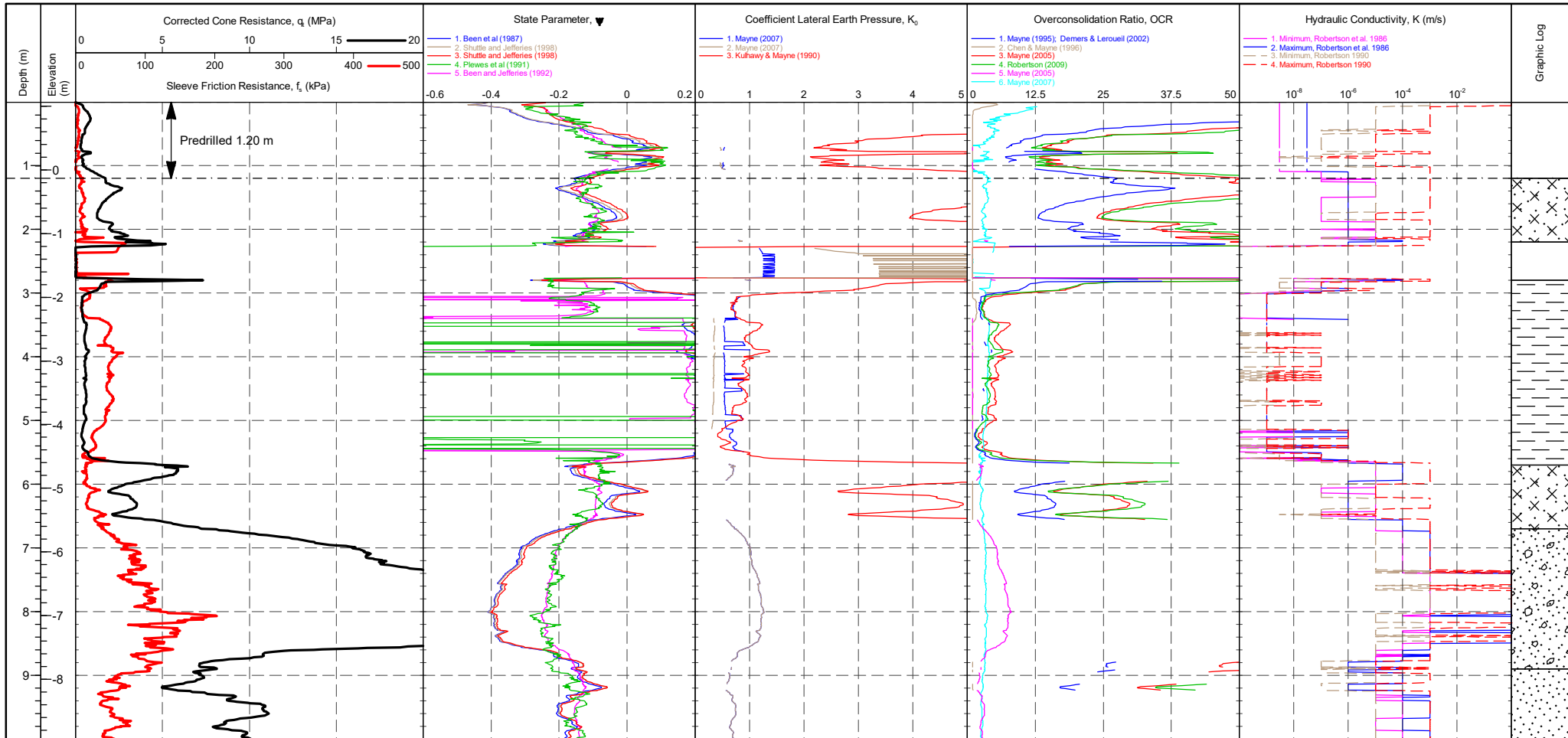
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652646.1 m NORTHING : 305984.8 m ELEVATION : 1.83 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 4 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 05 WEATHER : Overcast & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 01

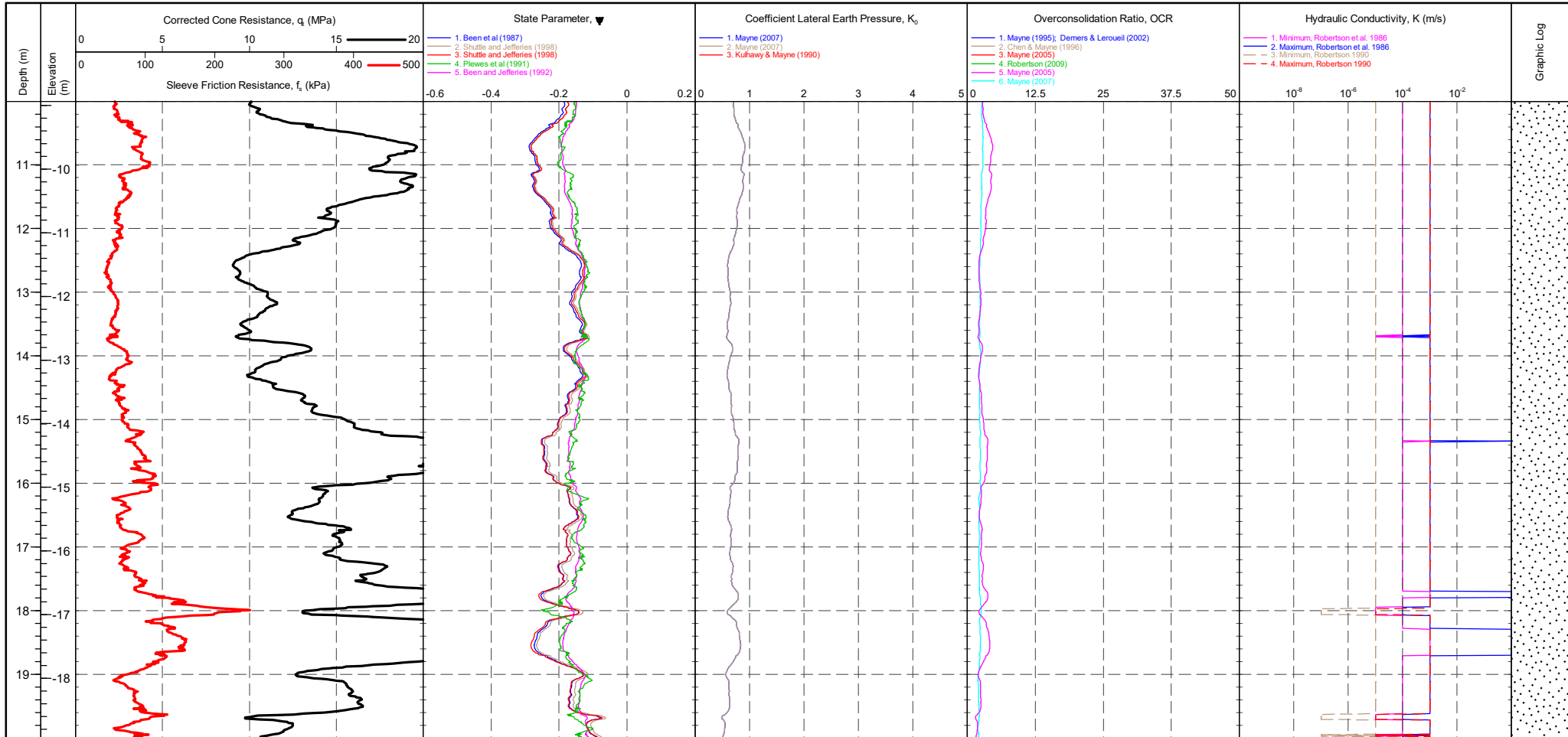
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652228.0 m NORTHING : 305894.9 m ELEVATION : 1.06 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 1 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 01 WEATHER : Overcast & Cold	CPTU ZERO VALUES Transducer : Tip : Sleeve : Pore Pressure 2 : X-Y Inclinometer :	Pre : Post : Difference :	Groundwater Level Dissipation Test
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PointID : **CPT 01**

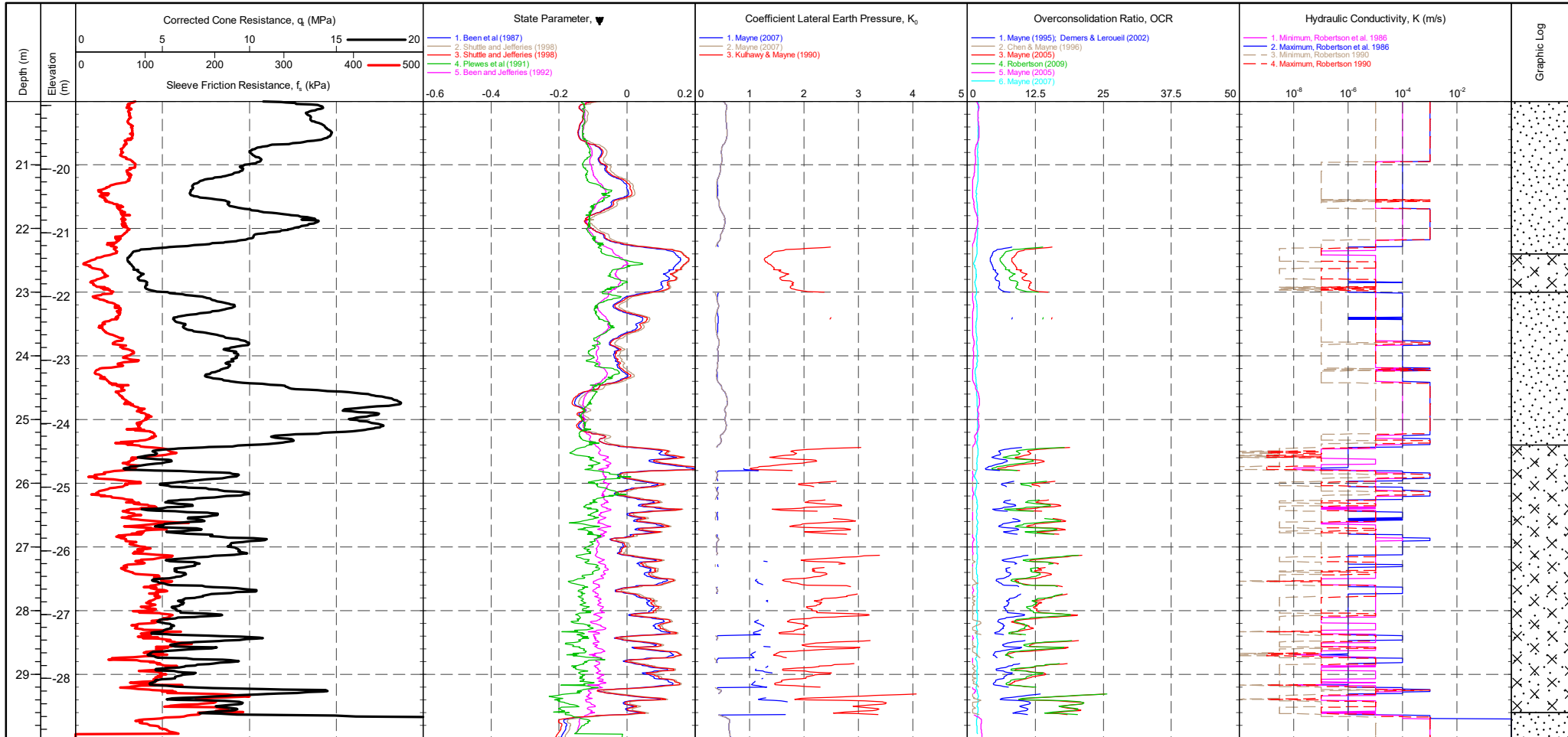
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652228.0 m NORTHING : 305894.9 m ELEVATION : 1.06 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 2 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 01 WEATHER : Overcast & Cold	CPTU ZERO VALUES <table border="1"> <thead> <tr> <th>Transducer</th> <th>Pre</th> <th>Post</th> <th>Difference</th> </tr> </thead> <tbody> <tr> <td>Tip</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Sleeve</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Pore Pressure 2</td> <td></td> <td></td> <td></td> </tr> <tr> <td>X-Y Inclinometer</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Transducer	Pre	Post	Difference	Tip				Sleeve				Pore Pressure 2				X-Y Inclinometer				Groundwater Level Dissipation Test
Transducer	Pre	Post	Difference																				
Tip																							
Sleeve																							
Pore Pressure 2																							
X-Y Inclinometer																							

PointID
CPT 01

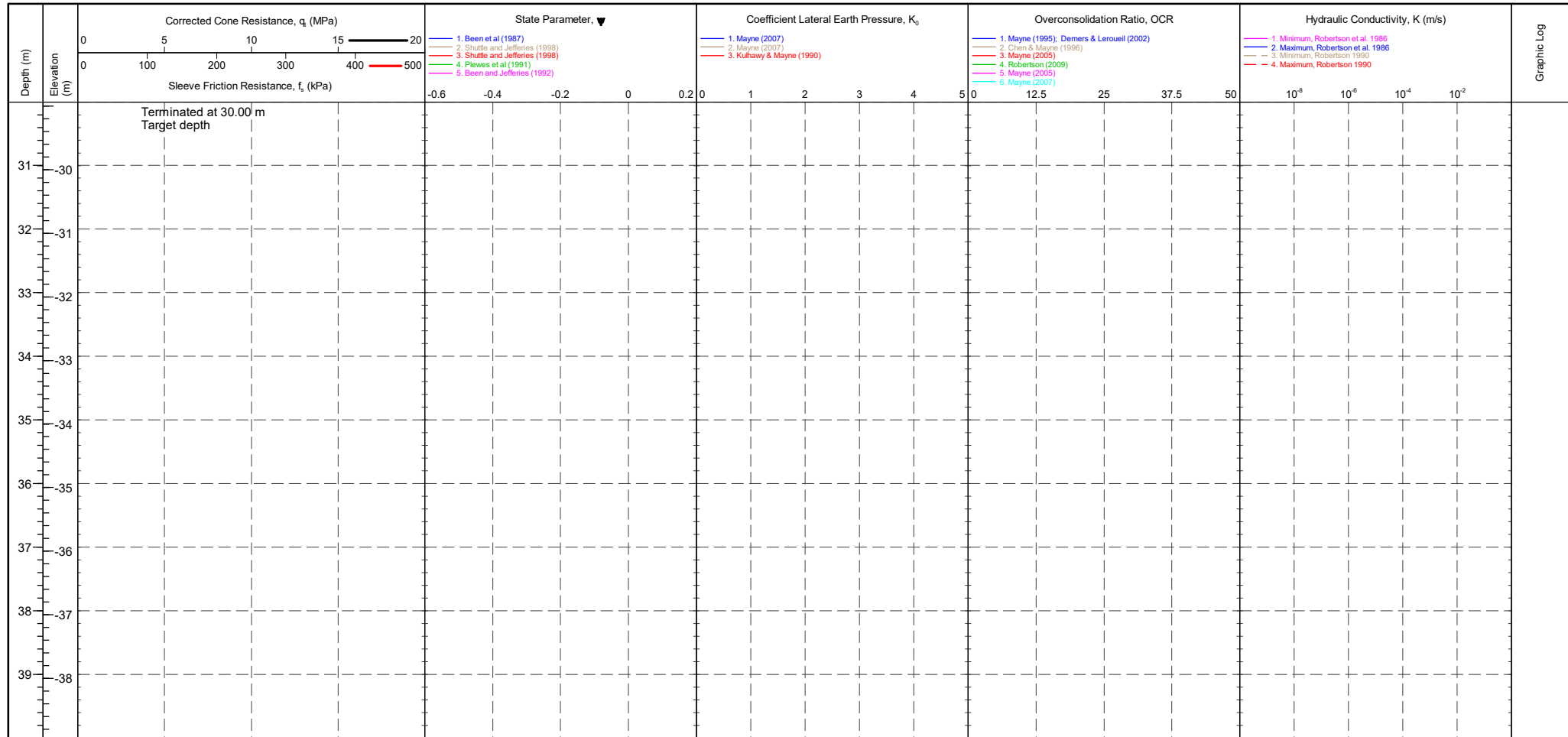
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652228.0 m NORTHING : 305894.9 m ELEVATION : 1.06 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 3 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 01 WEATHER : Overcast & Cold	CPTU ZERO VALUES Transducer Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Pre Post Difference	Groundwater Level Dissipation Test
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PointID
CPT 01

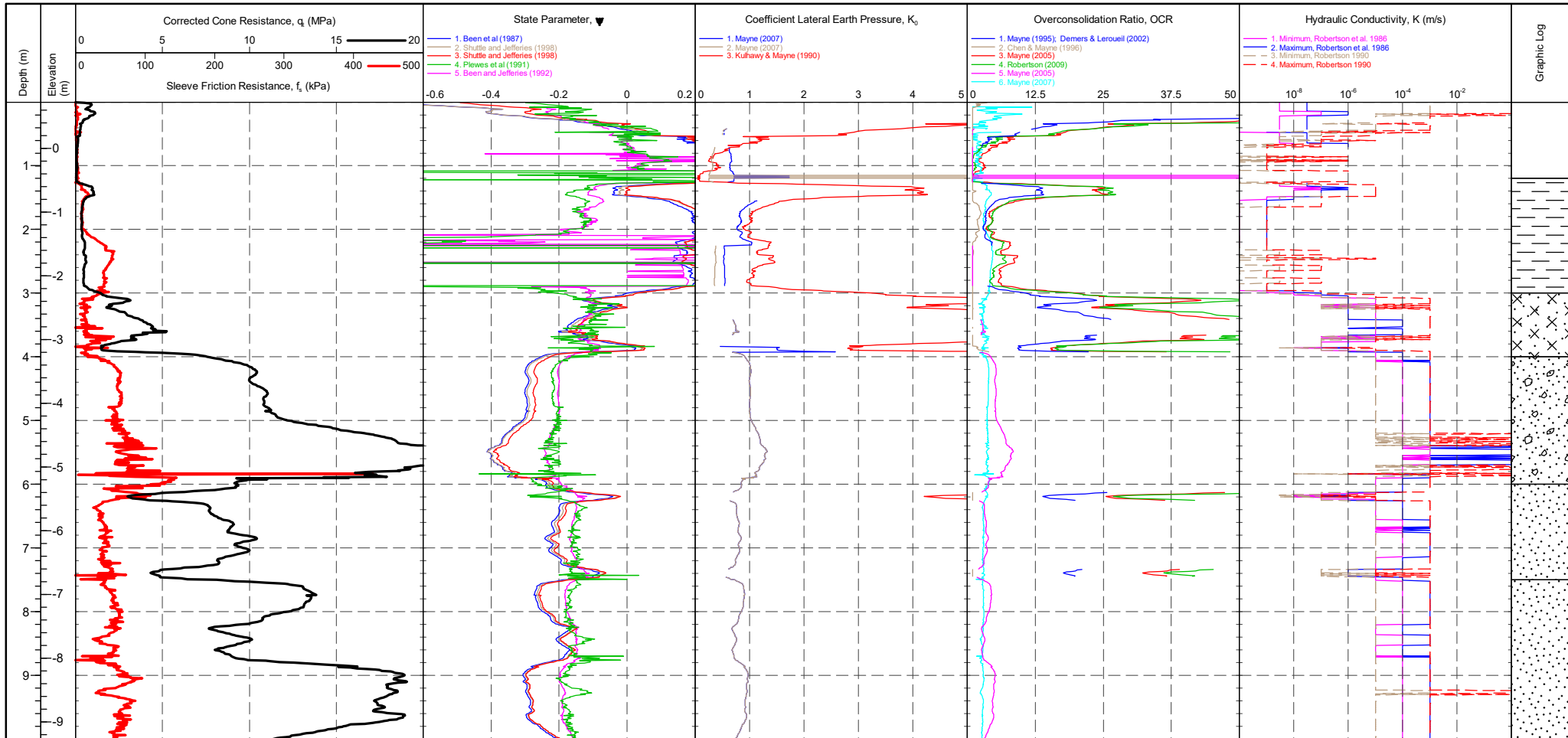
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652228.0 m NORTHING : 305894.9 m ELEVATION : 1.06 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 4 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 01 WEATHER : Overcast & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 02

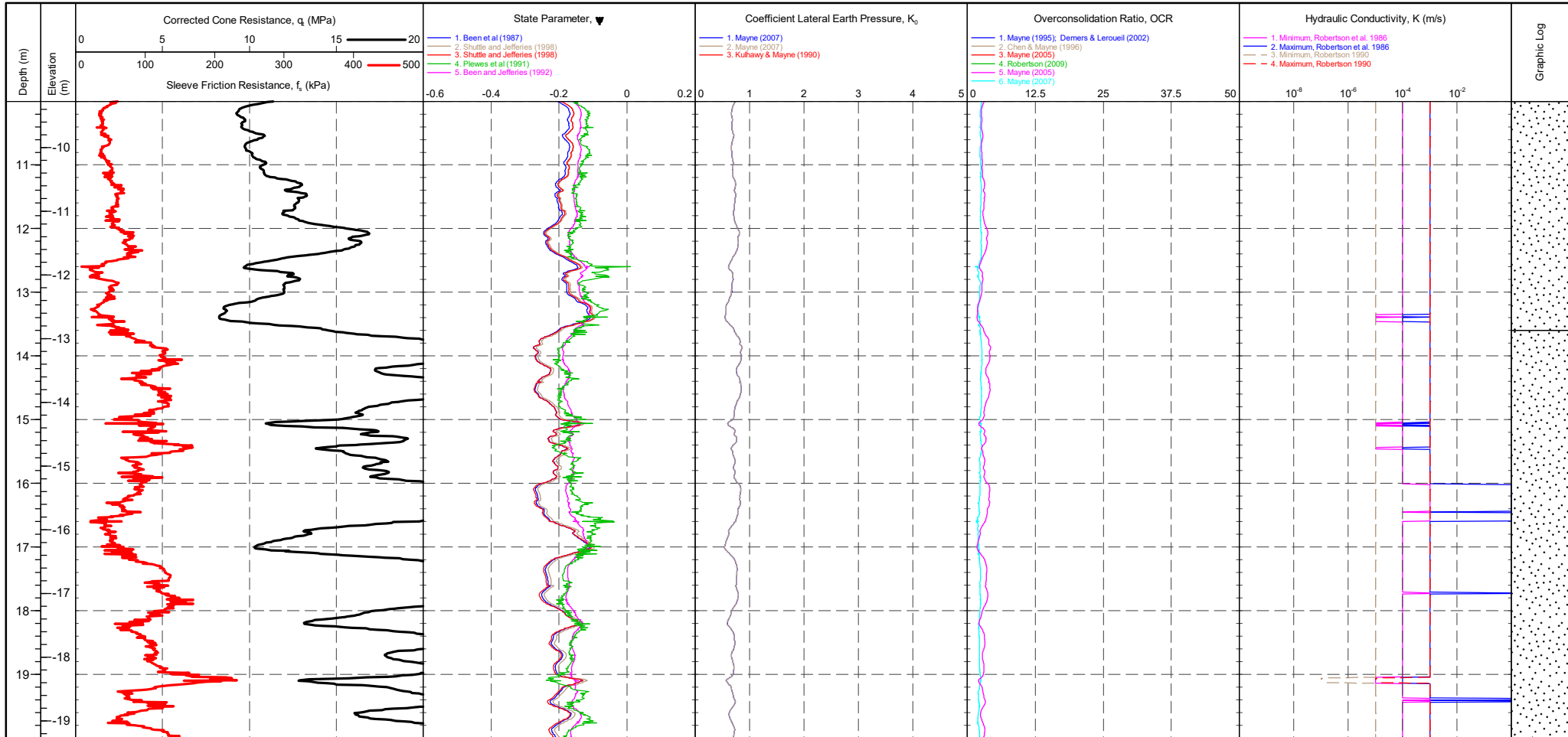
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652244.0 m NORTHING : 305934.2 m ELEVATION : 0.73 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 1 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 02 WEATHER : Sunny & Cold	CPTU ZERO VALUES <table border="1"> <tr> <th>Transducer</th> <th>Pre</th> <th>Post</th> <th>Difference</th> </tr> <tr> <td>Tip</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Sleeve</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Pore Pressure 2</td> <td></td> <td></td> <td></td> </tr> <tr> <td>X-Y Inclinometer</td> <td></td> <td></td> <td></td> </tr> </table>	Transducer	Pre	Post	Difference	Tip				Sleeve				Pore Pressure 2				X-Y Inclinometer				Groundwater Level Dissipation Test
Transducer	Pre	Post	Difference																				
Tip																							
Sleeve																							
Pore Pressure 2																							
X-Y Inclinometer																							

PointID : **CPT 02**

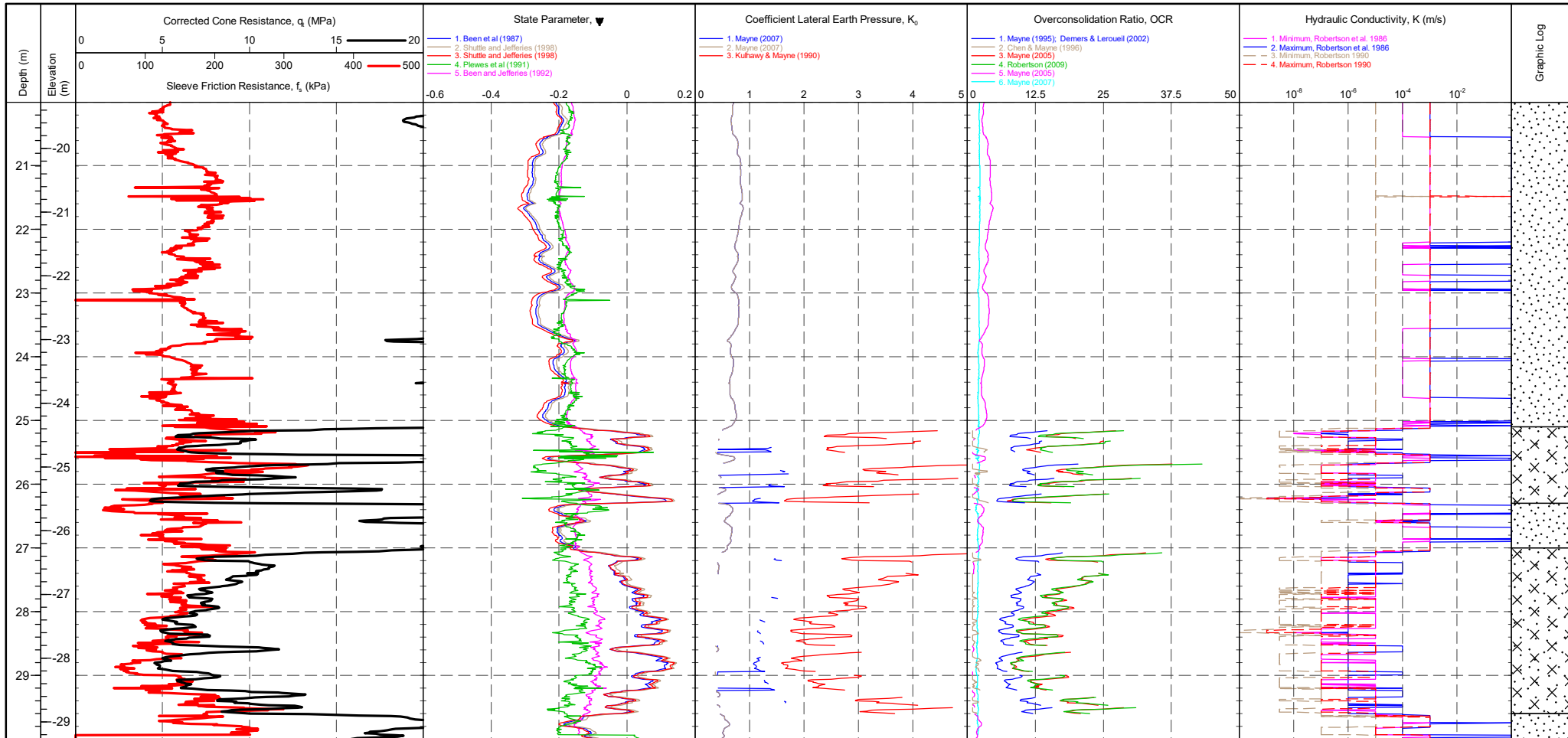
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652244.0 m NORTHING : 305934.2 m ELEVATION : 0.73 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 2 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 02 WEATHER : Sunny & Cold	CPTU ZERO VALUES <table border="1"> <tr> <th>Transducer</th> <th>Pre</th> <th>Post</th> <th>Difference</th> </tr> <tr> <td>Tip</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Sleeve</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Pore Pressure 2</td> <td></td> <td></td> <td></td> </tr> <tr> <td>X-Y Inclinometer</td> <td></td> <td></td> <td></td> </tr> </table>	Transducer	Pre	Post	Difference	Tip				Sleeve				Pore Pressure 2				X-Y Inclinometer				Groundwater Level Dissipation Test
Transducer	Pre	Post	Difference																				
Tip																							
Sleeve																							
Pore Pressure 2																							
X-Y Inclinometer																							

PointID
CPT 02

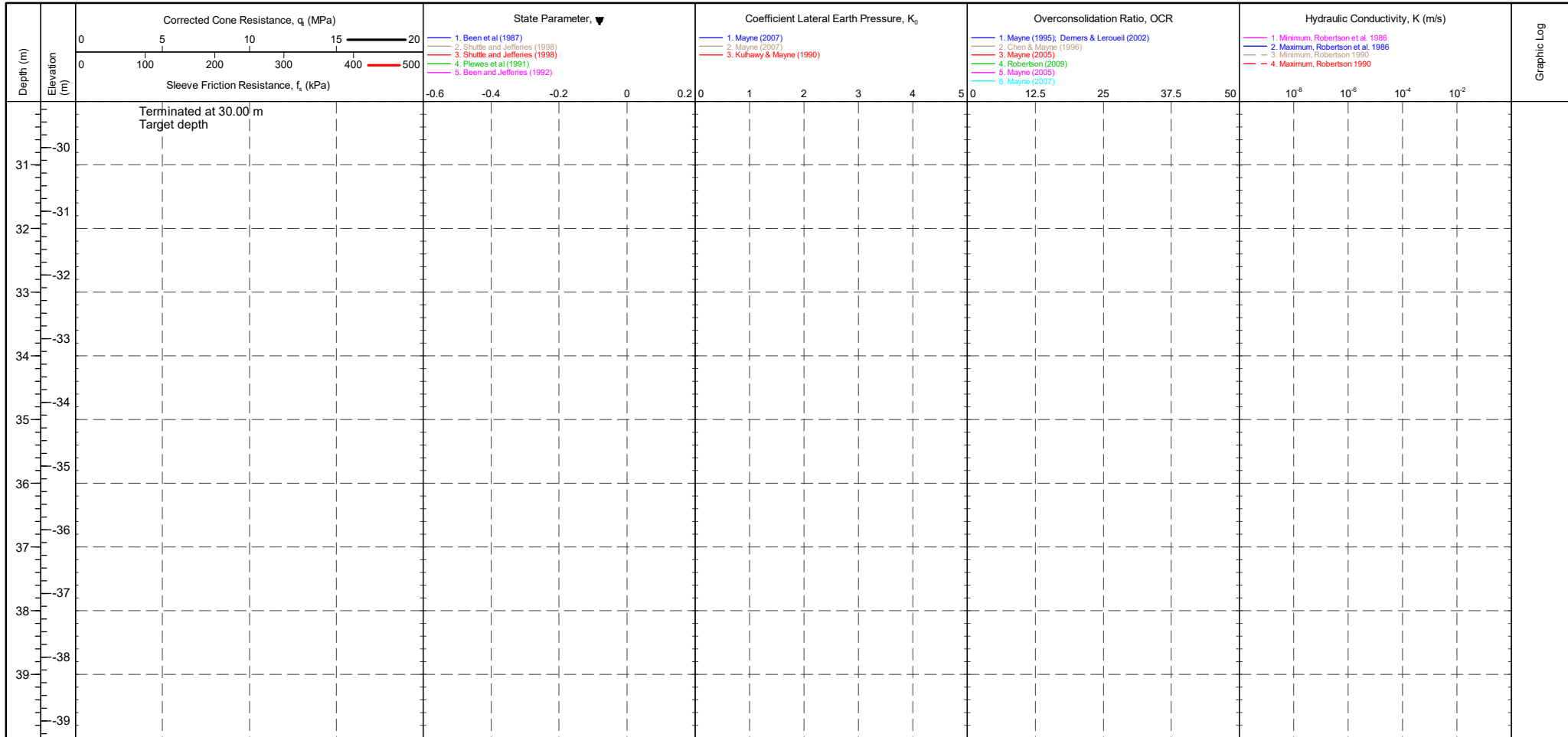
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652244.0 m NORTHING : 305934.2 m ELEVATION : 0.73 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 3 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 02 WEATHER : Sunny & Cold	Transducer Tip Sleeve Pore Pressure 2 X-Y Inclinometer	CPTU ZERO VALUES Pre Post Difference	Groundwater Level Dissipation Test
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PointID
CPT 02

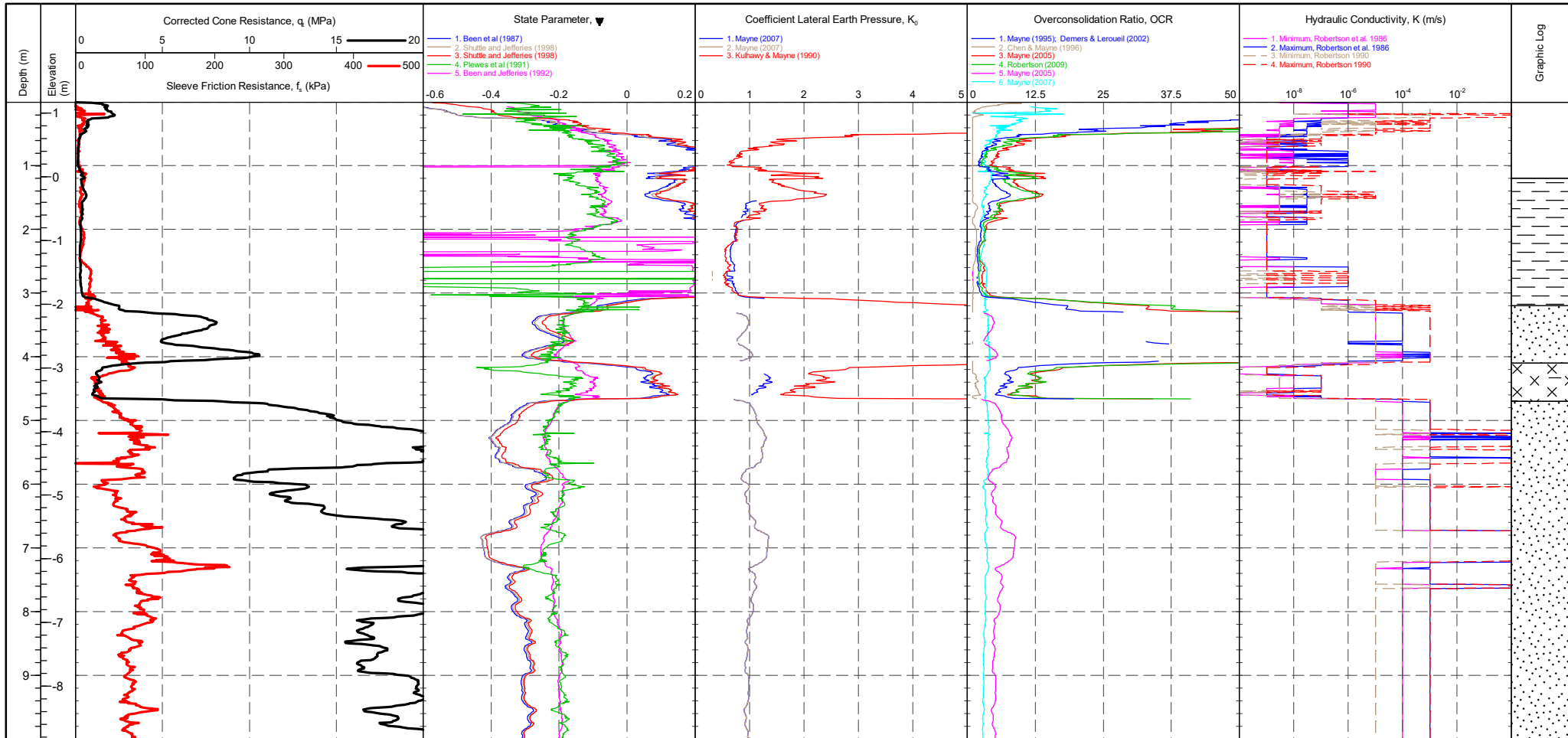
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652244.0 m NORTHING : 305934.2 m ELEVATION : 0.73 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 4 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 02 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 03

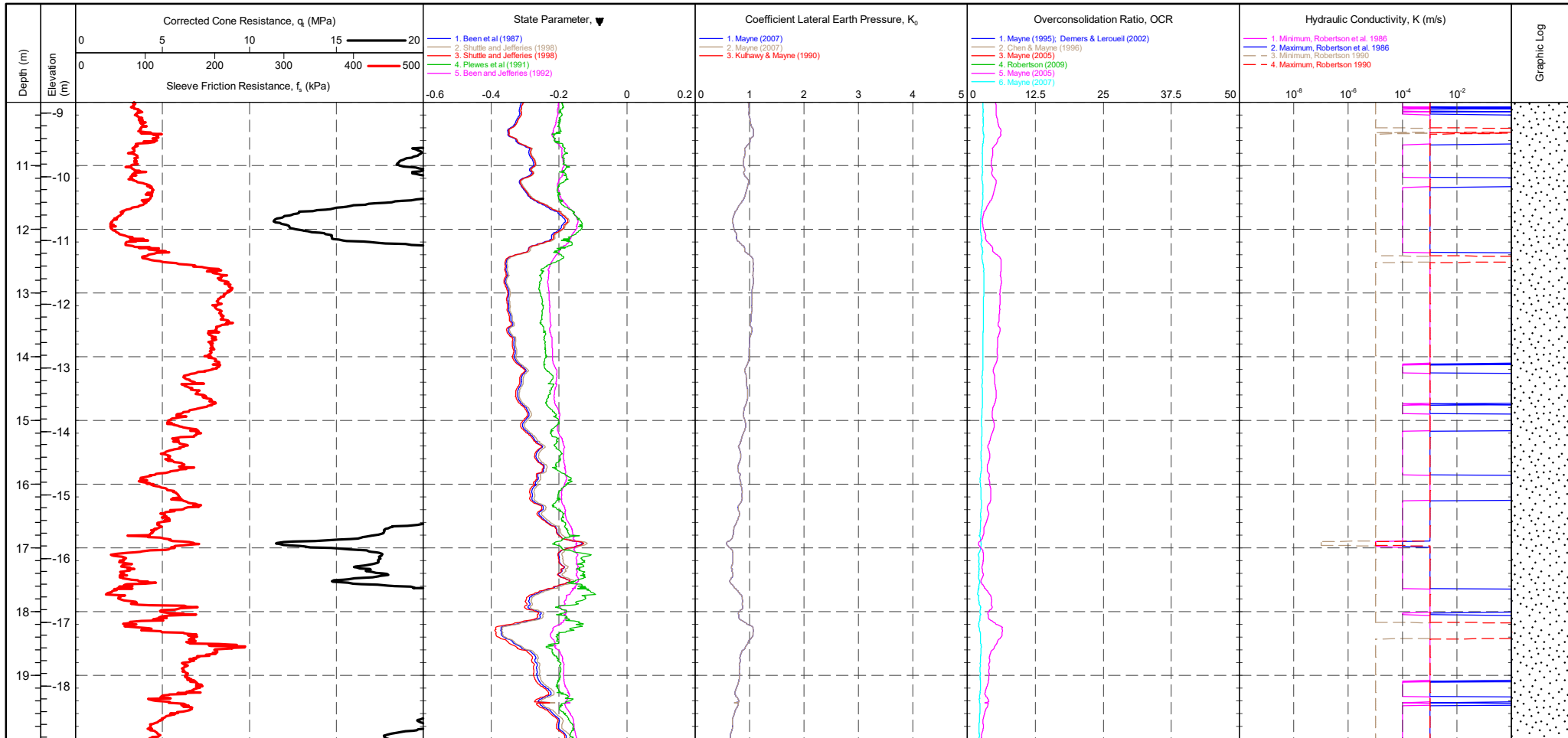
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652308.0 m NORTHING : 305950.5 m ELEVATION : 1.17 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark : 1 Test refused on total pressure.	SHEET : 1 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICITION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 03 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 03

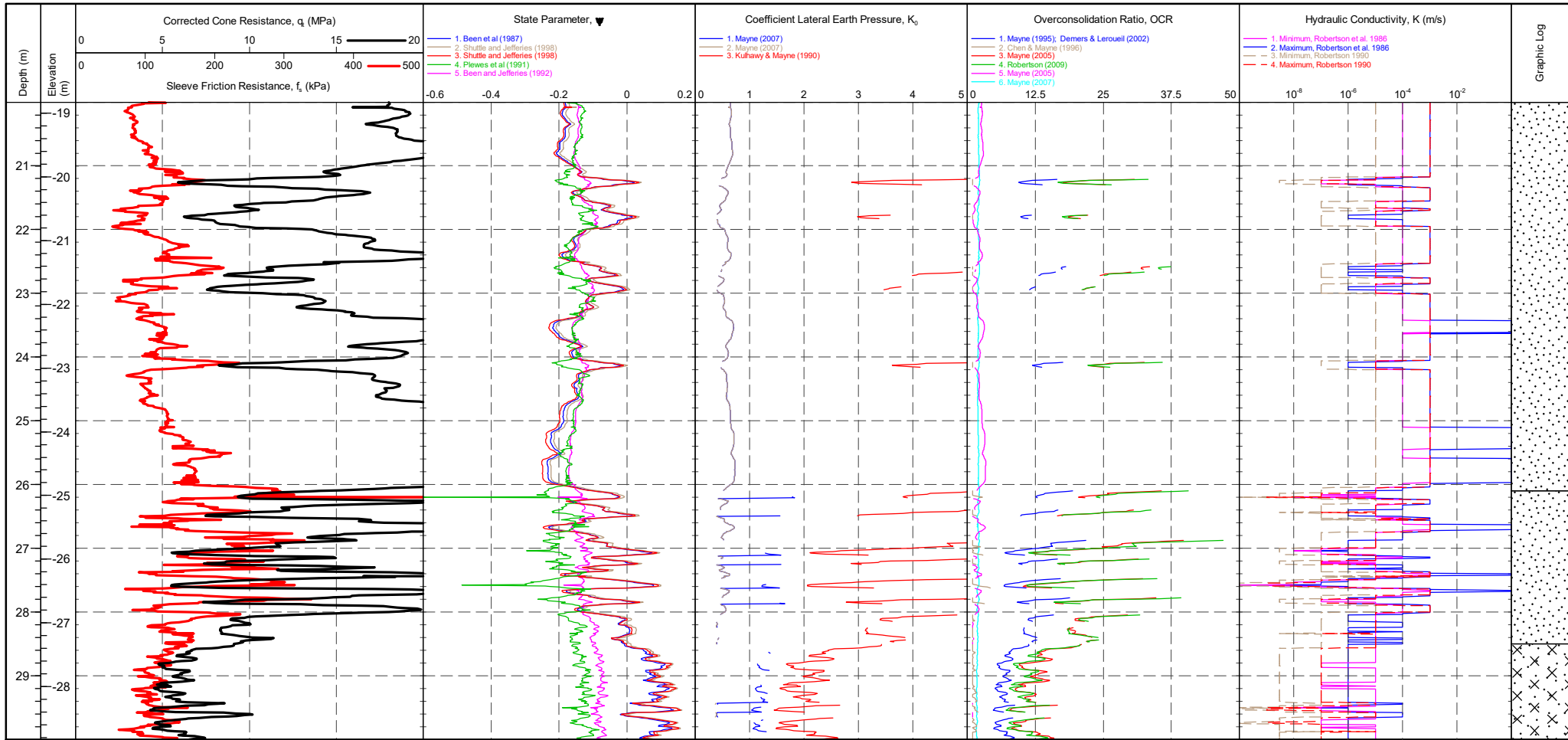
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652308.0 m NORTHING : 305950.5 m ELEVATION : 1.17 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark : 1 Test refused on total pressure.	SHEET : 2 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 03 WEATHER : Sunny & Cold	CPTU ZERO VALUES <table border="1"> <tr> <th>Transducer</th> <th>Pre</th> <th>Post</th> <th>Difference</th> </tr> <tr> <td>Tip</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Sleeve</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Pore Pressure 2</td> <td></td> <td></td> <td></td> </tr> <tr> <td>X-Y Inclinometer</td> <td></td> <td></td> <td></td> </tr> </table>	Transducer	Pre	Post	Difference	Tip				Sleeve				Pore Pressure 2				X-Y Inclinometer				Groundwater Level Dissipation Test
Transducer	Pre	Post	Difference																				
Tip																							
Sleeve																							
Pore Pressure 2																							
X-Y Inclinometer																							

PointID
CPT 03

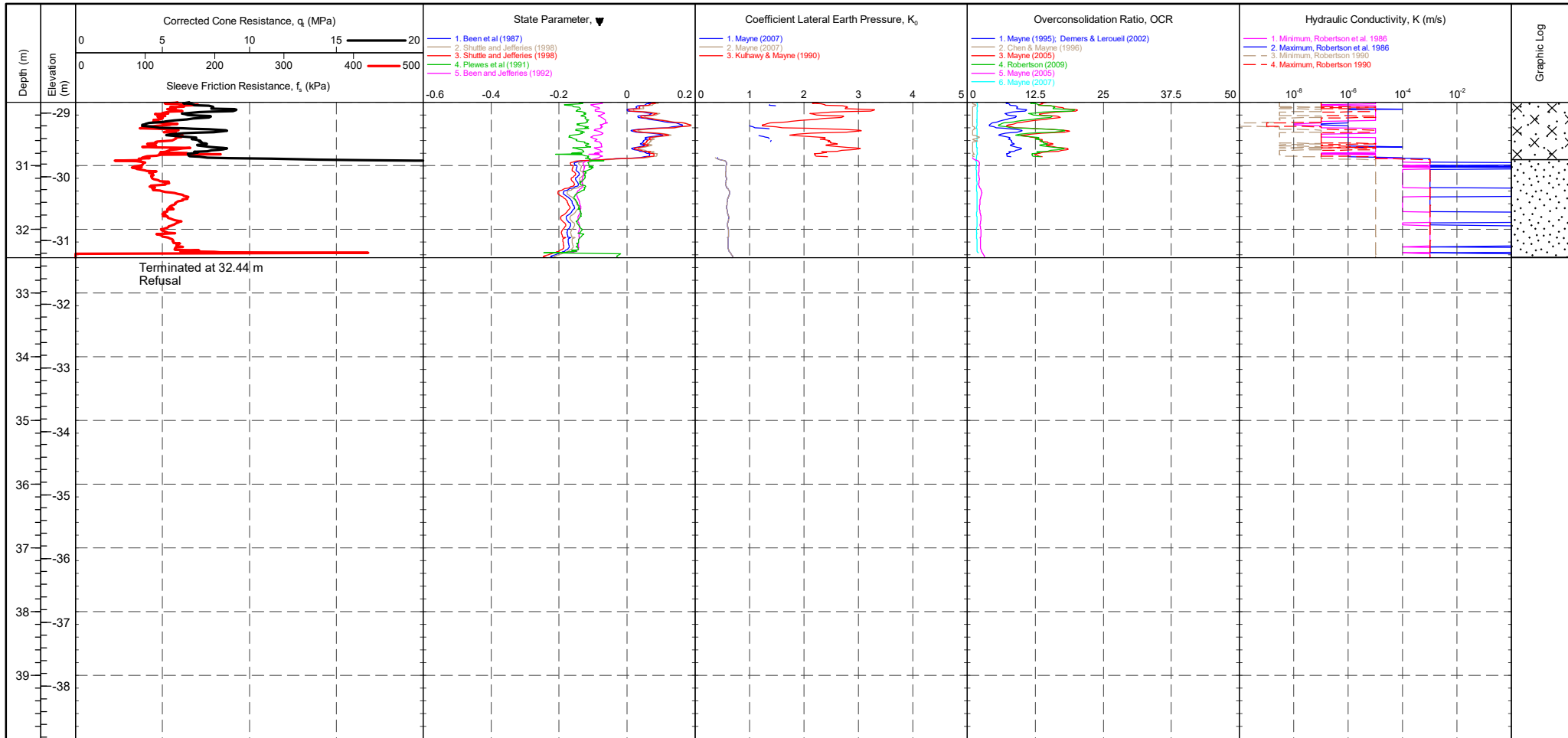
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652308.0 m NORTHING : 305950.5 m ELEVATION : 1.17 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark : 1 Test refused on total pressure.	SHEET : 3 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 03 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Pre Post Difference	Groundwater Level Dissipation Test
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PointID : **CPT 03**

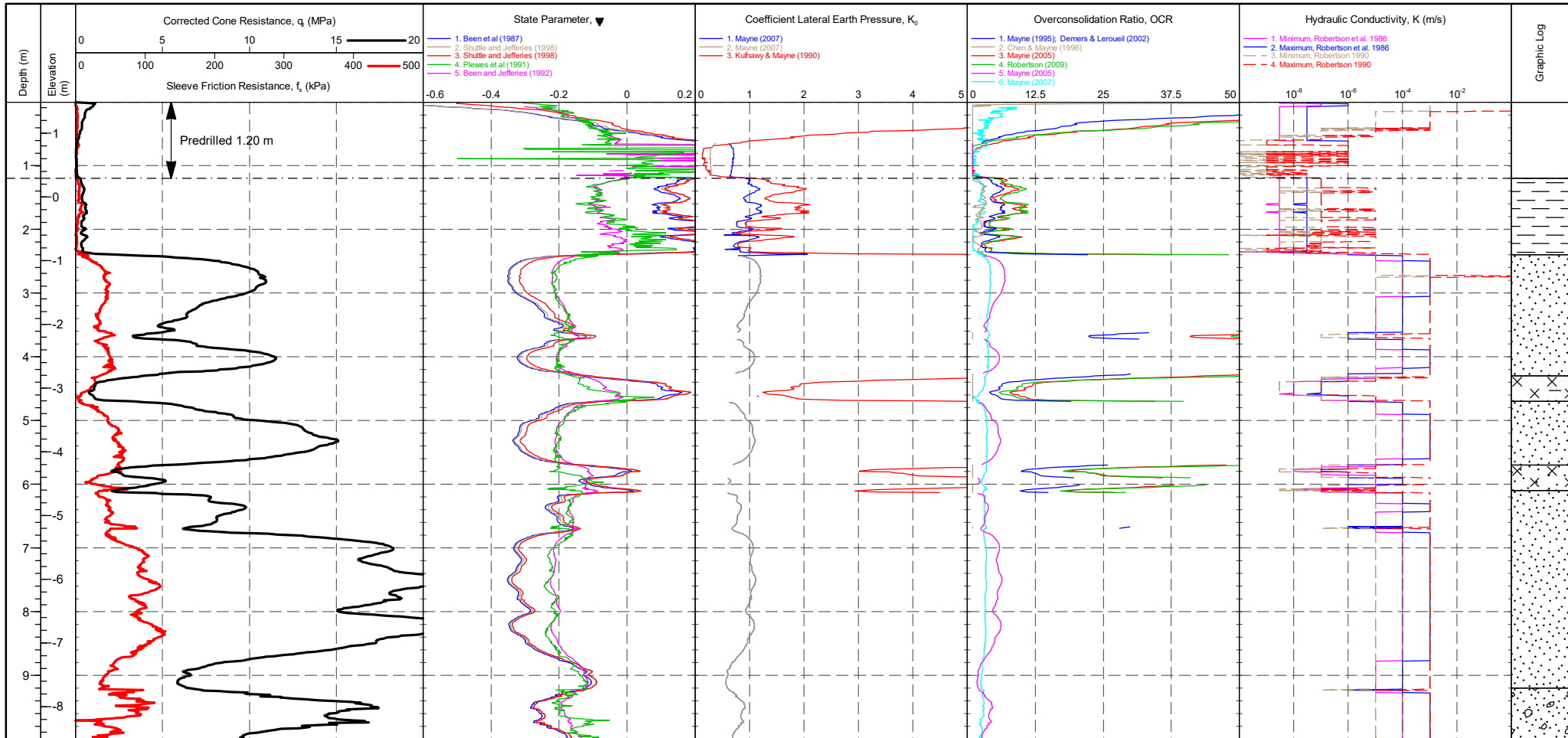
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652308.0 m NORTHING : 305950.5 m ELEVATION : 1.17 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark : 1 Test refused on total pressure.	SHEET : 4 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 03 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 04

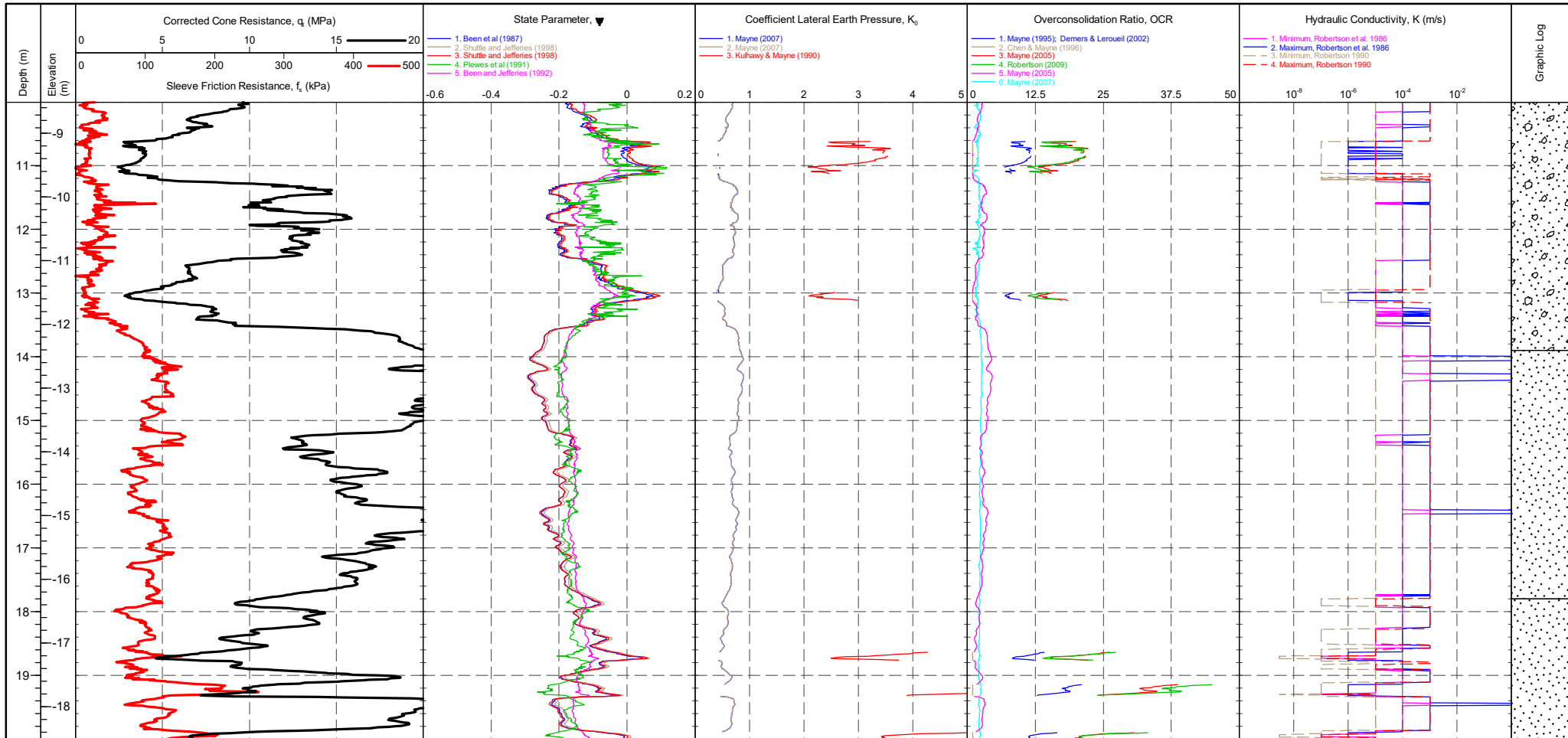
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652571.6 m NORTHING : 306018.0 m ELEVATION : 1.49 m CHECKED BY : LD TERMINATION REASON : Machine Limit	Remark : 7 Test stopped due to buckling rods.	SHEET : 1 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1:2012
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 04 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Pre Post Difference	Groundwater Level Dissipation Test
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PointID : **CPT 04**

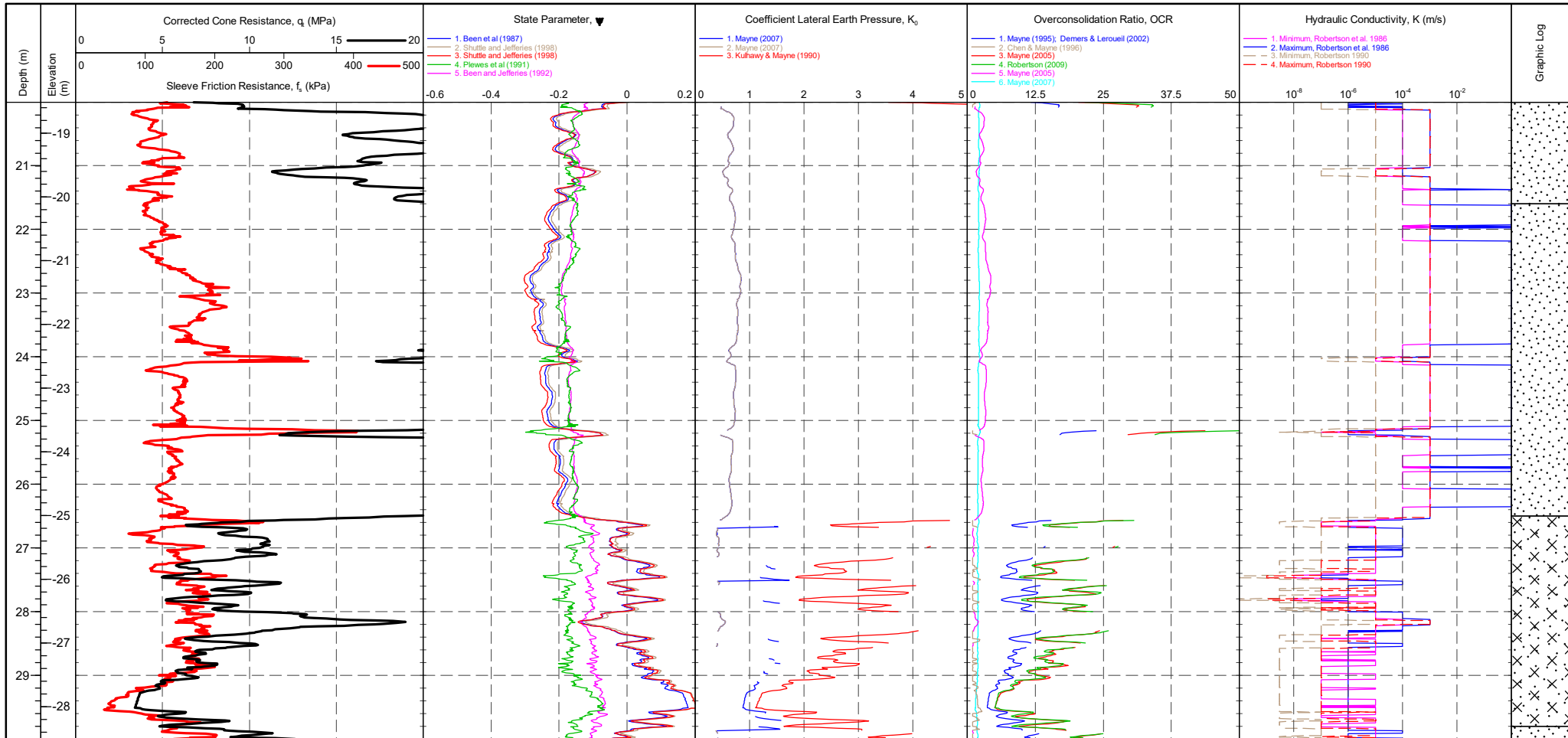
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652571.6 m NORTHING : 306018.0 m ELEVATION : 1.49 m CHECKED BY : LD TERMINATION REASON : Machine Limit	Remark : 7 Test stopped due to buckling rods.	SHEET : 2 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1:2012
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 04 WEATHER : Sunny & Cold	CPTU ZERO VALUES <table border="1"> <thead> <tr> <th>Transducer</th> <th>Pre</th> <th>Post</th> <th>Difference</th> </tr> </thead> <tbody> <tr> <td>Tip</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Sleeve</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Pore Pressure 2</td> <td></td> <td></td> <td></td> </tr> <tr> <td>X-Y Inclinometer</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Transducer	Pre	Post	Difference	Tip				Sleeve				Pore Pressure 2				X-Y Inclinometer				Groundwater Level Dissipation Test
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Tip																							
Sleeve																							
Pore Pressure 2																							
X-Y Inclinometer																							

PointID
CPT 04

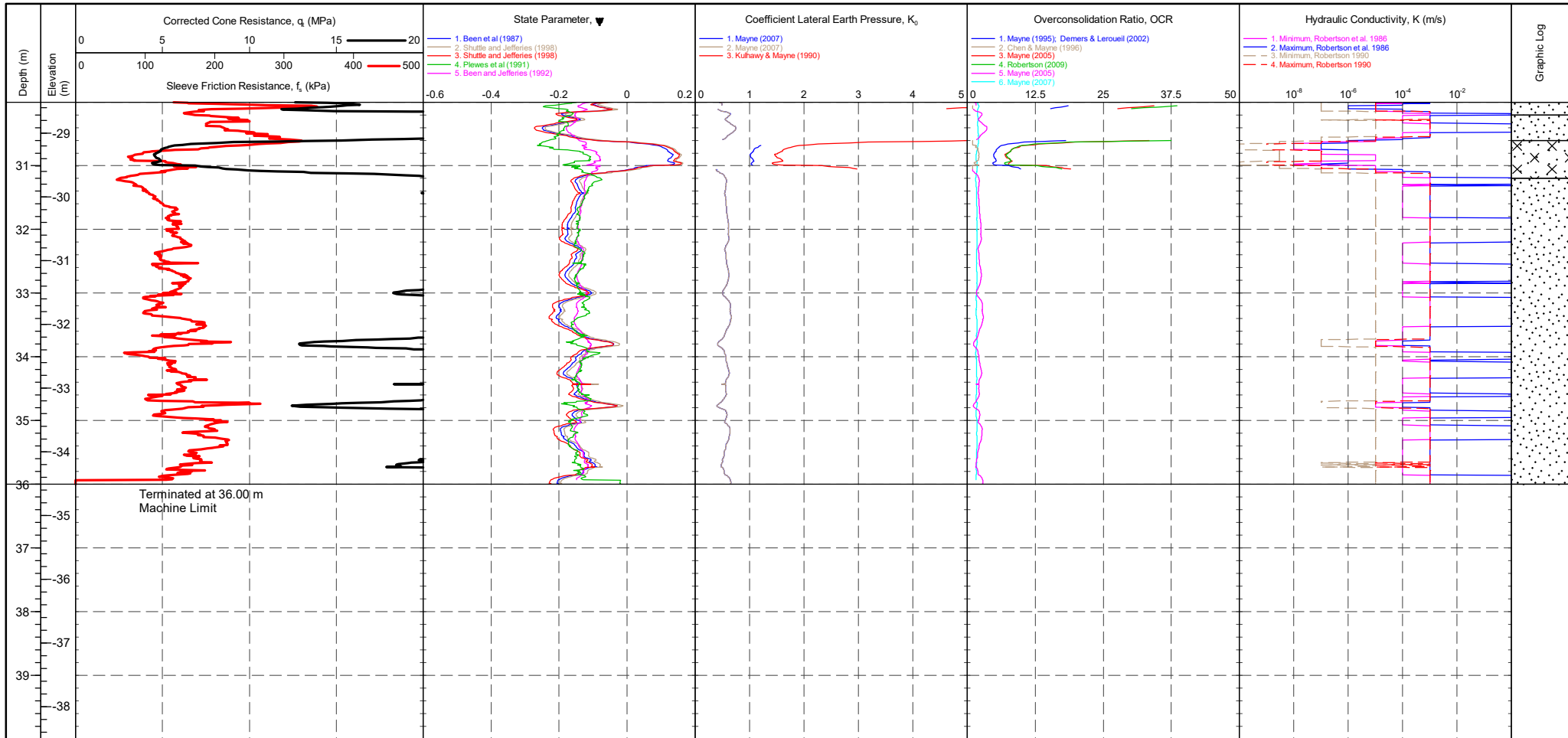
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652571.6 m NORTHING : 306018.0 m ELEVATION : 1.49 m CHECKED BY : LD TERMINATION REASON : Machine Limit	Remark : 7 Test stopped due to buckling rods.	SHEET : 3 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1:2012
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 04 WEATHER : Sunny & Cold	CPTU ZERO VALUES <table border="1"> <thead> <tr> <th>Transducer</th> <th>Pre</th> <th>Post</th> <th>Difference</th> </tr> </thead> <tbody> <tr> <td>Tip</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Sleeve</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Pore Pressure 2</td> <td></td> <td></td> <td></td> </tr> <tr> <td>X-Y Inclinometer</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Transducer	Pre	Post	Difference	Tip				Sleeve				Pore Pressure 2				X-Y Inclinometer				Groundwater Level Dissipation Test
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Tip																							
Sleeve																							
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PointID
CPT 04

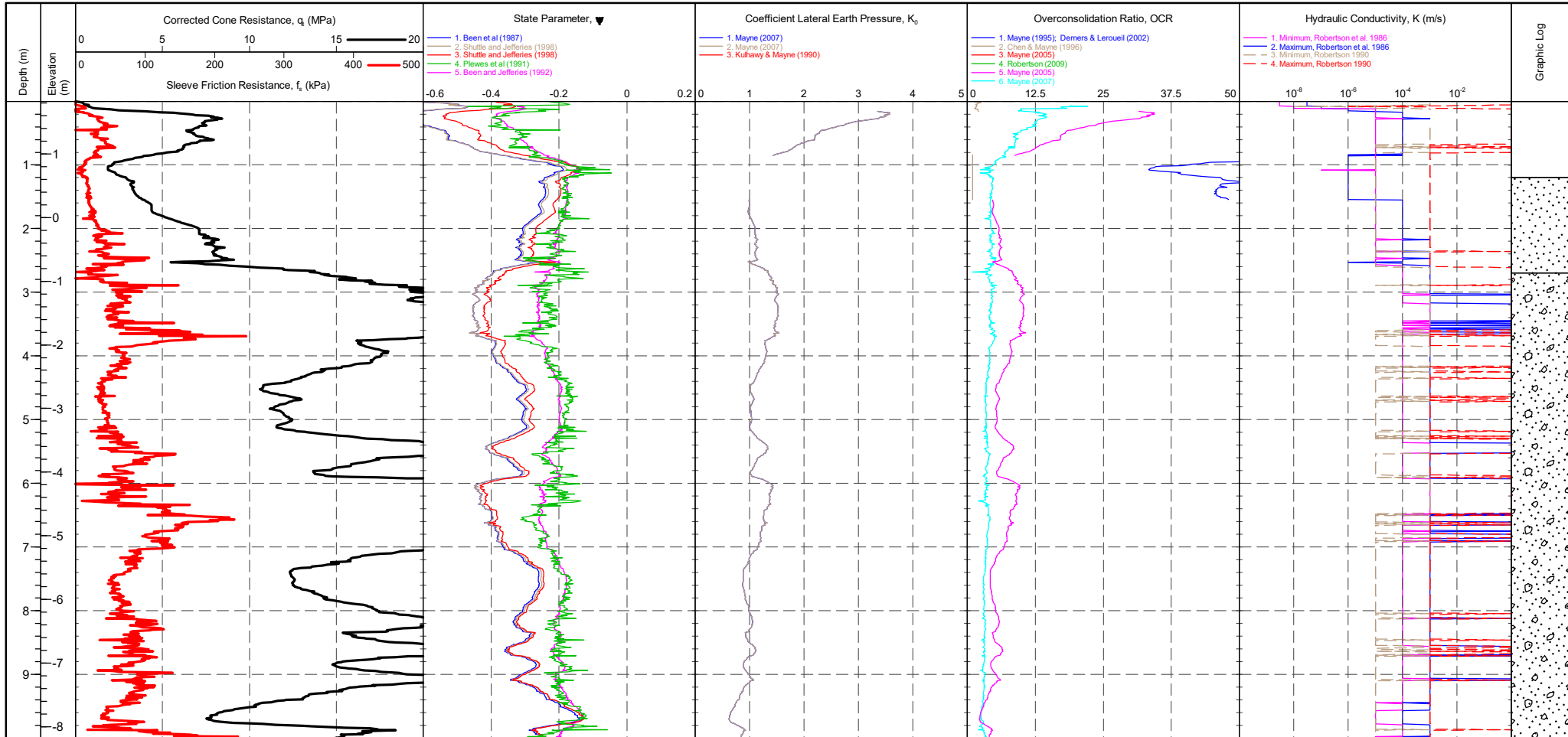
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652571.6 m NORTHING : 306018.0 m ELEVATION : 1.49 m CHECKED BY : LD TERMINATION REASON : Machine Limit	Remark : 7 Test stopped due to buckling rods.	SHEET : 4 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1:2012
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 04 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 05

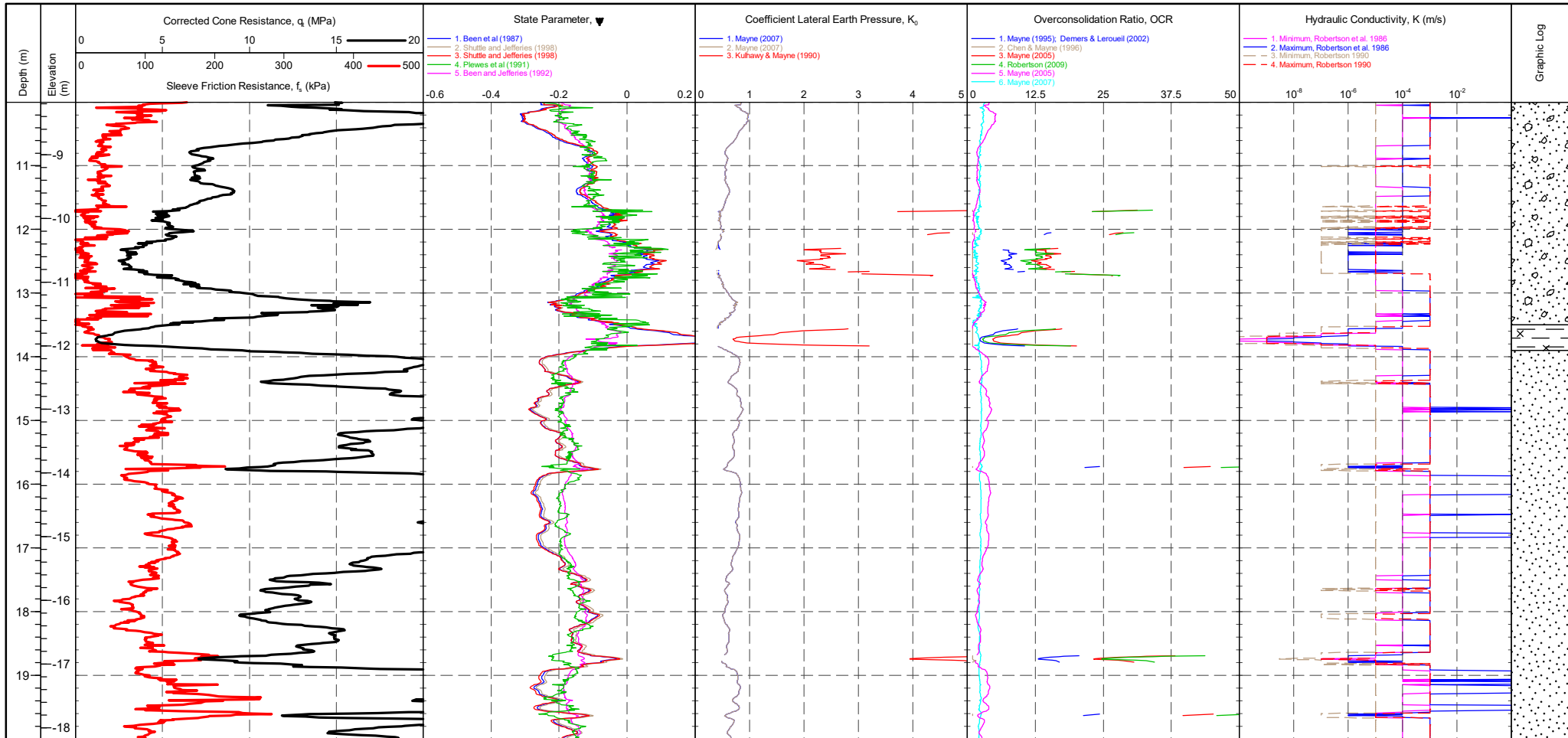
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652646.1 m NORTHING : 305984.8 m ELEVATION : 1.83 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 1 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 05 WEATHER : Overcast & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 05

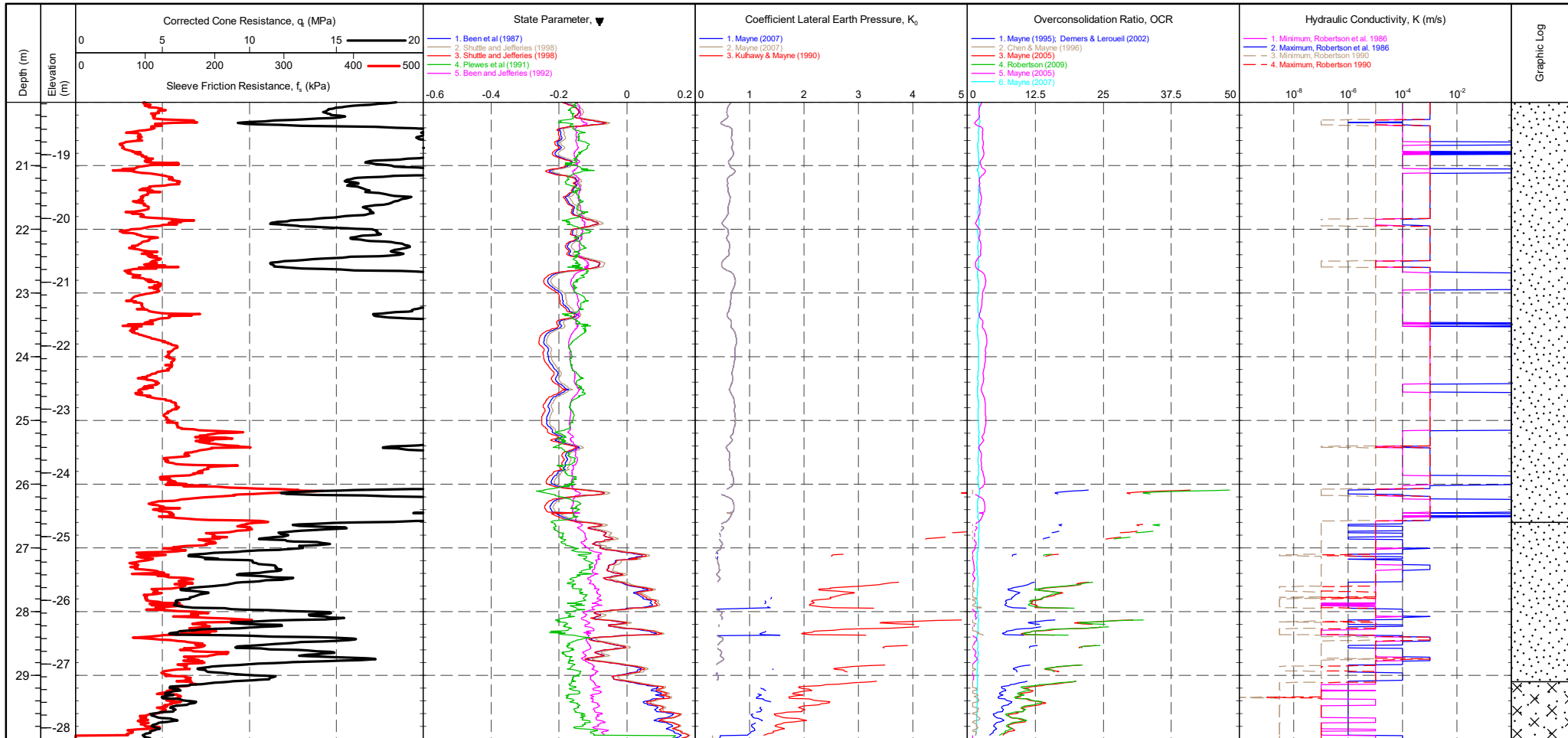
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652646.1 m NORTHING : 305984.8 m ELEVATION : 1.83 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 2 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 05 WEATHER : Overcast & Cold	CPTU ZERO VALUES Transducer Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Pre Post Difference	Groundwater Level Dissipation Test
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PointID : **CPT 05**

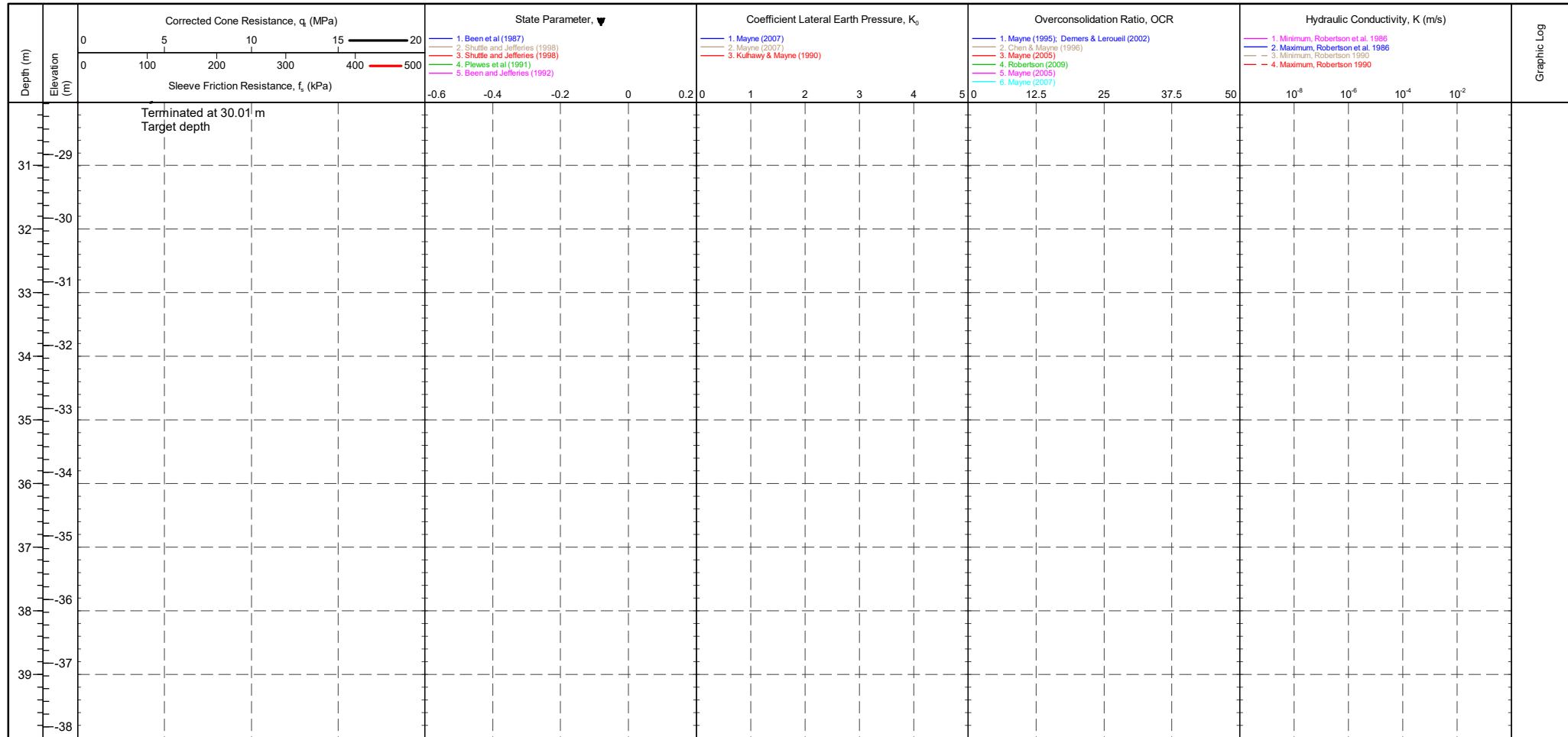
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652646.1 m NORTHING : 305984.8 m ELEVATION : 1.83 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 3 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 05 WEATHER : Overcast & Cold	CPTU ZERO VALUES <table border="1"> <thead> <tr> <th>Transducer</th> <th>Pre</th> <th>Post</th> <th>Difference</th> </tr> </thead> <tbody> <tr> <td>Tip</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Sleeve</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Pore Pressure 2</td> <td></td> <td></td> <td></td> </tr> <tr> <td>X-Y Inclinometer</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Transducer	Pre	Post	Difference	Tip				Sleeve				Pore Pressure 2				X-Y Inclinometer				Groundwater Level Dissipation Test
Transducer	Pre	Post	Difference																				
Tip																							
Sleeve																							
Pore Pressure 2																							
X-Y Inclinometer																							

PointID
CPT 05

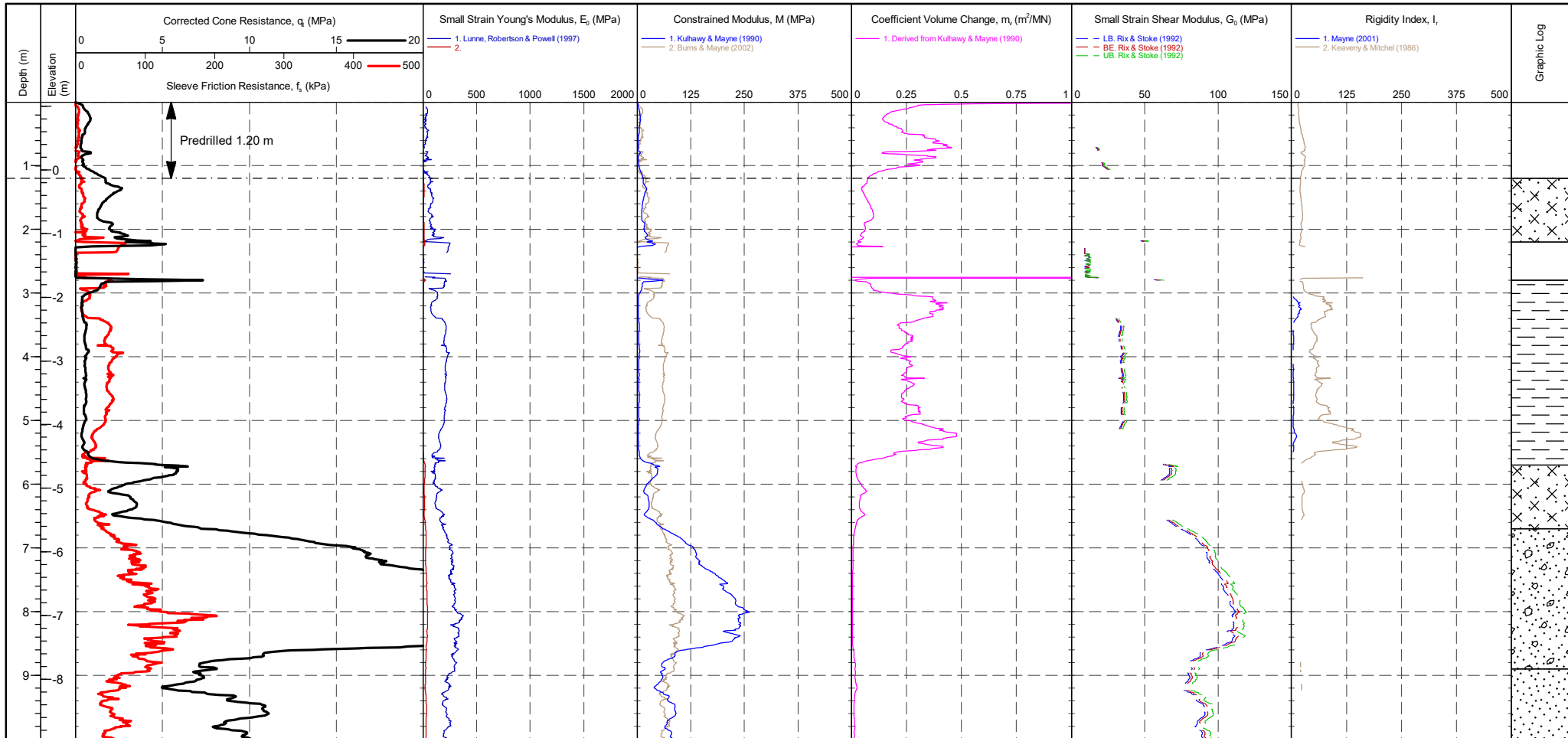
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652646.1 m NORTHING : 305984.8 m ELEVATION : 1.83 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 4 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 05 WEATHER : Overcast & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 01

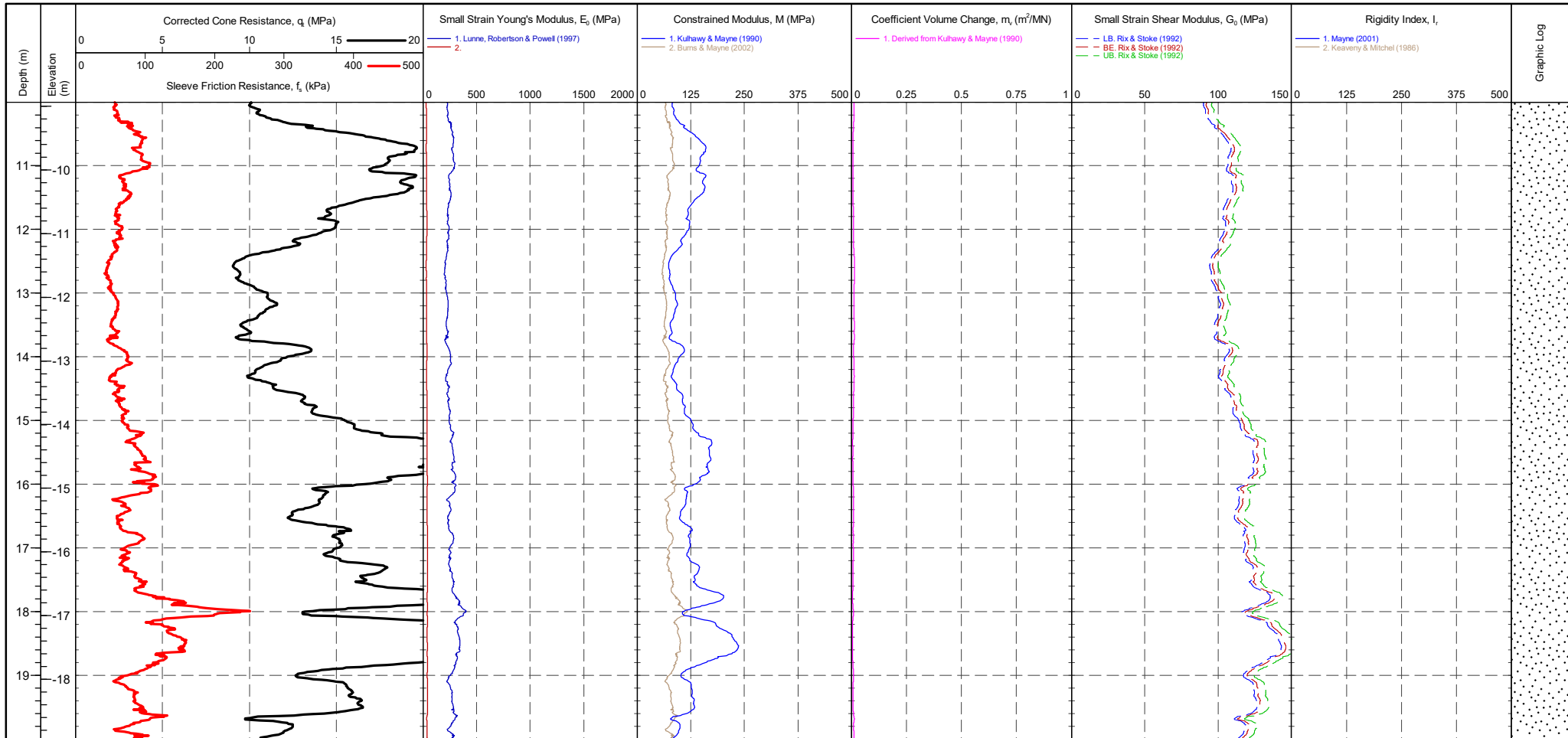
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652228.0 m NORTHING : 305894.9 m ELEVATION : 1.06 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 1 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICITION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 01 WEATHER : Overcast & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 01

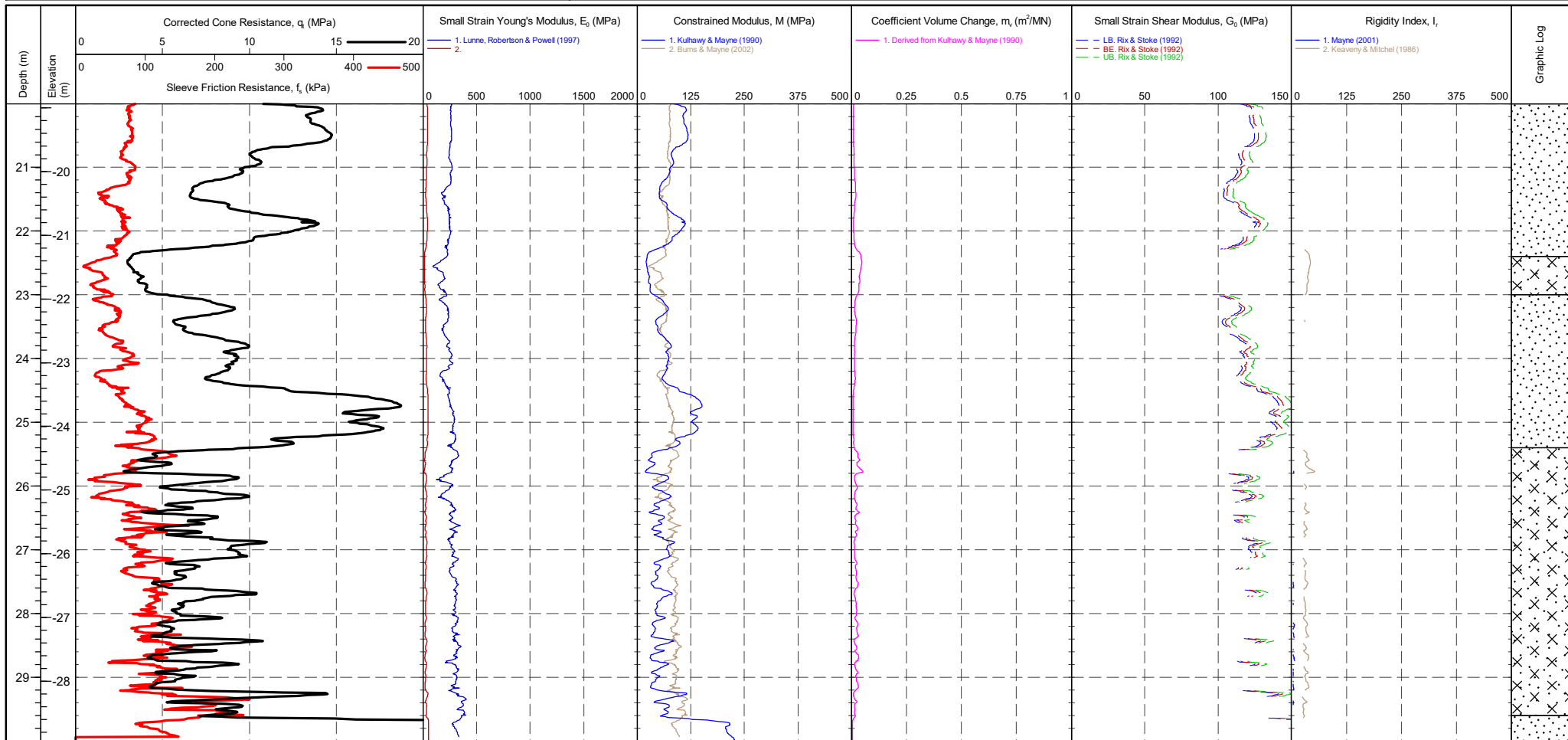
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 01 WEATHER : Overcast & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 01

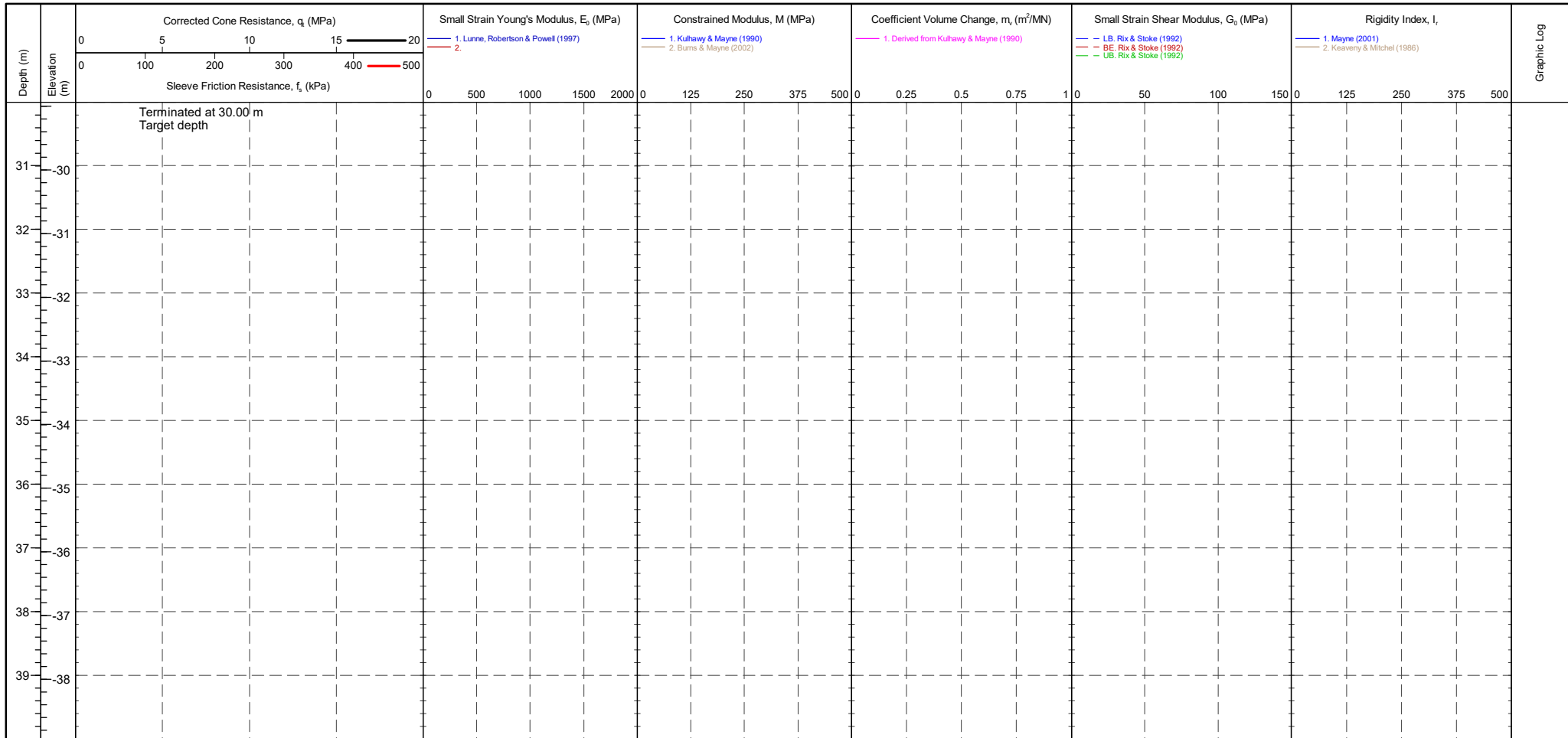
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652228.0 m NORTHING : 305894.9 m ELEVATION : 1.06 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 3 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 01 WEATHER : Overcast & Cold	CPT ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 01

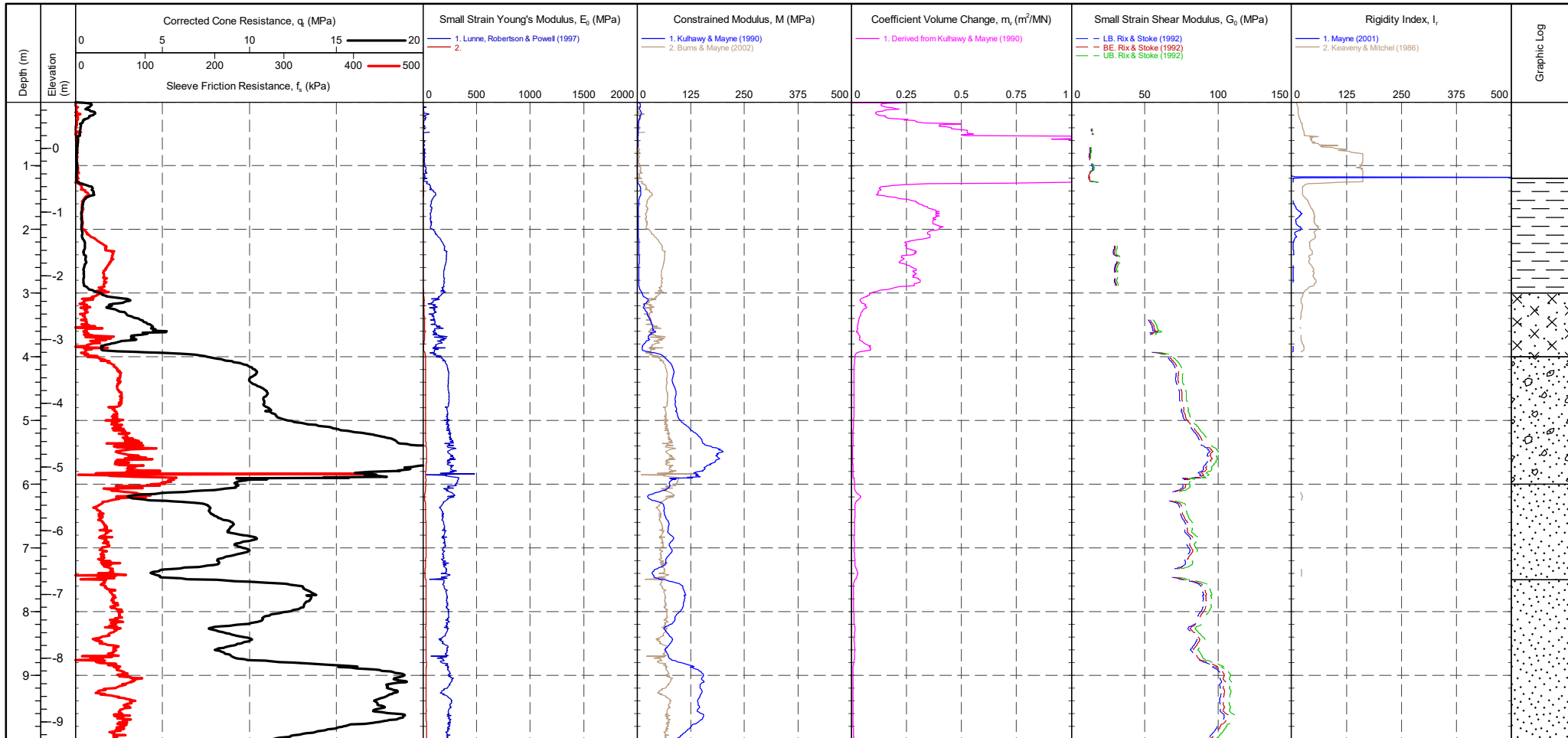
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652228.0 m NORTHING : 305894.9 m ELEVATION : 1.06 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 4 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 01 WEATHER : Overcast & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 02

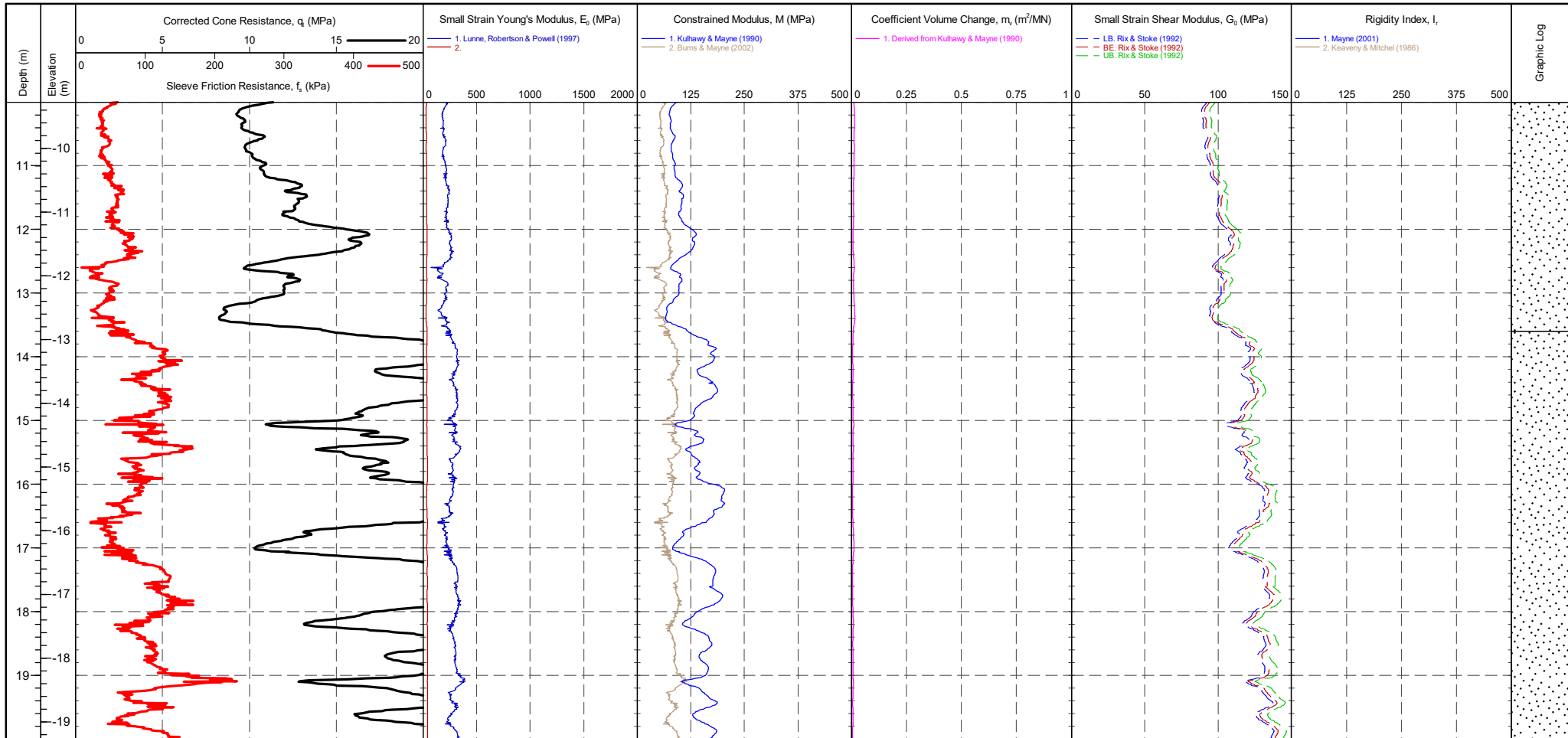
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 02 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 02

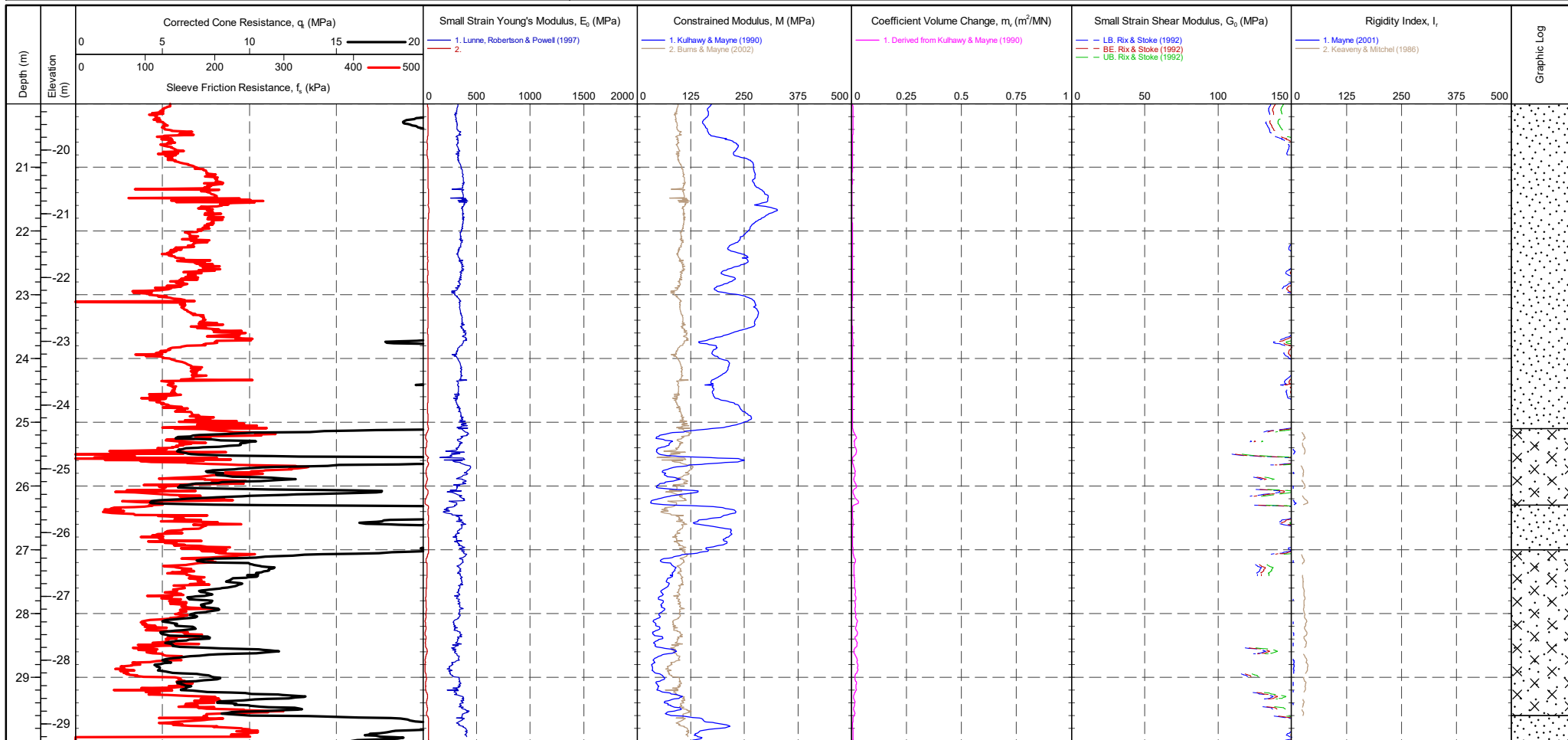
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 02 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 02

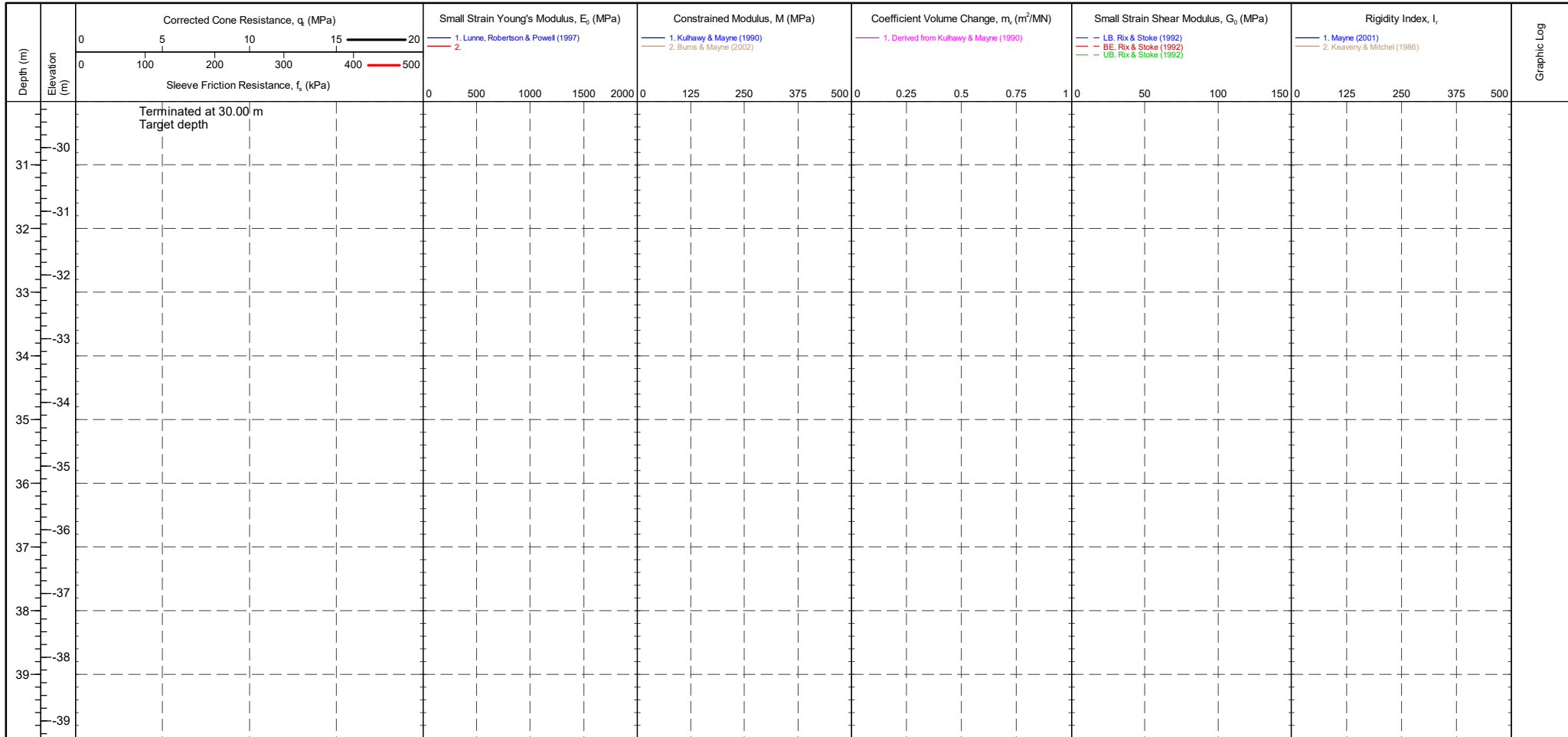
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 02 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 02

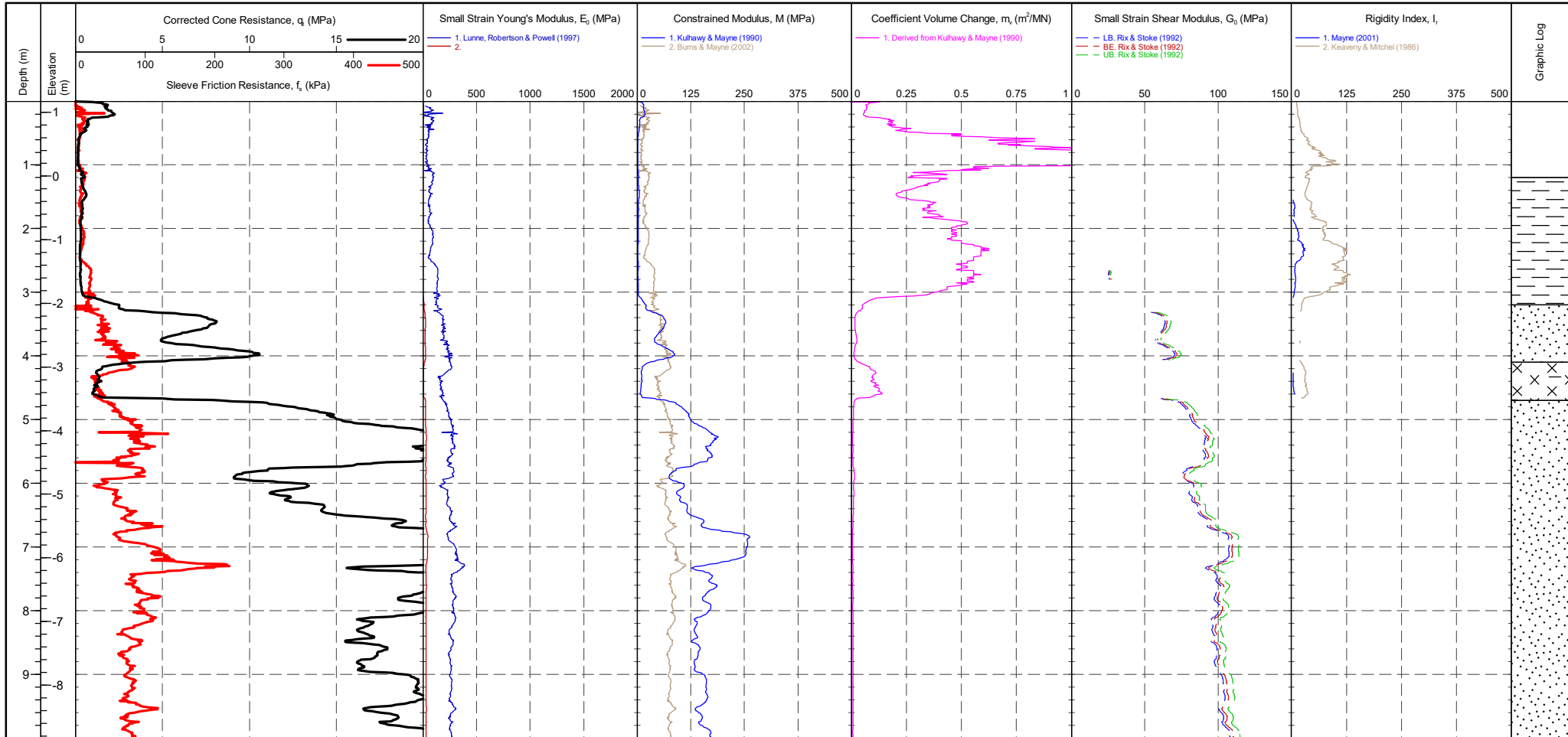
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652244.0 m NORTHING : 305934.2 m ELEVATION : 0.73 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 4 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 02 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 03

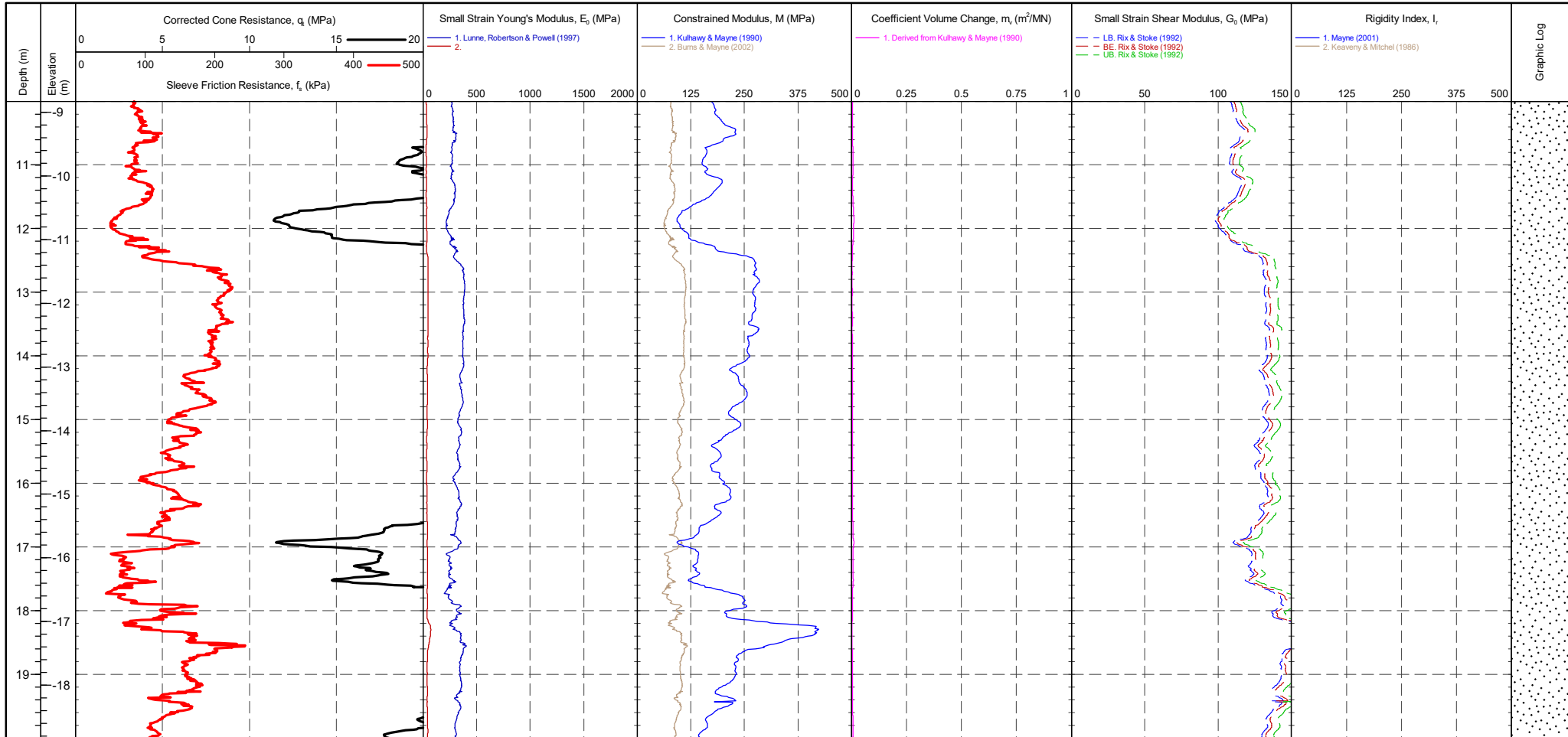
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652308.0 m NORTHING : 305950.5 m ELEVATION : 1.17 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark : 1 Test refused on total pressure.	SHEET : 1 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 03 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 03

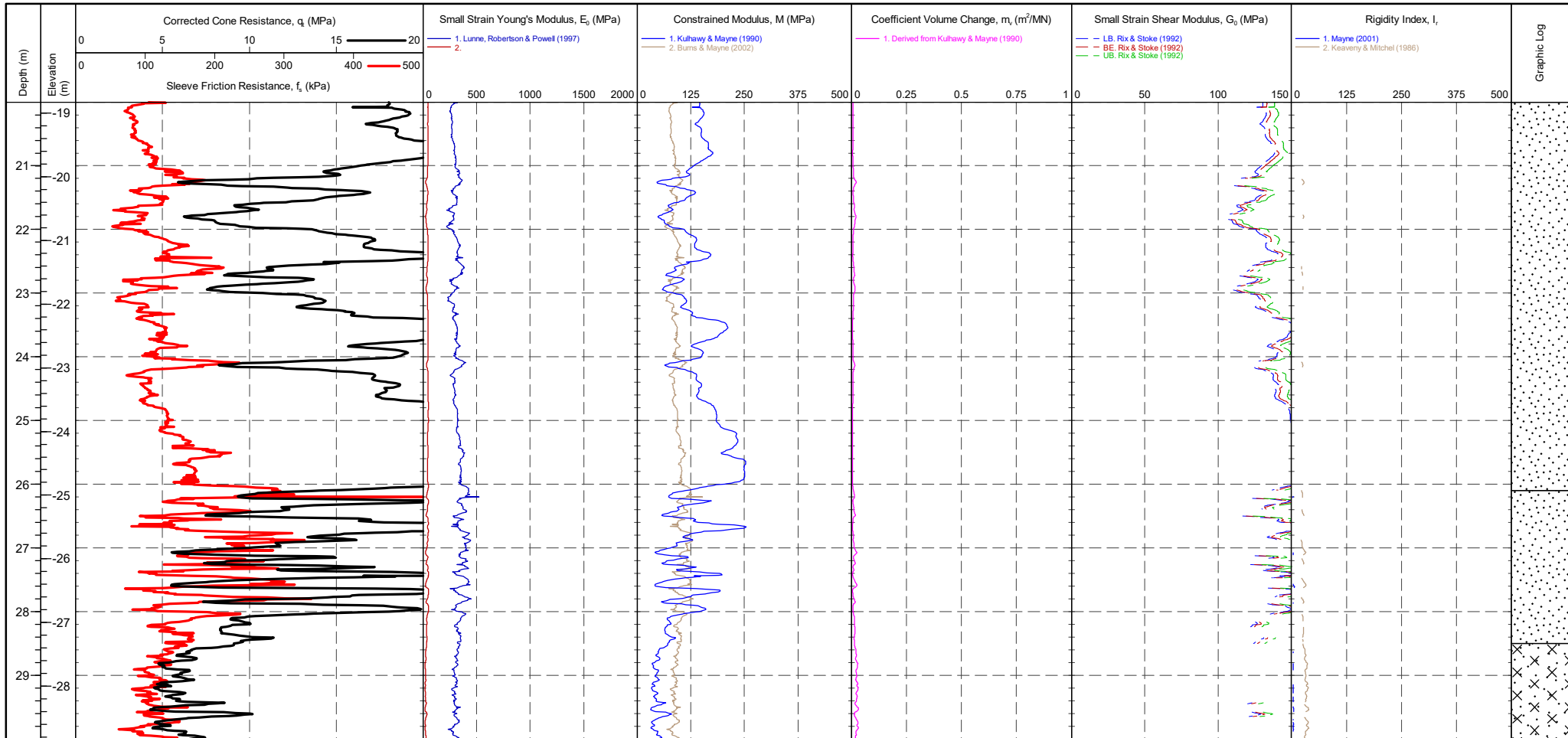
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 03 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 03

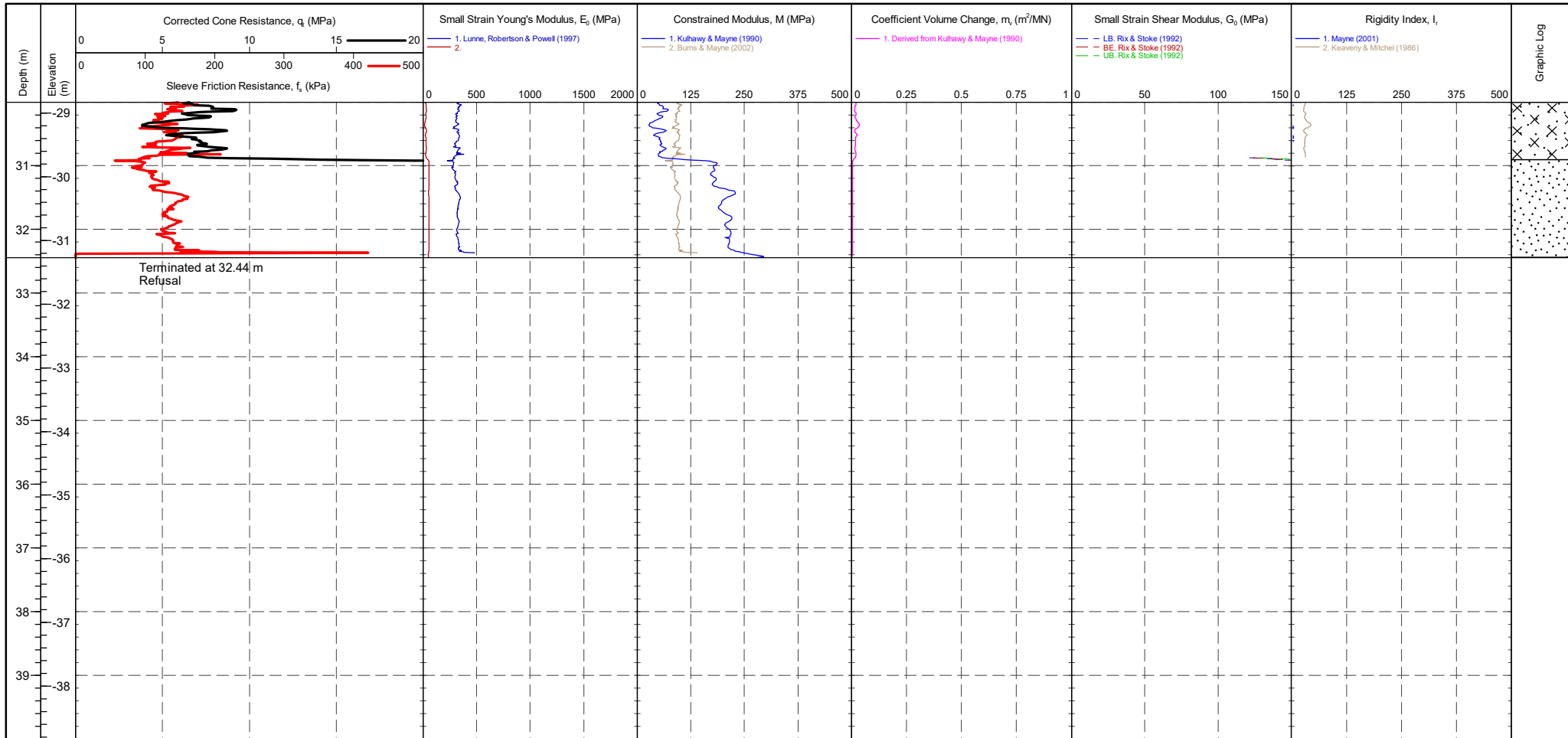
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 03 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 03

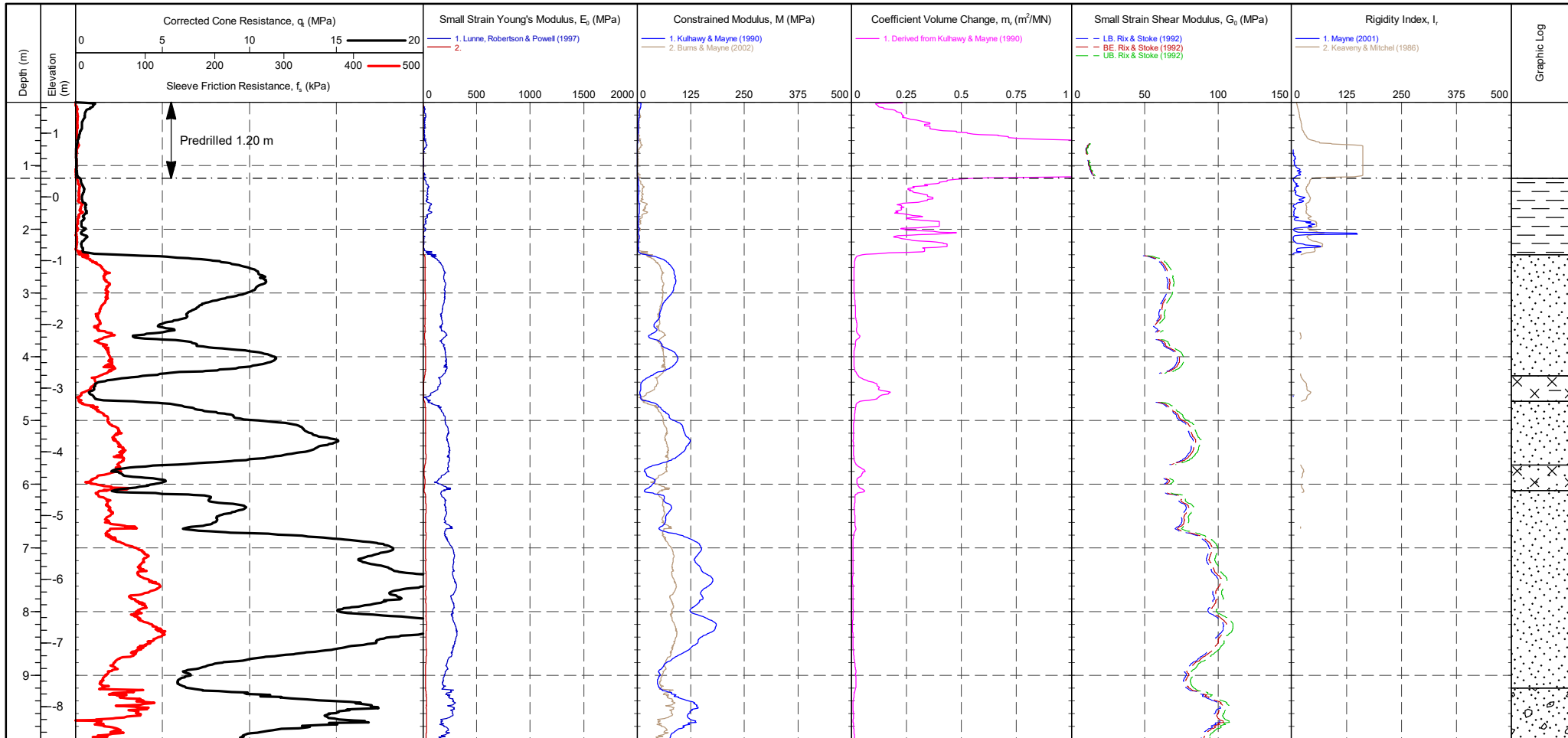
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652308.0 m NORTHING : 305950.5 m ELEVATION : 1.17 m CHECKED BY : LD TERMINATION REASON : Refusal	Remark : 1 Test refused on total pressure.	SHEET : 4 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 03 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 04

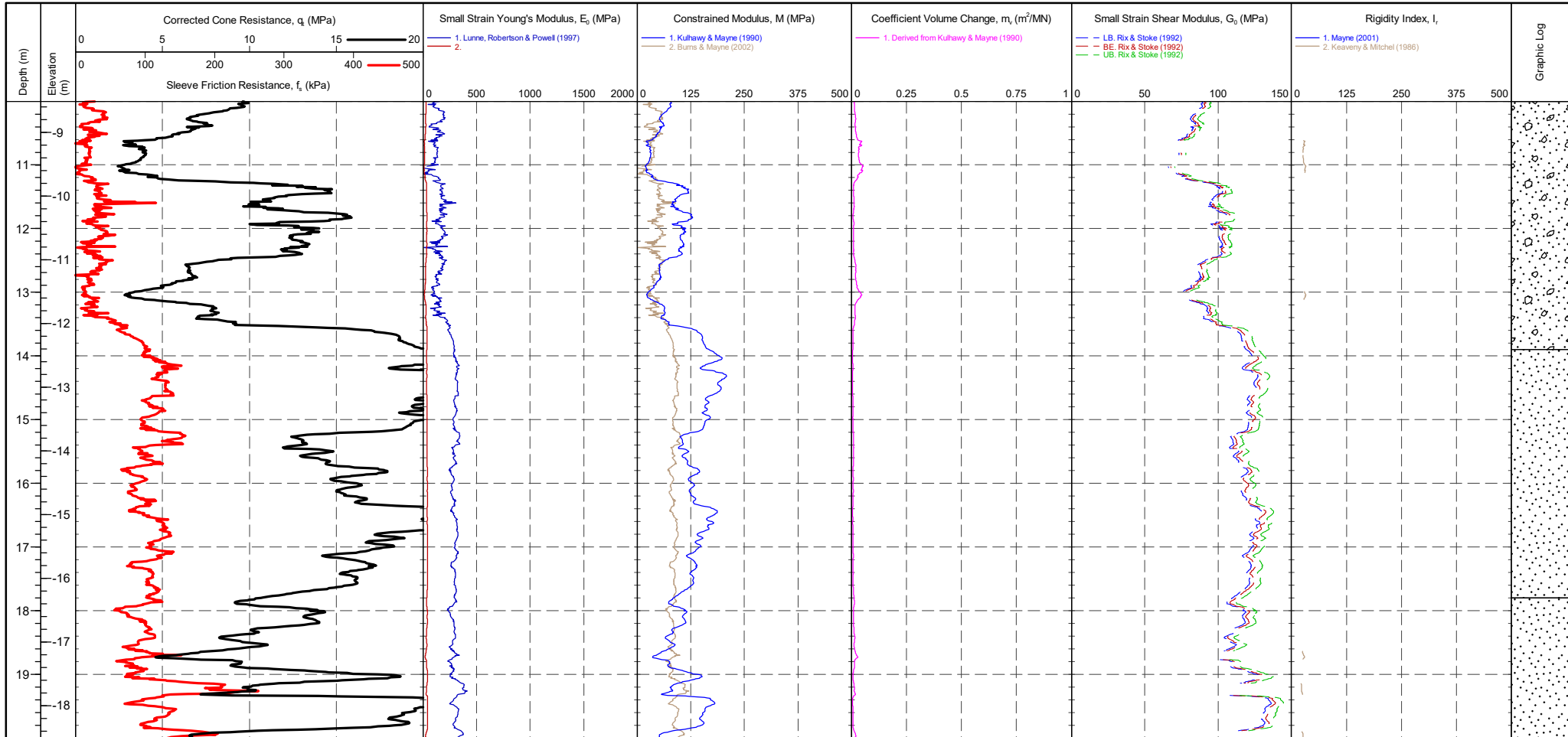
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652571.6 m NORTHING : 306018.0 m ELEVATION : 1.49 m CHECKED BY : LD TERMINATION REASON : Machine Limit	Remark : 7 Test stopped due to buckling rods.	SHEET : 1 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1:2012
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 04 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 04

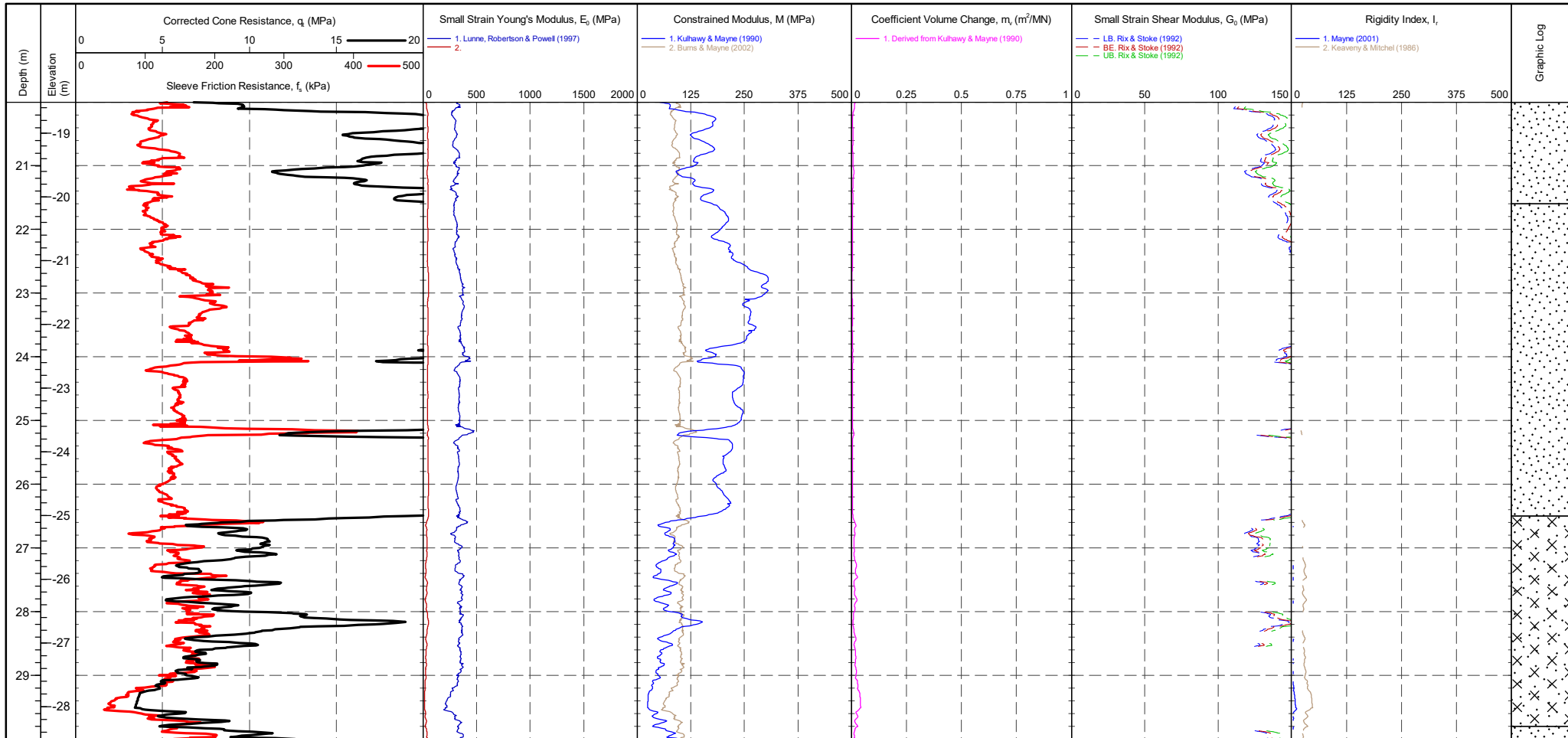
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 04 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 04

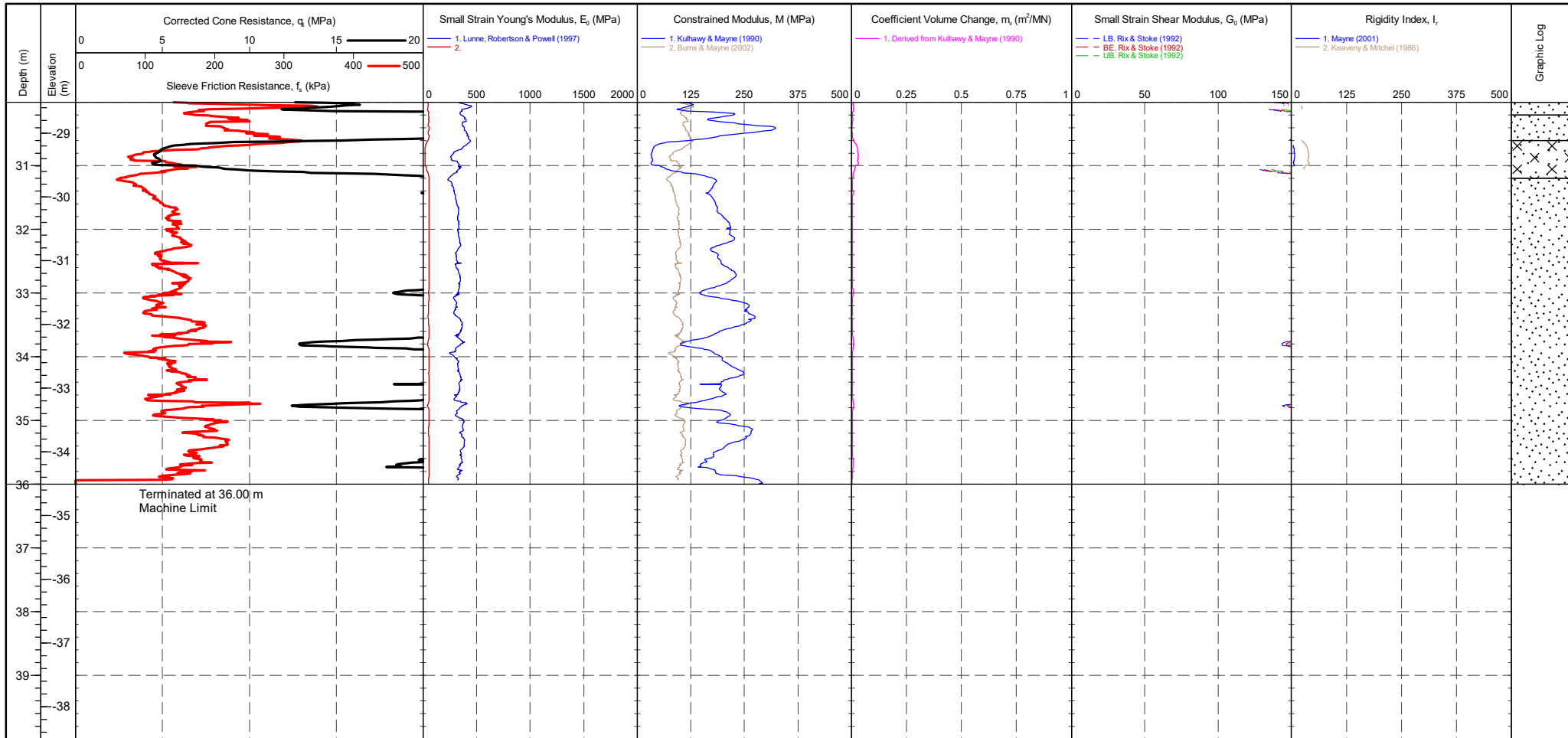
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652571.6 m NORTHING : 306018.0 m ELEVATION : 1.49 m CHECKED BY : LD TERMINATION REASON : Machine Limit	Remark : 7 Test stopped due to buckling rods.	SHEET : 3 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1:2012
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 04 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 04

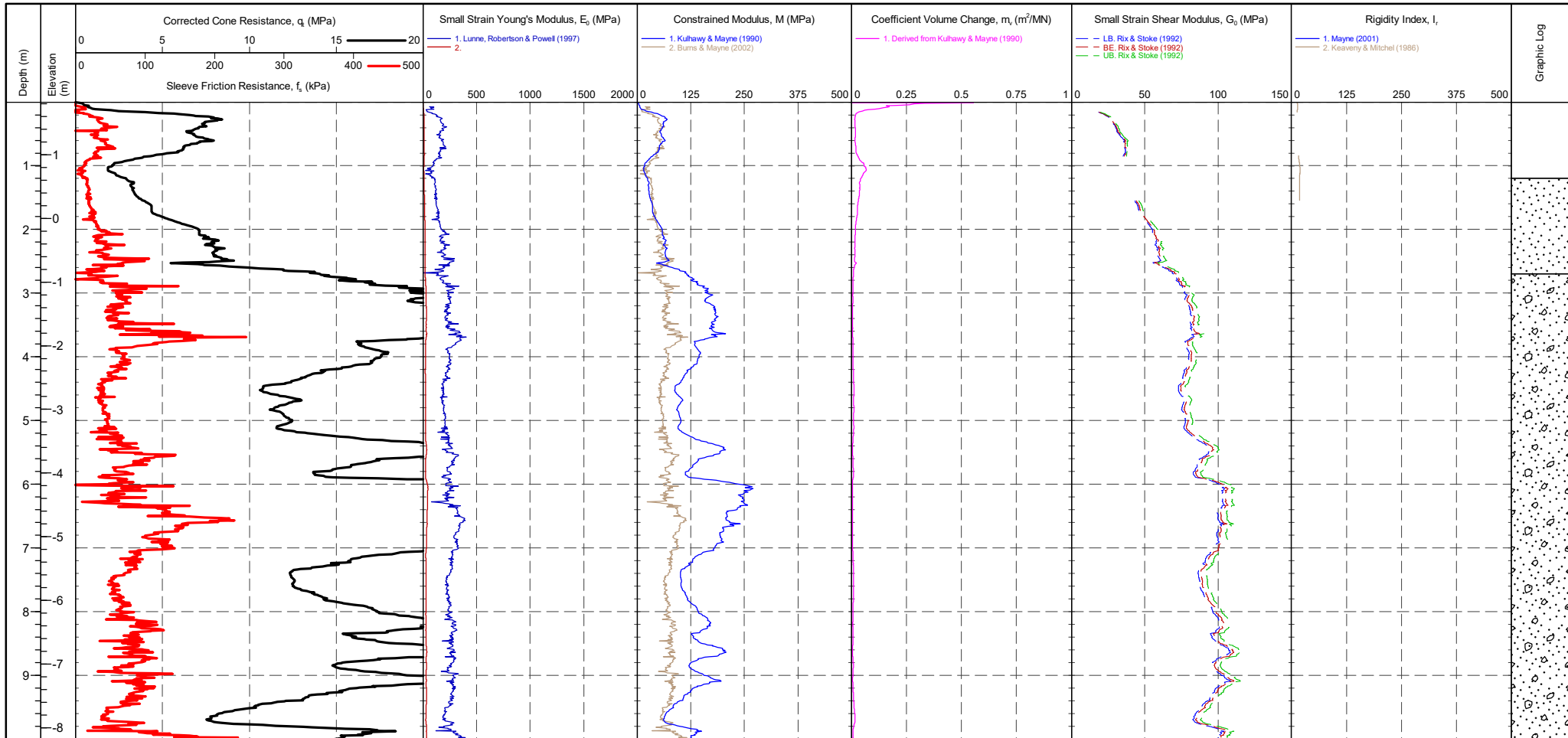
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652571.6 m NORTHING : 306018.0 m ELEVATION : 1.49 m CHECKED BY : LD TERMINATION REASON : Machine Limit	Remark : 7 Test stopped due to buckling rods.	SHEET : 4 OF 4 STATUS : Final TEST DATE : 19/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1:2012
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CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 04 WEATHER : Sunny & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
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PointID
CPT 05

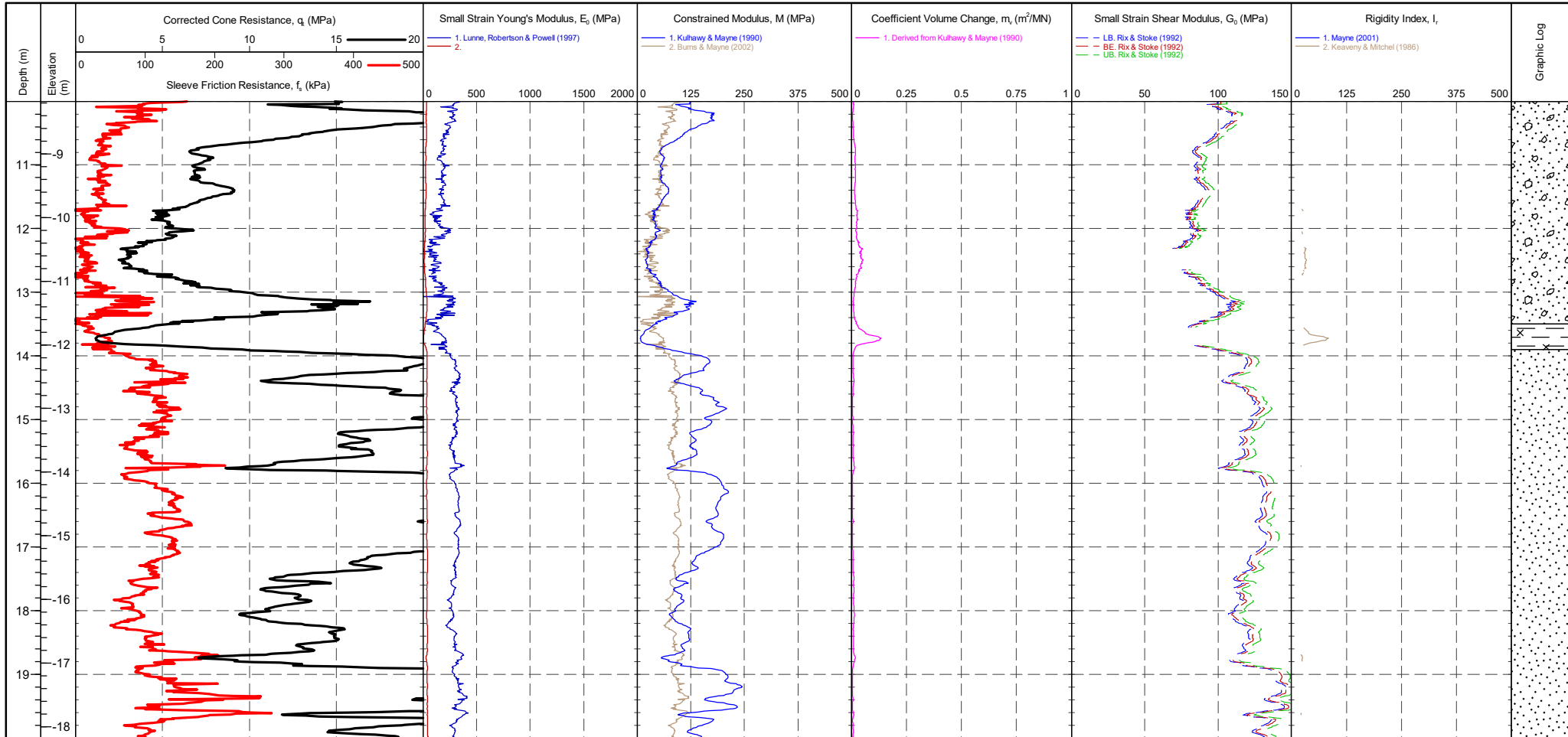
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652646.1 m NORTHING : 305984.8 m ELEVATION : 1.83 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 1 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
--	--	--	---



CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 05 WEATHER : Overcast & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
---	---	---	---------------------------------------

PointID
CPT 05

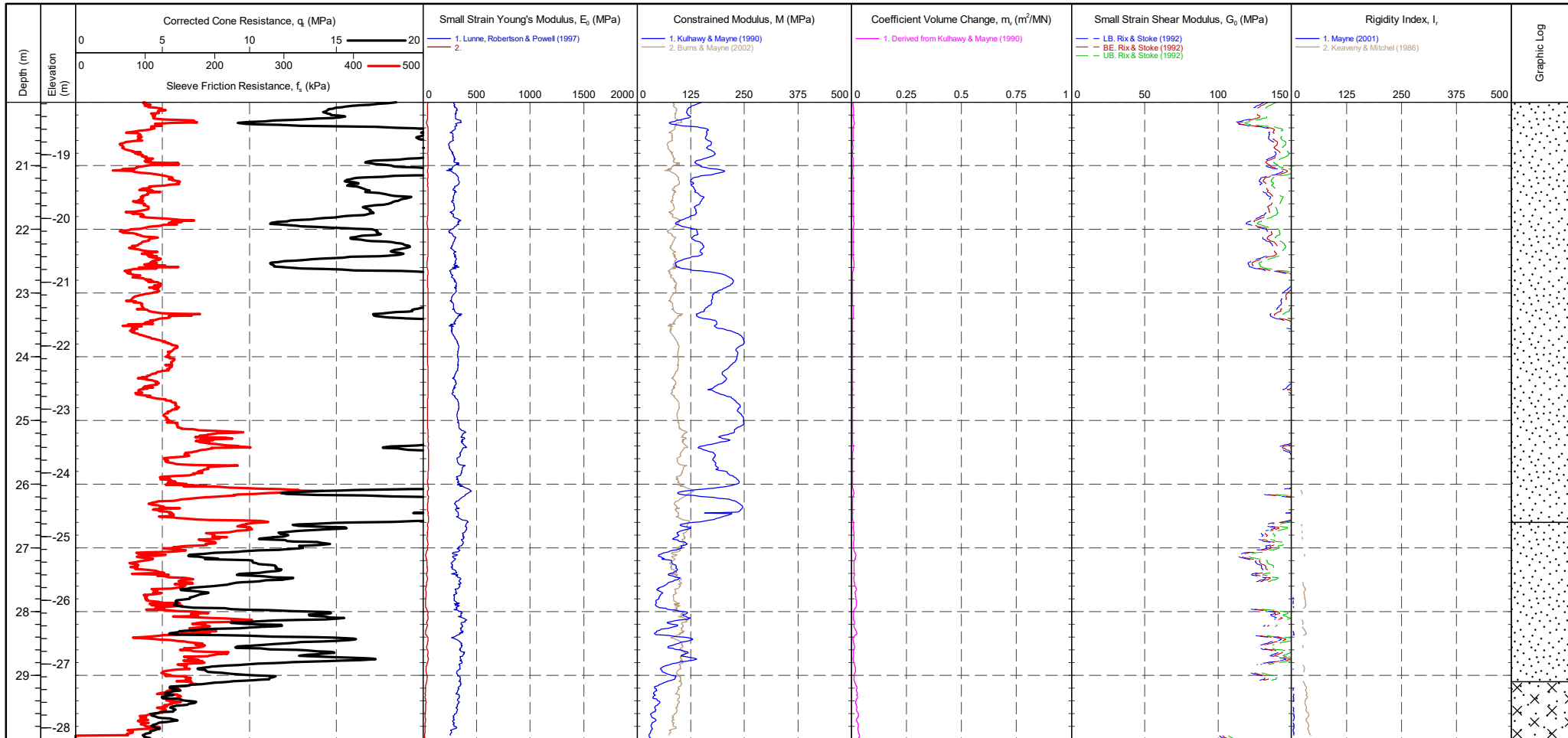
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652646.1 m NORTHING : 305984.8 m ELEVATION : 1.83 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 2 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
--	--	--	---



CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 05 WEATHER : Overcast & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
---	---	--	---

PointID
CPT 05

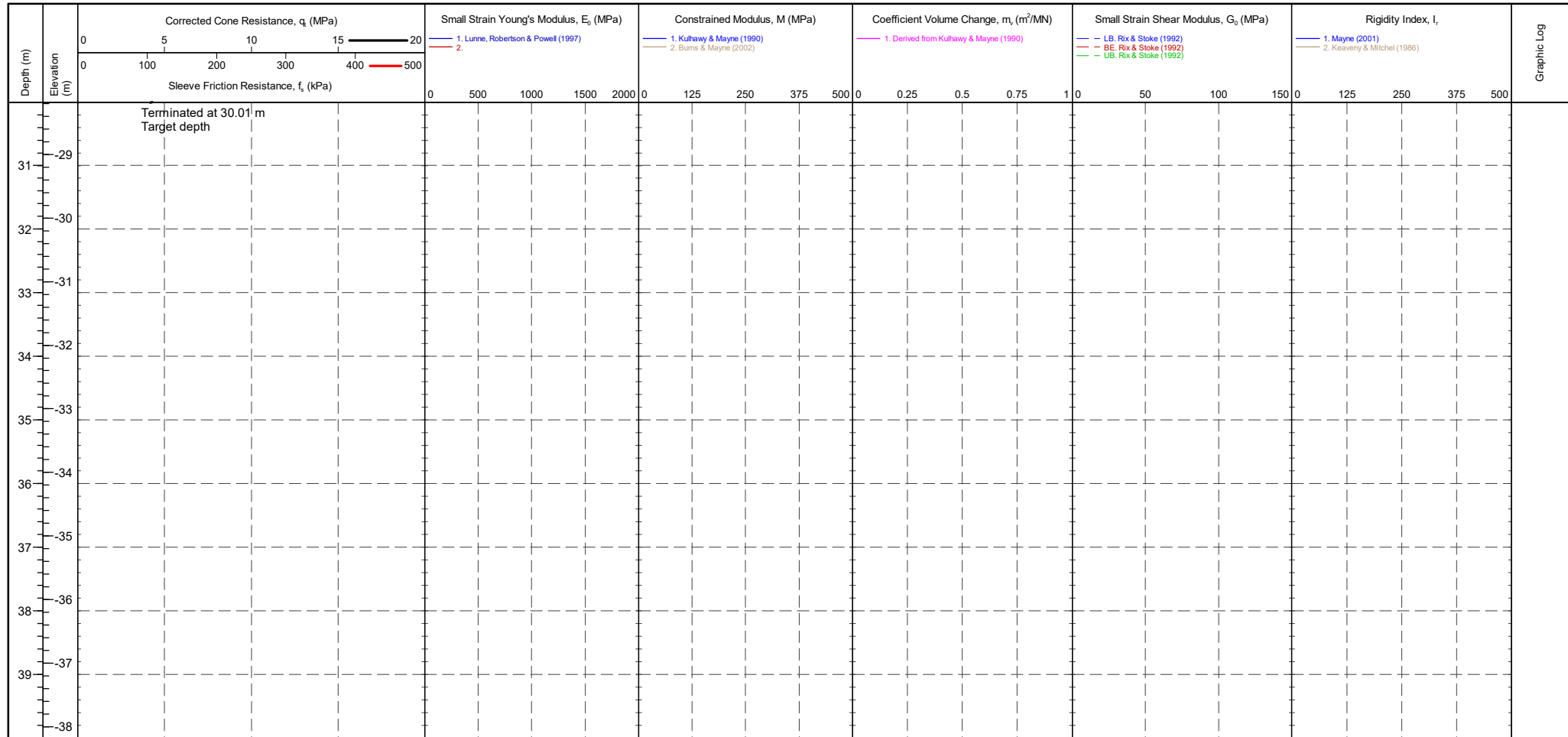
CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652646.1 m NORTHING : 305984.8 m ELEVATION : 1.83 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 3 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
--	--	--	---



CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 05 WEATHER : Overcast & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
---	---	---	---------------------------------------

PointID
CPT 05

CLIENT : Norfolk Partnership Laboratory PROJECT : Great Yarmouth 3rd River Crossing LOCATION : Great Yarmouth PROJECT No. : 1180180	EASTING : 652646.1 m NORTHING : 305984.8 m ELEVATION : 1.83 m CHECKED BY : LD TERMINATION REASON : Target depth	Remark : 0 Test completed at target depth.	SHEET : 4 OF 4 STATUS : Final TEST DATE : 20/03/2018 PLOT DATE : 19/04/2018 METHOD : ISO 22476-1 Application class 3
--	--	--	---



CONE ID : P15-CFPTxy.70080 CONE AREA : 15cm ² CONE AREA RATIO : 0.85 FILTER POSITION : u2 FILTER TYPE : HDPE FRICION REDUCER : None	TEST TYPE : TE2 APPLICATION CLASS : 2 RIG : CPT010 Walter; Truck-based 20 Ton; No anchoring OPERATOR : DH & AE FILE NAME : 1180180-CPT 05 WEATHER : Overcast & Cold	CPTU ZERO VALUES Transducer Pre Post Difference Tip Sleeve Pore Pressure 2 X-Y Inclinometer	Groundwater Level Dissipation Test
---	---	---	---------------------------------------

APPENDIX D

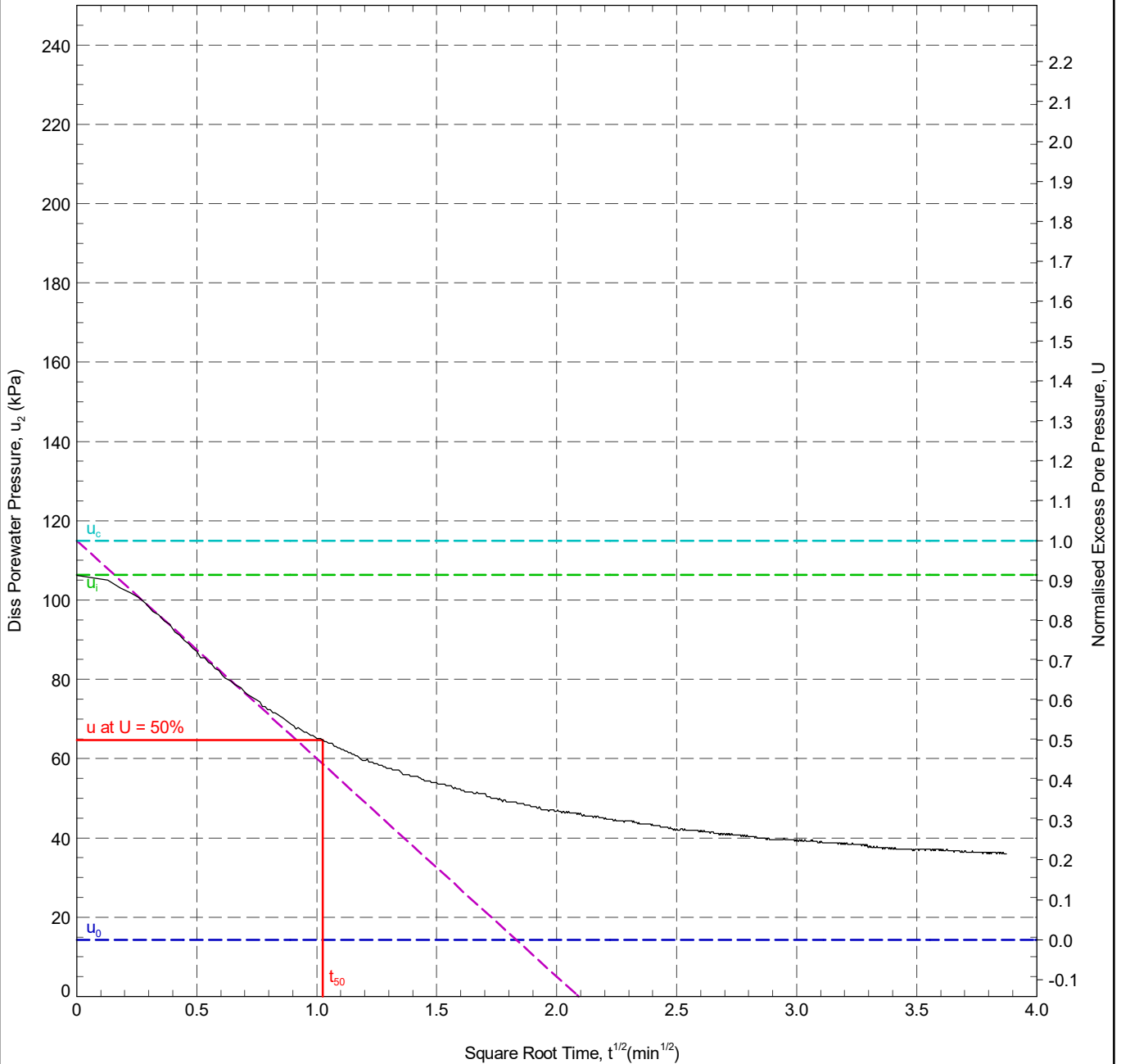
Dissipation Tests Results

Working with:

CLIENT : Norfolk Partnership Laboratory
 ENGINEER :
 PROJECT : Great Yarmouth 3rd River Crossing
 LOCATION : Great Yarmouth
 PROJECT No. : 1180180

AREA : Great Yarmouth
 EASTING : 652228.0 m
 NORTHING : 305894.9 m
 COORD. SYS.:
 ELEVATION : 1.06 m

SHEET : 1 OF 1
 STATUS : Final
 DATE : 20/03/18



In Situ Pore Pressure, u_0 :	14.3 kPa	Rigidity Index, I_r :	5.7
Initial Pore Pressure, u_i :	106.3 kPa	Horizontal Coefficient of Consolidation, c_h :	1.55×10^2 m ² /yr
Final Pore Pressure:	36.0 kPa	Ratio c_v/c_r :	3
Back Extrapolated Pore Pressure, u_c :	115 kPa	Vertical Coefficient of Consolidation, c_v :	5.16×10^1 m ² /yr
Degree of Dissipation:	50%		
Dissipation Pressure:	64.7 kPa		
Time for 50% Dissipation, t_{50} :	1.05 min		

RIG : CPT010 Walter; Truck-based 20 Ton Vibration Rig : LD DATE: 23/03/2018
 CONE TYPE : P15-CFPT : LD DATE: 23/03/2018
 CONE ID : P15-CFPTxy.70080 : LD DATE: 23/03/2018
 OPERATOR : DH & AE : DW DATE: 23/03/2018

REMARK
Test OK.

DISSIPATION TEST



Test ID

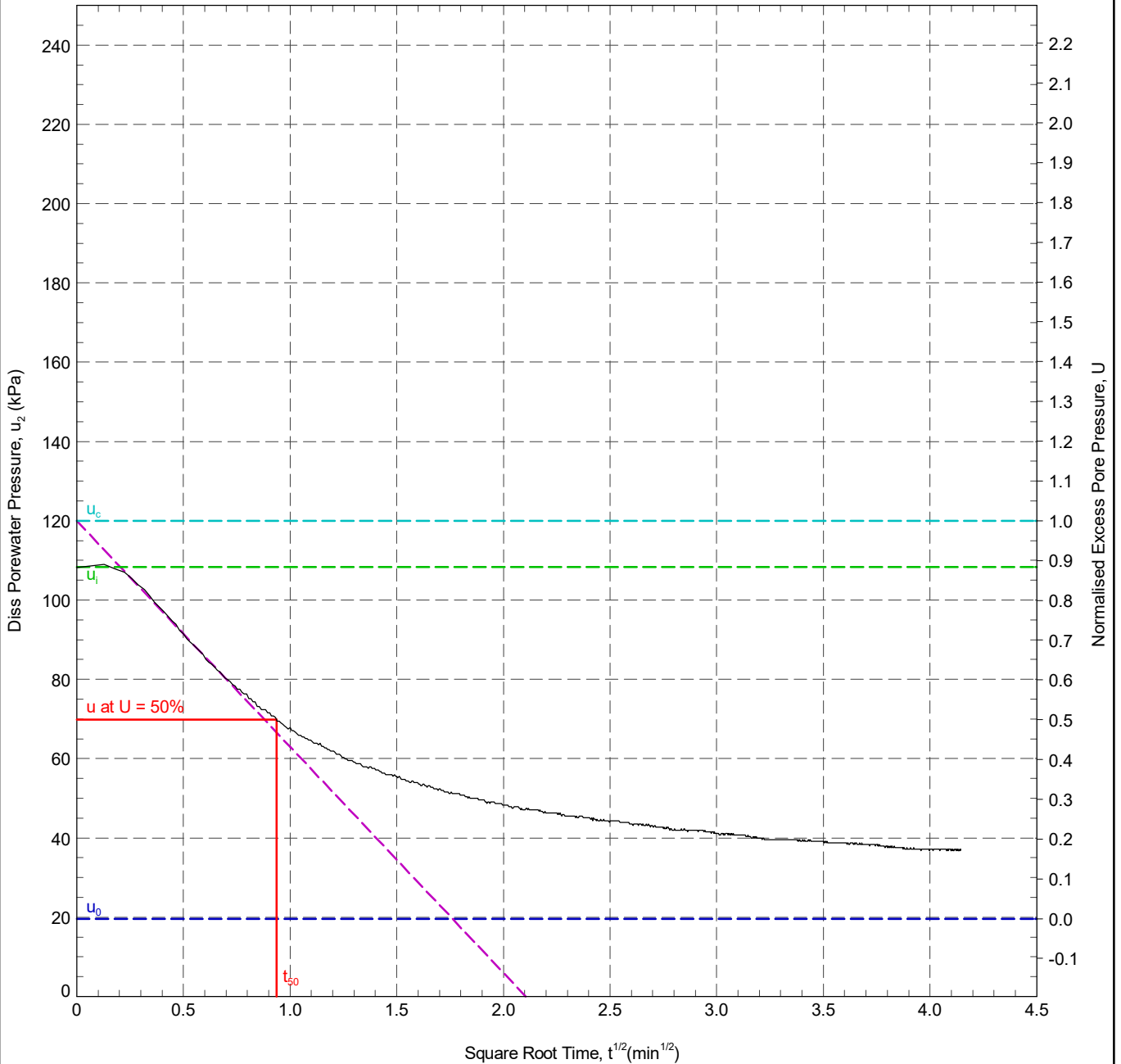
CPT 01 - 4.00 m

Working with:

CLIENT : Norfolk Partnership Laboratory
 ENGINEER :
 PROJECT : Great Yarmouth 3rd River Crossing
 LOCATION : Great Yarmouth
 PROJECT No. : 1180180

AREA : Great Yarmouth
 EASTING : 652228.0 m
 NORTHING : 305894.9 m
 COORD. SYS.:
 ELEVATION : 1.06 m

SHEET : 1 OF 1
 STATUS : Final
 DATE : 20/03/18



In Situ Pore Pressure, u_0 :	19.6 kPa	Rigidity Index, I_r :	100
Initial Pore Pressure, u_i :	108.3 kPa	Horizontal Coefficient of Consolidation, c_h :	$7.77 \times 10^2 \text{ m}^2/\text{yr}$
Final Pore Pressure:	37.1 kPa	Ratio c_r/c_v :	3
Back Extrapolated Pore Pressure, u_c :	120 kPa	Vertical Coefficient of Consolidation, c_v :	$2.59 \times 10^2 \text{ m}^2/\text{yr}$
Degree of Dissipation:	50%		
Dissipation Pressure:	69.8 kPa		
Time for 50% Dissipation, t_{50} :	0.88 min		

RIG : CPT010 Walter; Truck-based 20 Ton, ~~ANALYSIS BY~~ : LD DATE: 23/03/2018
 CONE TYPE : P15-CFPT CHECKED BY : LD DATE: 23/03/2018
 CONE ID : P15-CFPTxy.70080 APPROVED BY : DW DATE: 23/03/2018
 OPERATOR : DH & AE

REMARK
 Test OK.

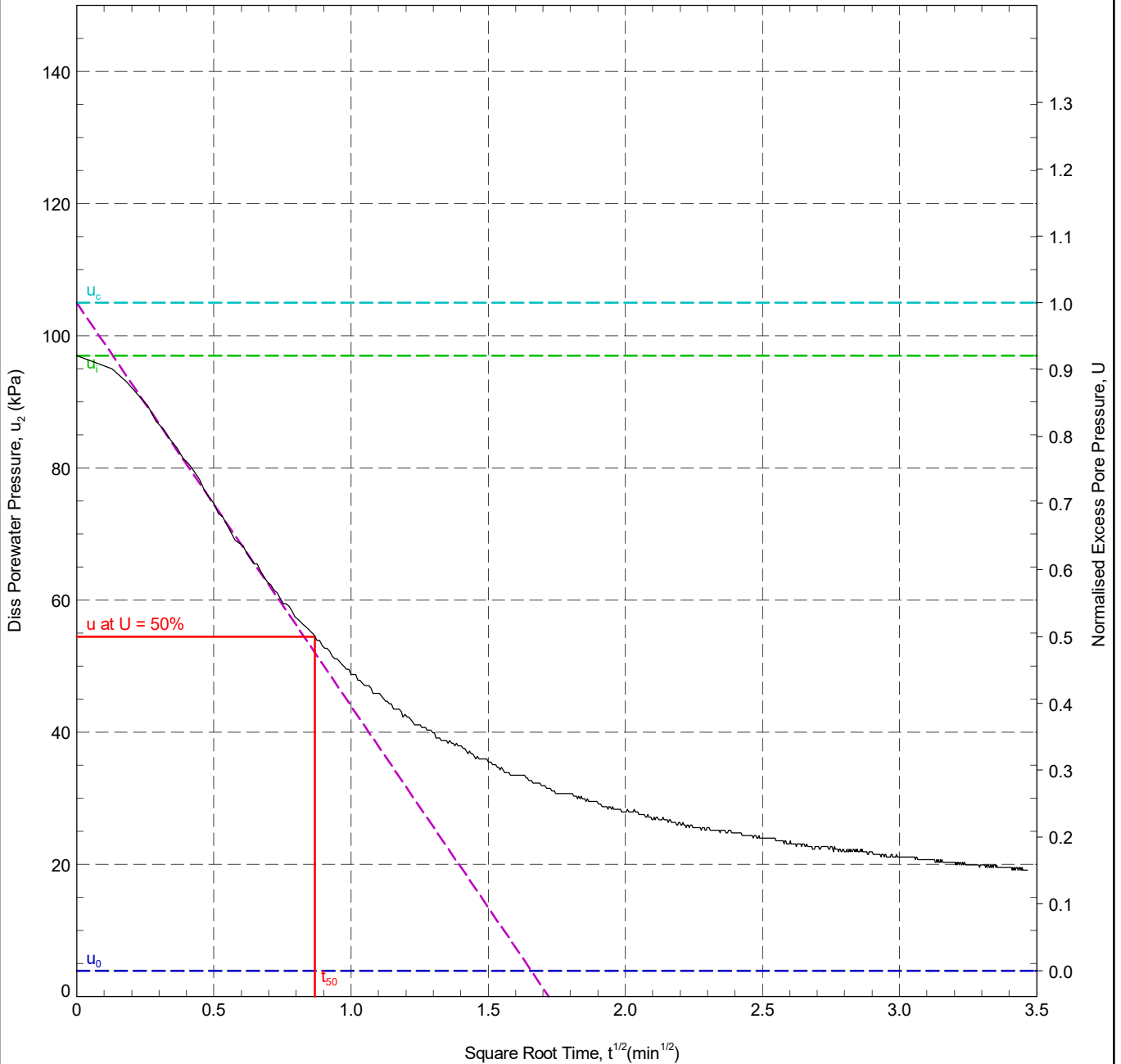
INSTITUSI 2.02.0.LIB.GLB.Gmph. ISSI DISS. PORE PRESSURE VS. SQR T.A.P. 1180180-GREAT YARMOUTH 3RD RIVER CROSSING.GPJ. <<Drawingfile>> 19/04/2018 18:08 10.0.000 D:\ghl\Lab and In Situ Tool - DGD\ [Lib: In Situ SI 2.02.0.2017-07-10 Proj: In Situ SI 2.02.0.2017-07-10

Working with:

CLIENT : Norfolk Partnership Laboratory
 ENGINEER :
 PROJECT : Great Yarmouth 3rd River Crossing
 LOCATION : Great Yarmouth
 PROJECT No. : 1180180

AREA : Great Yarmouth
 EASTING : 652244.0 m
 NORTHING : 305934.2 m
 COORD. SYS.:
 ELEVATION : 0.73 m

SHEET : 1 OF 1
 STATUS : Final
 DATE : 19/03/18



In Situ Pore Pressure, u_0 :	3.9 kPa	Rigidity Index, I_r :	4.6
Initial Pore Pressure, u_i :	97.0 kPa	Horizontal Coefficient of Consolidation, c_h :	1.94×10^2 m ² /yr
Final Pore Pressure:	19.1 kPa	Ratio c_h/c_v :	3
Back Extrapolated Pore Pressure, u_c :	105 kPa	Vertical Coefficient of Consolidation, c_v :	6.46×10^1 m ² /yr
Degree of Dissipation:	50%		
Dissipation Pressure:	54.5 kPa		
Time for 50% Dissipation, t_{50} :	0.75 min		

RIG : CPT010 Walter; Truck-based 20 Ton, ~~Walter~~ ANALYSIS BY : LD DATE: 23/03/2018
 CONE TYPE : P15-CFPT CHECKED BY : LD DATE: 23/03/2018
 CONE ID : P15-CFPTxy.70080 APPROVED BY : DW DATE: 23/03/2018
 OPERATOR : DH & AE

REMARK
Test OK.

Test ID

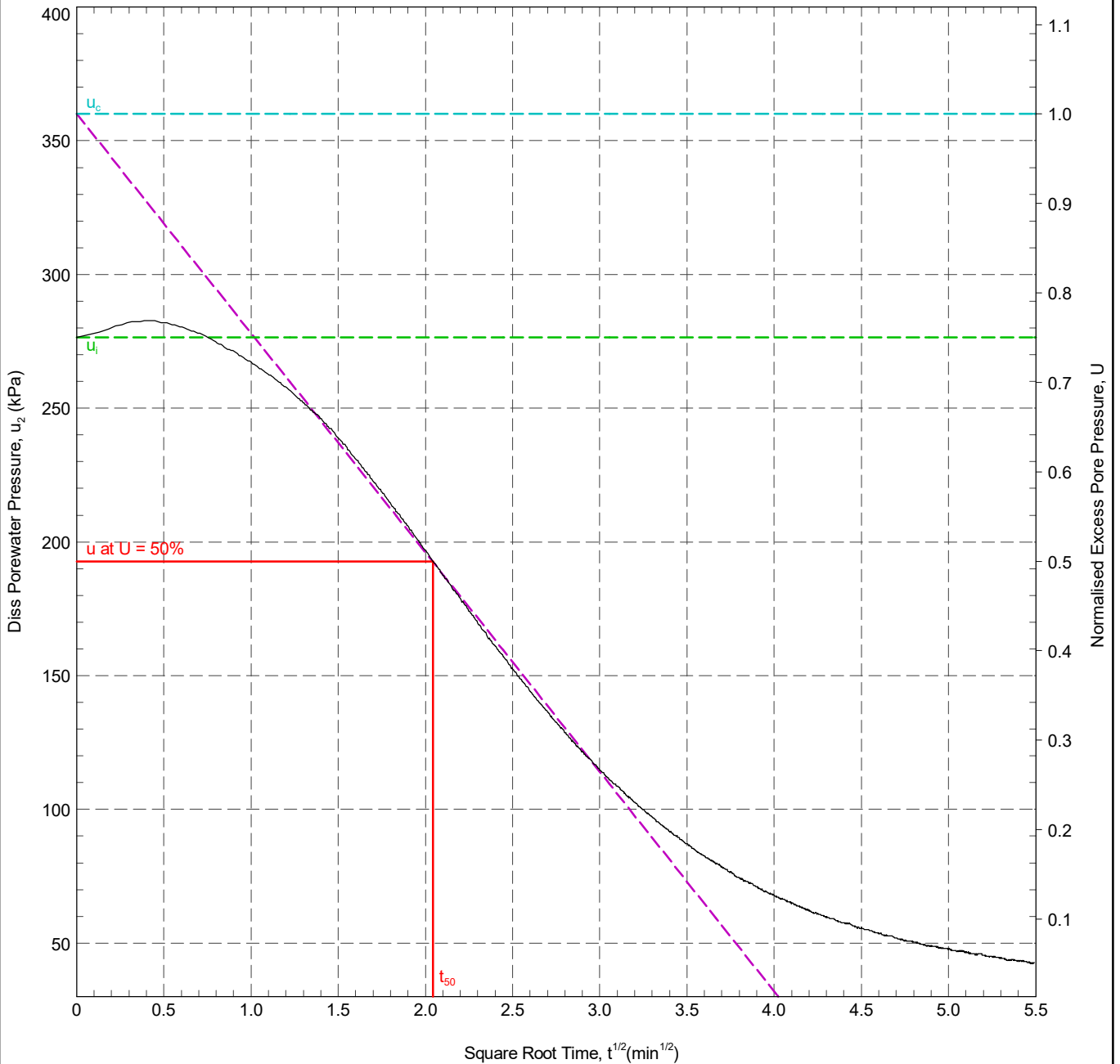
CPT 03 - 4.60 m

Working with:

CLIENT : Norfolk Partnership Laboratory
 ENGINEER :
 PROJECT : Great Yarmouth 3rd River Crossing
 LOCATION : Great Yarmouth
 PROJECT No. : 1180180

AREA : Great Yarmouth
 EASTING : 652308.0 m
 NORTHING : 305950.5 m
 COORD. SYS.:
 ELEVATION : 1.17 m

SHEET : 1 OF 1
 STATUS : Final
 DATE : 19/03/18



In Situ Pore Pressure, u_0 :	25.5 kPa	Rigidity Index, I_r :	7.9
Initial Pore Pressure, u_i :	276.4 kPa	Horizontal Coefficient of Consolidation, c_h :	4.59×10^1 m ² /yr
Final Pore Pressure:	42.7 kPa	Ratio c_h/c_v :	3
Back Extrapolated Pore Pressure, u_c :	360 kPa	Vertical Coefficient of Consolidation, c_v :	1.53×10^1 m ² /yr
Degree of Dissipation:	50%		
Dissipation Pressure:	192.7 kPa		
Time for 50% Dissipation, t_{50} :	4.18 min		

RIG	: CPT010 Walter; Truck-based 20 Ton; ANALYSIS BY : LD	DATE: 23/03/2018
CONE TYPE	: P15-CFPT	CHECKED BY : LD
CONE ID	: P15-CFPTxy.70080	APPROVED BY : DW
OPERATOR	: DH & AE	DATE: 23/03/2018

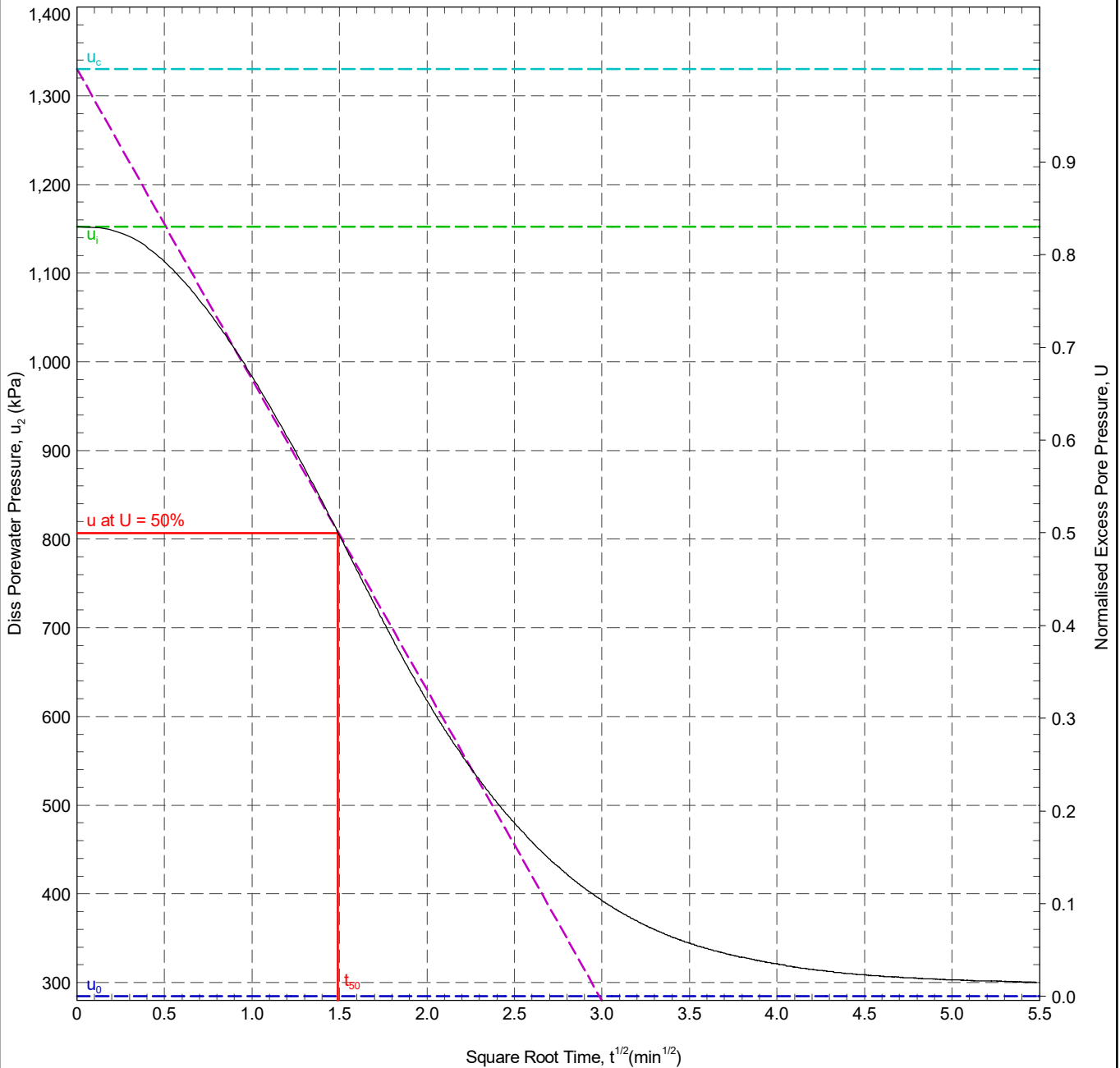
REMARK
Test OK.

Working with:

CLIENT : Norfolk Partnership Laboratory
 ENGINEER :
 PROJECT : Great Yarmouth 3rd River Crossing
 LOCATION : Great Yarmouth
 PROJECT No. : 1180180

AREA : Great Yarmouth
 EASTING : 652571.6 m
 NORTHING : 306018.0 m
 COORD. SYS.:
 ELEVATION : 1.49 m

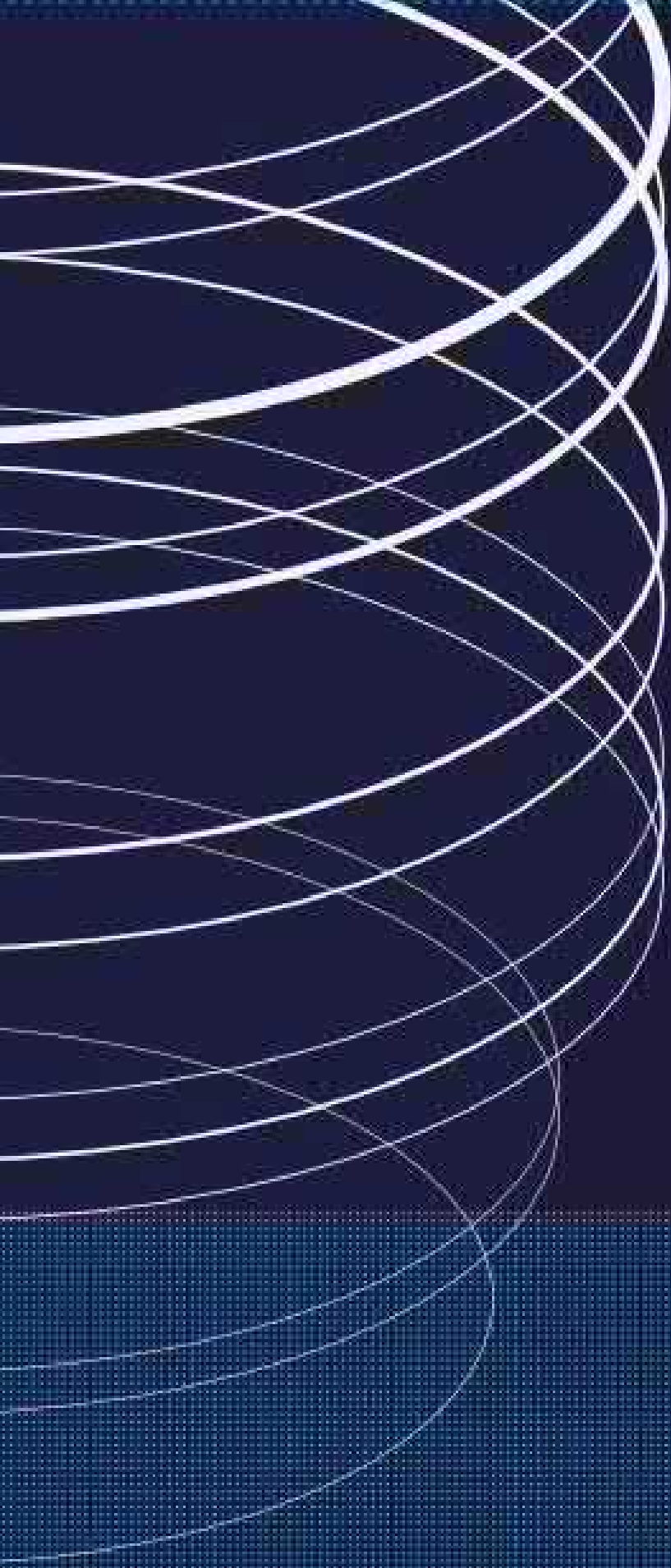
SHEET : 1 OF 1
 STATUS : Final
 DATE : 19/03/18



In Situ Pore Pressure, u_0 :	284.4 kPa	Rigidity Index, I_r :	6.7
Initial Pore Pressure, u_i :	1152.4 kPa	Horizontal Coefficient of Consolidation, c_{h1} :	$7.92 \times 10^1 \text{ m}^2/\text{yr}$
Final Pore Pressure:	300.4 kPa	Ratio c_{h1}/c_v :	3
Back Extrapolated Pore Pressure, u_c :	1330 kPa	Vertical Coefficient of Consolidation, c_v :	$2.64 \times 10^1 \text{ m}^2/\text{yr}$
Degree of Dissipation:	50%		
Dissipation Pressure:	807.1 kPa		
Time for 50% Dissipation, t_{50} :	2.23 min		

RIG : CPT010 Walter; Truck-based 20 Ton, ~~ANALYSIS BY~~ : LD DATE: 23/03/2018
 CONE TYPE : P15-CFPT CHECKED BY : LD DATE: 23/03/2018
 CONE ID : P15-CFPTxy.70080 APPROVED BY : DW DATE: 23/03/2018
 OPERATOR : DH & AE

REMARK
 Test OK.



IN SITU SITE INVESTIGATION

Unit 23 Hastings Innovation
Centre,
Highfield Drive
St. Leonards on Sea, East Sussex,
TN38 9UH, U.K.

Company No.: 6339499
VAT No.: 922 3561 41

Appendix F

DCP TEST RESULTS

WSP

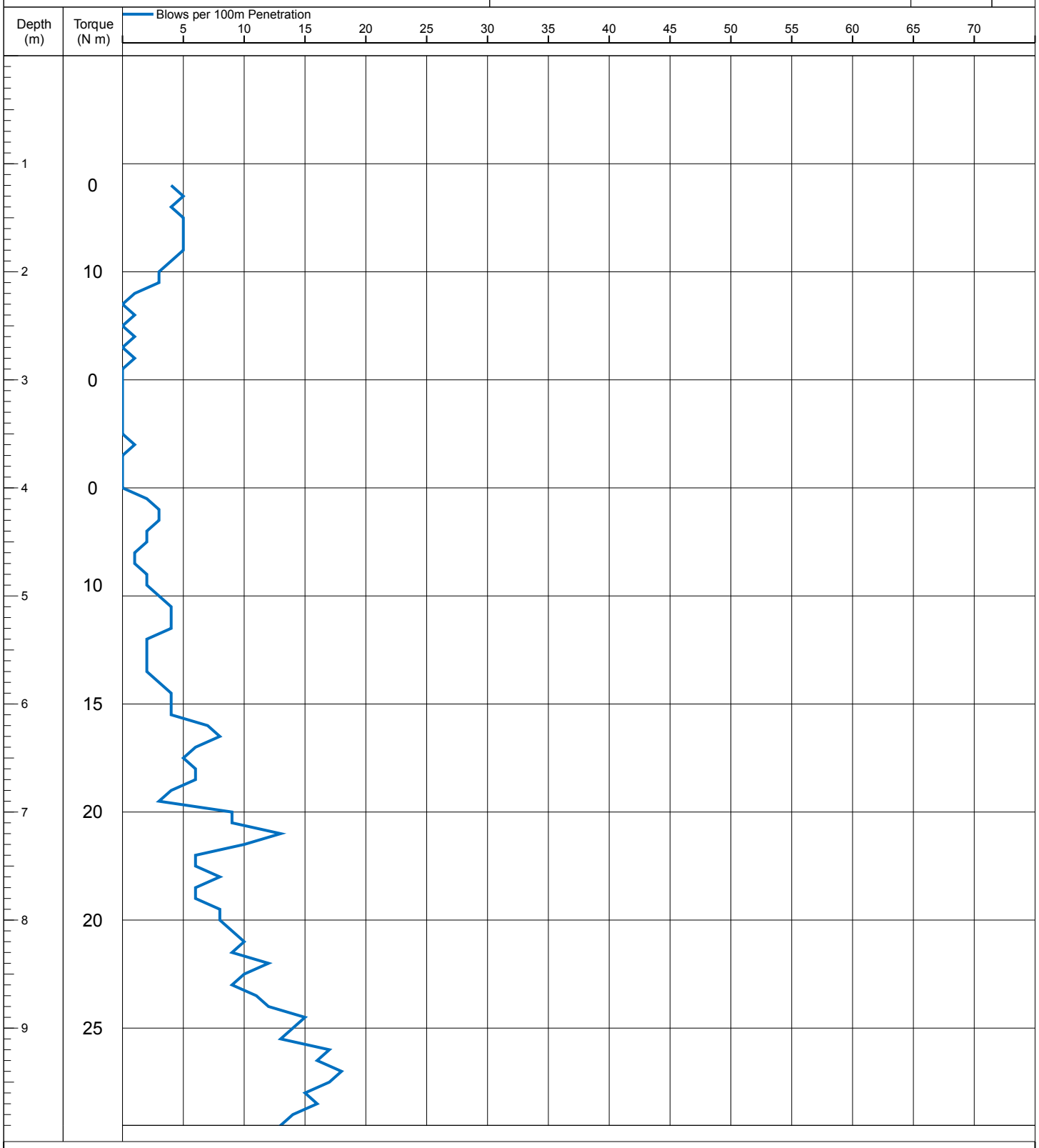
NORFOLK PARTNERSHIP LABORATORY

DYNAMIC PROBE LOG

Sheet 1 of 2



Scheme	Gt Yarmouth 3rd River Crossing		Job No.	PZ1522D1		Borehole No.	BH4AS				
Carried out for	Community & Environmental Services			Date Started	14/12/2017		Date Finished	14/12/2017			
Dimension (mm)	44	Probe Type	DPSH		Type of Rig	Dando Terrier/Terrier			Logged by	RK	
Remarks:	General; Refuse at 6m sand blowing up				Depth (m)	15.00		Height (m)	2.13		
						Co-ords	652284 - 305847			Checked by	MLB



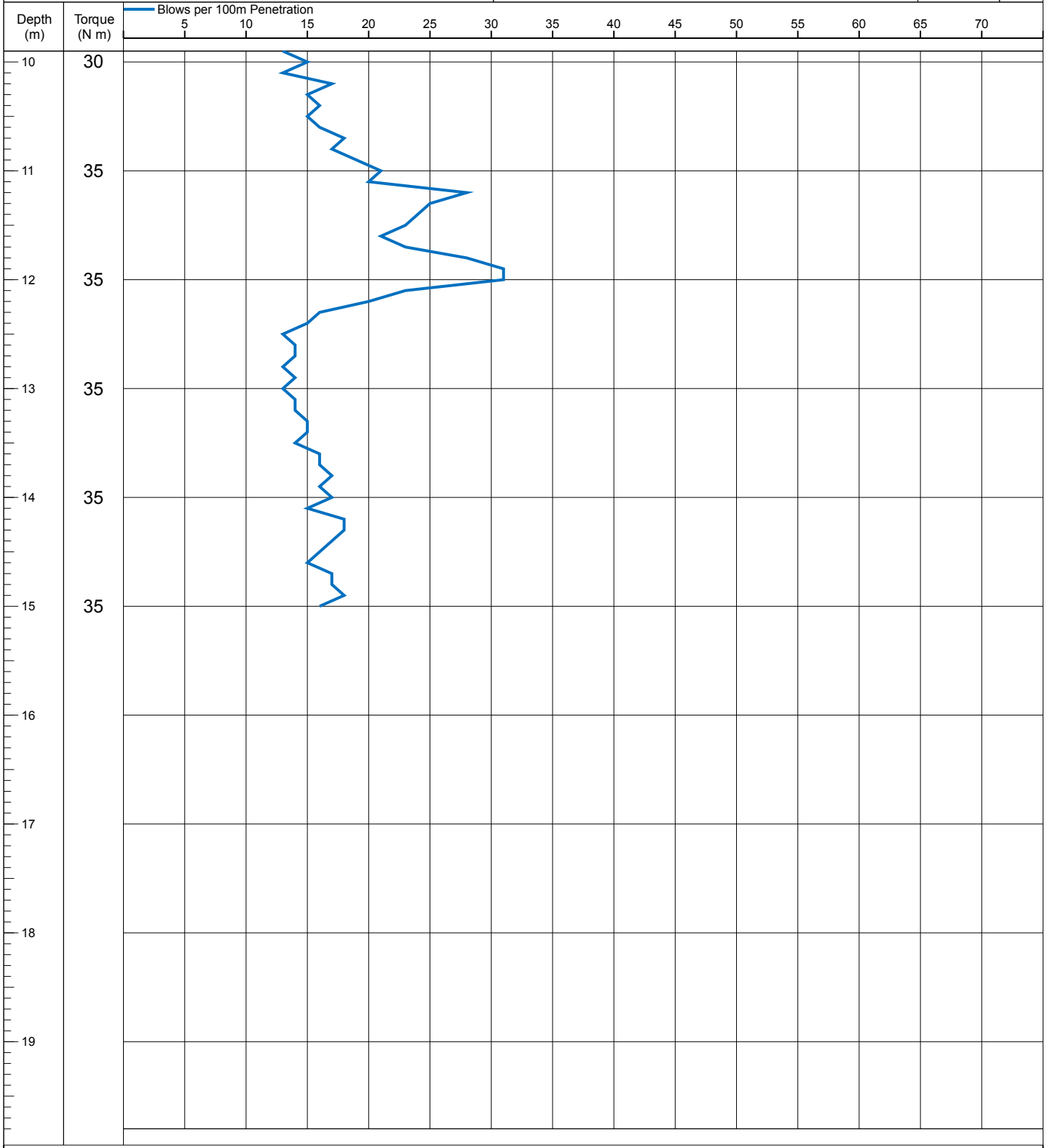
NORFOLK PARTNERSHIP LABORATORY

DYNAMIC PROBE LOG

Sheet 2 of 2



Scheme		Gt Yarmouth 3rd River Crossing		Job No. PZ1522D1		Borehole No. BH4AS						
Carried out for		Community & Environmental Services		Date Started 14/12/2017		Date Finished 14/12/2017						
Dimension (mm)	44	Probe Type	DPSH	Type of Rig			Dando Terrier/Terrier	Logged by	RK			
Remarks:		General; Refuse at 6m sand blowing up		Depth (m)		15.00		Height (m)		2.13	Drawn by	RK
				Co-ords				652284 - 305847		Checked by	MLB	



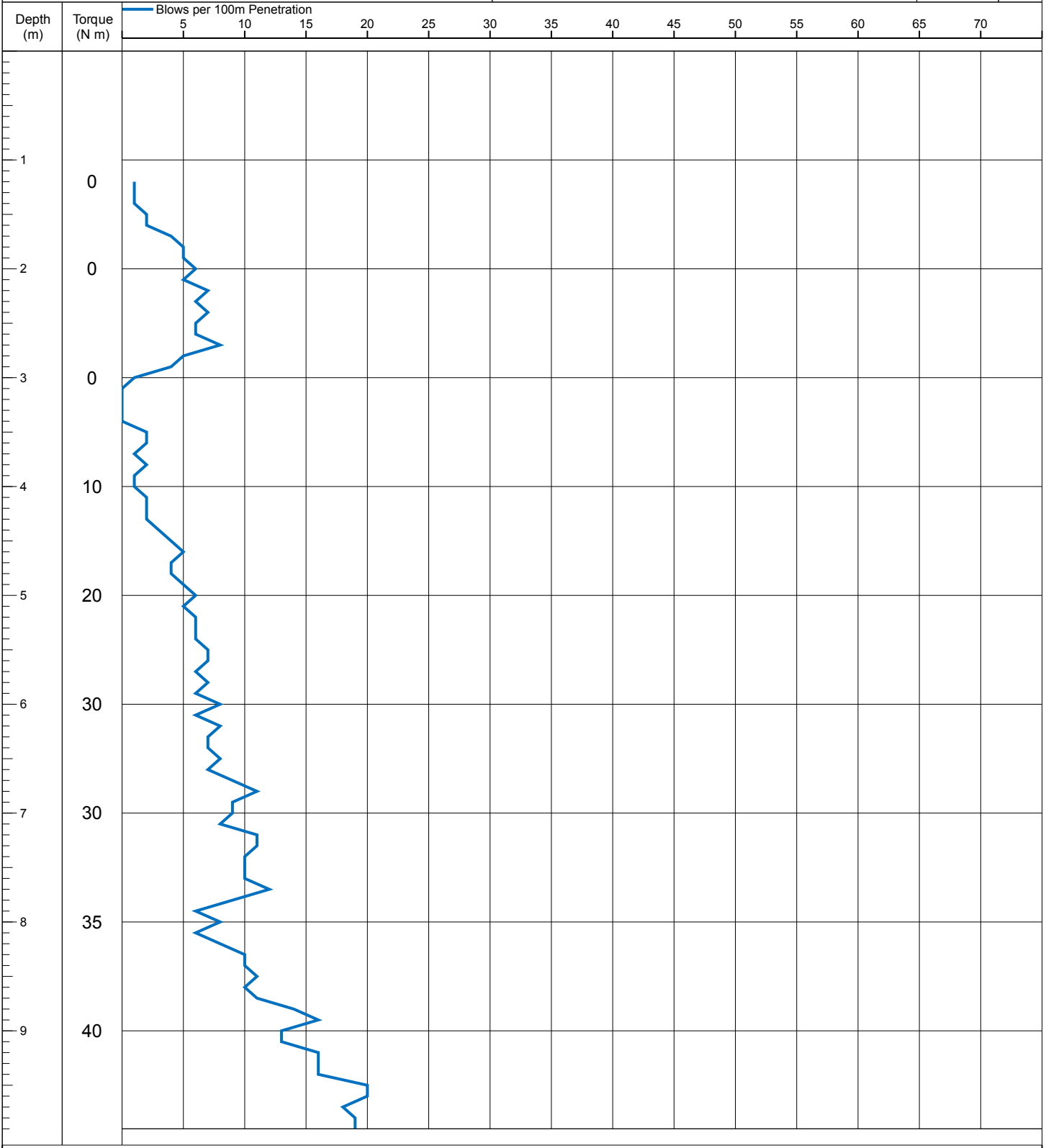
NORFOLK PARTNERSHIP LABORATORY

DYNAMIC PROBE LOG

Sheet 1 of 2



Scheme	Gt Yarmouth 3rd River Crossing		Job No.	PZ1522D1		Borehole No.	BH4B			
Carried out for	Community & Environmental Services			Date Started	14/12/2017		Date Finished	14/12/2017		
Dimension (mm)	44	Probe Type	DPSH		Type of Rig	Dando Terrier/Hand Tools/Terrier		Logged by	RK	
Remarks:	General; Refuse at 5m blowing sand. General; 3-4M liner in bulk bag				Depth (m)	5.00		Height (m)	1.83	
					Co-ords	652312 - 305826				Checked by



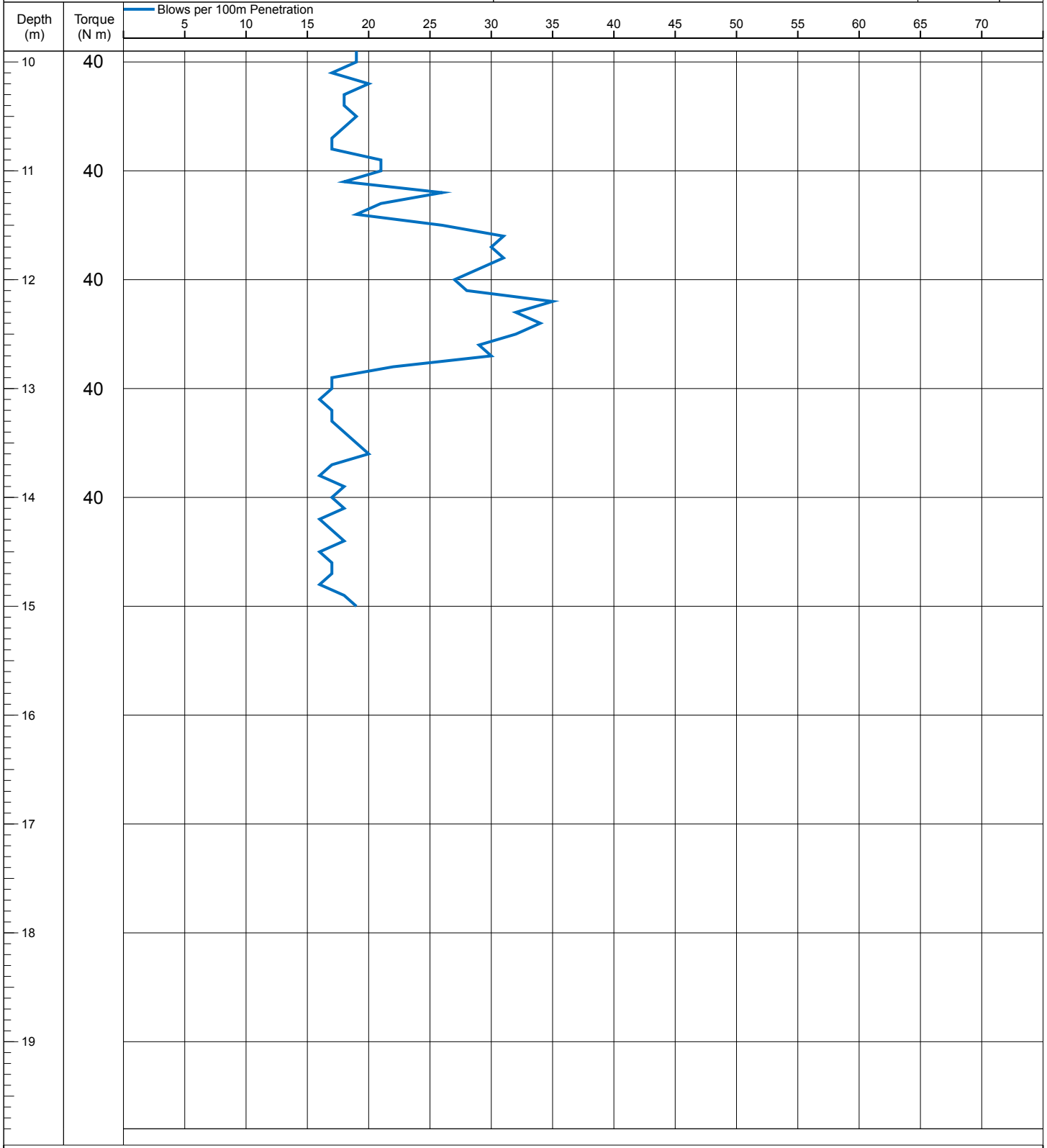
NORFOLK PARTNERSHIP LABORATORY

DYNAMIC PROBE LOG

Sheet 2 of 2



Scheme		Gt Yarmouth 3rd River Crossing		Job No. PZ1522D1		Borehole No. BH4B			
Carried out for		Community & Environmental Services		Date Started 14/12/2017		Date Finished 14/12/2017			
Dimension (mm)	44	Probe Type	DPSH	Type of Rig		Dando Terrier/Hand Tools/Terrier	Logged by	RK	
Remarks:		General; Refuse at 5m blowing sand. General; 3-4M liner in bulk bag		Depth (m)	5.00	Height (m)	1.83	Drawn by	RK
				Co-ords		652312 - 305826		Checked by	MLB



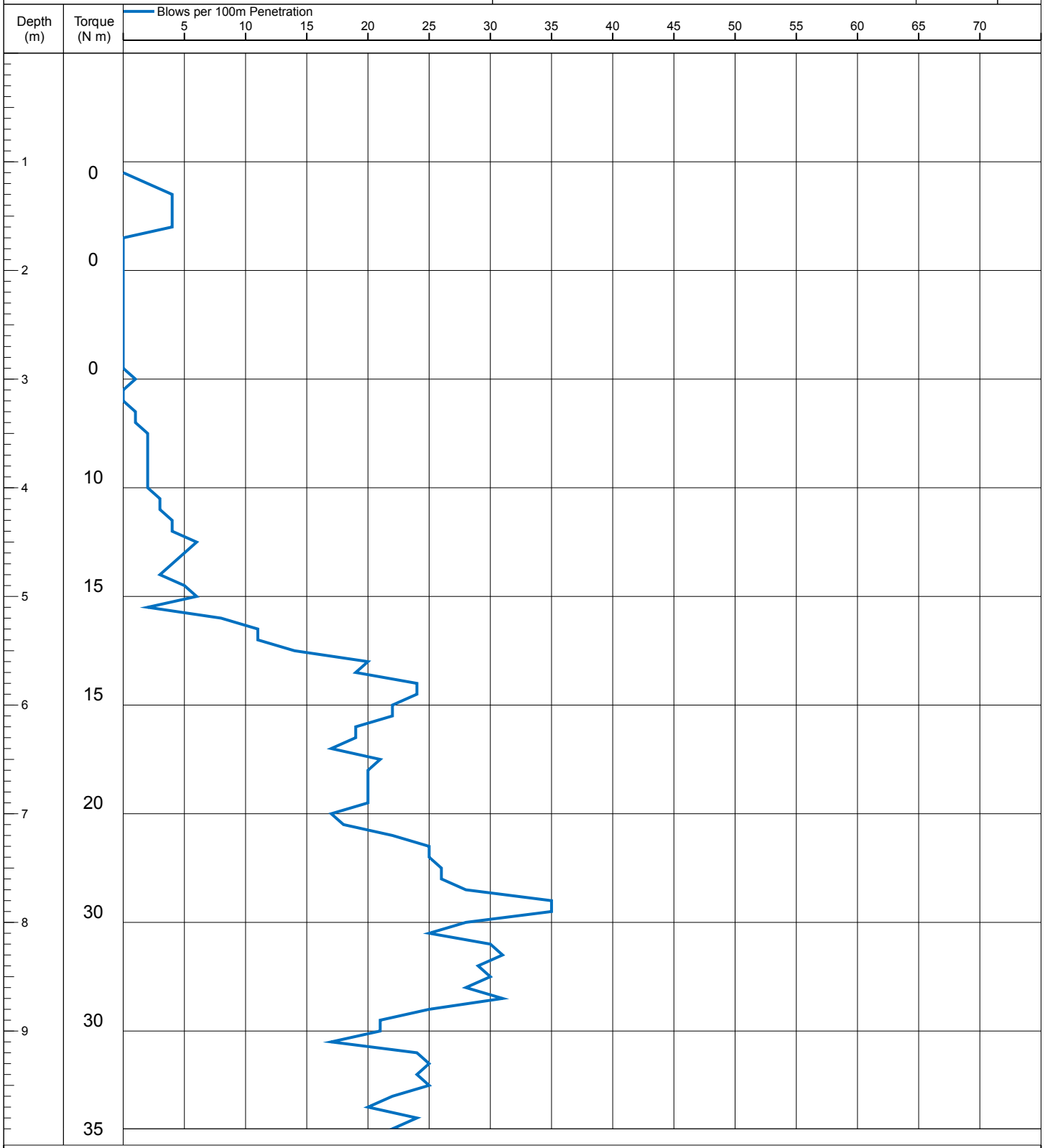
NORFOLK PARTNERSHIP LABORATORY

DYNAMIC PROBE LOG

Sheet 1 of 2



Scheme	Gt Yarmouth 3rd River Crossing		Job No.	PZ1522D1		Borehole No.	TP1DP			
Carried out for	Community & Environmental Services			Date Started	07/12/2017		Date Finished	07/12/2017		
Dimension (mm)	44	Probe Type	DPSH-B		Type of Rig	Terrier		Logged by	MB	
Remarks:	TP1 to 1.2m. DP continue from base of TP.				Depth (m)	15.00	Height (m)	1.55	Drawn by	RK
	Co-ords						652248 - 305907		Checked by	MLB



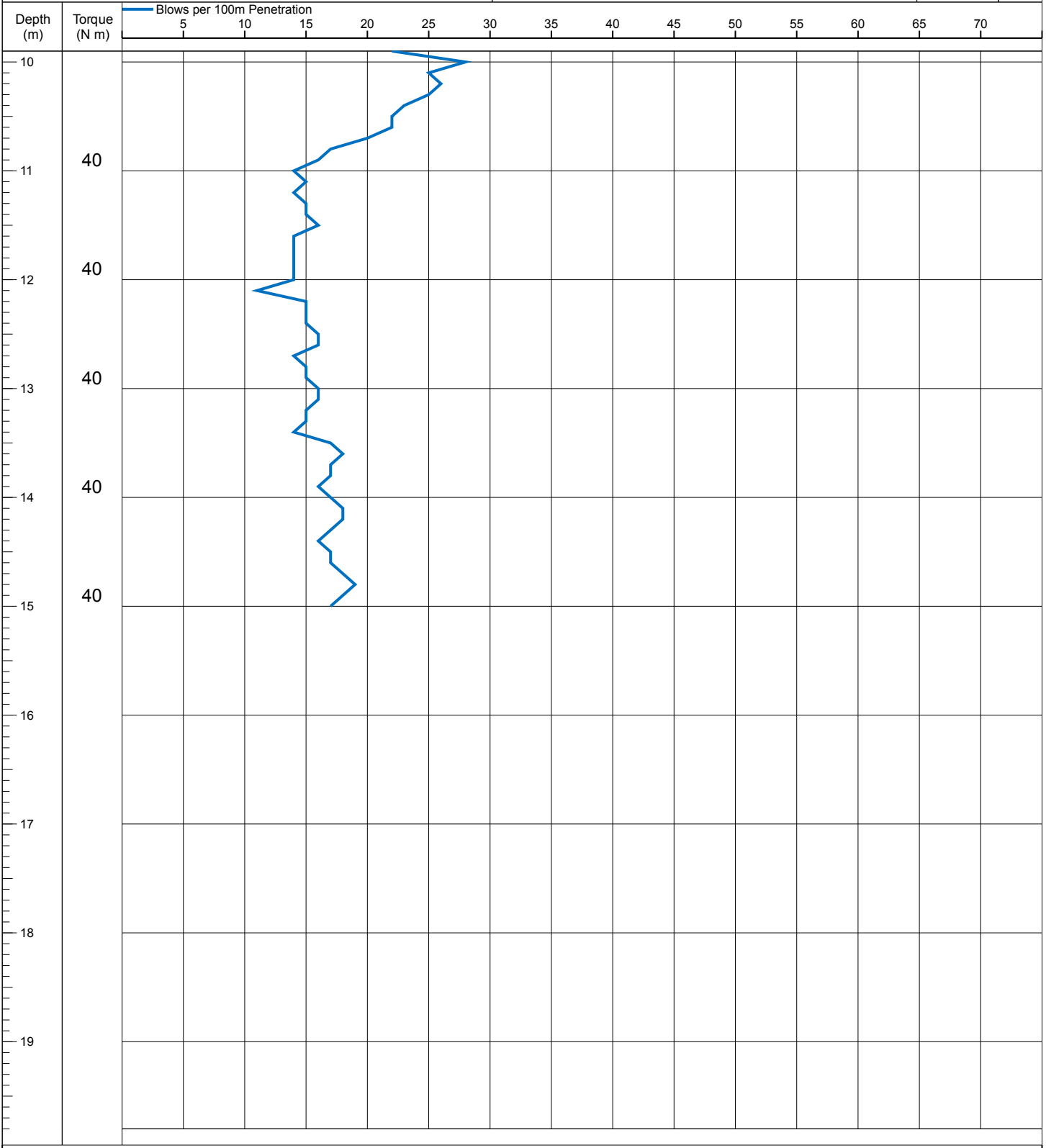
NORFOLK PARTNERSHIP LABORATORY

DYNAMIC PROBE LOG

Sheet 2 of 2



Scheme	Gt Yarmouth 3rd River Crossing		Job No.	PZ1522D1		Borehole No.	TP1DP			
Carried out for	Community & Environmental Services			Date Started	07/12/2017		Date Finished	07/12/2017		
Dimension (mm)	44	Probe Type	DPSH-B		Type of Rig	Terrier		Logged by	MB	
Remarks:	TP1 to 1.2m. DP continue from base of TP.				Depth (m)	15.00	Height (m)	1.55	Drawn by	RK
	Co-ords						652248 - 305907		Checked by	MLB



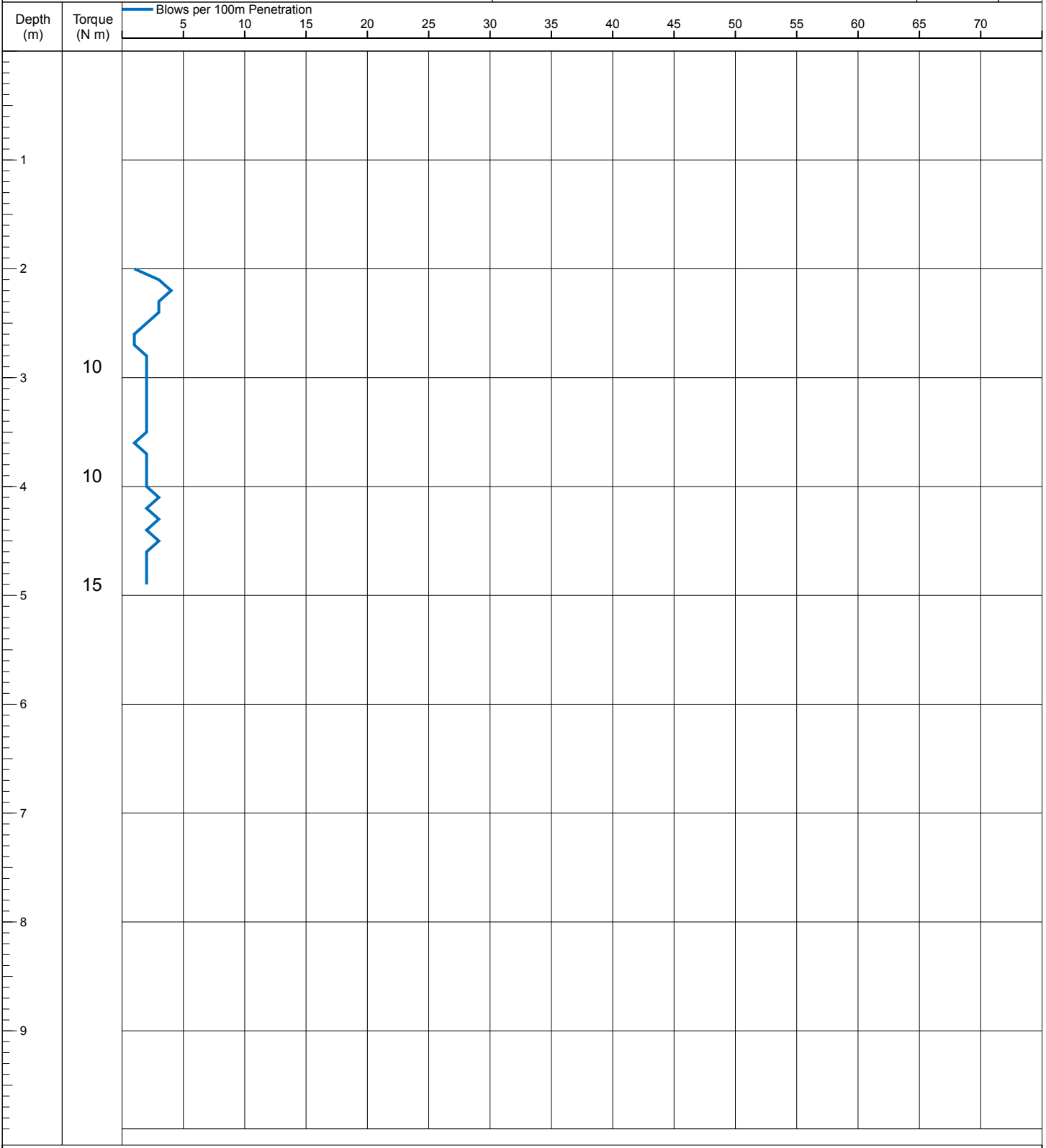
NORFOLK PARTNERSHIP LABORATORY

DYNAMIC PROBE LOG

Sheet 1 of 1



Scheme	Gt Yarmouth 3rd River Crossing		Job No.	PZ1522D1		Borehole No.	WS2DP			
Carried out for	Community & Environmental Services		Date Started	07/12/2017		Date Finished	07/12/2017			
Dimension (mm)	36	Probe Type	DPSH-B		Type of Rig	Geotool		Logged by	MB	
Remarks:	WS2 from 1.2-2m. DP continue from base of WS.				Depth (m)	5.00	Height (m)	0.85	Drawn by	RK
					Co-ords	652124 - 305897			Checked by	MLB



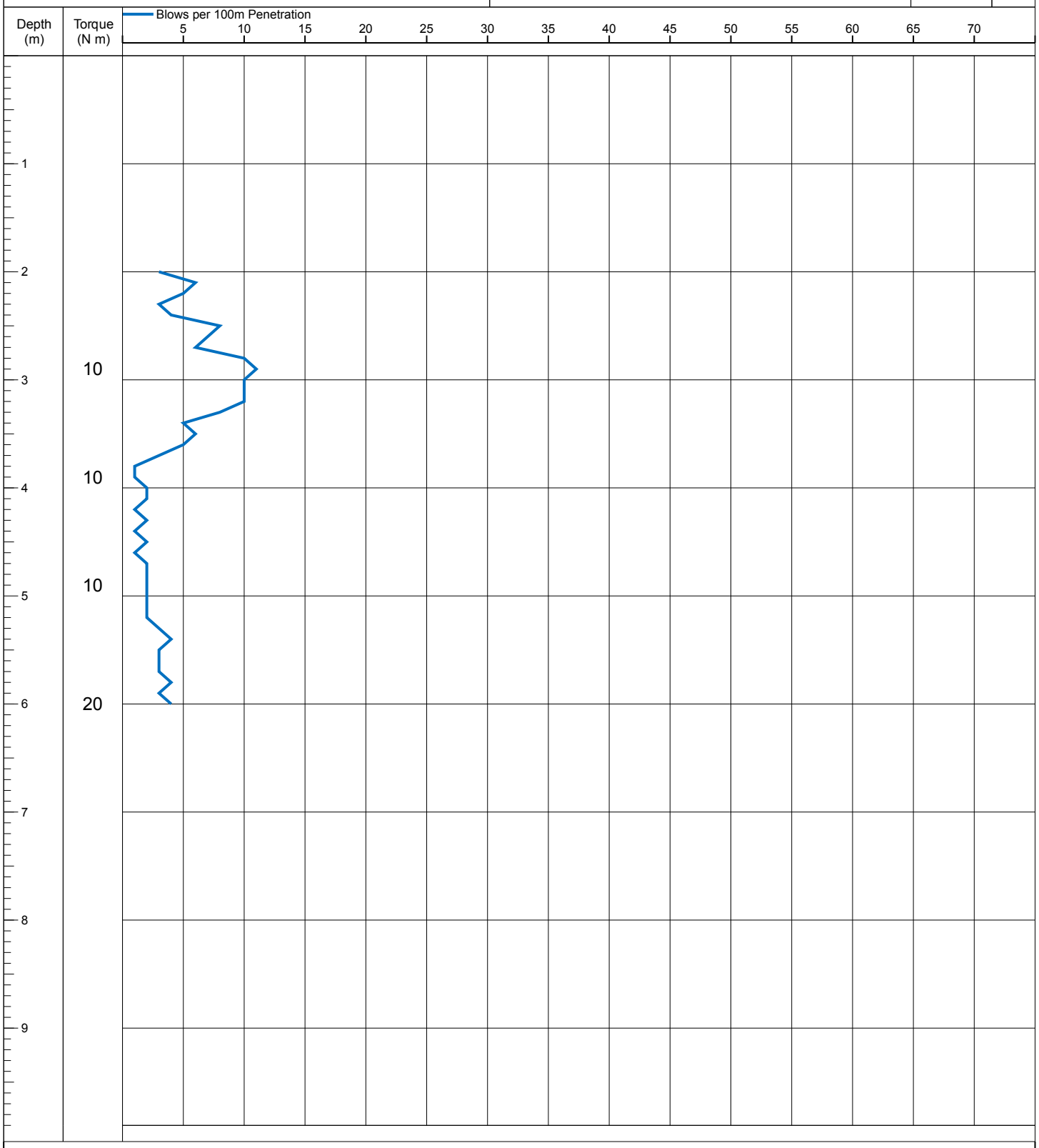
NORFOLK PARTNERSHIP LABORATORY

DYNAMIC PROBE LOG

Sheet 1 of 1



Scheme	Gt Yarmouth 3rd River Crossing	Job No.	PZ1522D1	Borehole No.	WS5DP
Carried out for	Community & Environmental Services	Date Started	04/12/2017	Date Finished	05/12/2017
Dimension (mm)	36	Probe Type	DPH	Type of Rig	Geotool
Remarks:	WS5 probe.	Depth (m)	6.00	Height (m)	1.09
		Co-ords	652156 - 305895		Checked by
					MLB



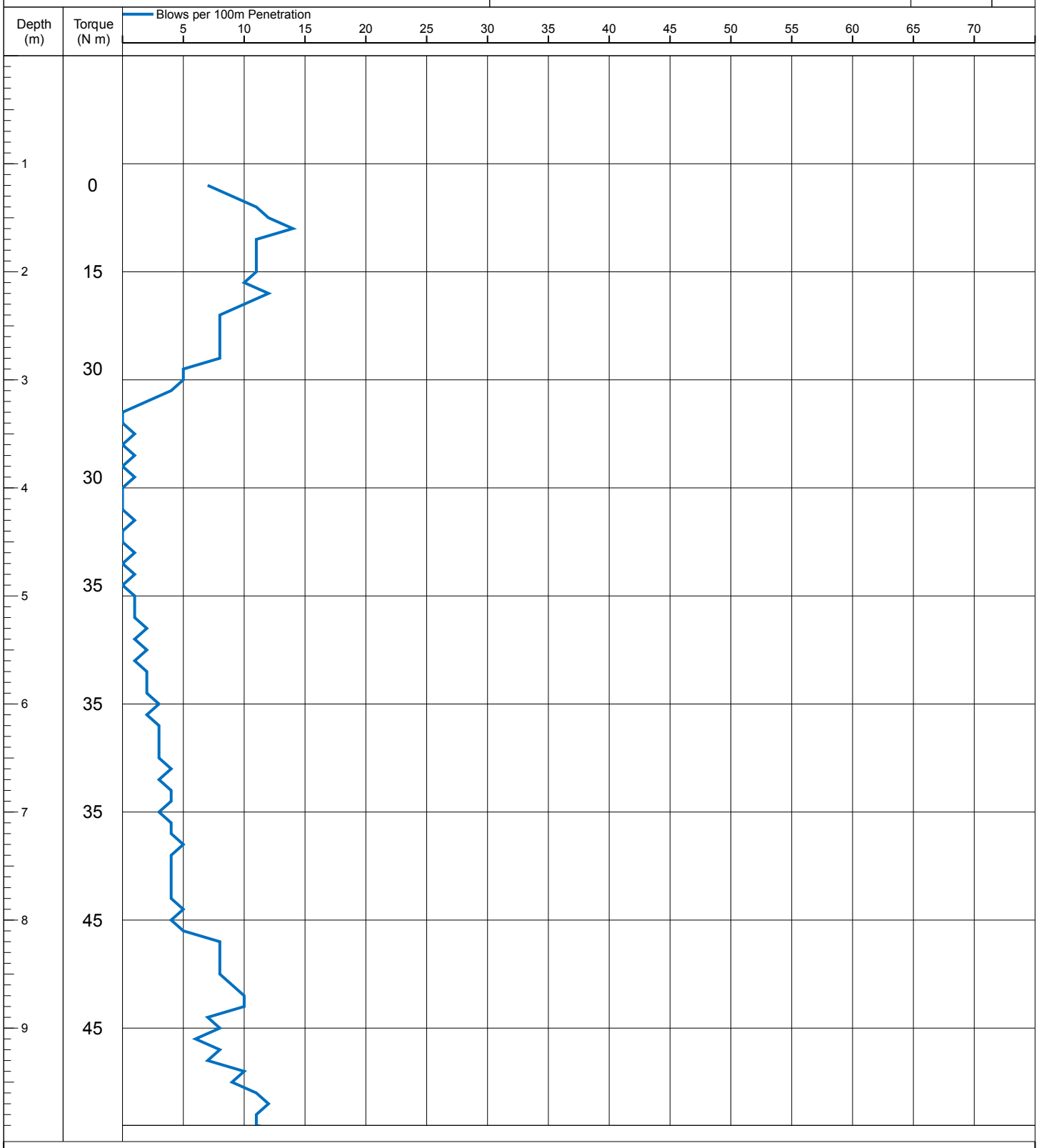
NORFOLK PARTNERSHIP LABORATORY

DYNAMIC PROBE LOG

Sheet 1 of 2



Scheme	Gt Yarmouth 3rd River Crossing		Job No.	PZ1522D1		Borehole No.	WS7DP			
Carried out for	Community & Environmental Services			Date Started	06/12/2017		Date Finished	06/12/2017		
Dimension (mm)	36	Probe Type	DPH		Type of Rig	Dando Terrier/Terrier/Hand Tools		Logged by	MB	
Remarks:	WS7 from 1.2-2m. DP from 1.2m				Depth (m)	15.00	Height (m)	0.85	Drawn by	RK
	Co-ords						652204 - 305885		Checked by	MLB



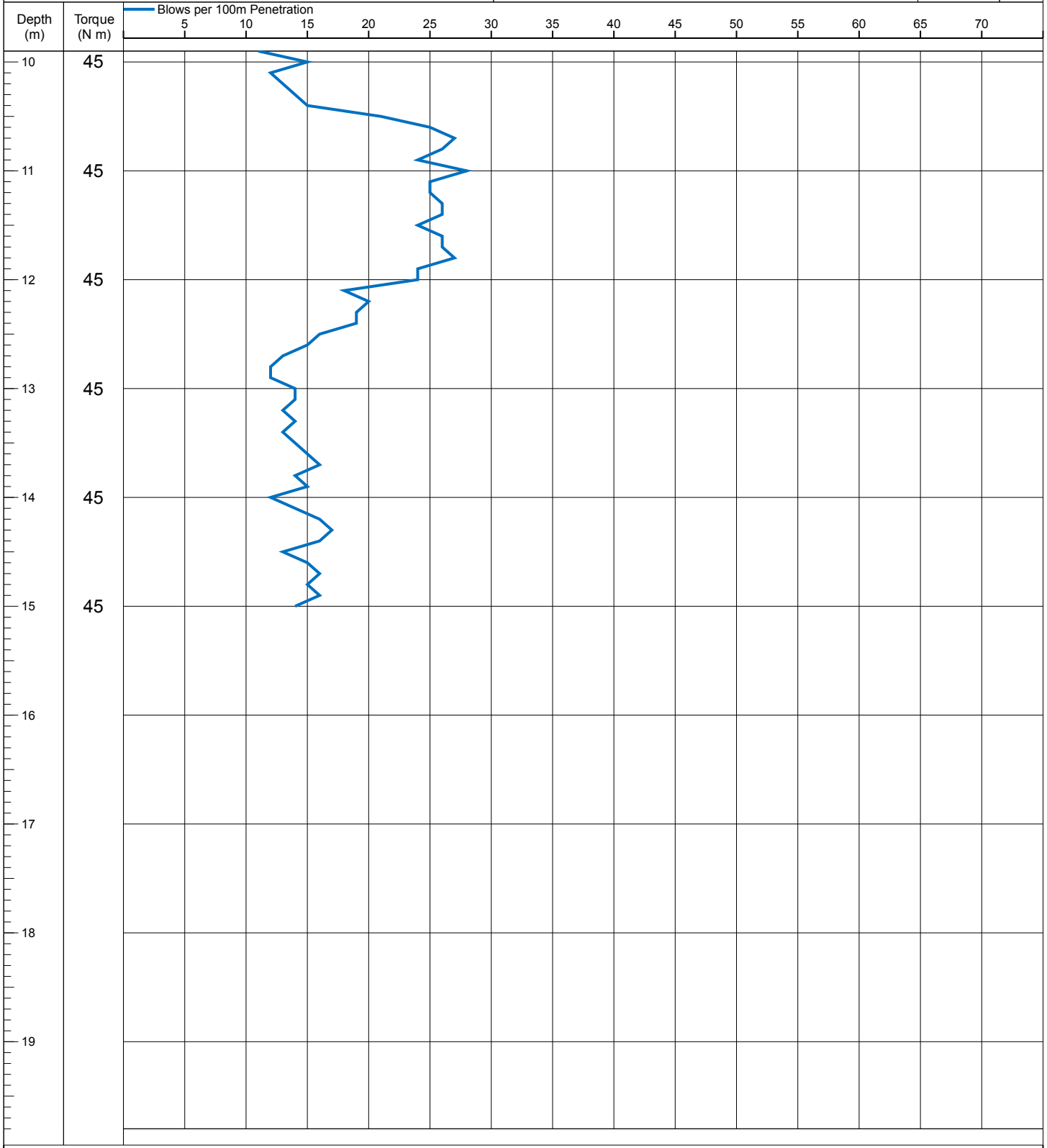
NORFOLK PARTNERSHIP LABORATORY

DYNAMIC PROBE LOG

Sheet 2 of 2



Scheme	Gt Yarmouth 3rd River Crossing		Job No.	PZ1522D1		Borehole No.	WS7DP			
Carried out for	Community & Environmental Services			Date Started	06/12/2017		Date Finished	06/12/2017		
Dimension (mm)	36	Probe Type	DPH		Type of Rig	Dando Terrier/Terrier/Hand Tools		Logged by	MB	
Remarks:	WS7 from 1.2-2m. DP from 1.2m				Depth (m)	15.00	Height (m)	0.85	Drawn by	RK
						Co-ords	652204 - 305885		Checked by	MLB



Appendix G

WSP
**GEOTECHNICAL LABORATORY TEST
RESULTS**

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:
Client Name:	Community & Environmental Services	PZ1522D1

Location	Depth m	Sample Ref	Sample Description	Water Content %	Remarks
BH1	3.60-3.80	B15	Grey brown sandy clayey SILT	47.7	
BH1	7.00-7.50	B25	Grey slightly gravelly CLAY. Gravel is of flint, chalk and occasional shell fragments	60.0	
BH1	9.50-9.95	D32	Dark brown and black pseudo fibrous PEAT.	335	
BH1	10.95-11.00	D35	Dark brown and black pseudo fibrous PEAT.	359	
BH1	27.45-27.50	D71	Grey slightly gravelly sandy CLAY. Gravel is of flint and occasional shell fragments.	26.9	
BH1	30.00-30.45	D76	Grey slightly clayey silty SAND	21.7	
BH2	4.40-4.80	B15	Grey brown slightly gravelly slightly sandy silty CLAY. Gravel is of flint, quartzite and occasional shell fragments	55.0	
BH2	6.50-7.00	B21	Grey slightly sandy silty CLAY	83.3	
BH2	8.60-9.00	B24	Dark brown and black amorphous PEAT	197	
BH2	10.00-10.45	D29	Dark brown and black amorphous PEAT.	257	

Remarks	Approved	Date	Sheet No.:
	MW	25/01/2018	1 of 2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:
Client Name:	Community & Environmental Services	PZ1522D1

Location	Depth m	Sample Ref	Sample Description	Water Content %	Remarks
BH2	27.00-28.00	B66	Grey brown clayey SAND	23.9	
BH2	27.90-28.35	D67	Grey slightly sandy silty CLAY.	24.5	
BH2	29.55-30.00	D70	Grey sandy CLAY.	24.5	

Remarks	Approved	Date	Sheet No.:
	MW	25/01/2018	2 of 2

Norfolk Partnership Laboratory

 Email: civil.laboratory@norfolk.gov.uk
Community & Environmental Services
G Broad
 County Hall
 Martineau Lane
 Norwich
 Norfolk
 NR1 2DH

Our Project No PZ1522D1
Our Report and sample No GTS3171204010-602
Our Specimen Ref
Your Project or Order No PZ1522

Date Report Issued 11-Jan-18

Page 1 of 1

Determination of Moisture Content to BS1377 : Part 2 : 1990 : Section 3.2

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH4A	Depth	2.1 m
Date sampled	8-Dec-17	Date received	8-Dec-18
Date tested	2-Jan-18		
Sample type	Bulk Disturbed		
If a Sample Certificate was provided it is available for inspection.			
The accuracy of information provided by third parties cannot be guaranteed.			
Material	Soil		
Description	Dark brown to black fibrous PEAT. Breydon Formation		
Supplier	Not applicable	Source	Ex-site

TEST SPECIMEN

Location Not applicable

Orientation Not applicable

PREPARATION DETAILS

Method of Division

Preparation Method Oven dried @ 105°C

Natural Moisture Content (%) 211

Remarks

Test Code = 602



Simon Holden (Project Technician)

www.norfolk.gov.uk


Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:
Client Name:	Community & Environmental Services	PZ1522D1

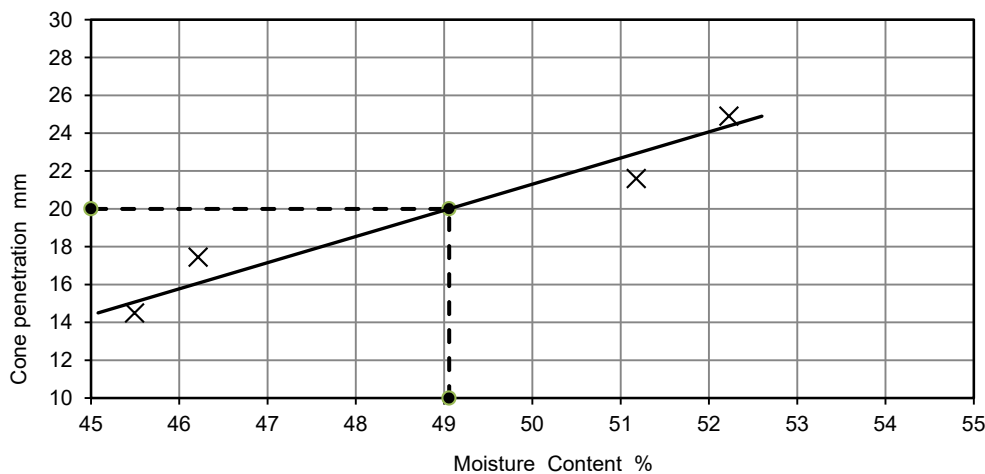
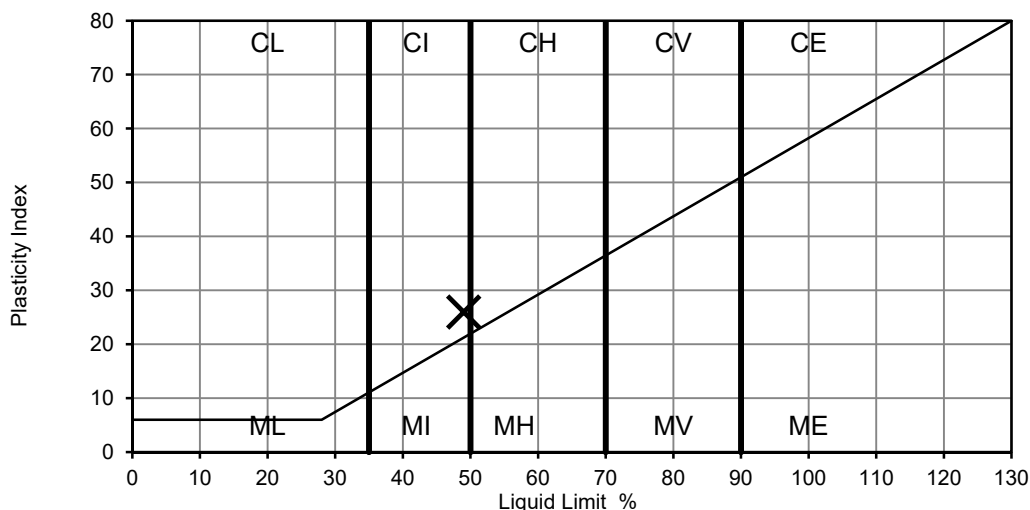
Location	Depth m	Sample Ref	Sample Description	Water Content %	Remarks
BH15	14.30-14.60	B43	Light brown clayey silty SAND	31.3	
BH15	27.60-27.70	D70	Grey slightly sandy silty CLAY	28.3	
BH15	30.00-30.45	D74	Grey mottled dark grey slightly sandy very silty CLAY	28.2	

Remarks	Approved	Date	Sheet No.:
	MW	30/01/2018	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH1
Sample Description:	Grey brown sandy clayey SILT	Sample Depth (m)	3.60
		Sample Reference	B15



Preparation: Material was washed and oven dried at below 50°C

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 48 %
 Percentage Passing 425µm sieve: 63 %
 Liquid Limit: 49 %
 Plastic Limit: 23 %
 Plasticity Index: 26

Liquidity Index: 0.96
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 16

Remarks	Approved	Date	Sheet No.:
	MW	25/01/2018	1 of 1

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 Our reference No. **GTS1171207003-604**
 Our Project No. **PZ1522D1**
 Your Sample Ref **B19**
 Your Project or Order No. **PZ1522**
 Date Report Issued **14 Mar 2018**

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH1	Depth	5m
Date sampled	07 Dec 2017	Date received	07 Dec 2017
Date tested	16 Feb 2018		
Sample type	Bulk Disturbed	Sample Mass (g)	566

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil
Description	Soft dark grey silty, very sandy CLAY, with lenses of black organic matter.

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	11.0	

Natural MC (%) 48

Liquid Limit (%) 74

Plastic Limit (%) 24

Plasticity Index (%) 50

Modified PI *(%) 44

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

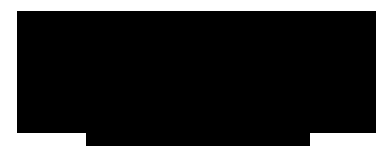
BS Soil Classification C V

Remarks	NHBC Volume change potential classification is high.
----------------	--

Test Code = 604



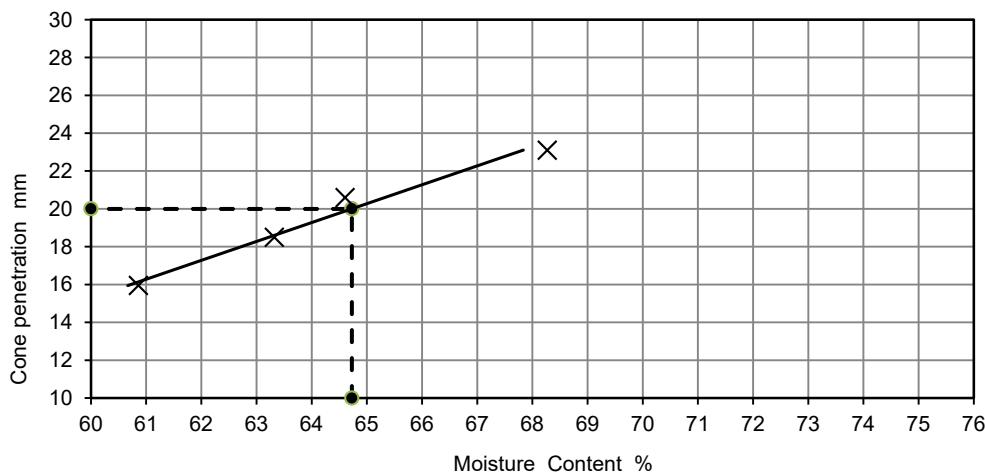
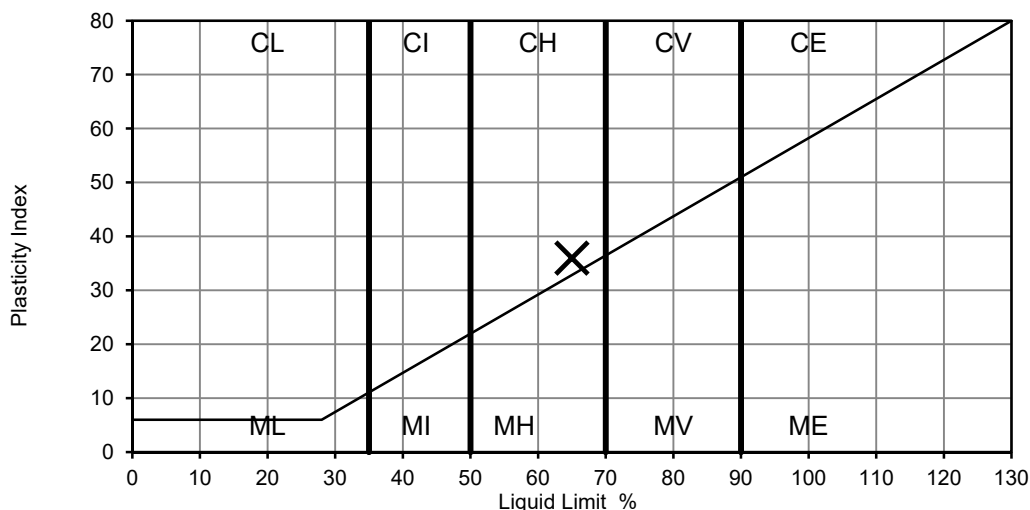
Peter Hardiment (Operations Manager)



LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH1
Sample Description:	Grey slightly gravelly CLAY. Gravel is of flint, chalk and occasional shell fragments	Sample Depth (m)	7.00
		Sample Reference	B25



Preparation: Material was washed and oven dried at below 50°C

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 60 %
 Percentage Passing 425µm sieve: 84 %
 Liquid Limit: 65 %
 Plastic Limit: 29 %
 Plasticity Index: 36

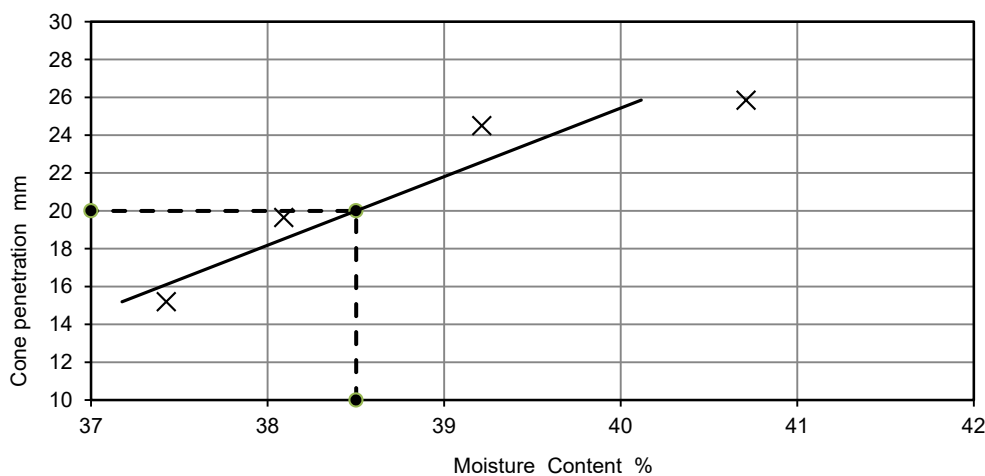
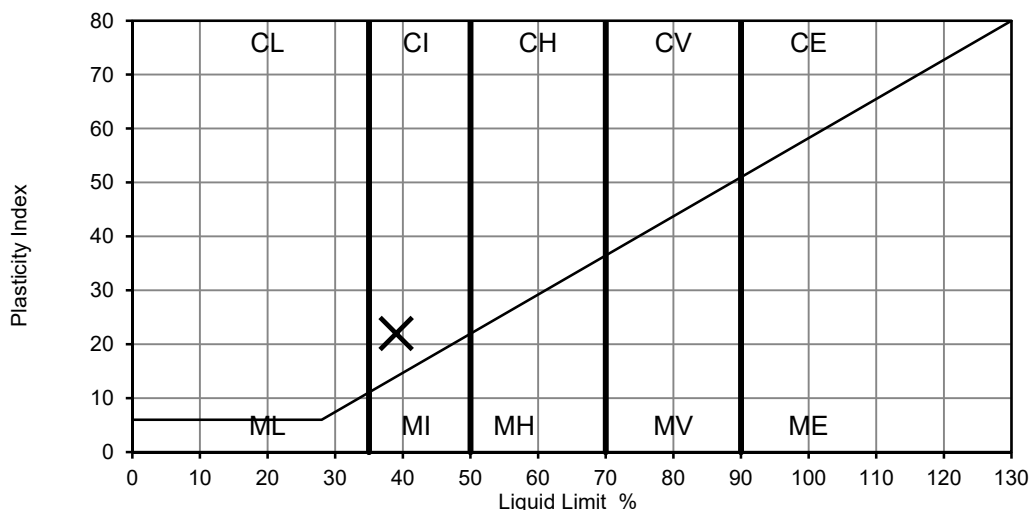
Liquidity Index: 0.86
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 30

Remarks	Approved	Date	Sheet No.:
	MW	25/01/2018	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH1
Sample Description:	Grey slightly gravelly sandy CLAY. Gravel is of flint and occasional shell fragments.	Sample Depth (m)	27.45
		Sample Reference	D71



Preparation: Material was washed and oven dried at below 50°C

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 27 %
 Percentage Passing 425µm sieve: 97 %
 Liquid Limit: 39 %
 Plastic Limit: 17 %
 Plasticity Index: 22

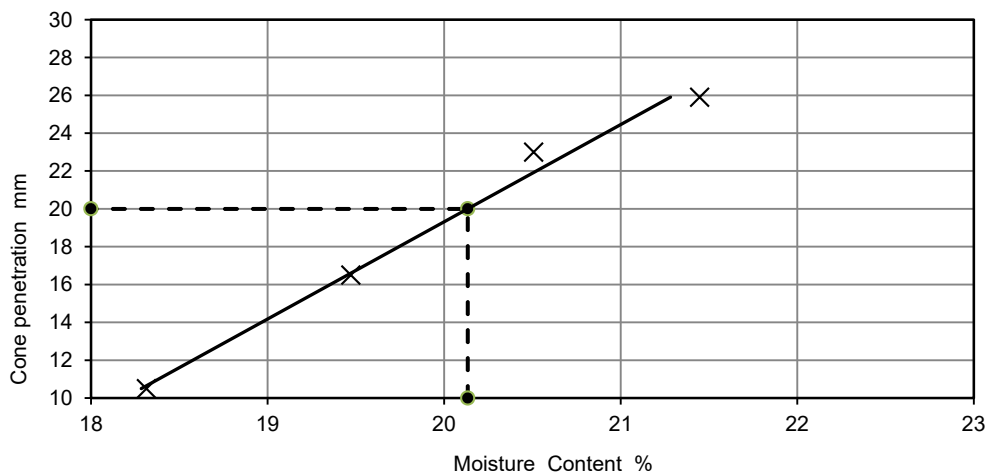
Liquidity Index: 0.45
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 21

Remarks	Approved	Date	Sheet No.:
	MW	25/01/2018	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH1
Sample Description:	Grey slightly clayey silty SAND	Sample Depth (m)	30.00
		Sample Reference	D76



Preparation: Material was washed and oven dried at below 50°C

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 22 %
 Percentage Passing 425µm sieve: 94 %
 Liquid Limit: 20 %
 Plastic Limit: Non-plastic %
 Plasticity Index: Non-plastic

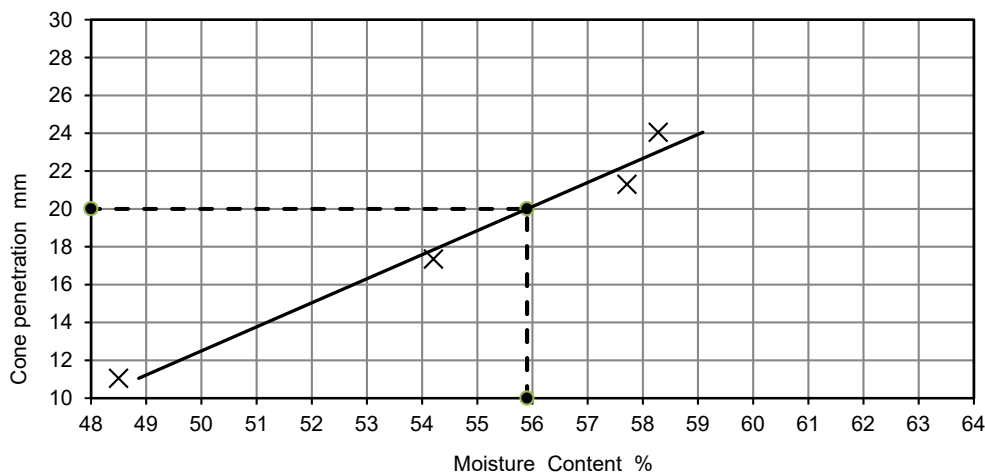
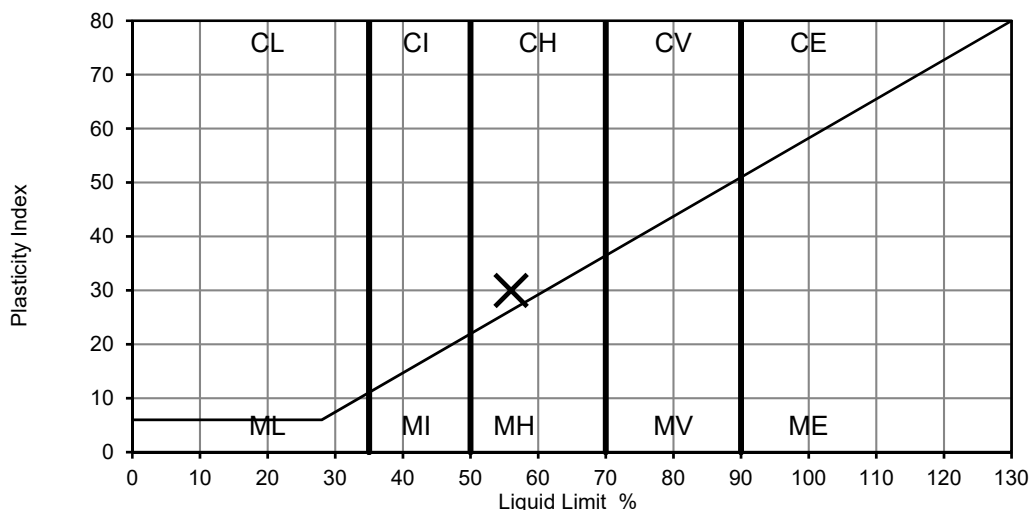
Liquidity Index: Non-plastic
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) Non-plastic

Remarks	Approved	Date	Sheet No.:
	MW	25/01/2018	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH2
Sample Description:	Grey brown slightly gravelly slightly sandy silty CLAY. Gravel is of flint, quartzite and occasional shell fragments	Sample Depth (m)	4.40
		Sample Reference	B15



Preparation: Material was washed and oven dried at below 50°C

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 55 %
 Percentage Passing 425µm sieve: 89 %
 Liquid Limit: 56 %
 Plastic Limit: 26 %
 Plasticity Index: 30

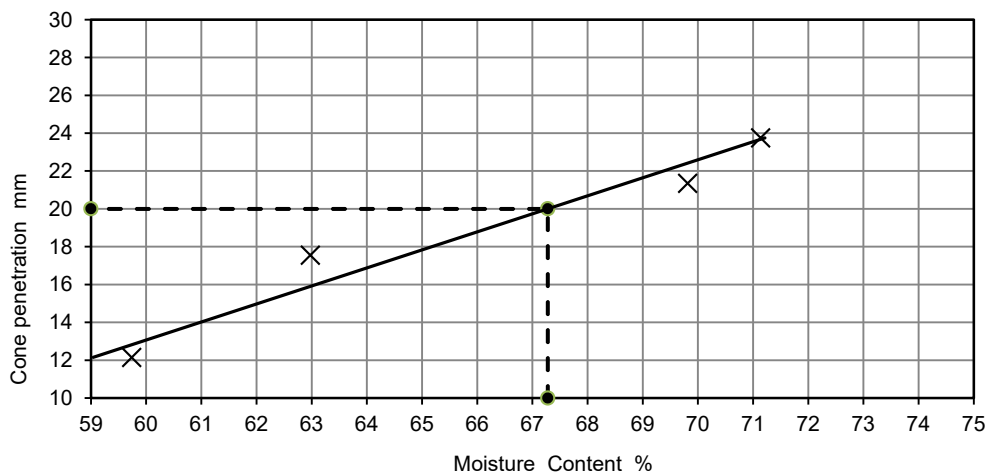
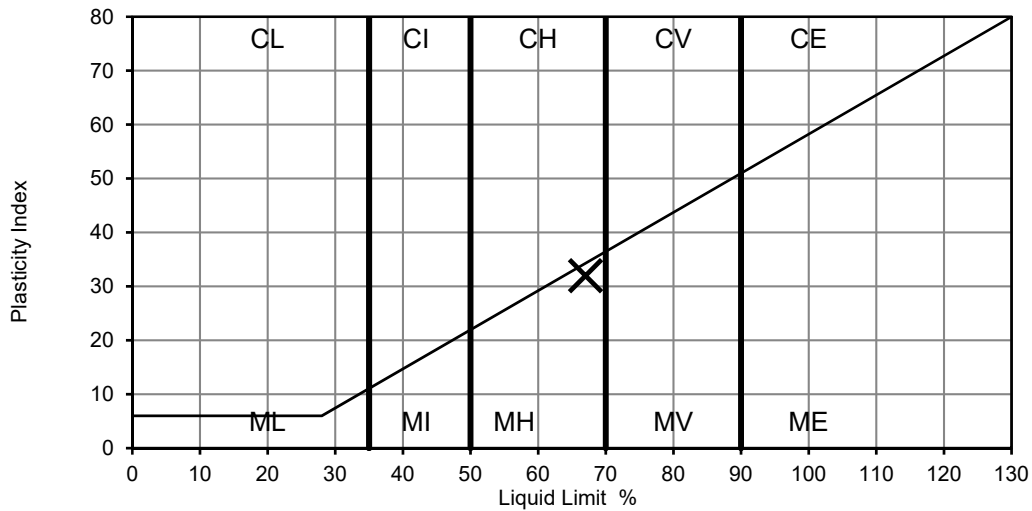
Liquidity Index: 0.97
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 27

Remarks	Approved	Date	Sheet No.:
	MW	25/01/2018	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH2
Sample Description:	Grey slightly sandy silty CLAY	Sample Depth (m)	6.50
		Sample Reference	B21



Preparation: Material was washed and oven dried at below 50°C

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 83 %
 Percentage Passing 425µm sieve: 91 %
 Liquid Limit: 67 %
 Plastic Limit: 35 %
 Plasticity Index: 32

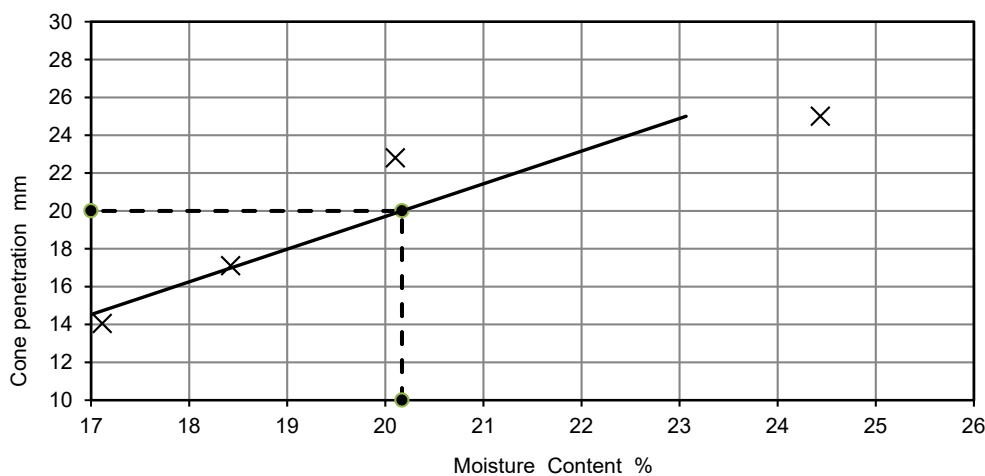
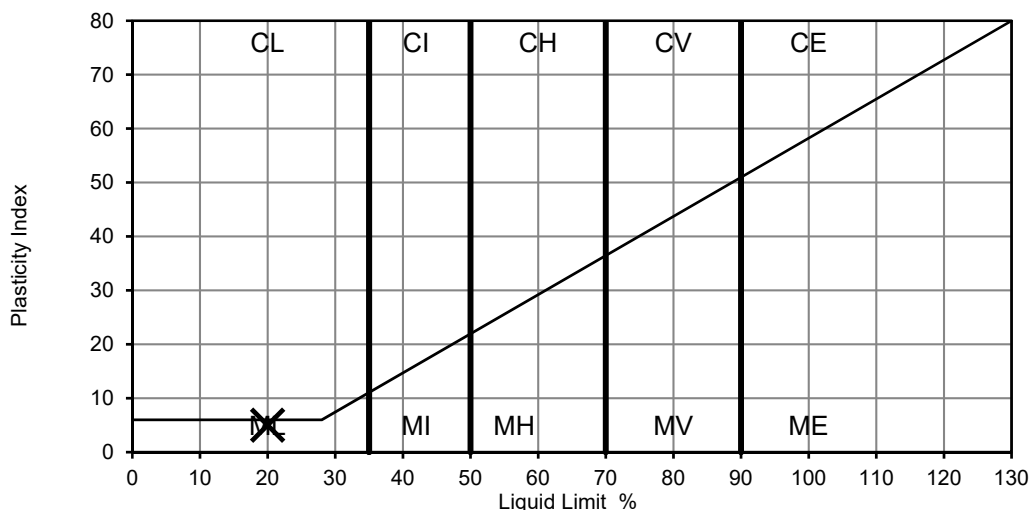
Liquidity Index: 1.50
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 29

Remarks	Approved	Date	Sheet No.:
	MW	25/01/2018	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH2
Sample Description:	Grey brown clayey SAND	Sample Depth (m)	27.00
		Sample Reference	B66



Preparation: Material was washed and oven dried at below 50°C

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 24 %
 Percentage Passing 425µm sieve: 91 %
 Liquid Limit: 20 %
 Plastic Limit: 15 %
 Plasticity Index: 5

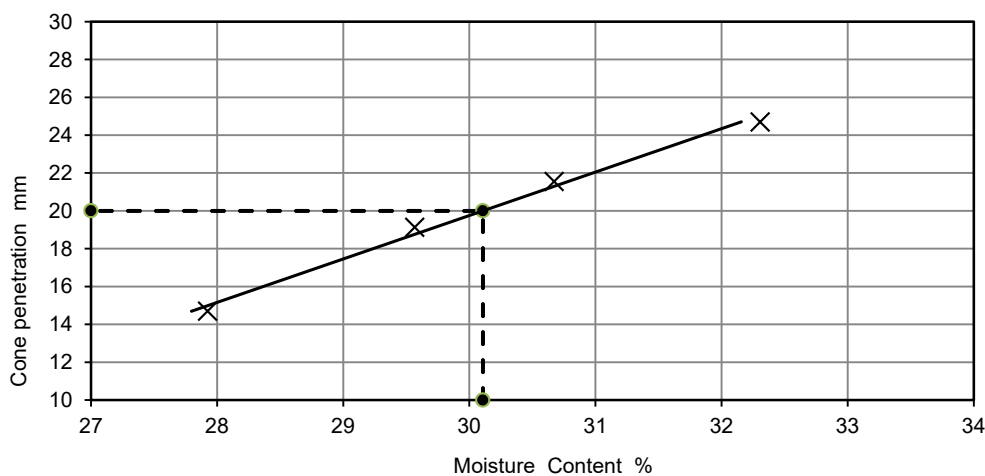
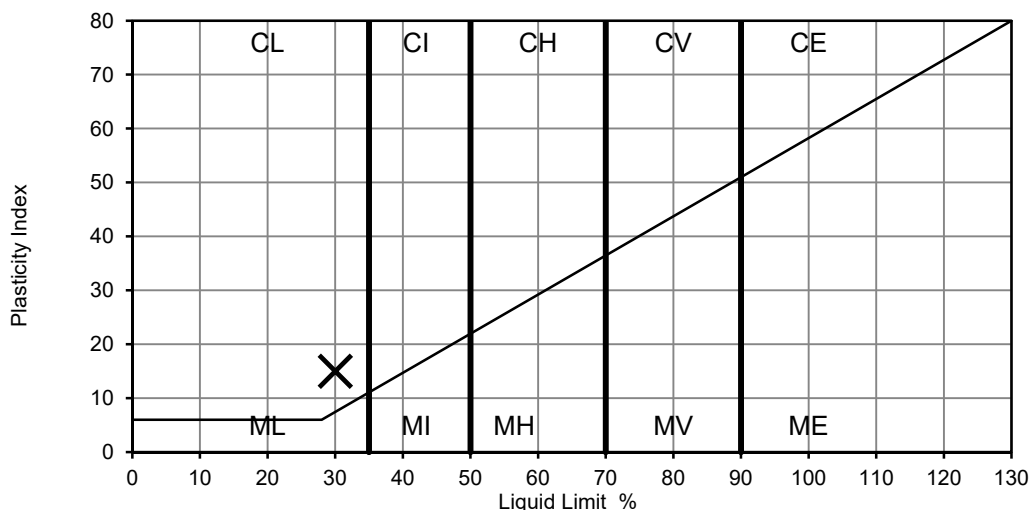
Liquidity Index: 1.80
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 5

Remarks	Approved	Date	Sheet No.:
	MW	25/01/2018	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH2
Sample Description:	Grey slightly silty sandy CLAY.	Sample Depth (m)	27.90
		Sample Reference	D67



Preparation: Material was natural

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 24 %
 Percentage Passing 425µm sieve: 100 %
 Liquid Limit: 30 %
 Plastic Limit: 15 %
 Plasticity Index: 15

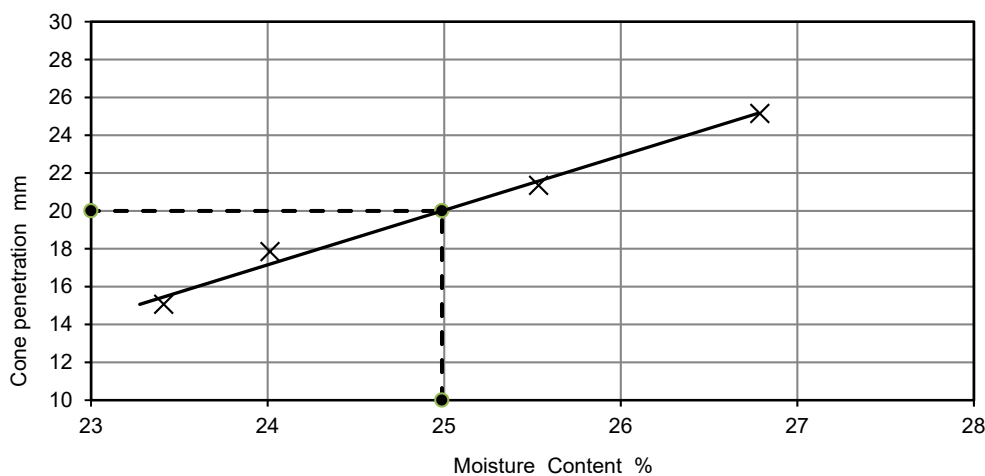
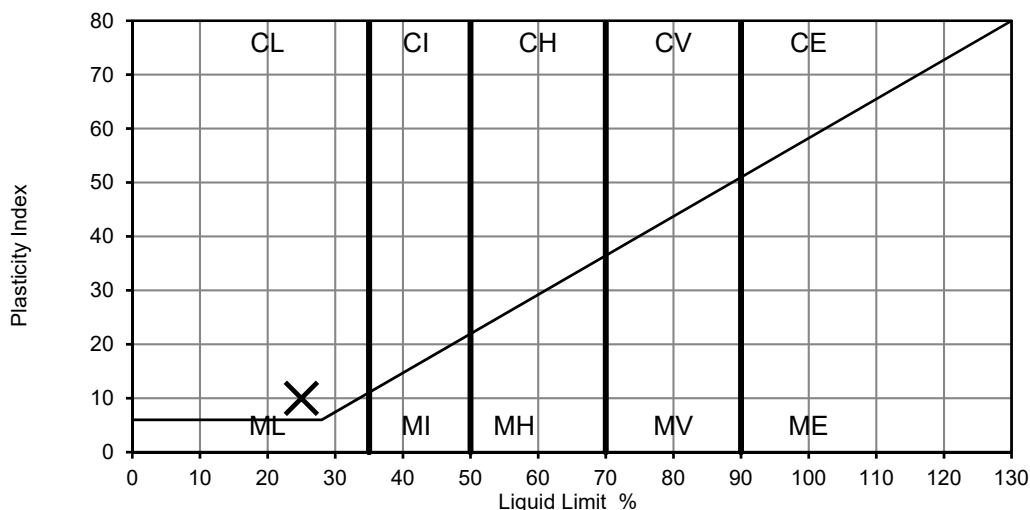
Liquidity Index: 0.60
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 15

Remarks	Approved	Date	Sheet No.:
	MW	25/01/2018	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH2
Sample Description:	Grey sandy CLAY.	Sample Depth (m)	29.55
		Sample Reference	D70



Preparation: Material was washed and oven dried at below 50°C

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 25 %
 Percentage Passing 425µm sieve: 94 %
 Liquid Limit: 25 %
 Plastic Limit: 15 %
 Plasticity Index: 10

Liquidity Index: 1.00
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 9

Remarks	Approved	Date	Sheet No.:
	MW	25/01/2018	1 of 1

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Our reference No. GTS1171128013-604
Our Project No PZ1522D1
Your Sample Ref B13
Your Project or Order No. PZ1522
Date Report Issued 18 Jan 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH4	Depth	2.3m
Date sampled	30 Nov 2017	Date received	
Date tested	29 Dec 2018		
Sample type	Bulk Disturbed	Sample Mass (g)	806

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	MADE GROUND - comprising soft to firm grey slightly gravelly, silty CLAY. Gravel is fine to medium, angular to sub-angular brick, pottery, flint, asphalt & quartz.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	29.4	

Natural MC (%) 39

Liquid Limit (%) 40

Plastic Limit (%) 21

Plasticity Index (%) 19

Modified PI *(%) 14

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

BS Soil Classification C I

Remarks NHBC Volume change potential classification is low.

Test Code = 604



Peter Hardiment (Operations Manager)



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 Our reference No. **GTS1171129002-604**
 Our Project No. **PZ1522D1**
 Your Sample Ref **B19**
 Your Project or Order No. **PZ1522**
 Date Report Issued **19 Jan 2018**

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH4	Depth	3.3m
Date sampled	29 Nov 2017	Date received	
Date tested	29 Dec 2018		
Sample type	Bulk Disturbed	Sample Mass (g)	735

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Soft to very soft, grey silty, organic, slightly gravelly, CLAY. Gravel is fine and medium, sub-rounded to sub-angular flint.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	5.0	

Natural MC (%) 82

Liquid Limit (%) 104

Plastic Limit (%) 35

Plasticity Index (%) 69

Modified PI *(%) 66

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

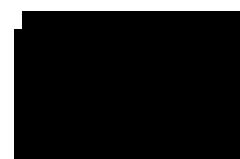
BS Soil Classification C E

Remarks NHBC Volume change potential classification is high.

Test Code = 604



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 Our reference No. **GTS5171205011-604**
 Our Project No **PZ1522D1**
 Your Sample Ref **D78**
 Your Project or Order No. **PZ1522**
 Date Report Issued **06 Feb 2018**

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH4	Depth	30m
Date sampled	05 Dec 2017	Date received	
Date tested	10 Dec 2017		
Sample type	Small disturbed sample	Sample Mass (g)	514

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil
Description	Firm to stiff, laminated & thinly bedded grey CLAY & dark grey, clayey SILT. Few shell fragments.

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	1.7	

Natural MC (%) 29

Liquid Limit (%) 33

Plastic Limit (%) 16

Plasticity Index (%) 18

Modified PI *(%) 17

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

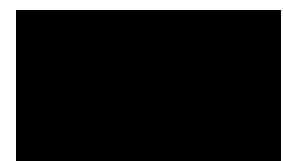
BS Soil Classification CL

Remarks NHBC Volume change potential classification is low.

Test Code = 604



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 Our reference No. **GTS3171204006-604**
 Our Project No **PZ1522D1**
 Your Sample Ref **D5**
 Your Project or Order No. **PZ1522**
 Date Report Issued **19 Jan 2018**

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH4A	Depth	1.2m
Date sampled	04 Dec 2017	Date received	
Date tested			
Sample type	Small disturbed sample	Sample Mass (g)	308

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Soft to firm laminated grey slightly gravelly, sandy, silty CLAY and light brown clayey SILT. Gravel is fine, rounded to sub-angular flint and quartz.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Whole	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	1.6	

Natural MC (%) 23

Liquid Limit (%) 36

Plastic Limit (%) 21

Plasticity Index (%) 15

Modified PI *(%) 15

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

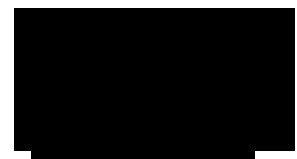
BS Soil Classification C I

Remarks NHBC Volume change potential classification is low.

Test Code = 604



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Our reference No. GTS3171214018-604
Our Project No PZ1522D1
Your Sample Ref D63
Your Project or Order No. PZ1522
Date Report Issued 06 Feb 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH4D	Depth	27.9m
Date sampled	14 Dec 2017	Date received	
Date tested	12 Jan 2018		
Sample type	Small disturbed sample	Sample Mass (g)	527

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Firm, grey silty CLAY, with laminae of grey sandy, silt & some shell fragments.		

Supplier	Not applicable	Source	Ex site
-----------------	----------------	---------------	---------

TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	1.0	

Natural MC (%) 26

Liquid Limit (%) 41

Plastic Limit (%) 18

Plasticity Index (%) 23

Modified PI *(%) 22

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

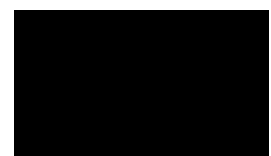
BS Soil Classification C I

Remarks	NHBC Volume change potential classification is medium.
----------------	--

Test Code = 604



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Our reference No. GTS3171214022-604
Our Project No PZ1522D1
Your Sample Ref D67
Your Project or Order No. PZ1522
Date Report Issued 06 Feb 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH4D	Depth	30m
Date sampled	14 Dec 2017	Date received	
Date tested	12 Jan 2018		
Sample type	Small disturbed sample	Sample Mass (g)	489

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil
Description	Firm to stiff grey sandy CLAY, with some shell fragments.

Supplier	Not applicable	Source	Ex site
-----------------	----------------	---------------	---------

TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	0.7	

Natural MC (%) 27

Liquid Limit (%) 33

Plastic Limit (%) 16

Plasticity Index (%) 17

Modified PI *(%) 17

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

BS Soil Classification CL

Remarks	NHBC Volume change potential classification is low.
----------------	---

Test Code = 604



Peter Hardiment (Operations Manager)



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 Our reference No. **NCCL2018030214-604**
 Our Project No PZ1522D1
 Your Sample Ref U7
 Your Project or Order No. PZ1522
 Date Report Issued 30 Apr 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH4ASU	Depth	2m
Date sampled	14 Dec 2017	Date received	14 Dec 2017
Date tested	11 Apr 2018		
Sample type	Undisturbed Sample	Sample Mass (g)	367

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Soft dark grey silty CLAY. Trace of fine and medium rounded to sub-angular flint and quartz gravel.		

Supplier	Not applicable	Source	Ex site
-----------------	----------------	---------------	---------

TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	1.2	

Natural MC (%) 57

Liquid Limit (%) 85

Plastic Limit (%) 31

Plasticity Index (%) 53

Modified PI *(%) 53

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

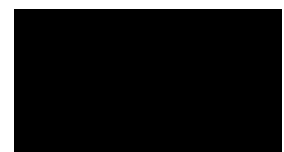
BS Soil Classification C V

Remarks	NHBC Volume change potential classification is high.
----------------	--

Test Code = 604



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 Our reference No. **NCCL2018030221-604**
 Our Project No. PZ1522D1
 Your Sample Ref U7
 Your Project or Order No. PZ1522
 Date Report Issued 30 Apr 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH4BU	Depth	2m
Date sampled	13 Nov 2017	Date received	13 Nov 2017
Date tested	11 Apr 2018		
Sample type	Undisturbed Sample	Sample Mass (g)	471

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Laminated, grey, silty CLAY, black, organic silty CLAY and lightgrey, clayey SILT.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	7.2	

Natural MC (%) 73

Liquid Limit (%) 81

Plastic Limit (%) 33

Plasticity Index (%) 49

Modified PI *(%) 45

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

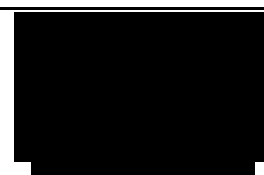
BS Soil Classification C V

Remarks	NHBC Volume change potential classification is high.
----------------	--

Test Code = 604



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 Our reference No. **GTS3171201005-604**
 Our Project No **PZ1522D1**
 Your Sample Ref **U5**
 Your Project or Order No. **PZ1522**
 Date Report Issued **19 Jan 2018**

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH5	Depth	1.2m
Date sampled	01 Dec 2017	Date received	04 Dec 2017
Date tested	02 Jan 2018		
Sample type	Undisturbed Sample	Sample Mass (g)	1027

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	MADE GROUND - comprising soft to very soft dark grey slightly gravelly, slightly sandy, silty clay. Gravel is fine to medium angular brick, concrete, asphalt, flint & wood.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	34.8	

Natural MC (%) 26

Liquid Limit (%) 37

Plastic Limit (%) 22

Plasticity Index (%) 15

Modified PI *(%) 10

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

BS Soil Classification C I

Remarks NHBC Volume change potential classification is low.

Test Code = 604



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 Our reference No. **GTS3171201009-604**
 Our Project No **PZ1522D1**
 Your Sample Ref **B9**
 Your Project or Order No. **PZ1522**
 Date Report Issued **19 Jan 2018**

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH5	Depth	2m
Date sampled	01 Dec 2017	Date received	04 Dec 2017
Date tested	18 Dec 2017		
Sample type	Bulk Disturbed	Sample Mass (g)	581

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Soft dark grey silty CLAY with lenses of black organic material & thin beds of dark brown pseudo fibrous PEAT, with numerous roots.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	1.9	

Natural MC (%) 198

Liquid Limit (%) 244

Plastic Limit (%) 142

Plasticity Index (%) 103

Modified PI *(%) 101

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

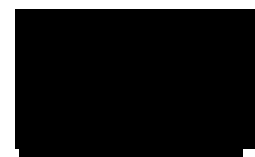
BS Soil Classification M E

Remarks NHBC Volume change potential classification is high.

Test Code = 604



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Our reference No. GTS3171201012-604
Our Project No PZ1522D1
Your Sample Ref D12
Your Project or Order No. PZ1522
Date Report Issued 19 Jan 2018

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**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH5	Depth	4m
Date sampled	01 Dec 2017	Date received	04 Dec 2017
Date tested	28 Dec 2017		
Sample type	Small disturbed sample	Sample Mass (g)	408

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Light greyish brown, gravelly, silty fine SAND with laminae of soft to firm light grey, silty CLAY. Gravel is fine and medium rounded to sub-rounded, quartz and flint.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Whole	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	15.5	

Natural MC (%) 17

Liquid Limit (%) 25
Plastic Limit (%) Non Plastic

Plasticity Index (%)

Modified PI *(%) *BRE Digest 240:1993.
This calculation is outside the scope of UKAS accreditation.

BS Soil Classification Non Plastic

Remarks

Test Code = 604



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Our reference No. GTS1171212010-604
Our Project No PZ1522D1
Your Sample Ref D9
Your Project or Order No. PZ1522
Date Report Issued 06 Feb 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH5A	Depth	1.7m
Date sampled	12 Dec 2017	Date received	12 Dec 2017
Date tested	08 Jan 2018		
Sample type	Small disturbed sample	Sample Mass (g)	408

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	MADE GROUND - comprising soft brownish grey, slightly gravelly, silty clay with lenses of black fibrous peat. Gravel is fine brick.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	0.7	

Natural MC (%) 57

Liquid Limit (%) 81

Plastic Limit (%) 31

Plasticity Index (%) 50

Modified PI *(%) 50

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

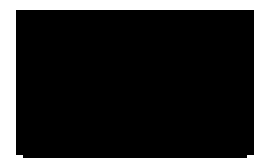
BS Soil Classification C V

Remarks	NHBC Volume change potential classification is high.
----------------	--

Test Code = 604



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 Our reference No. **GTS1171213005-604**
 Our Project No. **PZ1522D1**
 Your Sample Ref **D18**
 Your Project or Order No. **PZ1522**
 Date Report Issued **06 Feb 2018**

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**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH5A	Depth	4m
Date sampled	13 Dec 2017	Date received	13 Dec 2017
Date tested	08 Jan 2018		
Sample type	Small disturbed sample	Sample Mass (g)	362

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil
Description	Firm grey sandy, silty CLAY, with laminae of orange silty fine sand.

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	13.6	

Natural MC (%) 17

Liquid Limit (%) 29

Plastic Limit (%) 13

Plasticity Index (%) 16

Modified PI *(%) 14

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

BS Soil Classification CL

Remarks	NHBC Volume change potential classification is low.
----------------	---

Test Code = 604



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Our reference No. GTS1171214025-604
Our Project No PZ1522D1
Your Sample Ref D72
Your Project or Order No. PZ1522
Date Report Issued 06 Feb 2018

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**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH5A	Depth	28m
Date sampled	14 Dec 2017	Date received	14 Dec 2017
Date tested	08 Jan 2018		
Sample type	Small disturbed sample	Sample Mass (g)	397

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Firm to stiff laminated and thinly bedded grey silty CLAY and sandy SILT and brownish grey silty fine to medium SAND with some shell fragments.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	3.9	

Natural MC (%) 26

Liquid Limit (%) 30

Plastic Limit (%) 15

Plasticity Index (%) 15

Modified PI *(%) 15

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

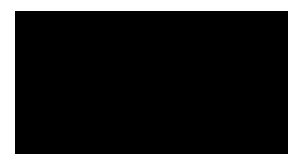
BS Soil Classification CL

Remarks NHBC Volume change potential classification is low.

Test Code = 604



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Our Project No PZ1522D1
Your Sample Ref D77
Your Project or Order No. PZ1522
Date Report Issued 06 Feb 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH5A	Depth	30.45m
Date sampled	14 Dec 2017	Date received	14 Dec 2017
Date tested	08 Jan 2018		
Sample type	Small disturbed sample	Sample Mass (g)	506

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Firm to stiff laminated & thinly bedded grey silty CLAY & sandy SILT & brownish grey silty fine to medium SAND, with some shell fragments.		
Supplier	Not applicable	Source	Ex site

TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	0.5	

Natural MC (%) 25

Liquid Limit (%) 53

Plastic Limit (%) 21

Plasticity Index (%) 31

Modified PI *(%) 31

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

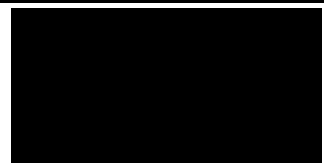
BS Soil Classification C H

Remarks NHBC Volume change potential classification is medium.

Test Code = 604



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 Our reference No. **GTS3171127014-604**
 Our Project No. **PZ1522D1**
 Your Sample Ref **D60**
 Your Project or Order No. **PZ1522**
 Date Report Issued **19 Dec 2017**

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH6	Depth	23m
Date sampled	27 Nov 2017	Date received	
Date tested	30 Nov 2017		
Sample type	Small disturbed sample	Sample Mass (g)	530
If a Sample Certificate was provided it is available for inspection. The accuracy of information provided by third parties cannot be guaranteed.			
Material	Soil		
Description	Very stiff, light grey, very clayey SILT.		
Supplier	Not applicable	Source	Ex site

TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	2.4	

Natural MC (%)	36
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Liquid Limit (%)	52
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Plastic Limit (%)	27
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Plasticity Index (%)	26
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Modified PI *(%)	25
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*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

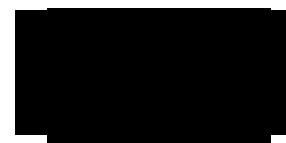
BS Soil Classification	C H
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Remarks	NHBC Volume change potential classification is medium.
----------------	--

Test Code = 604



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 Our reference No. **GTS3171127022-604**
 Our Project No. **PZ1522D1**
 Your Sample Ref **D68**
 Your Project or Order No. **PZ1522**
 Date Report Issued **19 Dec 2017**

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH6	Depth	27m
Date sampled	27 Nov 2017	Date received	
Date tested	30 Nov 2017		
Sample type	Small disturbed sample	Sample Mass (g)	549

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil
Description	Stiff, grey, slightly sandy, silty CLAY, with laminae of dark grey SILT.

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	3.6	

Natural MC (%) 28

Liquid Limit (%) 46

Plastic Limit (%) 20

Plasticity Index (%) 26

Modified PI *(%) 25

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

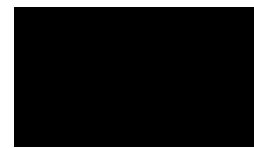
BS Soil Classification C I

Remarks	NHBC Volume change potential classification is medium.
----------------	--

Test Code = 604



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Our reference No. GTS3171127027-604
Our Project No PZ1522D1
Your Sample Ref D73
Your Project or Order No. PZ1522
Date Report Issued 19 Dec 2017

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH6	Depth	29.6m
Date sampled	27 Nov 2017	Date received	
Date tested	01 Dec 2017		
Sample type	Small disturbed sample	Sample Mass (g)	440

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil
Description	Stiff, grey, silty CLAY, with thin beds of grey, fine to medium SAND.

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	7.1	

Natural MC (%) 26

Liquid Limit (%) 40

Plastic Limit (%) 16

Plasticity Index (%) 25

Modified PI *(%) 23

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

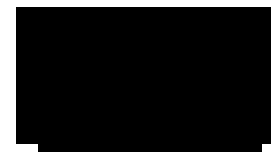
BS Soil Classification C I

Remarks	NHBC Volume change potential classification is medium.
----------------	--

Test Code = 604



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 Our reference No. **GTS3171128005-604**
 Our Project No **PZ1522D1**
 Your Sample Ref **B5**
 Your Project or Order No. **PZ1522**
 Date Report Issued **06 Feb 2018**

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH7	Depth	1m
Date sampled	30 Nov 2017	Date received	01 Dec 2017
Date tested	29 Dec 2018		
Sample type	Bulk Disturbed	Sample Mass (g)	840

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	MADE GROUND - comprising greyish brown, slightly gravelly, very sity, sandy clay. Gravel is fine and medium , rounded to sub-angular, flint, sandstone, asphalt, brick and quartz.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	10.9	

Natural MC (%) 24

Liquid Limit (%) 39

Plastic Limit (%) 21

Plasticity Index (%) 18

Modified PI *(%) 16

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

BS Soil Classification C I

Remarks NHBC Volume change potential classification is low.

Test Code = 604



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Our reference No. GTS3171129001-604
Our Project No PZ1522D1
Your Sample Ref B7
Your Project or Order No. PZ1522
Date Report Issued 06 Feb 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH7	Depth	1.4m
Date sampled	29 Nov 2017	Date received	30 Nov 2017
Date tested	02 Jan 2018		
Sample type	Bulk Disturbed	Sample Mass (g)	504

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	MADE GROUND - comprising soft grey, organic, sandy, silty clay with lenses of dark brown amorphous peat. Gravel is fine and medium sub-rounded to sub-angular flint and brick.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	8.4	

Natural MC (%) 73

Liquid Limit (%) 71

Plastic Limit (%) 29

Plasticity Index (%) 42

Modified PI *(%) 38

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

BS Soil Classification C V

Remarks NHBC Volume change potential classification is medium.

Test Code = 604



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Our reference No. GTS3171129005-604
Our Project No PZ1522D1
Your Sample Ref B11
Your Project or Order No. PZ1522
Date Report Issued 06 Feb 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH7	Depth	2m
Date sampled	30 Nov 2017	Date received	01 Dec 2017
Date tested	29 Dec 2017		
Sample type	Bulk Disturbed	Sample Mass (g)	674

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Very soft, dark brown, organic, gravelly, very clayey, very sandy SILT with lenses of dark brown pseudo-fibrous peat. Gravel is fine, rounded to sub-angular flint fragments.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	2.1	

Natural MC (%) 148

Liquid Limit (%) 168

Plastic Limit (%) Non Plastic

Plasticity Index (%)

Modified PI *(%) *BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

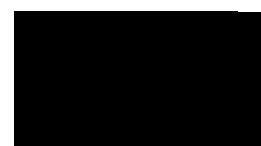
BS Soil Classification Non Plastic

Remarks

Test Code = 604



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 Our reference No. **GTS3171129008-604**
 Our Project No **PZ1522D1**
 Your Sample Ref **B13**
 Your Project or Order No. **PZ1522**
 Date Report Issued **06 Feb 2018**

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH7	Depth	3m
Date sampled	30 Nov 2017	Date received	01 Dec 2017
Date tested	04 Jan 2018		
Sample type	Bulk Disturbed	Sample Mass (g)	483

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Dark brown organic gravelly, silty, clayey, fine and medium SAND with lenses of dark brown peat. Gravel is fine and medium angular flint and quartz.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	15.5	

Natural MC (%) 35

Liquid Limit (%) 36

Plastic Limit (%) Non Plastic

Plasticity Index (%)

Modified PI *(%) *BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

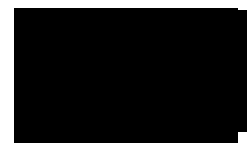
BS Soil Classification Non Plastic

Remarks

Test Code = 604



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 Our reference No. **GTS5180123011-604**
 Our Project No **PZ1522D1**
 Your Sample Ref **D11**
 Your Project or Order No. **PZ1522**
 Date Report Issued **21 Feb 2018**

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH8	Depth	1.8m
Date sampled	23 Jan 2018	Date received	23 Jan 2018
Date tested	05 Feb 2018		
Sample type	Small disturbed sample	Sample Mass (g)	606

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Soft, dark brown, silty, sandy CLAY with some sub-aangular, fine flint gravel. Some organic matter.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	12.4	

Natural MC (%) 31

Liquid Limit (%) 43

Plastic Limit (%) 22

Plasticity Index (%) 21

Modified PI *(%) 19

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

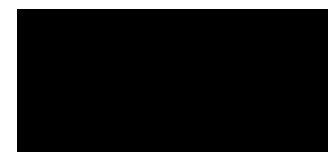
BS Soil Classification C I

Remarks NHBC Volume change potential classification is low.

Test Code = 604



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Our Project No PZ1522D1
Your Sample Ref D76
Your Project or Order No. PZ1522
Date Report Issued 21 Feb 2018

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**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH8	Depth	27.6m
Date sampled	26 Jan 2018	Date received	26 Jan 2018
Date tested	05 Feb 2018		
Sample type	Small disturbed sample	Sample Mass (g)	578

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Very stiff, laminated, grey, silty CLAY and dark grey, sandy SILT and silty, fine SAND with some shell fragments.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	1.7	

Natural MC (%) 28

Liquid Limit (%) 42

Plastic Limit (%) 19

Plasticity Index (%) 23

Modified PI *(%) 23

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

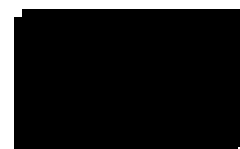
BS Soil Classification C I

Remarks NHBC Volume change potential classification is medium.

Test Code = 604



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Our reference No. GTS1180126031-604
Our Project No PZ1522D1
Your Sample Ref D82
Your Project or Order No. PZ1522
Date Report Issued 21 Feb 2018

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**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH8	Depth	30m
Date sampled	26 Jan 2018	Date received	26 Jan 2018
Date tested	05 Feb 2018		
Sample type	Small disturbed sample	Sample Mass (g)	563

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Very stiff, laminated, grey, silty CLAY and dark grey, sandy SILT and silty, fine SAND with some shell fragments.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	1.4	

Natural MC (%) 26

Liquid Limit (%) 40

Plastic Limit (%) 18

Plasticity Index (%) 22

Modified PI *(%) 21

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

BS Soil Classification C I

Remarks NHBC Volume change potential classification is medium.

Test Code = 604



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Our Project No PZ1522D1
Your Sample Ref B11
Your Project or Order No. PZ1522
Date Report Issued 14 Mar 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH9	Depth	2.6m
Date sampled	31 Jan 2018	Date received	31 Jan 2018
Date tested	16 Feb 2018		
Sample type	Bulk Disturbed	Sample Mass (g)	986

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil
Description	MADE GROUND - comprising very soft, grey, organic, very sandy, silty, slightly gravelly clay. Gravel is up to cobble sized, rounded to sub-angular, flint, quartz, coal and brick.

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	31.6	

Natural MC (%) 28

Liquid Limit (%) 32

Plastic Limit (%) 18

Plasticity Index (%) 13

Modified PI *(%) 9

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

BS Soil Classification CL

Remarks NHBC Volume change potential classification is low.

Test Code = 604



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Our Project No PZ1522D1

Your Sample Ref
Your Project or Order No. PZ1522

Date Report Issued 04 Jul 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.4 Cone Penetrometer (One Point Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH9	Depth	22m
Date sampled	02 Feb 2018	Date received	
Date tested	07 Feb 2018		
Sample type	Small disturbed sample	Sample Mass (g)	546.8
If a Sample Certificate was provided it is available for inspection.			
The accuracy of information provided by third parties cannot be guaranteed.			
Material	Soil		
Description	Grey and light brown silty fine and medium sand with occasional lenses of silty clay.		
Supplier	Not applicable	Source	Ex site

TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Whole sample	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	37	

Natural MC (%) 21

Liquid Limit (%) 27

Plastic Limit (%) Non Plastic

Plasticity Index (%)
Modified PI *(%) *BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.
BS Soil Classification
Remarks

Test Code = 605



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Our Project No PZ1522D1
Your Sample Ref D72
Your Project or Order No. PZ1522
Date Report Issued 14 Mar 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH9	Depth	27.95m
Date sampled	02 Feb 2018	Date received	
Date tested	07 Feb 2018		
Sample type	Small disturbed sample	Sample Mass (g)	611

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Thinly bedded, stiff, grey, silty CLAY and dark grey, clayey silt and greyish brown, silty fine sand with shell fragments.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	7.2	

Natural MC (%) 26

Liquid Limit (%) 28

Plastic Limit (%) 14

Plasticity Index (%) 15

Modified PI *(%) 14

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

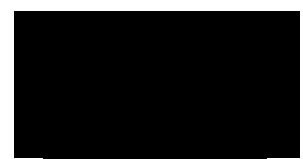
BS Soil Classification CL

Remarks NHBC Volume change potential classification is low.

Test Code = 604



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Our Project No PZ1522D1
Your Sample Ref D77
Your Project or Order No. PZ1522
Date Report Issued 14 Mar 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH9	Depth	30m
Date sampled	02 Feb 2018	Date received	02 Feb 2018
Date tested	02 Mar 2018		
Sample type	Small disturbed sample	Sample Mass (g)	414

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Stiff, laminated, grey, silty, CLAY with laminae of light grey, silty fine sand. Some shell fragments.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	0.8	

Natural MC (%) 25

Liquid Limit (%) 40

Plastic Limit (%) 14

Plasticity Index (%) 27

Modified PI *(%) 26

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

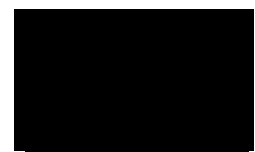
BS Soil Classification C I

Remarks NHBC Volume change potential classification is medium.

Test Code = 604



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Our reference No. GTS6180202019-604
Our Project No PZ1522D1
Your Sample Ref B79
Your Project or Order No. PZ1522
Date Report Issued 14 Mar 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH9	Depth	31m
Date sampled	02 Feb 2018	Date received	02 Feb 2018
Date tested	16 Feb 2018		
Sample type	Bulk Disturbed	Sample Mass (g)	511

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Stiff, laminated, grey, silty CLAY and light grey, clayey SILT with thin bands of silty fine sand. Trace of fine, sub-angular to sub-rounded, flint, chalk and shell.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	0.9	

Natural MC (%) 28

Liquid Limit (%) 48

Plastic Limit (%) 18

Plasticity Index (%) 30

Modified PI *(%) 30

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

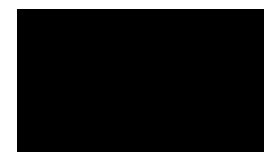
BS Soil Classification C I

Remarks NHBC Volume change potential classification is medium.

Test Code = 604



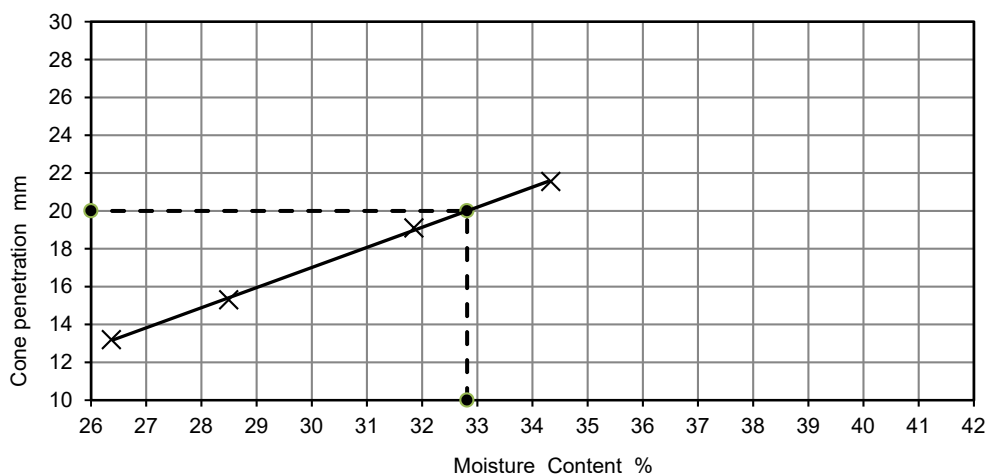
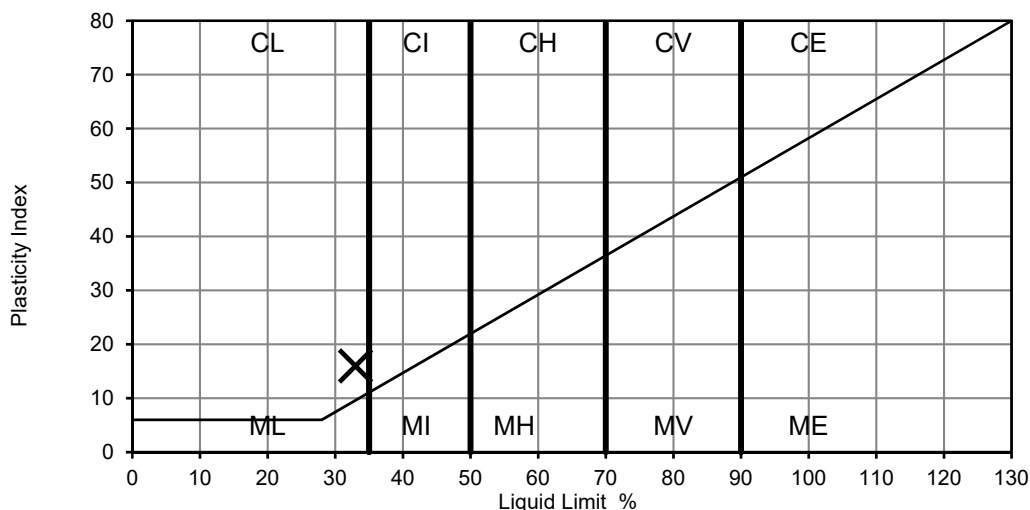
Peter Hardiment (Operations Manager)



LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Dark brown slightly gravelly slightly sandy clayey SILT. Gravel is of flint, quartz and shell fragments	Sample Depth (m)	1.20
		Sample Reference	D5



Preparation: Material was washed and oven dried at below 50°C

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 21 %
 Percentage Passing 425µm sieve: 85 %
 Liquid Limit: 33 %
 Plastic Limit: 17 %
 Plasticity Index: 16

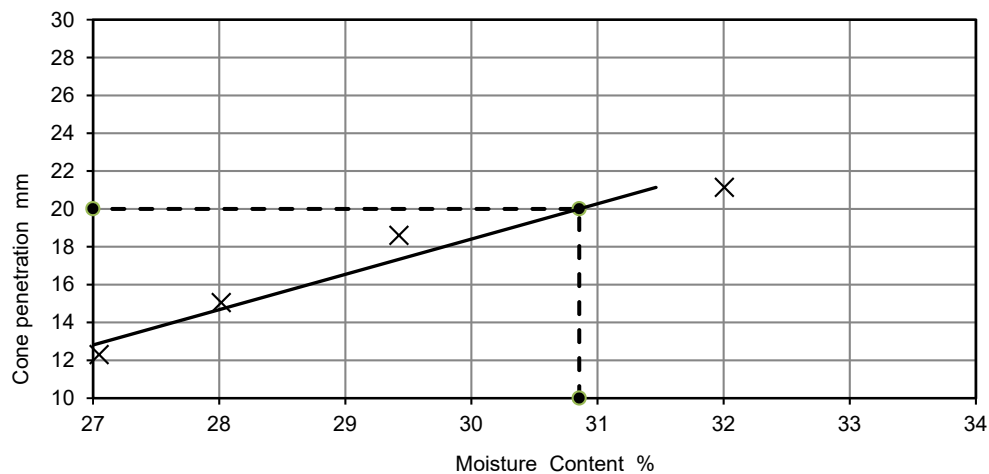
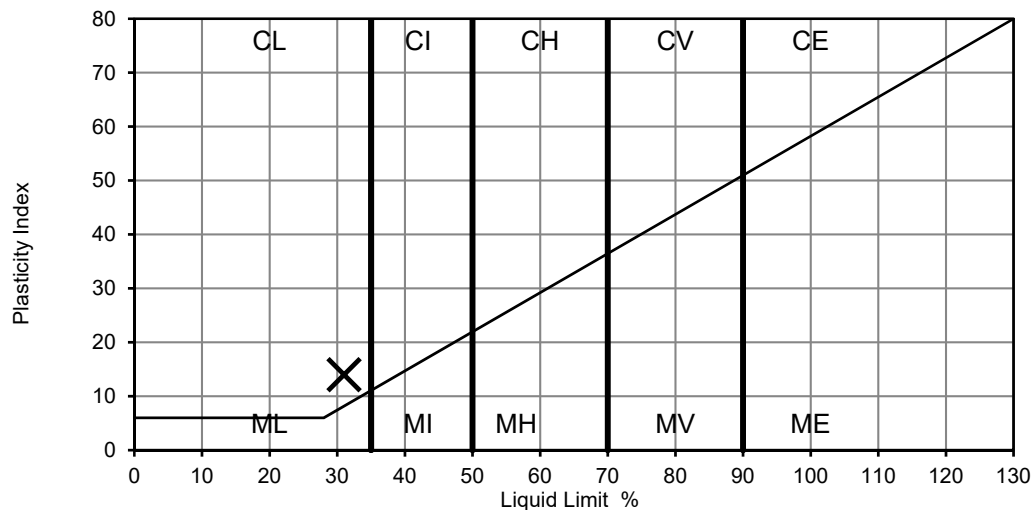
Liquidity Index: 0.25
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 14

Remarks	Approved	Date	Sheet No.:
	MW	31/05/2018	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Grey brown mottled dark grey clayey silty gravelly SAND. Gravel is of flint and shell fragments	Sample Depth (m)	2.00
		Sample Reference	D8



Preparation: Material was washed and oven dried at below 50°C

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 21 %
 Percentage Passing 425µm sieve: 77 %
 Liquid Limit: 31 %
 Plastic Limit: 17 %
 Plasticity Index: 14

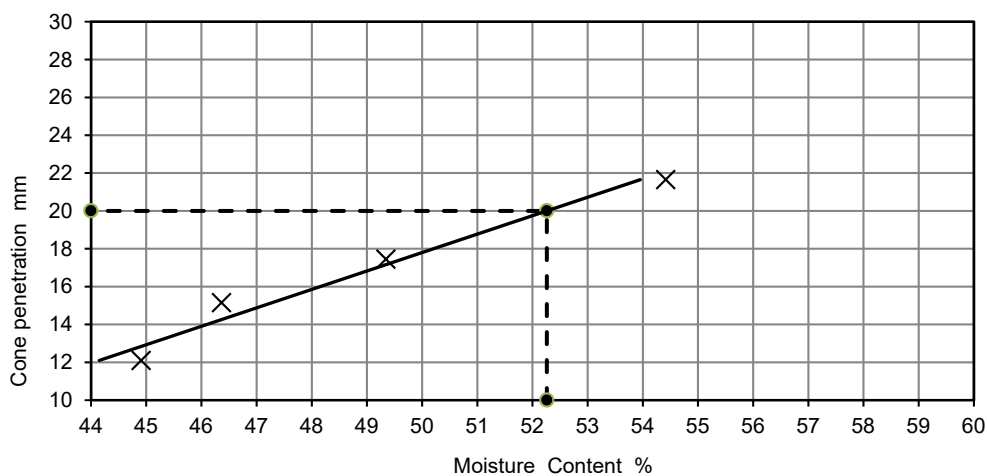
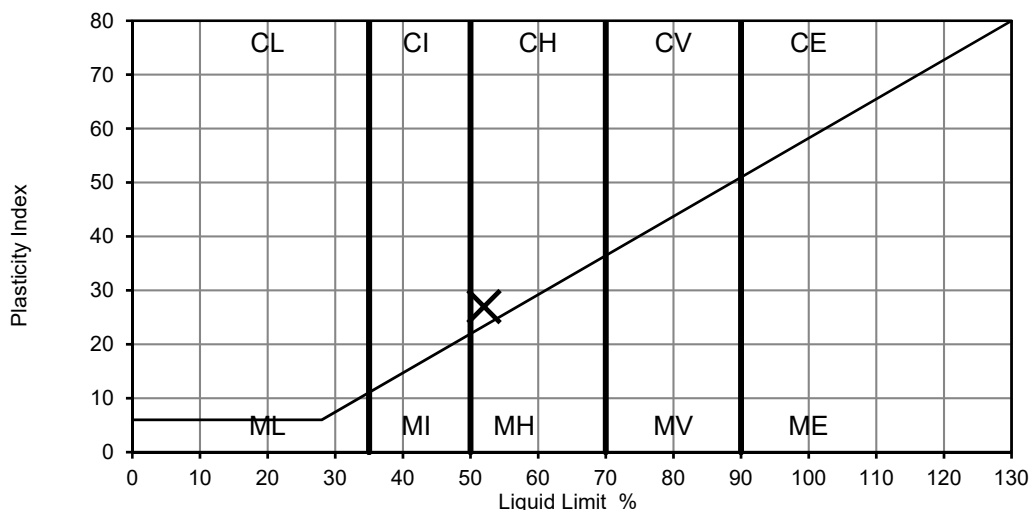
Liquidity Index: 0.29
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 11

Remarks	Approved	Date	Sheet No.:
	MW	31/05/2018	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Grey brown and orange brown slightly gravelly sandy CLAY. Gravel is of sandstone	Sample Depth (m)	11.20
		Sample Reference	B43



Preparation: Material was washed and oven dried at below 50°C

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 36 %
 Percentage Passing 425µm sieve: 75 %
 Liquid Limit: 52 %
 Plastic Limit: 25 %
 Plasticity Index: 27

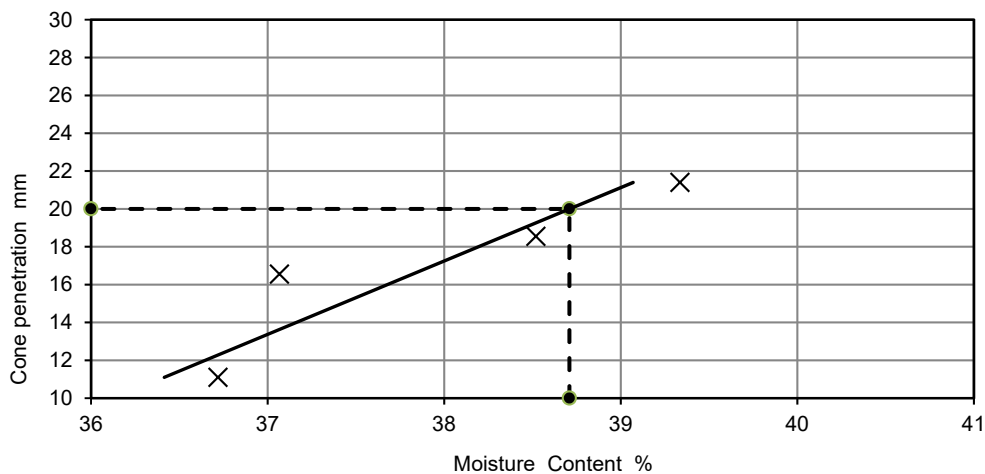
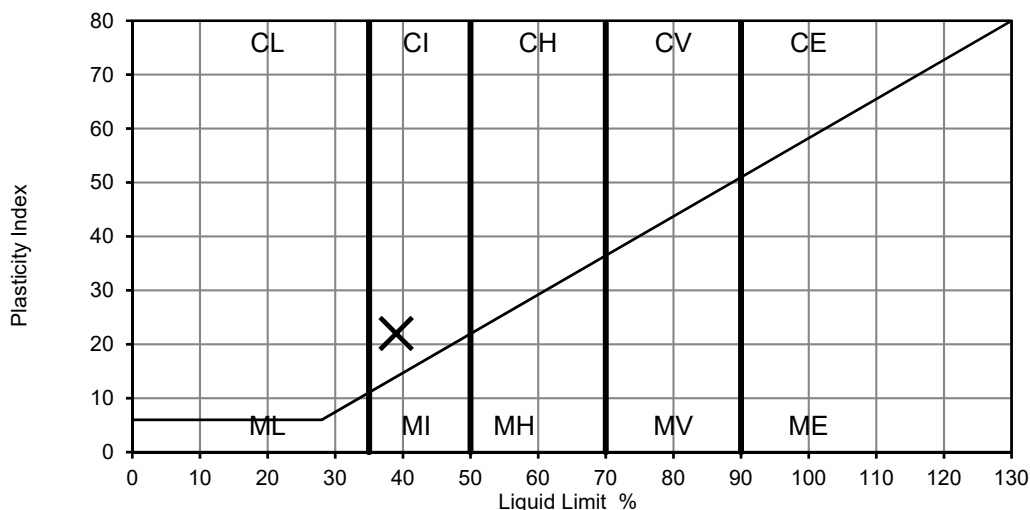
Liquidity Index: 0.41
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 20

Remarks	Approved	Date	Sheet No.:
	MW	31/05/2018	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Dark grey sandy clayey SILT	Sample Depth (m)	30.00
		Sample Reference	D75



Preparation: Material was natural

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 25 %
 Percentage Passing 425µm sieve: 93 %
 Liquid Limit: 39 %
 Plastic Limit: 17 %
 Plasticity Index: 22

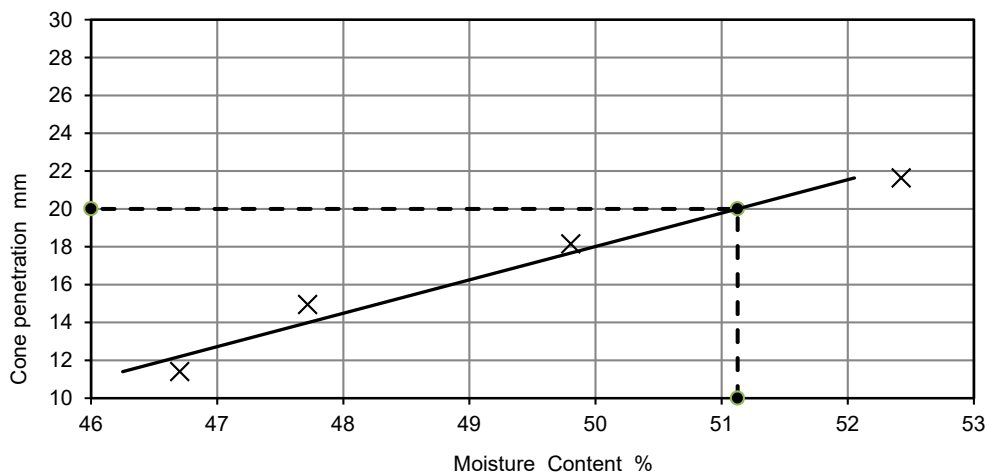
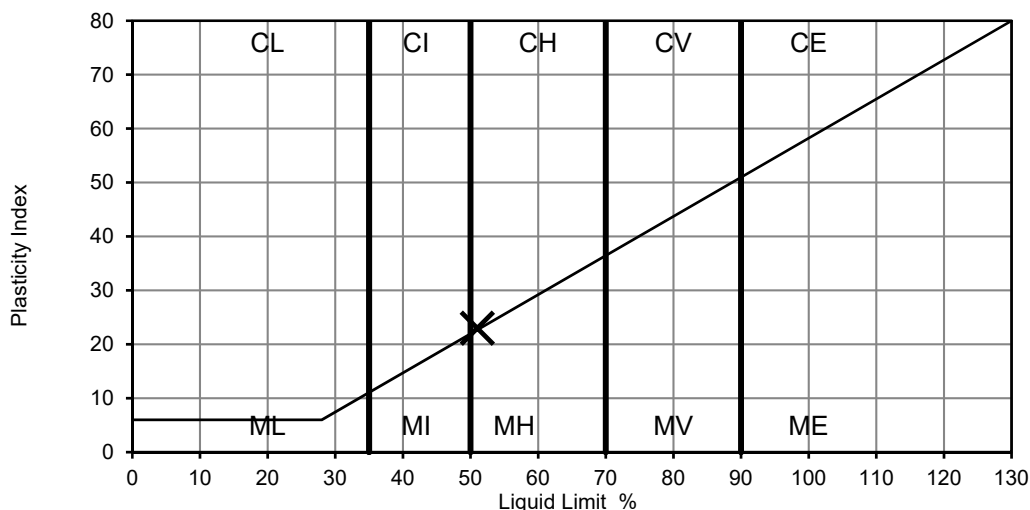
Liquidity Index: 0.36
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 20

Remarks	Approved	Date	Sheet No.:
	MW	31/05/2018	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Grey gravelly sandy clayey SILT. Gravel is of flint	Sample Depth (m)	45.60
		Sample Reference	B100



Preparation: Material was natural

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 30 %
 Percentage Passing 425µm sieve: 54 %
 Liquid Limit: 51 %
 Plastic Limit: 28 %
 Plasticity Index: 23

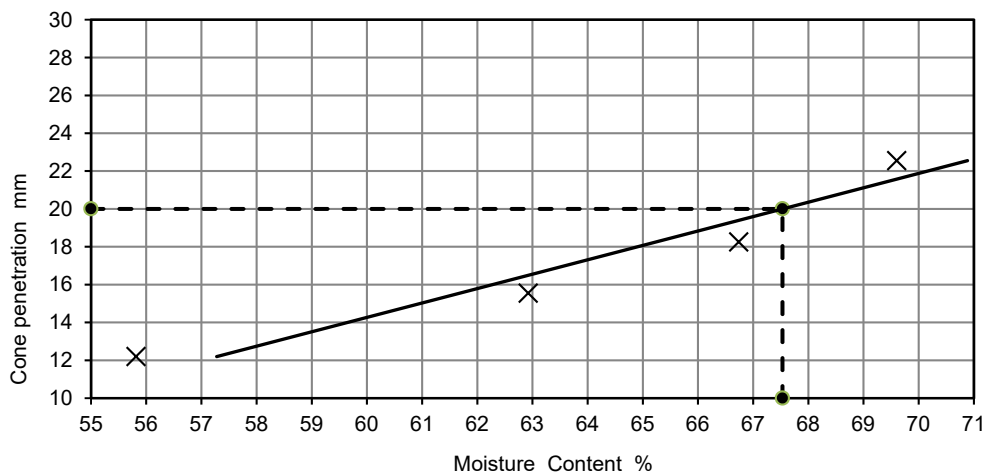
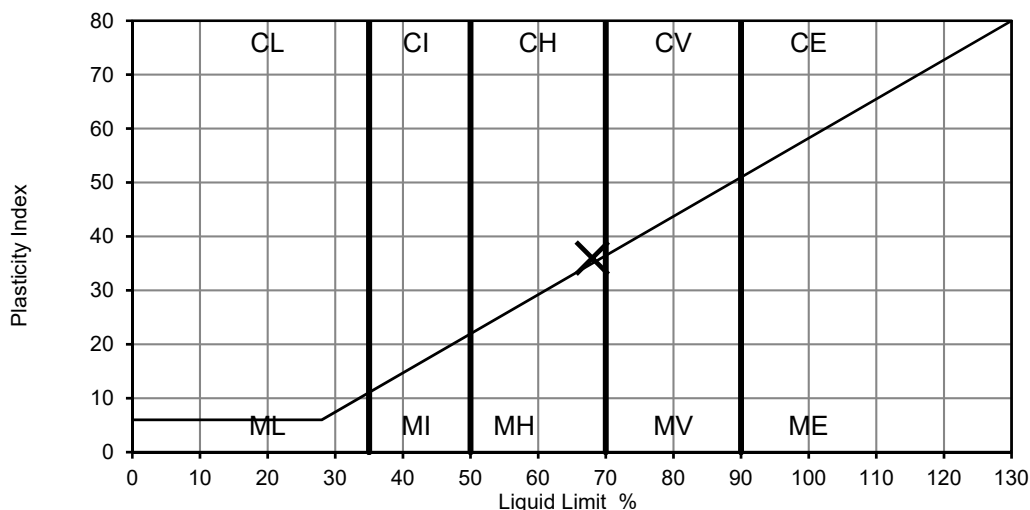
Liquidity Index: 0.09
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 12

Remarks	Approved	Date	Sheet No.:
	MW	31/05/2018	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Dark grey slightly sandy slightly gravelly CLAY. Gravel is of flint and shell fragments.	Sample Depth (m)	46.00
		Sample Reference	D101



Preparation: Material was washed and oven dried at below 50°C

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 25 %
 Percentage Passing 425µm sieve: 89 %
 Liquid Limit: 68 %
 Plastic Limit: 32 %
 Plasticity Index: 36

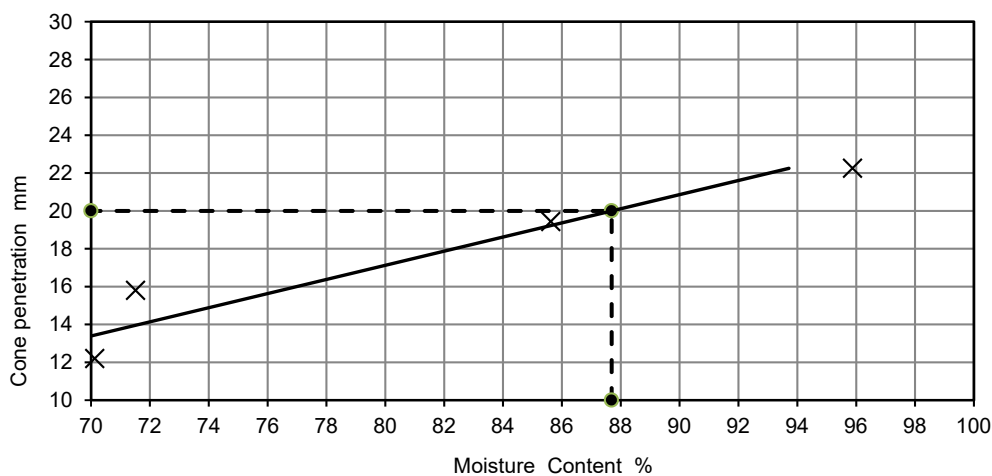
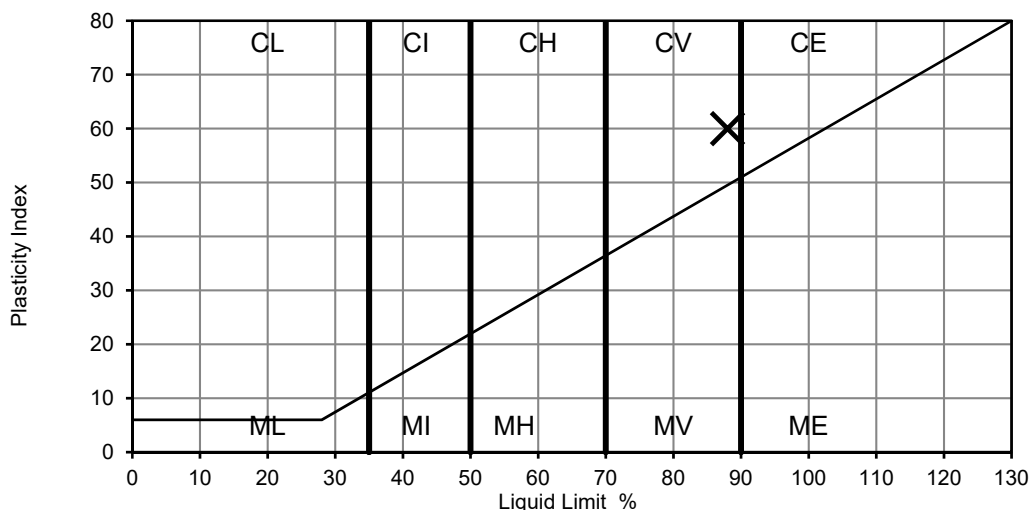
Liquidity Index: -0.19
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 32

Remarks	Approved	Date	Sheet No.:
	MW	31/05/2018	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Grey brown slightly sandy CLAY.	Sample Depth (m)	48.00
		Sample Reference	D105



Preparation: Material was natural

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 31 %
 Percentage Passing 425µm sieve: 100 %
 Liquid Limit: 88 %
 Plastic Limit: 28 %
 Plasticity Index: 60

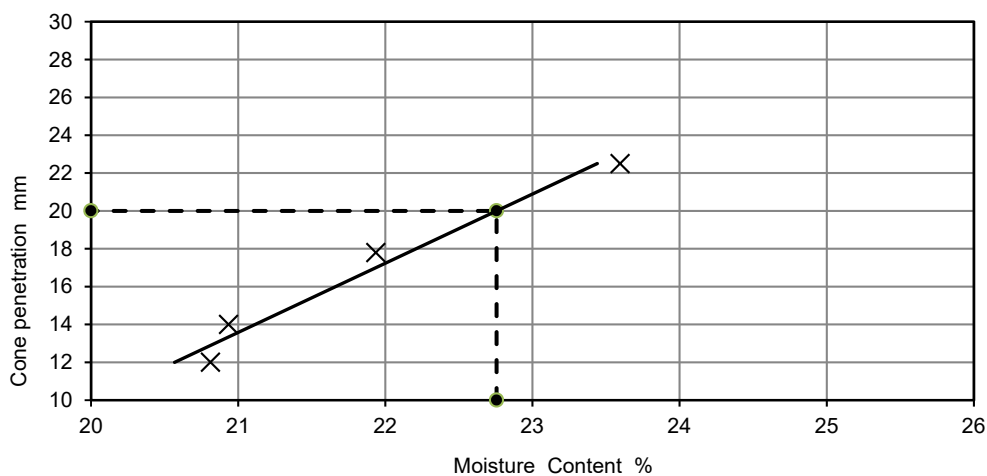
Liquidity Index: 0.05
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 60

Remarks	Approved	Date	Sheet No.:
	MW	31/05/2018	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Grey brown slightly clayey silty SAND	Sample Depth (m)	4.00
		Sample Reference	D19



Preparation: Material was washed and oven dried at below 50°C

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 37 %
 Percentage Passing 425µm sieve: 76 %
 Liquid Limit: 23 %
 Plastic Limit: Non-plastic %
 Plasticity Index: Non-plastic

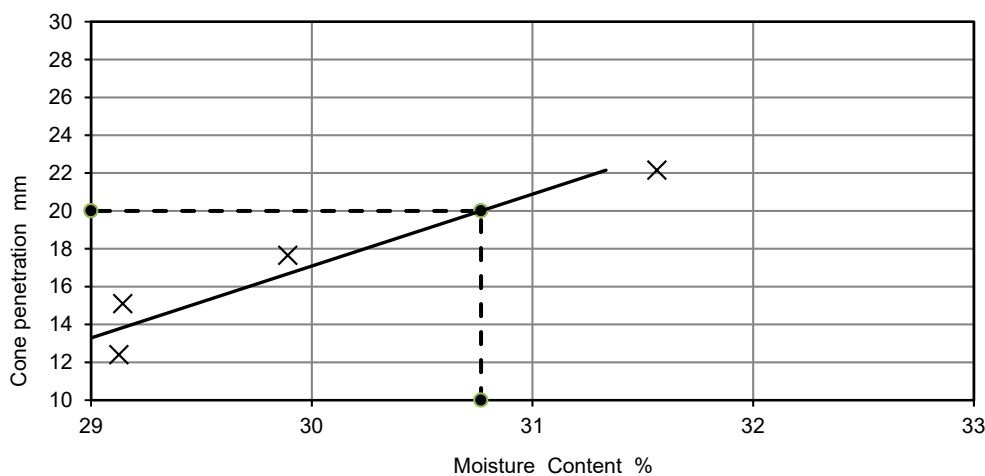
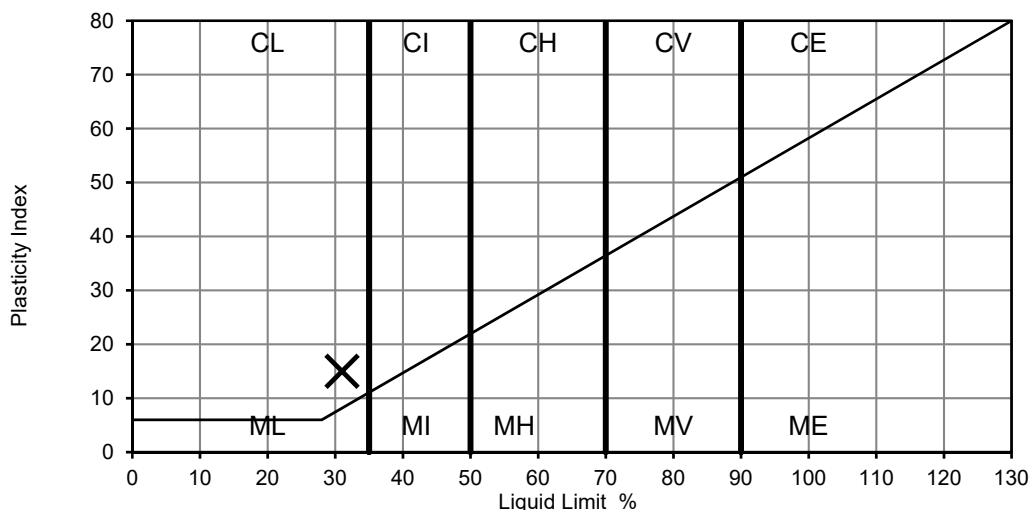
Liquidity Index: Non-plastic
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) Non-plastic

Remarks	Approved	Date	Sheet No.:
	MW	31/05/2018	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Dark grey and brown slightly clayey silty SAND	Sample Depth (m)	10.00
		Sample Reference	D40



Preparation: Material was natural

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 25 %
 Percentage Passing 425µm sieve: 96 %
 Liquid Limit: 31 %
 Plastic Limit: 16 %
 Plasticity Index: 15

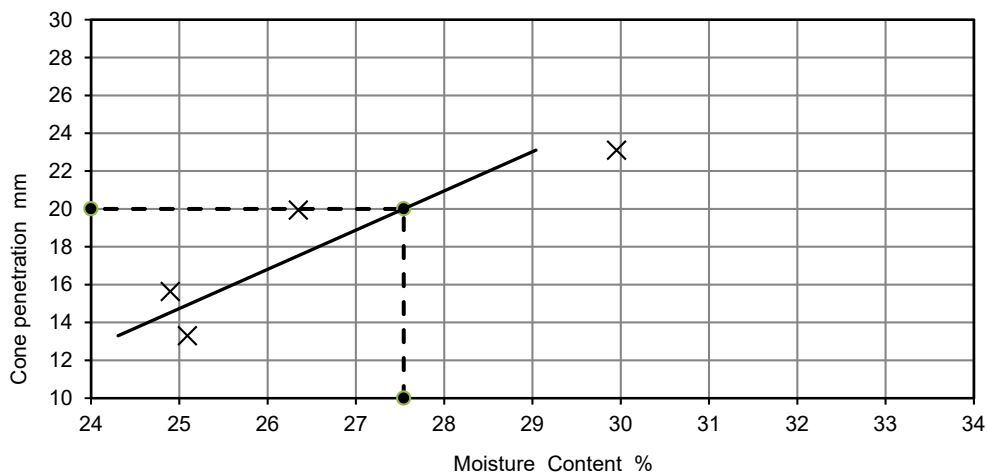
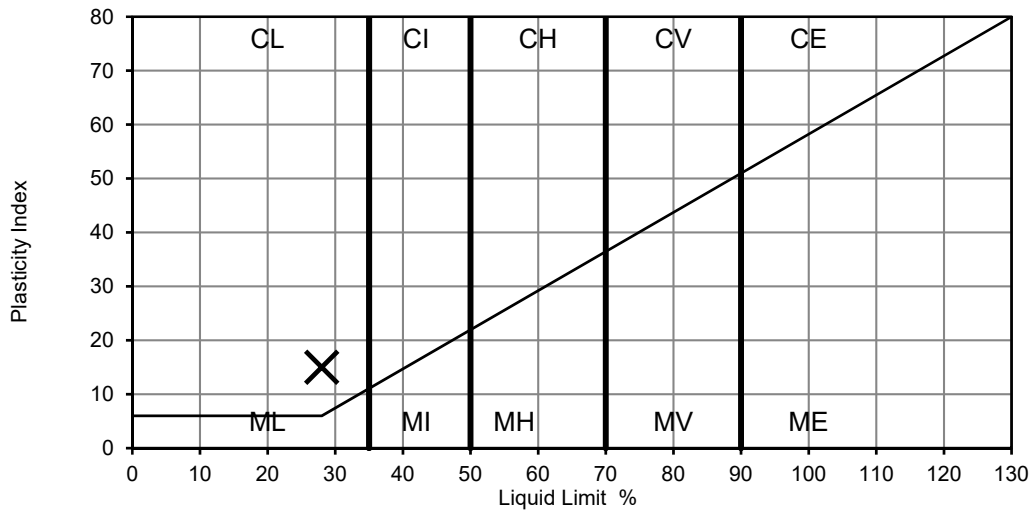
Liquidity Index: 0.60
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 14

Remarks	Approved	Date	Sheet No.:
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LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Dark grey sandy clayey SILT	Sample Depth (m)	30.00
		Sample Reference	D79



Preparation: Material was natural

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 24 %
 Percentage Passing 425µm sieve: 100 %
 Liquid Limit: 28 %
 Plastic Limit: 13 %
 Plasticity Index: 15

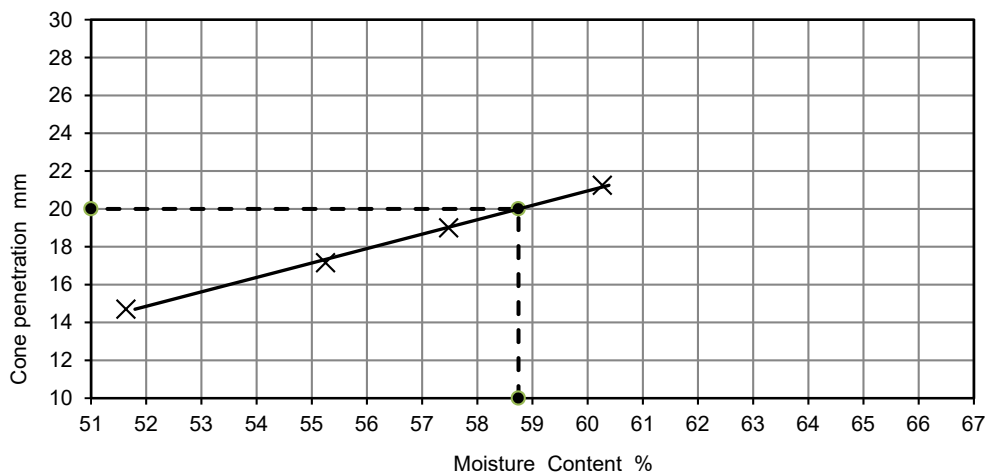
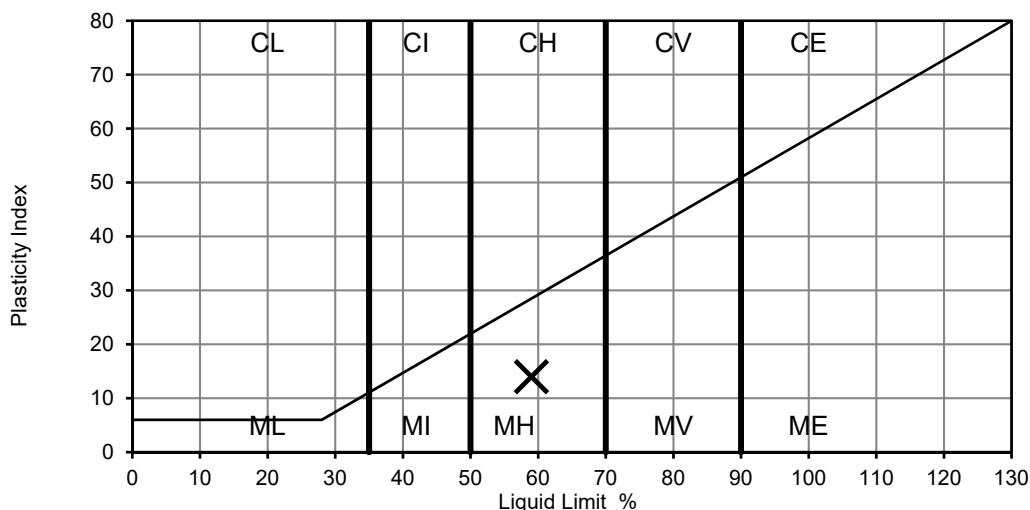
Liquidity Index: 0.73
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 15

Remarks	Approved	Date	Sheet No.:
	MW	31/05/2018	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Dark grey slightly sandy very silty CLAY	Sample Depth (m)	45.60
		Sample Reference	B104



Preparation: Material was natural

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 37 %
 Percentage Passing 425µm sieve: 96 %
 Liquid Limit: 59 %
 Plastic Limit: 45 %
 Plasticity Index: 14

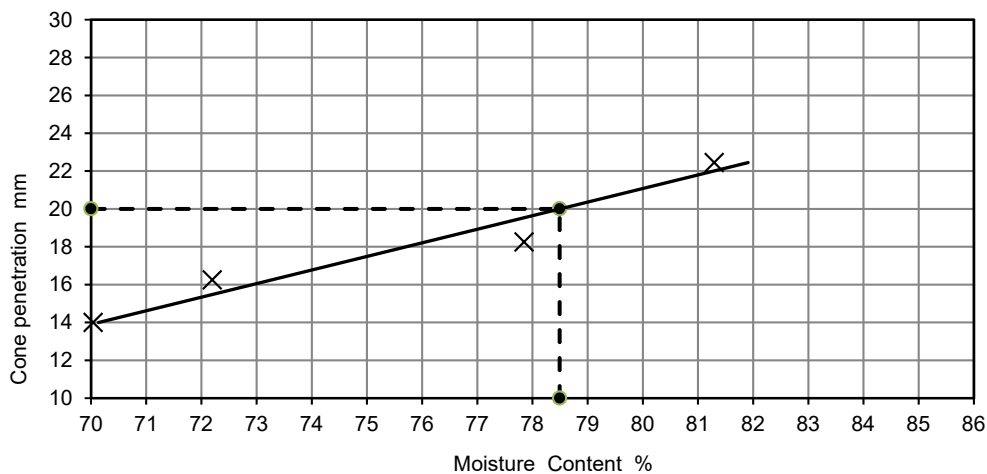
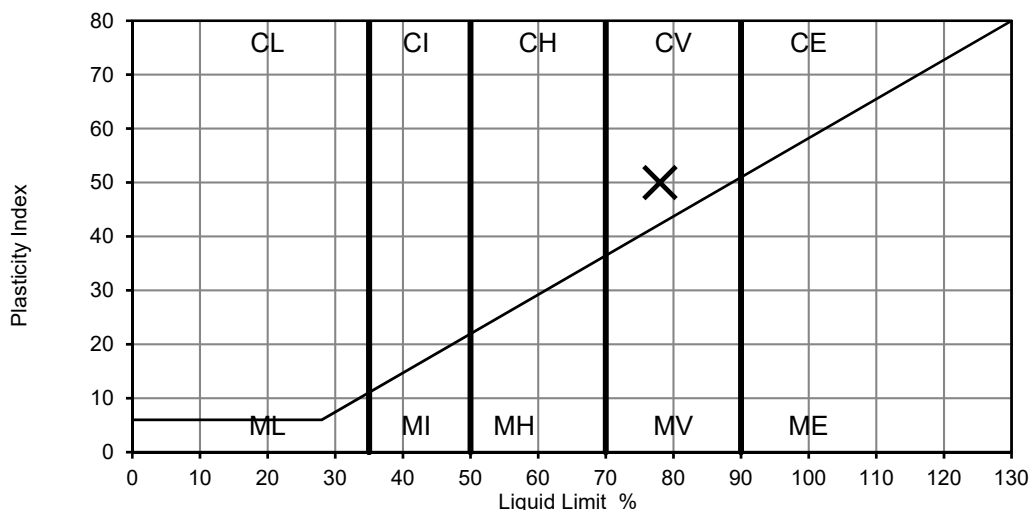
Liquidity Index: -0.57
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 13

Remarks	Approved	Date	Sheet No.:
	MW	31/05/2018	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Dark grey slightly sandy silty CLAY	Sample Depth (m)	46.00
		Sample Reference	D105



Preparation: Material was natural

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 32 %
 Percentage Passing 425µm sieve: 93 %
 Liquid Limit: 78 %
 Plastic Limit: 28 %
 Plasticity Index: 50

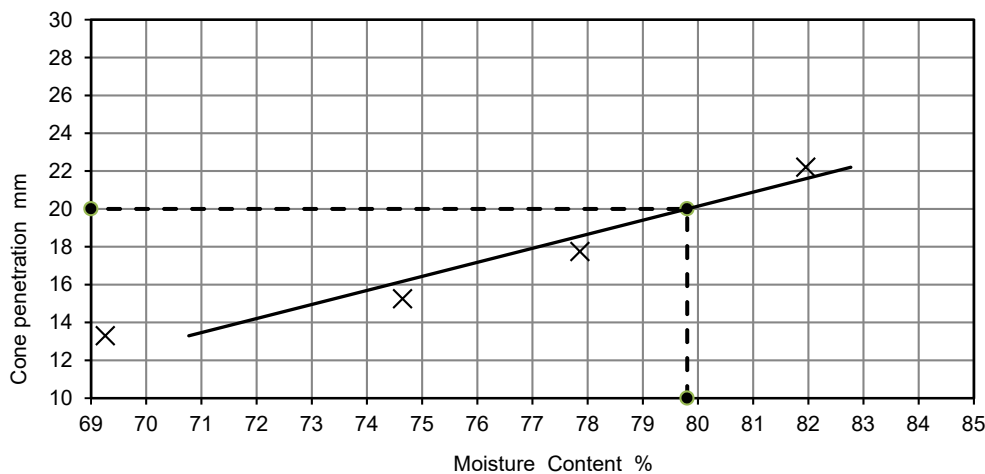
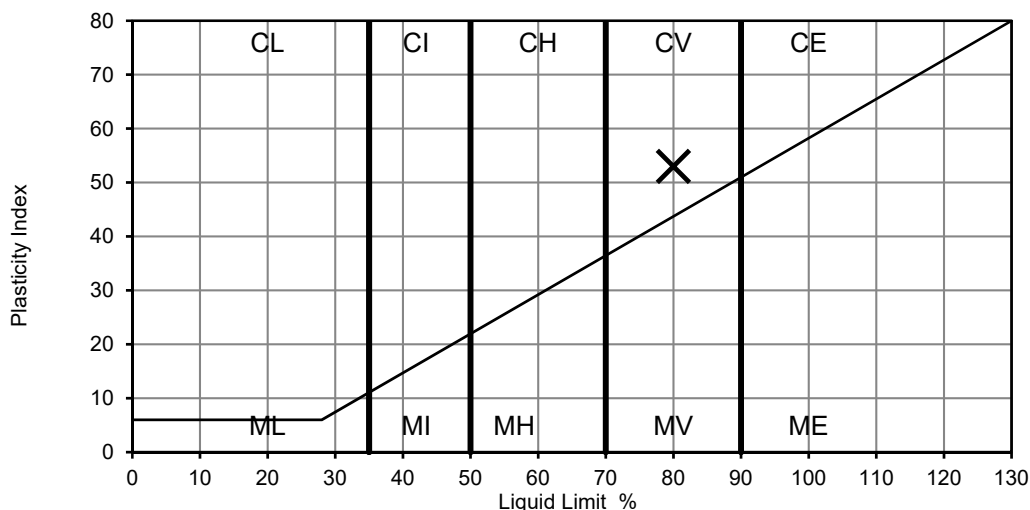
Liquidity Index: 0.08
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 47

Remarks	Approved	Date	Sheet No.:
	MW	31/05/2018	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Dark grey slightly sandy very silty CLAY	Sample Depth (m)	48.00
		Sample Reference	B110



Preparation: Material was natural

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 34 %
 Percentage Passing 425µm sieve: 97 %
 Liquid Limit: 80 %
 Plastic Limit: 27 %
 Plasticity Index: 53

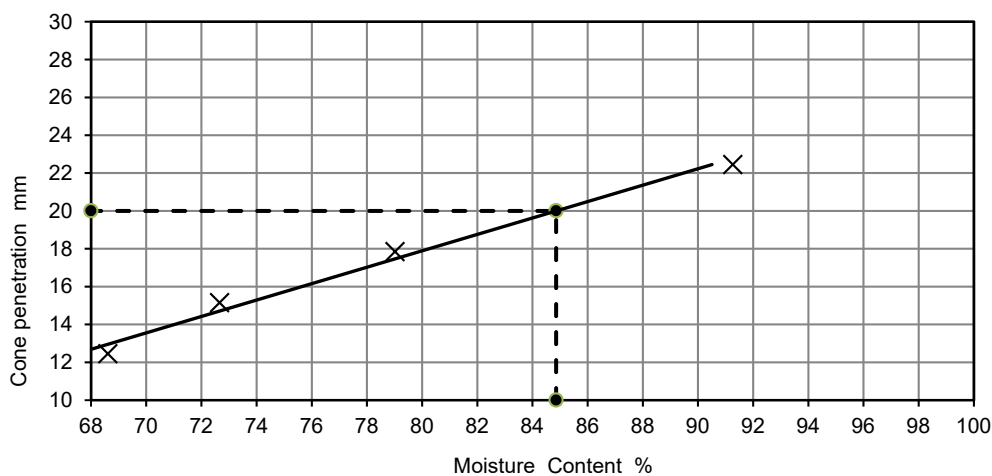
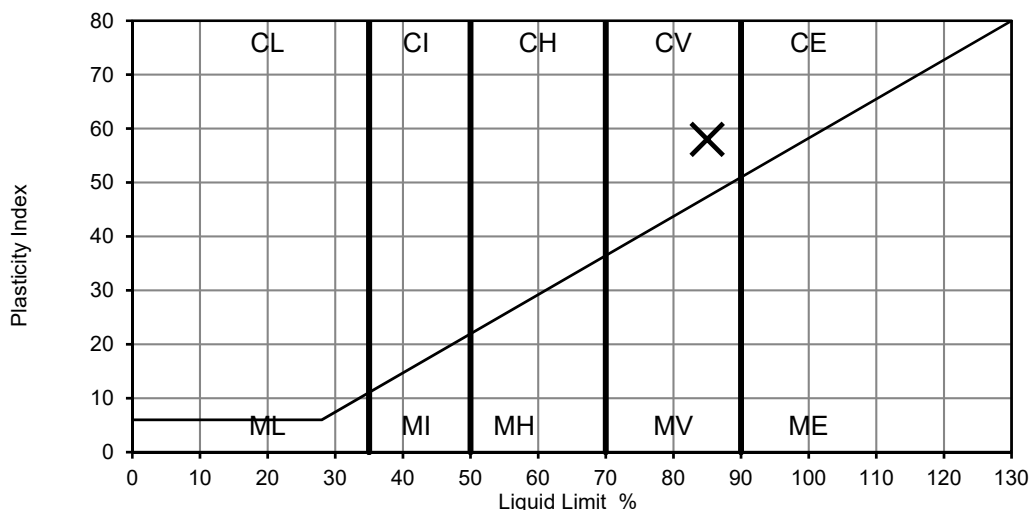
Liquidity Index: 0.13
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 51

Remarks	Approved	Date	Sheet No.:
	MW	31/05/2018	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Dark grey slightly sandy very silty CLAY	Sample Depth (m)	49.50
		Sample Reference	B114



Preparation: Material was natural

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 37 %
 Percentage Passing 425µm sieve: 100 %
 Liquid Limit: 85 %
 Plastic Limit: 27 %
 Plasticity Index: 58

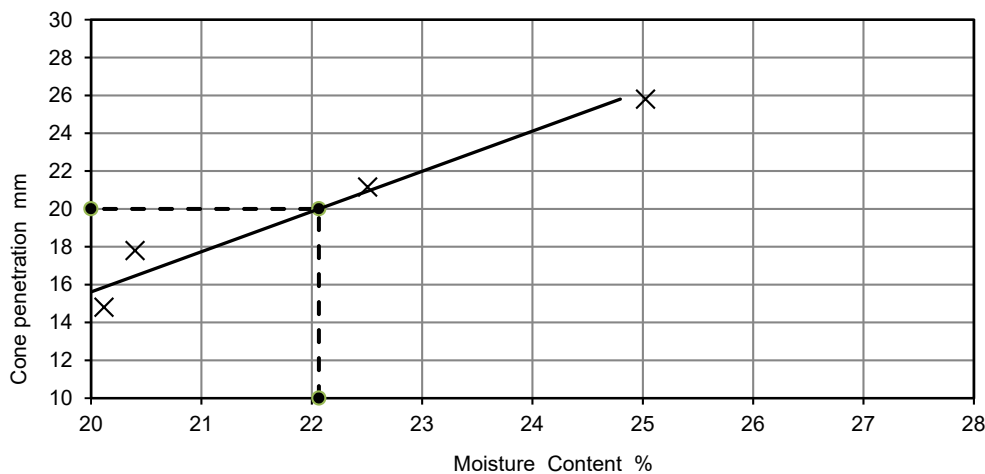
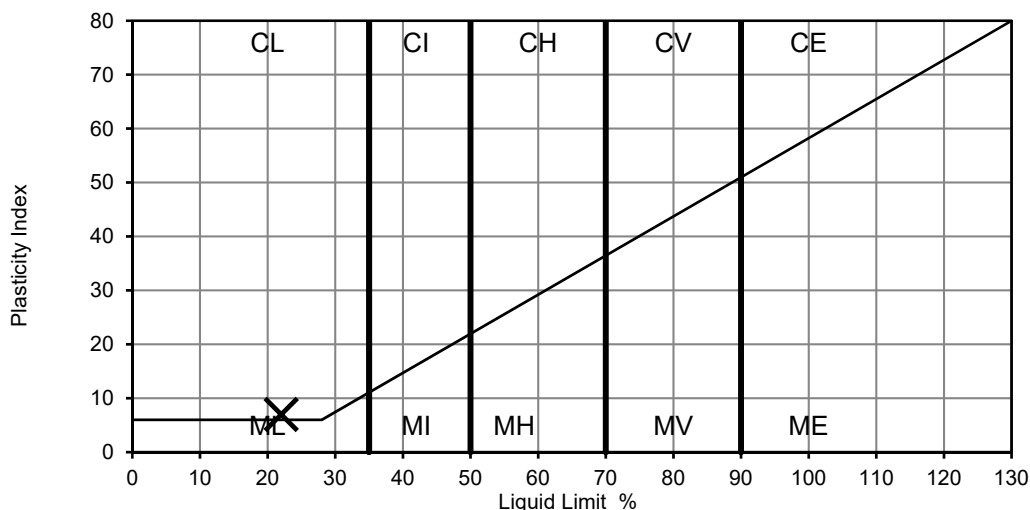
Liquidity Index: 0.17
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 58

Remarks	Approved	Date	Sheet No.:
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LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Dark brown slightly sandy slightly gravelly CLAY. Gravel is of flint and shell fragments.	Sample Depth (m)	2.50
		Sample Reference	D10



Preparation: Material was washed and oven dried at below 50°C

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 19 %
 Percentage Passing 425µm sieve: 72 %
 Liquid Limit: 22 %
 Plastic Limit: 15 %
 Plasticity Index: 7

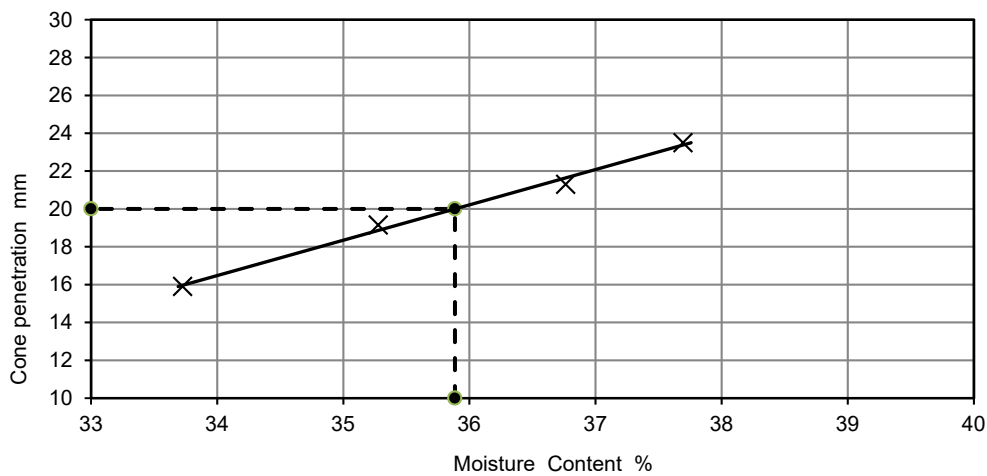
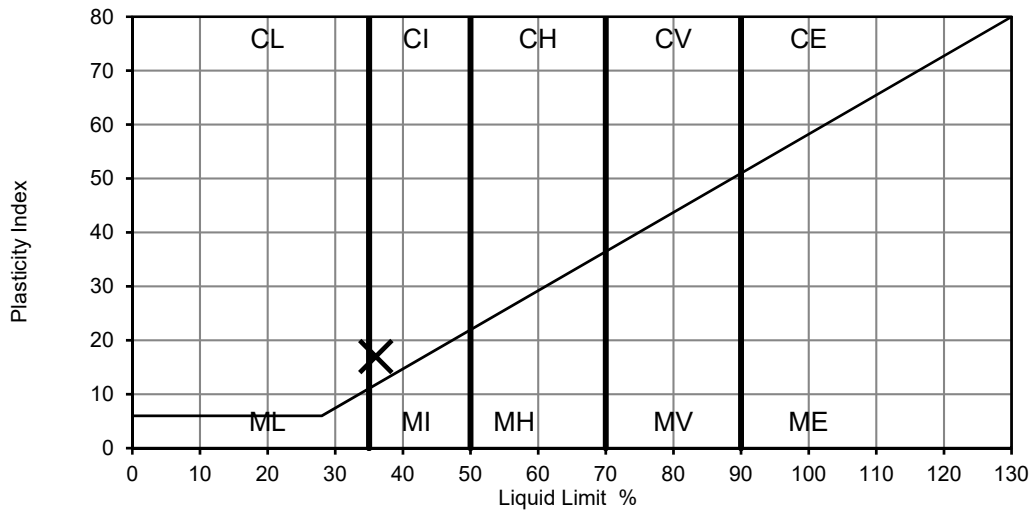
Liquidity Index: 0.57
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 5

Remarks	Approved	Date	Sheet No.:
	MW	31/05/2018	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Dark grey and grey clayey very silty SAND / GRAVEL. Gravel is of flint and shell fragments	Sample Depth (m)	3.50
		Sample Reference	B15



Preparation: Material was washed and oven dried at below 50°C

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 27 %
 Percentage Passing 425µm sieve: 51 %
 Liquid Limit: 36 %
 Plastic Limit: 19 %
 Plasticity Index: 17

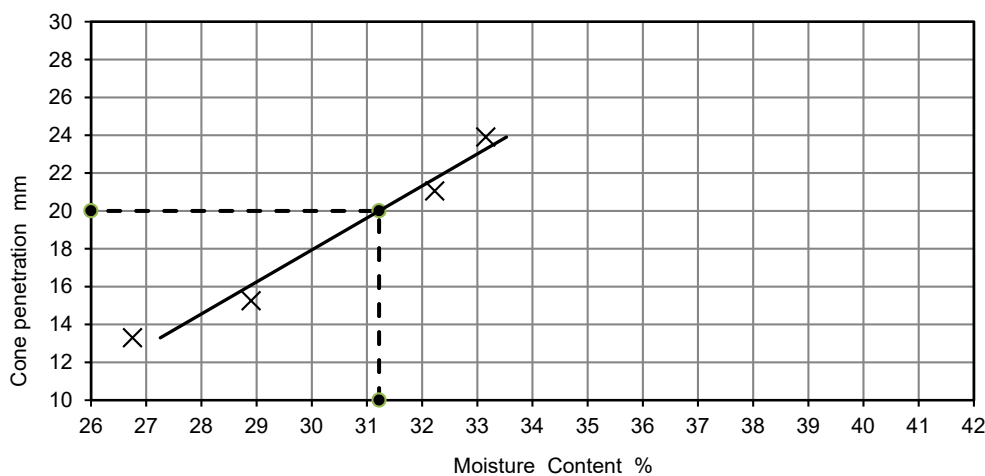
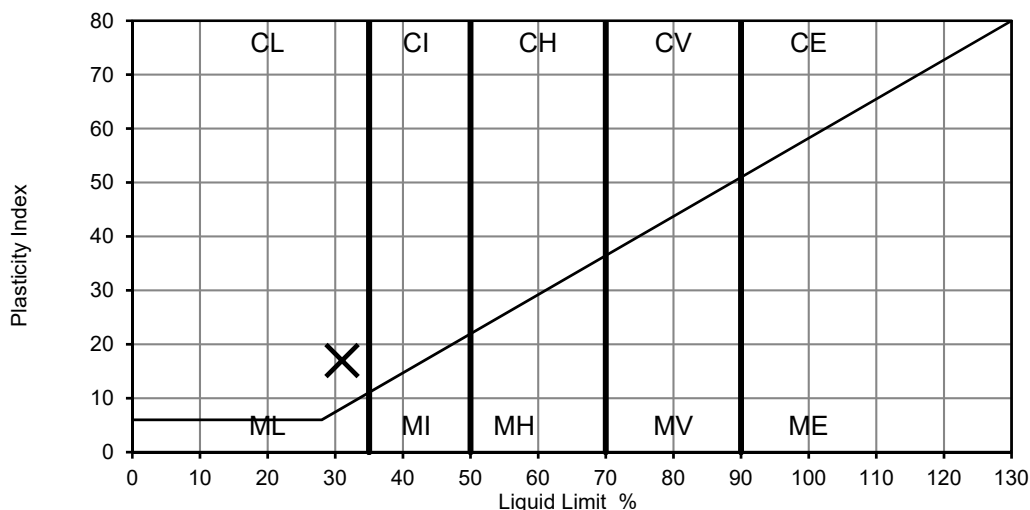
Liquidity Index: 0.47
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 9

Remarks	Approved	Date	Sheet No.:
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LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Dark grey slightly sandy CLAY	Sample Depth (m)	29.50
		Sample Reference	D79



Preparation: Material was natural

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 25 %
 Percentage Passing 425µm sieve: 100 %
 Liquid Limit: 31 %
 Plastic Limit: 14 %
 Plasticity Index: 17

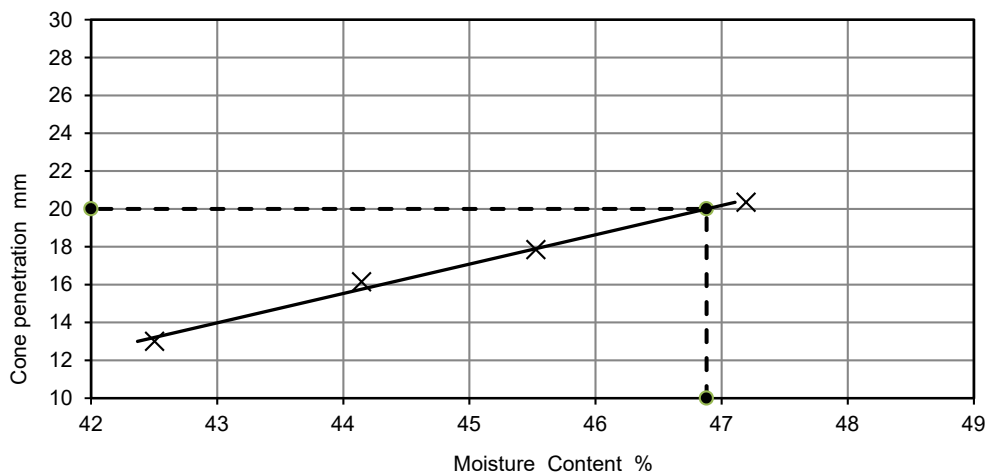
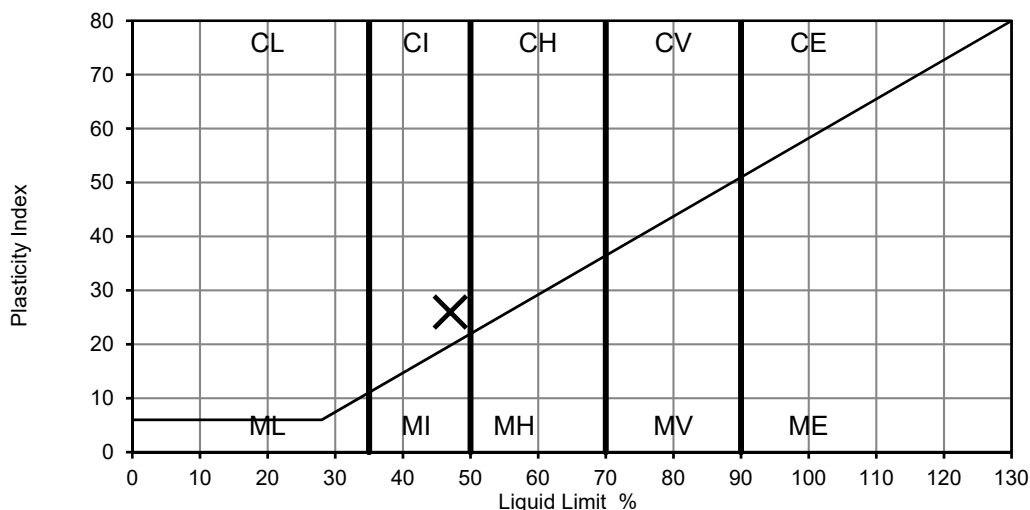
Liquidity Index: 0.65
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 17

Remarks	Approved	Date	Sheet No.:
	MW	31/05/2018	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Dark grey slightly sandy very silty CLAY	Sample Depth (m)	31.00
		Sample Reference	D82



Preparation: Material was natural

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 24 %
 Percentage Passing 425µm sieve: 100 %
 Liquid Limit: 47 %
 Plastic Limit: 21 %
 Plasticity Index: 26

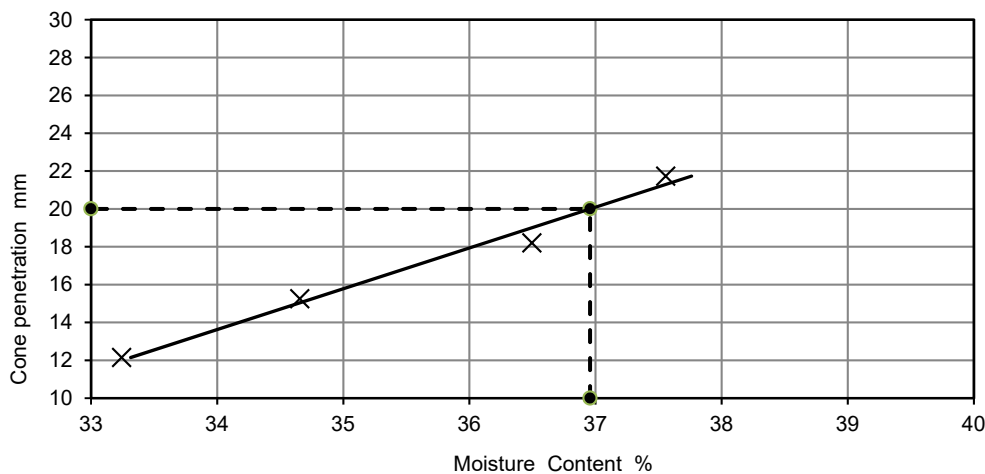
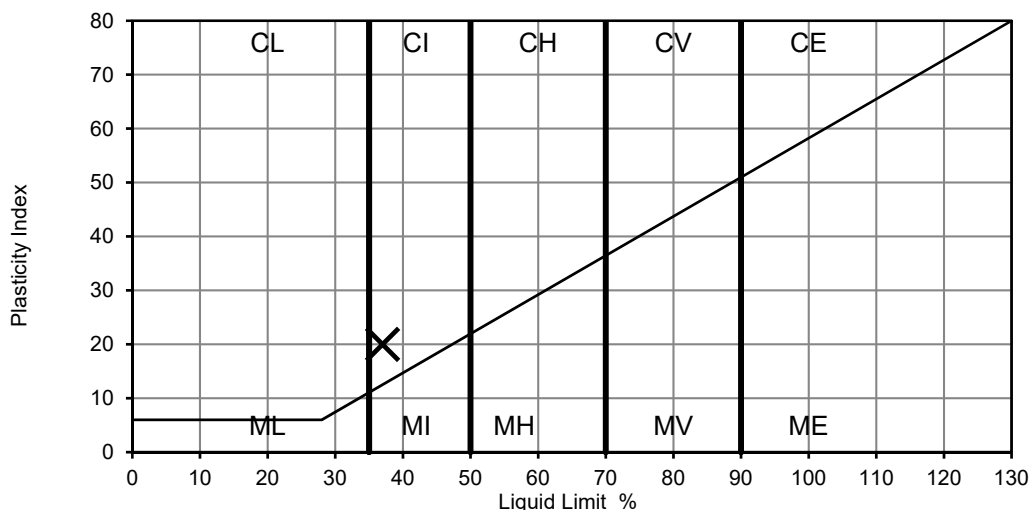
Liquidity Index: 0.12
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 26

Remarks	Approved	Date	Sheet No.:
	MW	31/05/2018	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Dark grey slightly sandy very silty CLAY.	Sample Depth (m)	31.55
		Sample Reference	D85



Preparation: Material was natural

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 28 %
 Percentage Passing 425µm sieve: 99 %
 Liquid Limit: 37 %
 Plastic Limit: 17 %
 Plasticity Index: 20

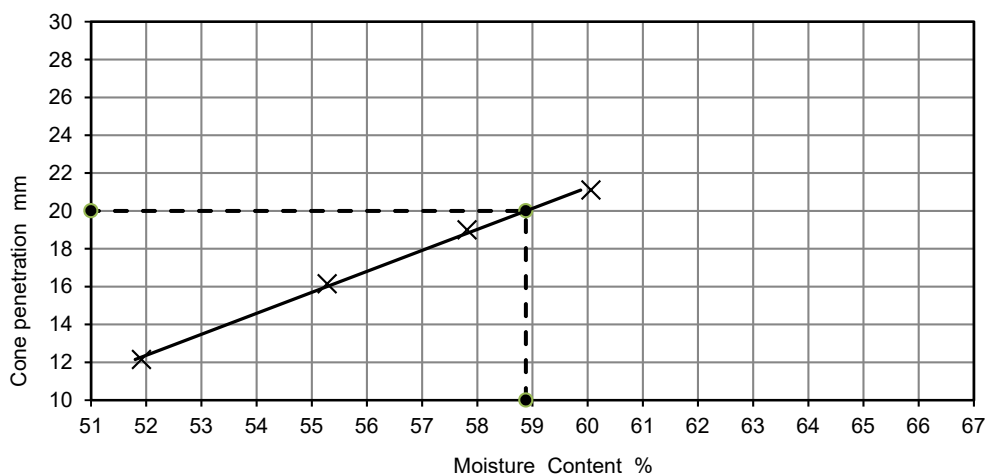
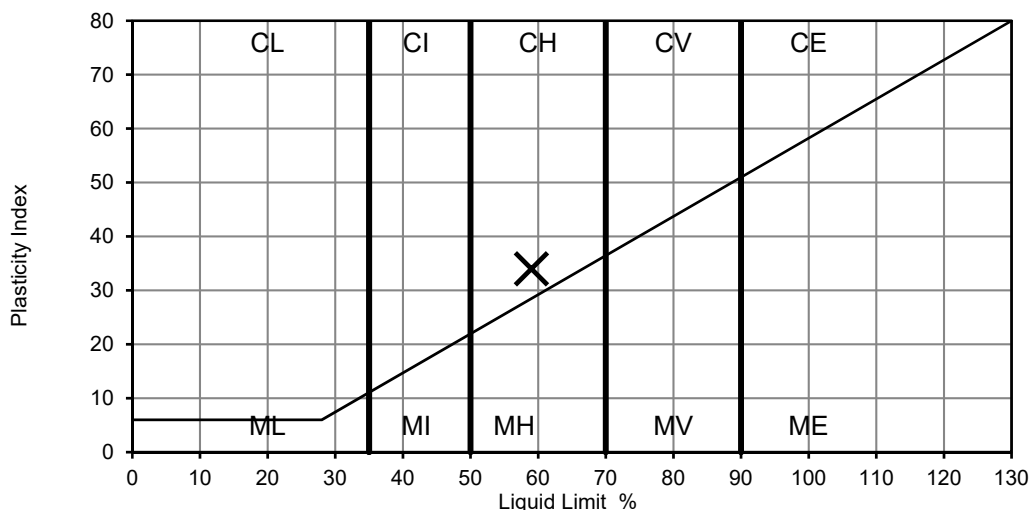
Liquidity Index: 0.55
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 20

Remarks	Approved	Date	Sheet No.:
	MW	31/05/2018	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Grey and dark grey slightly sandy very silty CLAY	Sample Depth (m)	45.95
		Sample Reference	D109



Preparation: Material was natural

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 33 %
 Percentage Passing 425µm sieve: 98 %
 Liquid Limit: 59 %
 Plastic Limit: 25 %
 Plasticity Index: 34

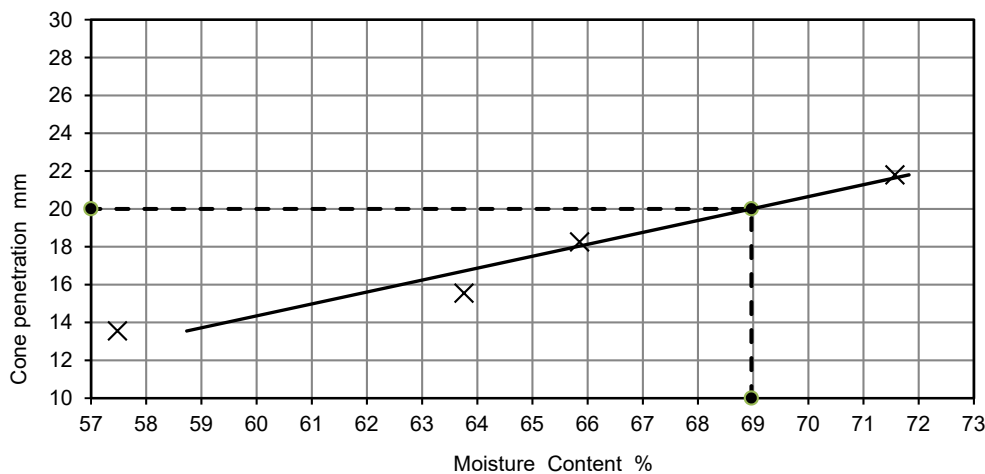
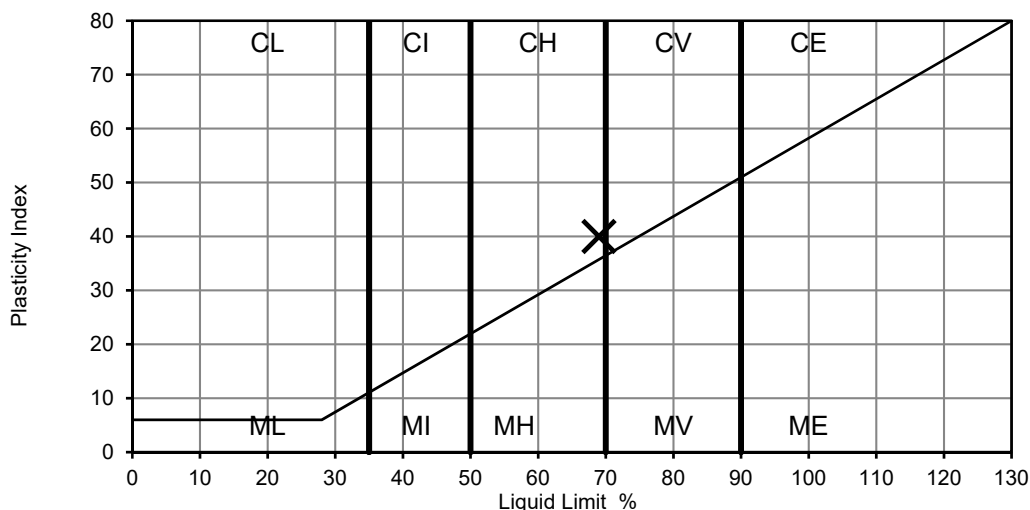
Liquidity Index: 0.24
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 33

Remarks	Approved	Date	Sheet No.:
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LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Dark grey slightly sandy clayey SILT	Sample Depth (m)	46.80
		Sample Reference	D112



Preparation: Material was washed and oven dried at below 50°C

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 24 %
 Percentage Passing 425µm sieve: 88 %
 Liquid Limit: 69 %
 Plastic Limit: 29 %
 Plasticity Index: 40

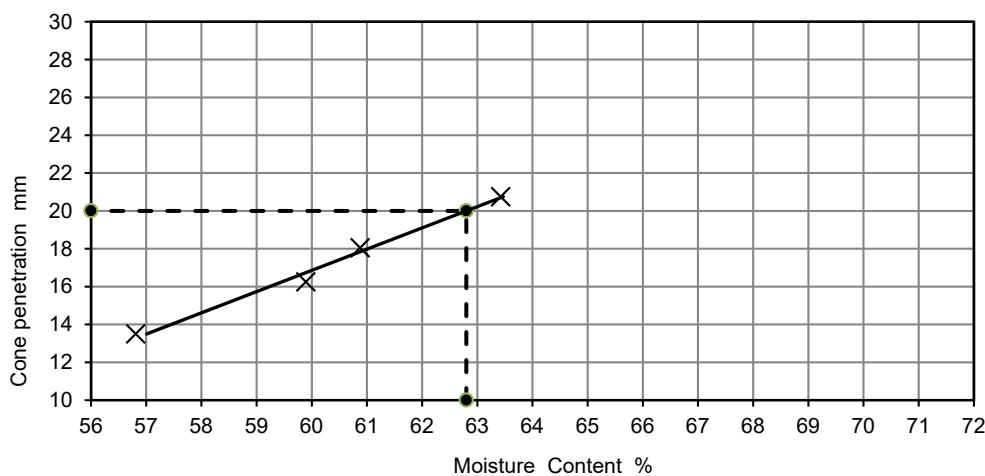
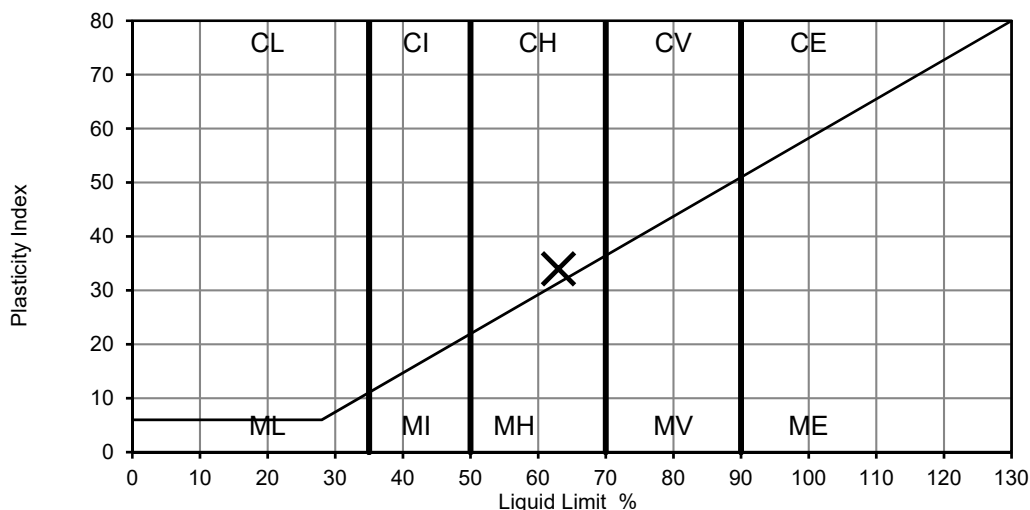
Liquidity Index: -0.13
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 35

Remarks	Approved	Date	Sheet No.:
	MW	24/05/2018	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Dark brown slightly sandy silty CLAY	Sample Depth (m)	47.55
		Sample Reference	D115



Preparation: Material was washed and oven dried at below 50°C

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 28 %
 Percentage Passing 425µm sieve: 95 %
 Liquid Limit: 63 %
 Plastic Limit: 29 %
 Plasticity Index: 34

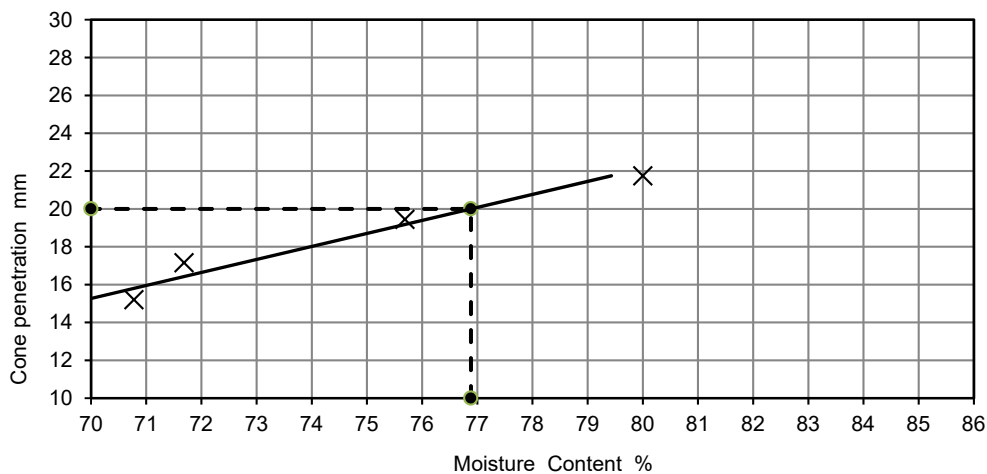
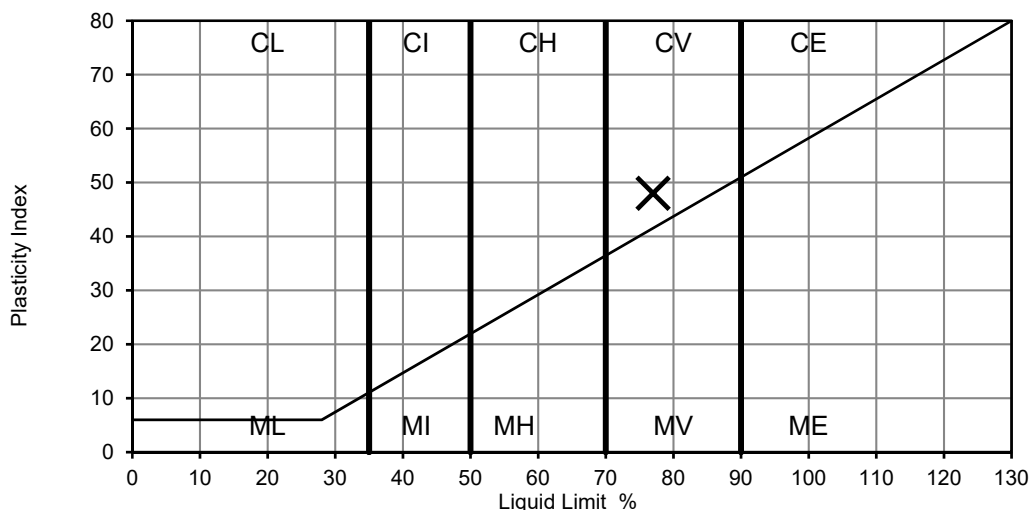
Liquidity Index: -0.03
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 32

Remarks	Approved	Date	Sheet No.:
	MW	31/05/2018	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Dark brown slightly sandy silty CLAY	Sample Depth (m)	49.55
		Sample Reference	D120



Preparation: Material was natural

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 32 %
 Percentage Passing 425µm sieve: 96 %
 Liquid Limit: 77 %
 Plastic Limit: 29 %
 Plasticity Index: 48

Liquidity Index: 0.06
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 46

Remarks	Approved	Date	Sheet No.:
	MW	31/05/2018	1 of 1

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Community & Environmental Services

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Our reference No. GTS1180214026-604
Our Project No PZ1522D1
Your Sample Ref D84
Your Project or Order No. PZ1522
Date Report Issued 06 Apr 2018

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**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH11A	Depth	30m
Date sampled	14 Feb 2018	Date received	15 Feb 2018
Date tested	12 Mar 2018		
Sample type	Small disturbed sample	Sample Mass (g)	337

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil
Description	laminated, soft, grey, silty CLAY, grey, fine and medium SAND and dark grey, clayey SILT.

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Whole	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	0.3	

Natural MC (%) 25

Liquid Limit (%) 30

Plastic Limit (%) 15

Plasticity Index (%) 15

Modified PI *(%) 15

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

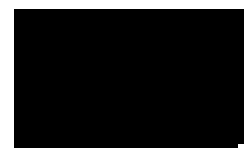
BS Soil Classification CL

Remarks	NHBC Volume change potential classification is low.
----------------	---

Test Code = 604



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Our reference No. GTS1180215004-604
Our Project No PZ1522D1
Your Sample Ref D89
Your Project or Order No. PZ1522
Date Report Issued 06 Apr 2018

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**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH11A	Depth	32.1m
Date sampled	15 Feb 2018	Date received	16 Feb 2018
Date tested	12 Mar 2018		
Sample type	Small disturbed sample	Sample Mass (g)	491

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil
Description	Laminated, firm to stiff, silty CLAY and grey, silty fine SAND. Trace of fine shell and flint fragments .

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Whole	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	0.8	

Natural MC (%) 26

Liquid Limit (%) 37

Plastic Limit (%) 16

Plasticity Index (%) 22

Modified PI *(%) 22

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

BS Soil Classification C I

Remarks	NHBC Volume change potential classification is medium.
----------------	--

Test Code = 604



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Our reference No. GTS1180216004-604
Our Project No PZ1522D1
Your Sample Ref D112
Your Project or Order No. PZ1522
Date Report Issued 06 Apr 2018

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**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH11A	Depth	46.5m
Date sampled	16 Feb 2018	Date received	17 Feb 2018
Date tested	12 Mar 2018		
Sample type	Small disturbed sample	Sample Mass (g)	294

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil
Description	Very stiff, laminated, greyish brown, silty CLAY.

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Whole	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	0.6	

Natural MC (%) 40

Liquid Limit (%) 88

Plastic Limit (%) 26

Plasticity Index (%) 62

Modified PI *(%) 61

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

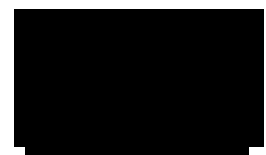
BS Soil Classification C V

Remarks	NHBC Volume change potential classification is high.
----------------	--

Test Code = 604



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Our reference No. GTS1180216008-604
Our Project No PZ1522D1
Your Sample Ref D116
Your Project or Order No. PZ1522
Date Report Issued 06 Apr 2018

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Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method) and Determination of Plasticity Index to BS1377-2:1990 CI 5

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH11A	Depth	47.5m
Date sampled	16 Feb 2018	Date received	17 Feb 2018
Date tested	12 Mar 2018		
Sample type	Small disturbed sample	Sample Mass (g)	436

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil
Description	Very stiff, brown CLAY.

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	0.0	

Natural MC (%) 31

Liquid Limit (%) 92

Plastic Limit (%) 27

Plasticity Index (%) 64

Modified PI *(%) 64

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

BS Soil Classification C E

Remarks	NHBC Volume change potential classification is high.
----------------	--

Test Code = 604



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Our reference No. GTS1180216013-604
Our Project No PZ1522D1
Your Sample Ref D121
Your Project or Order No. PZ1522
Date Report Issued 06 Apr 2018

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**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH11A	Depth	49.5m
Date sampled	16 Feb 2018	Date received	17 Feb 2018
Date tested	12 Mar 2018		
Sample type	Small disturbed sample	Sample Mass (g)	388

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil
Description	Very stiff, brown CLAY.

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	0.2	

Natural MC (%) 34

Liquid Limit (%) 92

Plastic Limit (%) 28

Plasticity Index (%) 63

Modified PI *(%) 63

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

BS Soil Classification C E

Remarks	NHBC Volume change potential classification is high.
----------------	--

Test Code = 604



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Our Project No PZ1522D1
Your Sample Ref B6
Your Project or Order No. PZ1522
Date Report Issued 11 Jun 2018

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**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH12	Depth	2m
Date sampled	07 Mar 2018	Date received	07 Mar 2018
Date tested	16 May 2018		
Sample type	Bulk Disturbed	Sample Mass (g)	567

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	MADE GROUND - comprising very soft, dark grey, slightly sandy, silty clay. Gravel is fine and medium, rounded to sub-rounded, flint, chalk and brick.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	6.7	

Natural MC (%) 38

Liquid Limit (%) 55

Plastic Limit (%) 25

Plasticity Index (%) 30

Modified PI *(%) 28

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

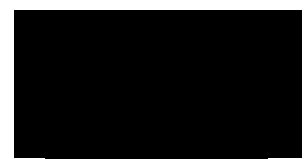
BS Soil Classification C H

Remarks NHBC Volume change potential classification is medium.

Test Code = 604



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Your Sample Ref B73
Your Project or Order No. PZ1522
Date Report Issued 11 Jun 2018

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**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH12	Depth	29.5m
Date sampled	12 Mar 2018	Date received	13 Mar 2018
Date tested	16 May 2018		
Sample type	Bulk Disturbed	Sample Mass (g)	600

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Laminated and thinly bedded, firm, grey, silty CLAY, light grey silty fine sand and black silt.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	1.3	

Natural MC (%) 32

Liquid Limit (%) 38

Plastic Limit (%) 17

Plasticity Index (%) 21

Modified PI *(%) 21

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

BS Soil Classification C I

Remarks NHBC Volume change potential classification is medium.

Test Code = 604



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**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH12	Depth	31.5m
Date sampled	12 Mar 2018	Date received	13 Mar 2018
Date tested	16 May 2018		
Sample type	Bulk Disturbed	Sample Mass (g)	527

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Stiff, grey, slightly sandy, silty CLAY.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable		
Orientation	Not applicable		

PREPARATION DETAILS

Method of Division	Quartering		
Preparation Method	Wet sieving	Oven dried @ 40°C	
Retained 425µm (%)	0.6		

Natural MC (%)	24		
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Liquid Limit (%)	50		
Plastic Limit (%)	20		
Plasticity Index (%)	31		
Modified PI *(%)	30	*BRE Digest 240:1993. <i>This calculation is outside the scope of UKAS accreditation.</i>	

BS Soil Classification	C H		
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Remarks	NHBC Volume change potential classification is medium.		
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Test Code = 604



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Date Report Issued 11 Jun 2018

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**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH12	Depth	45.7m
Date sampled	13 Mar 2018	Date received	14 Mar 2018
Date tested	11 May 2018		
Sample type	Small disturbed sample	Sample Mass (g)	557

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Very stiff, laminated, brown CLAY, witha littl fine and medium angular flint gravel.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Whole	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	6.3	

Natural MC (%) 31

Liquid Limit (%) 89

Plastic Limit (%) 23

Plasticity Index (%) 65

Modified PI *(%) 61

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

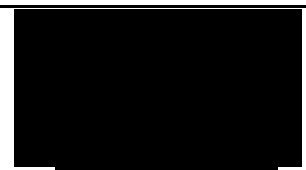
BS Soil Classification C V

Remarks NHBC Volume change potential classification is high.

Test Code = 604



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Your Sample Ref D101
Your Project or Order No. PZ1522
Date Report Issued 11 Jun 2018

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**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH12	Depth	47.5m
Date sampled	13 Mar 2018	Date received	14 Mar 2018
Date tested	11 May 2018		
Sample type	Small disturbed sample	Sample Mass (g)	483

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Very stiff, laminated, brown CLAY, with laminae of light brown and light grey SILT.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	0.6	

Natural MC (%) 30

Liquid Limit (%) 91
Plastic Limit (%) 29
Plasticity Index (%) 62
Modified PI *(%) 62

*BRE Digest 240:1993.
 This calculation is outside the scope of UKAS accreditation.

BS Soil Classification C E

Remarks NHBC Volume change potential classification is high.

Test Code = 604



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Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH12	Depth	49.5m
Date sampled	14 Mar 2018	Date received	15 Mar 2018
Date tested	11 May 2018		
Sample type	Small disturbed sample	Sample Mass (g)	490

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Very stiff, slightly sandy, laminated, brown CLAY, with laminae of light brown and light grey SILT. Occasional fine gypsum crystals.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	0.7	

Natural MC (%)	31
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Liquid Limit (%)	84
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Plastic Limit (%)	23
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Plasticity Index (%)	61
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Modified PI *(%)	61
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*BRE Digest 240:1993.

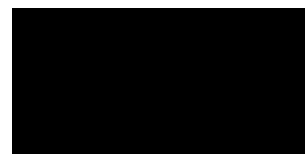
This calculation is outside the scope of UKAS accreditation.
BS Soil Classification C V

Remarks NHBC Volume change potential classification is high.

Test Code = 604



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Your Sample Ref B39
Your Project or Order No. PZ1522
Date Report Issued 14 Jun 2018

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**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH12B	Depth	12.4m
Date sampled	20 Mar 2018	Date received	21 Mar 2018
Date tested	25 May 2018		
Sample type	Bulk Disturbed	Sample Mass (g)	595

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Medium dense, orangey brown, silty fine to medium SAND, with laminae of light grey silty CLAY, black clayey SILT and orange sandy SILT.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	4.4	

Natural MC (%) 23

Liquid Limit (%) 31
Plastic Limit (%) Non Plastic
Plasticity Index (%)
Modified PI *(%)

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

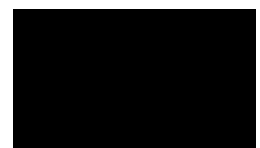
BS Soil Classification Non Plastic

Remarks

Test Code = 604



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Date Report Issued 14 Jun 2018

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**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH12B	Depth	29.95m
Date sampled	22 Mar 2018	Date received	23 Mar 2018
Date tested	25 May 2018		
Sample type	Small disturbed sample	Sample Mass (g)	493

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil
Description	Stiff to very stiff, laminated, grey silty CLAY and light grey SILT.

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	0.0	

Natural MC (%) 28

Liquid Limit (%) 54

Plastic Limit (%) 20

Plasticity Index (%) 34

Modified PI *(%) 34

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

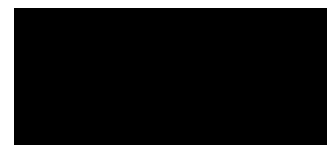
BS Soil Classification C H

Remarks NHBC Volume change potential classification is medium.

Test Code = 604



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Your Sample Ref D101
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Date Report Issued 14 Jun 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH12B	Depth	47.5m
Date sampled	23 Mar 2018	Date received	26 Mar 2018
Date tested	25 May 2018		
Sample type	Small disturbed sample	Sample Mass (g)	411

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Very stiff, laminated, brown CLAY, with occasional mud nodules.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	5.5	

Natural MC (%) 30

Liquid Limit (%) 88

Plastic Limit (%) 29

Plasticity Index (%) 59

Modified PI *(%) 56

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

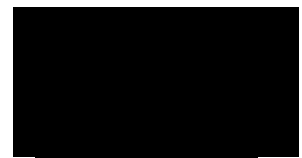
BS Soil Classification C V

Remarks NHBC Volume change potential classification is high.

Test Code = 604



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Your Project or Order No. PZ1522
Date Report Issued 14 Jun 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH12B	Depth	49.5m
Date sampled	23 Mar 2018	Date received	26 Mar 2018
Date tested	25 May 2018		
Sample type	Small disturbed sample	Sample Mass (g)	298

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Very stiff, laminated, dark greyish brown CLAY, with occasional laminae of light grey silt.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Whole	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	1.0	

Natural MC (%) 31

Liquid Limit (%) 93

Plastic Limit (%) 29

Plasticity Index (%) 64

Modified PI *(%) 63

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

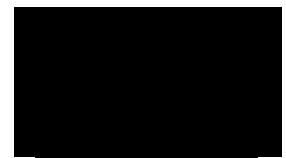
BS Soil Classification C E

Remarks NHBC Volume change potential classification is high.

Test Code = 604



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Your Sample Ref D12
Your Project or Order No. PZ1522
Date Report Issued 05 Jul 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH13	Depth	2m
Date sampled	05 Mar 2018	Date received	06 Mar 2018
Date tested	13 Jun 2018		
Sample type	Small disturbed sample	Sample Mass (g)	637

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Soft, brownish grey, sandy, silty CLAY.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable		
Orientation	Not applicable		

PREPARATION DETAILS

Method of Division	Quartering		
Preparation Method	Wet sieving	Oven dried @ 40°C	
Retained 425µm (%)	12.3		

Natural MC (%)	31		
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Liquid Limit (%)	36		
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Plastic Limit (%)	20		
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Plasticity Index (%)	16		
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Modified PI *(%)	14	*BRE Digest 240:1993.	
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This calculation is outside the scope of UKAS accreditation.

BS Soil Classification	C I		
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Remarks	NHBC Volume change potential classification is low.		
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Test Code = 604



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Date Report Issued 23 May 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH13	Depth	2.6m
Date sampled	05 Mar 2018	Date received	06 Mar 2018
Date tested	24 Apr 2018		
Sample type	Small disturbed sample	Sample Mass (g)	570

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Soft, black organic very silty CLAY, rapidly weathering to brown with trace of fine and medium flint gravel.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	9.4	

Natural MC (%) 46

Liquid Limit (%) 41

Plastic Limit (%) 22

Plasticity Index (%) 19

Modified PI *(%) 17

*BRE Digest 240:1993.

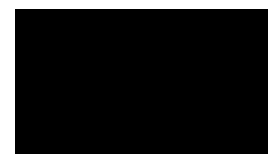
This calculation is outside the scope of UKAS accreditation.
BS Soil Classification C I

Remarks NHBC Volume change potential classification is low.

Test Code = 604



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Your Sample Ref D80
Your Project or Order No. PZ1522
Date Report Issued 23 May 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH13	Depth	28.5m
Date sampled	07 Mar 2018	Date received	08 Mar 2018
Date tested	13 Apr 2018		
Sample type	Small disturbed sample	Sample Mass (g)	449

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil
Description	Stiff laminated silty CLAY with numerous laminae of light grey silt.

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Whole	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	0.2	

Natural MC (%)	25
-----------------------	----

Liquid Limit (%)	41
Plastic Limit (%)	16
Plasticity Index (%)	25
Modified PI *(%)	25

*BRE Digest 240:1993.

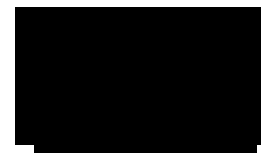
This calculation is outside the scope of UKAS accreditation.
BS Soil Classification C I

Remarks	NHBC Volume change potential classification is medium.
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Test Code = 604



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Your Sample Ref D85
Your Project or Order No. PZ1522
Date Report Issued 23 May 2018

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**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH13	Depth	32m
Date sampled	08 Mar 2018	Date received	09 Mar 2018
Date tested	13 Apr 2018		
Sample type	Small disturbed sample	Sample Mass (g)	616

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Laminated and thinly bedded firm, grey silty CLAY and light grey fine SAND. Trace of fine gravel sized shell fragments.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Whole	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	0.8	

Natural MC (%) 24

Liquid Limit (%) 27

Plastic Limit (%) 13

Plasticity Index (%) 15

Modified PI *(%) 14

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

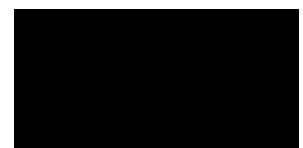
BS Soil Classification CL

Remarks NHBC Volume change potential classification is low.

Test Code = 604



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Your Project or Order No. PZ1522
Date Report Issued 23 May 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH13	Depth	44.8m
Date sampled	09 Mar 2018	Date received	12 Mar 2018
Date tested	24 Apr 2018		
Sample type	Bulk Disturbed	Sample Mass (g)	427

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Thinly bedded, stiff grey silty CLAY with laminae of dark grey, sandy SILT. Trace of fine shell.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	0.4	

Natural MC (%) 35

Liquid Limit (%) 60

Plastic Limit (%) 24

Plasticity Index (%) 36

Modified PI *(%) 36

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

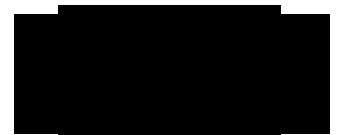
BS Soil Classification C H

Remarks NHBC Volume change potential classification is medium.

Test Code = 604



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Our Project No PZ1522D1
Your Sample Ref D108
Your Project or Order No. PZ1522
Date Report Issued 23 May 2018

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**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH13	Depth	45.5m
Date sampled	09 Mar 2018	Date received	12 Mar 2018
Date tested	24 Apr 2018		
Sample type	Small disturbed sample	Sample Mass (g)	290

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Firm to stiff laminated brown, silty CLAY with some fine disseminated gypsum crystals.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Whole	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	1.9	

Natural MC (%) 30

Liquid Limit (%) 88

Plastic Limit (%) 27

Plasticity Index (%) 61

Modified PI *(%) 60

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

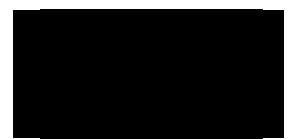
BS Soil Classification C V

Remarks NHBC Volume change potential classification is high.

Test Code = 604



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Your Project or Order No. PZ1522
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**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH13	Depth	47.5m
Date sampled	09 Mar 2018	Date received	12 Mar 2018
Date tested	13 Apr 2018		
Sample type	Small disturbed sample	Sample Mass (g)	324

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil
Description	Very stiff, laminated, brownish grey, silty, gravelly, sandy CLAY. Gravel is fine and medium, rounded to sub-rounded, flint and ironstone.

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Whole	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	10.7	

Natural MC (%) 27

Liquid Limit (%) 82

Plastic Limit (%) 25

Plasticity Index (%) 57

Modified PI *(%) 51

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

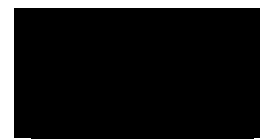
BS Soil Classification C V

Remarks NHBC Volume change potential classification is high.

Test Code = 604



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Our Project No PZ1522D1
Your Sample Ref D117
Your Project or Order No. PZ1522
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**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH13	Depth	49.5m
Date sampled	09 Mar 2018	Date received	12 Mar 2018
Date tested	13 Apr 2018		
Sample type	Small disturbed sample	Sample Mass (g)	491

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Very stiff laminated brownish grey, silty CLAY. Trace of fine, rounded to sub-angular flint.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	1.9	

Natural MC (%) 32

Liquid Limit (%) 89

Plastic Limit (%) 27

Plasticity Index (%) 62

Modified PI *(%) 60

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

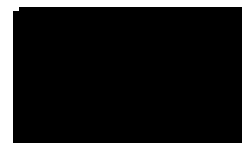
BS Soil Classification C V

Remarks NHBC Volume change potential classification is high.

Test Code = 604



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Your Sample Ref D11
Your Project or Order No. PZ1522
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**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH13A	Depth	2.7m
Date sampled	15 Mar 2018	Date received	16 Mar 2018
Date tested	31 May 2018		
Sample type	Small disturbed sample	Sample Mass (g)	520

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	MADE GROUND - comprising soft to firm, brownish grey, gravelly, very sandy, silty clay. Gravel is fine to coarse angular to sub-angular flint and brick.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	14.7	

Natural MC (%)	36
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Liquid Limit (%)	43
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Plastic Limit (%)	19
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Plasticity Index (%)	24
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Modified PI *(%)	21
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*BRE Digest 240:1993.

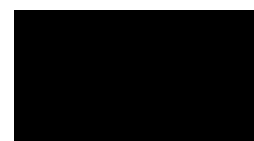
This calculation is outside the scope of UKAS accreditation.
BS Soil Classification C I

Remarks NHBC Volume change potential classification is medium.

Test Code = 604



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Our Project No PZ1522D1
Your Sample Ref D17
Your Project or Order No. PZ1522
Date Report Issued 05 Jul 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH13A	Depth	4m
Date sampled	15 Mar 2018	Date received	16 Mar 2018
Date tested	31 May 2018		
Sample type	Small disturbed sample	Sample Mass (g)	508

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Dark grey, weathering to brown, very silty, organic, gravelly fine to medium SAND. Gravel is fine to medium sub-rounded to sub-angular flint.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	22.4	

Natural MC (%) 26

Liquid Limit (%) 40
Plastic Limit (%) Non Plastic
Plasticity Index (%)
Modified PI *(%)

*BRE Digest 240:1993.
 This calculation is outside the scope of UKAS accreditation.

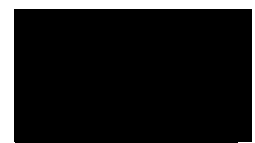
BS Soil Classification Non Plastic

Remarks

Test Code = 604



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Your Sample Ref D75
Your Project or Order No. PZ1522
Date Report Issued 05 Jul 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH13A	Depth	28.45m
Date sampled	19 Mar 2018	Date received	20 Mar 2018
Date tested	31 May 2018		
Sample type	Small disturbed sample	Sample Mass (g)	510

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Laminated and thinly bedded, soft to firm, grey CLAY and light grey, silty fine SAND.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	0.1	

Natural MC (%) 28

Liquid Limit (%) 36

Plastic Limit (%) 14

Plasticity Index (%) 22

Modified PI *(%) 22

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

BS Soil Classification C I

Remarks	NHBC Volume change potential classification is medium.
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Test Code = 604



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Our Project No PZ1522D1
Your Sample Ref D79
Your Project or Order No. PZ1522
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Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH13A	Depth	30m
Date sampled	19 Mar 2018	Date received	20 Mar 2018
Date tested	31 May 2018		
Sample type	Small disturbed sample	Sample Mass (g)	424

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Laminated and thinly bedded, firm to stiff, grey CLAY and light grey, silty fine SAND.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable		
Orientation	Not applicable		

PREPARATION DETAILS

Method of Division	Quartering		
Preparation Method	Wet sieving	Oven dried @ 40°C	
Retained 425µm (%)	0.2		

Natural MC (%)	25		
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Liquid Limit (%)	34		
Plastic Limit (%)	14		
Plasticity Index (%)	20		
Modified PI *(%)	20	*BRE Digest 240:1993. <i>This calculation is outside the scope of UKAS accreditation.</i>	

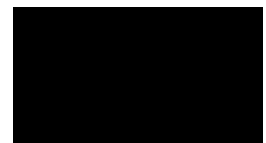
BS Soil Classification	CL		
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Remarks	NHBC Volume change potential classification is medium.		
----------------	--	--	--

Test Code = 604



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Your Sample Ref B104
Your Project or Order No. PZ1522
Date Report Issued 05 Jul 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH13A	Depth	45.7m
Date sampled	21 Mar 2018	Date received	22 Mar 2018
Date tested	01 Jun 2018		
Sample type	Bulk Disturbed	Sample Mass (g)	509

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil
Description	Stiff, grey, silty CLAY, with laminae of black SILT and light grey silty, fine SAND.

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	0.4	

Natural MC (%) 32

Liquid Limit (%) 77

Plastic Limit (%) 25

Plasticity Index (%) 52

Modified PI *(%) 51

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

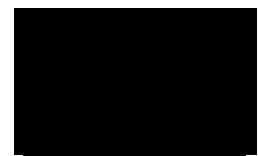
BS Soil Classification C V

Remarks NHBC Volume change potential classification is high.

Test Code = 604



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Your Sample Ref D108
Your Project or Order No. PZ1522
Date Report Issued 05 Jul 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH13A	Depth	47m
Date sampled	21 Mar 2018	Date received	22 Mar 2018
Date tested	31 May 2018		
Sample type	Small disturbed sample	Sample Mass (g)	488

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Very stiff laminated brown CLAY, with some fine gypsum crystals and some nodules of light grey, siltstone.		
Supplier	Not applicable	Source	Ex site

TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	0.4	

Natural MC (%) 35

Liquid Limit (%) 88

Plastic Limit (%) 27

Plasticity Index (%) 60

Modified PI *(%) 60

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

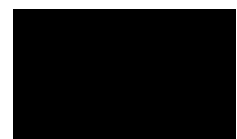
BS Soil Classification C V

Remarks NHBC Volume change potential classification is high.

Test Code = 604



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Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH13A	Depth	49m
Date sampled	21 Mar 2018	Date received	22 Mar 2018
Date tested	01 Jun 2018		
Sample type	Small disturbed sample	Sample Mass (g)	500

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Very stiff laminated brown CLAY, with some fine gypsum crystals and some nodules of light grey, siltstone.		

Supplier	Not applicable	Source	Ex site
-----------------	----------------	---------------	---------

TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Whole	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	0.8	

Natural MC (%) 25

Liquid Limit (%) 75

Plastic Limit (%) 23

Plasticity Index (%) 51

Modified PI *(%) 51

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

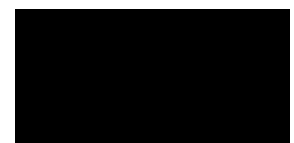
BS Soil Classification C V

Remarks NHBC Volume change potential classification is high.

Test Code = 604



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Your Sample Ref D5
Your Project or Order No. PZ1522
Date Report Issued 21 Nov 2017

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH14	Depth	2.6m
Date sampled	18 Sep 2017	Date received	18 Sep 2017
Date tested	23 Oct 2017		
Sample type	Small disturbed sample	Sample Mass (g)	565

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	MADE GROUND comprising - soft, laminated, light brown and dark grey, very sity, sandy, gravelly clay. Gravel is rounded to sub-angular, flint, quartz, brick, shell and breeze block.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	13.1	

Natural MC (%) 24

Liquid Limit (%) 36

Plastic Limit (%) 20

Plasticity Index (%) 16

Modified PI *(%) 14

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

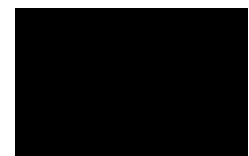
BS Soil Classification C I

Remarks NHBC Volume change potential classification is low.

Test Code = 604



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Our Project No PZ1522D1
Your Sample Ref B37
Your Project or Order No. PZ1522
Date Report Issued 21 Nov 2017

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH14	Depth	17.6-18.1m
Date sampled	18 Sep 2017	Date received	18 Sep 2017
Date tested	18 Oct 2017		
Sample type	Bulk Disturbed	Sample Mass (g)	820

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Greyish brown, slightly clayey, silty, fine, medium and coarse SAND. Gravel is fine and medium sub-rounded to sub-angular flint.		

Supplier	Not applicable	Source	Ex site
-----------------	----------------	---------------	---------

TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	38.1	

Natural MC (%) 24

Liquid Limit (%) 25

Plastic Limit (%) Non Plastic

Plasticity Index (%)

Modified PI *(%)

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

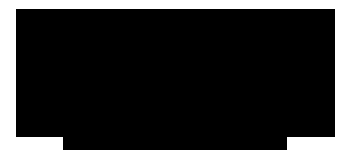
BS Soil Classification Non Plastic

Remarks

Test Code = 604



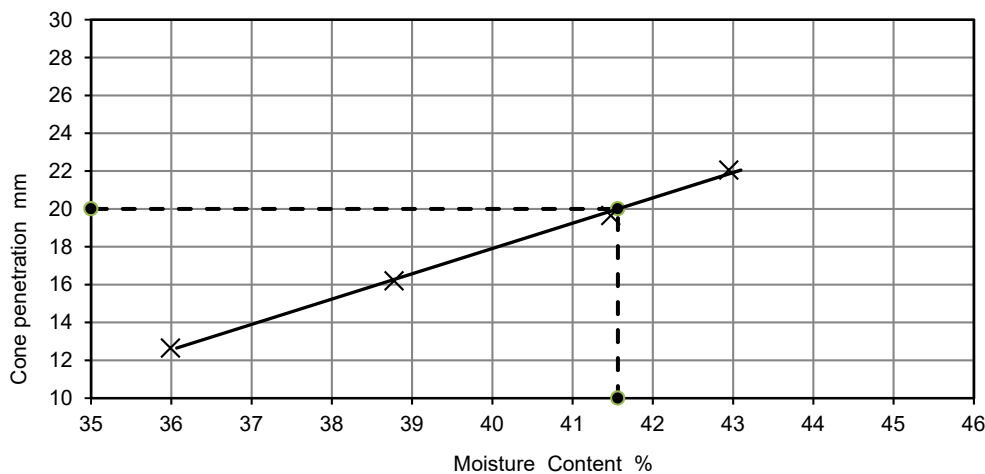
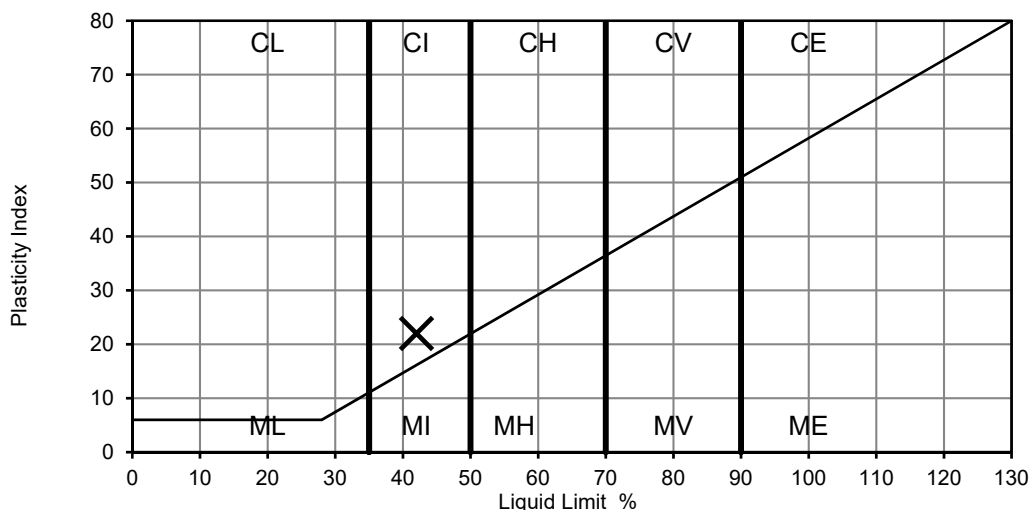
Peter Hardiment (Operations Manager)



LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH15
Sample Description:	Light brown clayey silty SAND	Sample Depth (m)	14.30
		Sample Reference	B43



Preparation: Material was washed and oven dried at below 50°C

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 31 %
 Percentage Passing 425µm sieve: 96 %
 Liquid Limit: 42 %
 Plastic Limit: 20 %
 Plasticity Index: 22

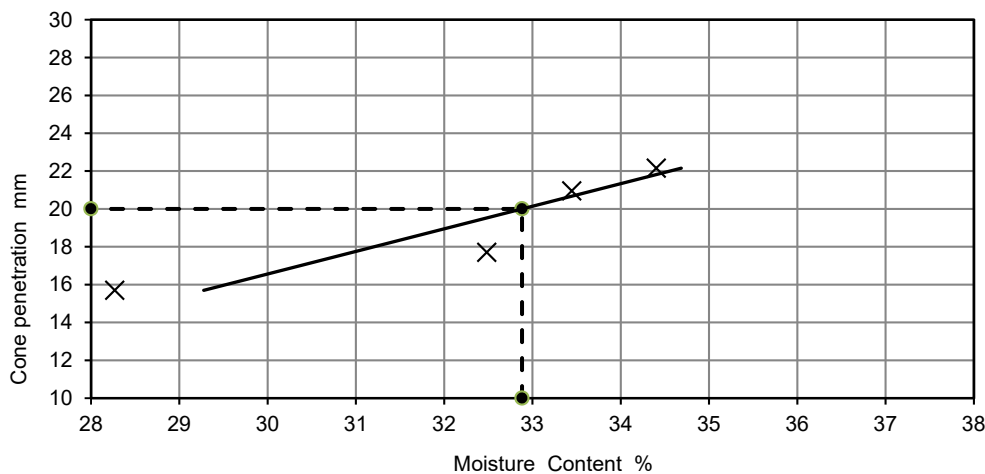
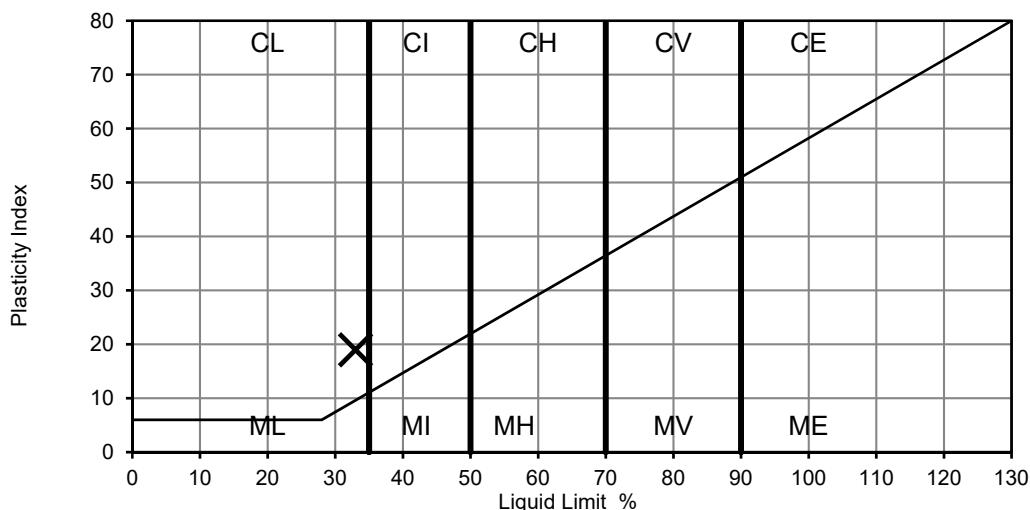
Liquidity Index: 0.50
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 21

Remarks	Approved	Date	Sheet No.:
	MW	30/01/2018	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH15
Sample Description:	Grey slightly sandy silty CLAY	Sample Depth (m)	27.60
		Sample Reference	D70



Preparation: Material was natural

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 28 %
 Percentage Passing 425µm sieve: 100 %
 Liquid Limit: 33 %
 Plastic Limit: 14 %
 Plasticity Index: 19

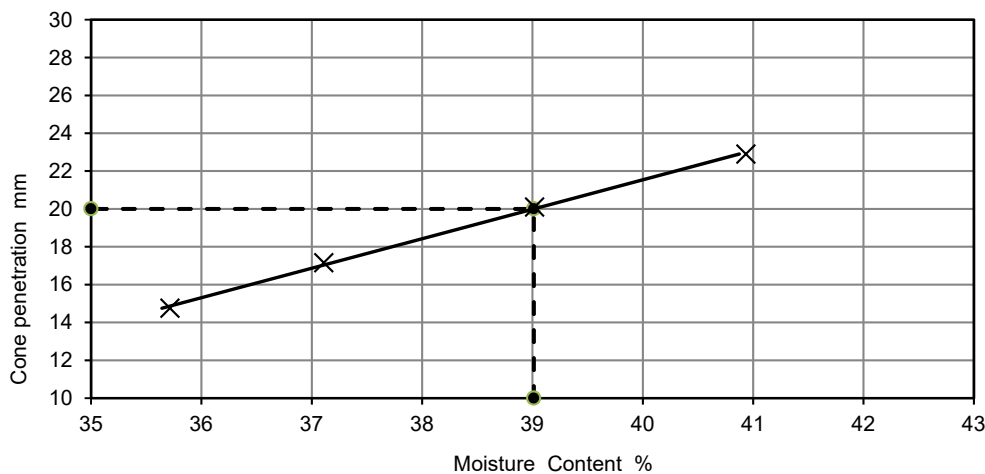
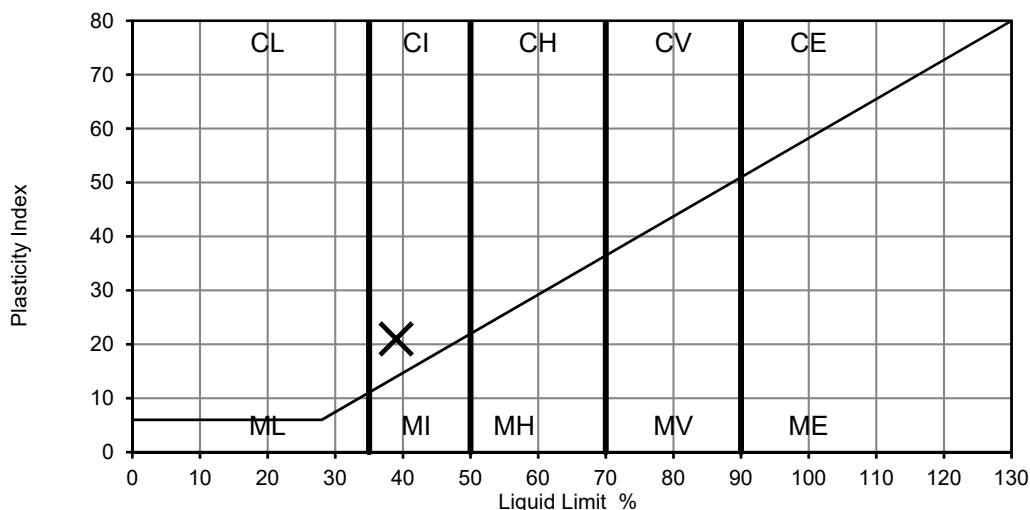
Liquidity Index: 0.74
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 19

Remarks	Approved	Date	Sheet No.:
	MW	30/01/2018	1 of 1

LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX, & LIQUIDITY INDEX

BS 1377 : Part 2 : 1990, clause 4.3 and 5

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH15
Sample Description:	Grey mottled dark grey slightly sandy very silty CLAY	Sample Depth (m)	30.00
		Sample Reference	D74



Preparation: Material was natural

Results: As Received Moisture Content: (BS1377 : Part 2 : Clause 3 : 1990) 28 %
 Percentage Passing 425µm sieve: 99 %
 Liquid Limit: 39 %
 Plastic Limit: 18 %
 Plasticity Index: 21

Liquidity Index: 0.48
 Modified Plasticity Index: (NHBC Standards Chapter 4.2) 21

Remarks	Approved	Date	Sheet No.:
	MW	30/01/2018	1 of 1

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Our reference No. NCCL2017102620-604

Our Project No PZ1522D1

Your Sample Ref B3

Your Project or Order No. PZ1522

Date Report Issued 21 Nov 2017

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH16	Depth	2-2.5m
Date sampled	25 Oct 2017	Date received	26 Oct 2017
Date tested	06 Nov 2017		
Sample type	Bulk Disturbed	Sample Mass (g)	613

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil
Description	Very soft to soft brown slightly silty, sandy CLAY.

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	1.3	

Natural MC (%) 34

Liquid Limit (%) 38

Plastic Limit (%) 19

Plasticity Index (%) 19

Modified PI *(%) 18

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

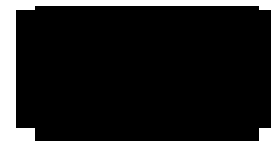
BS Soil Classification C I

Remarks	NHBC Volume change potential classification is low.
----------------	---

Test Code = 604



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Our reference No. NCCL201710275-604
Our Project No PZ1522D1
Your Sample Ref B10275
Your Project or Order No. PZ1522
Date Report Issued 28 Nov 2017

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH16	Depth	37-37.5m
Date sampled	25 Oct 2017	Date received	26 Oct 2017
Date tested	06 Nov 2017		
Sample type	Bulk Disturbed	Sample Mass (g)	918

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil
Description	Soft, dark grey, clayey, silty, fine and medium SAND with some shell fragments.

Supplier	Not applicable	Source	Ex site
-----------------	----------------	---------------	---------

TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	2.0	

Natural MC (%) 31

Liquid Limit (%) 23

Plastic Limit (%) 13

Plasticity Index (%) 10

Modified PI *(%) 10

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

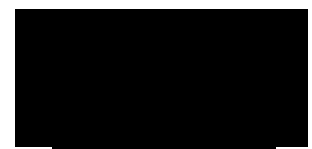
BS Soil Classification CL

Remarks	NHBC Volume change potential classification is low.
----------------	---

Test Code = 604



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Our Project No PZ1522D1

Your Sample Ref B6

Your Project or Order No. PZ1522

Date Report Issued 07 Nov 2017

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH17	Depth	2.0-2.5m
Date sampled	18 Sep 2017	Date received	18 Sep 2017
Date tested	23 Oct 2017		
Sample type	Bulk Disturbed	Sample Mass (g)	467

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil
Description	Soft, greenish grey, clayey, very sandy, medium and coarse SILT.

Supplier	Not applicable	Source	Ex site
-----------------	----------------	---------------	---------

TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	3.1	

Natural MC (%) 35

Liquid Limit (%) 34

Plastic Limit (%) 22

Plasticity Index (%) 12

Modified PI *(%) 12

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

BS Soil Classification CL

Remarks	NHBC Volume change potential classification is low.
----------------	---

Test Code = 604



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Our Project No PZ1522D1

Your Sample Ref D44

Your Project or Order No. PZ1522

Date Report Issued 03 Nov 2017

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH17	Depth	29.5m
Date sampled	18 Sep 2017	Date received	18 Sep 2017
Date tested	26 Oct 2017		
Sample type	Small disturbed sample	Sample Mass (g)	505

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Firm to stiff, light grey, very sandy, silty CLAY.		

Supplier	Not applicable	Source	Ex site
-----------------	----------------	---------------	---------

TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	0.4	

Natural MC (%) 40

Liquid Limit (%) 44

Plastic Limit (%) 17

Plasticity Index (%) 27

Modified PI *(%) 27

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

BS Soil Classification C I

Remarks NHBC Volume change potential classification is medium.

Test Code = 604



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Our Project No PZ1522D1

Your Sample Ref D49

Your Project or Order No. PZ1522

Date Report Issued 03 Nov 2017

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH17	Depth	32.6m
Date sampled	18 Sep 2017	Date received	18 Sep 2017
Date tested	26 Oct 2017		
Sample type	Small disturbed sample	Sample Mass (g)	476

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Stiff, laminated, dark grey, organic CLAY and fine, silty SAND.		

Supplier	Not applicable	Source	Ex site
-----------------	----------------	---------------	---------

TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	0.3	

Natural MC (%) 25

Liquid Limit (%) 54

Plastic Limit (%) 23

Plasticity Index (%) 31

Modified PI *(%) 31

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

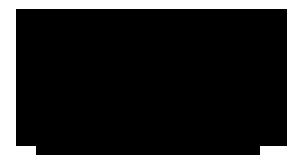
BS Soil Classification C H

Remarks	NHBC Volume change potential classification is medium.
----------------	--

Test Code = 604



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Our Project No PZ1522D1

Your Sample Ref B17

Your Project or Order No. PZ1522

Date Report Issued 28 Nov 2017

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH18	Depth	9.6-10.0m
Date sampled	26 Sep 2017	Date received	26 Sep 2017
Date tested	26 Oct 2017		
Sample type	Bulk Disturbed	Sample Mass (g)	543

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil
Description	Dark grey, clayey, very silty fine and medium SAND, weathering to brown.

Supplier	Not applicable	Source	Ex site
-----------------	----------------	---------------	---------

TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	0.2	

Natural MC (%) 38

Liquid Limit (%) 35

Plastic Limit (%) 18

Plasticity Index (%) 17

Modified PI *(%) 17

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.
BS Soil Classification C I

Remarks	NHBC Volume change potential classification is low.
----------------	---

Test Code = 604



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Our Project No PZ1522D1

Your Sample Ref B45

Your Project or Order No. PZ1522

Date Report Issued 28 Nov 2017

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH18	Depth	34.8-35m
Date sampled	26 Sep 2017	Date received	26 Sep 2017
Date tested	26 Oct 2017		
Sample type	Bulk Disturbed	Sample Mass (g)	530

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil
Description	Firm dark grey, sandy, very silty CLAY weathering to brown.

Supplier	Not applicable	Source	Ex site
-----------------	----------------	---------------	---------

TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	1.2	

Natural MC (%) 26

Liquid Limit (%) 45

Plastic Limit (%) 19

Plasticity Index (%) 26

Modified PI *(%) 26

*BRE Digest 240:1993.

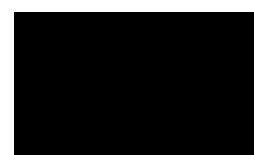
This calculation is outside the scope of UKAS accreditation.
BS Soil Classification C I

Remarks NHBC Volume change potential classification is medium.

Test Code = 604



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Our Project No PZ1522D1

Your Sample Ref D48

Your Project or Order No. PZ1522

Date Report Issued 28 Nov 2017

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH18	Depth	38m
Date sampled	26 Sep 2017	Date received	26 Sep 2017
Date tested	26 Oct 2017		
Sample type	Small disturbed sample	Sample Mass (g)	492

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Firm to stiff, dark grey, very clayey, fine, medium and coarse SILT.		

Supplier	Not applicable	Source	Ex site
-----------------	----------------	---------------	---------

TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	0.4	

Natural MC (%) 26

Liquid Limit (%) 52

Plastic Limit (%) 22

Plasticity Index (%) 30

Modified PI *(%) 30

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

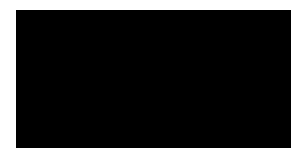
BS Soil Classification C H

Remarks	NHBC Volume change potential classification is medium.
----------------	--

Test Code = 604



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Our Project No PZ1522D1

Your Sample Ref D50

Your Project or Order No. PZ1522

Date Report Issued 28 Nov 2017

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH18	Depth	40m
Date sampled	26 Sep 2017	Date received	26 Sep 2017
Date tested	26 Oct 2017		
Sample type	Small disturbed sample	Sample Mass (g)	714

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Dark grey, very clayey, silty fine and medium SAND.		

Supplier	Not applicable	Source	Ex site
-----------------	----------------	---------------	---------

TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	3.8	

Natural MC (%) 31

Liquid Limit (%) 24

Plastic Limit (%) Non Plastic

Plasticity Index (%)

Modified PI *(%) *BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

BS Soil Classification Non Plastic

Remarks

Test Code = 604



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Our Project No PZ1522D1
Your Sample Ref U9
Your Project or Order No. PZ1522
Date Report Issued 14 Mar 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	WS1	Depth	4m
Date sampled	05 Dec 2017	Date received	05 Dec 2017
Date tested	19 Feb 2018		
Sample type	Undisturbed Sample	Sample Mass (g)	419

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Soft laminated grey silty CLAY, with numerous lenses & laminae of black organic material.		

Supplier	Not applicable	Source	Ex site
-----------------	----------------	---------------	---------

TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Hand picking	Oven dried @ 40°C
Retained 425µm (%)	0.0	

Natural MC (%) 69

Liquid Limit (%) 82

Plastic Limit (%) 28

Plasticity Index (%) 54

Modified PI *(%) 54

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

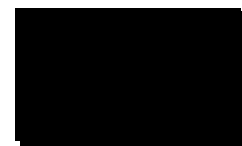
BS Soil Classification C V

Remarks	NHBC Volume change potential classification is high.
----------------	--

Test Code = 604



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Our Project No PZ1522D1
Your Sample Ref U8
Your Project or Order No. PZ1522
Date Report Issued 14 Mar 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	WS3	Depth	3m
Date sampled	06 Dec 2017	Date received	
Date tested	06 Mar 2018		
Sample type	Undisturbed Sample	Sample Mass (g)	413

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil
Description	Soft, grey very silty CLAY with numerous layers of organic matter.

Supplier	Not applicable	Source	Ex site
-----------------	----------------	---------------	---------

TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	0.2	

Natural MC (%) 77

Liquid Limit (%) 85

Plastic Limit (%) 32

Plasticity Index (%) 53

Modified PI *(%) 53

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

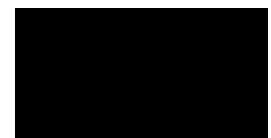
BS Soil Classification C V

Remarks	NHBC Volume change potential classification is high.
----------------	--

Test Code = 604



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Our Project No PZ1522D1
Your Sample Ref U9
Your Project or Order No. PZ1522
Date Report Issued 14 Mar 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	WS3	Depth	4m
Date sampled	06 Dec 2017	Date received	
Date tested	19 Feb 2018		
Sample type	Undisturbed Sample	Sample Mass (g)	656

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Laminated and thinly bedded, black and dark grey-green, silty CLAY.		

Supplier	Not applicable	Source	Ex site
-----------------	----------------	---------------	---------

TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Hand picking	Oven dried @ 40°C
Retained 425µm (%)		

Natural MC (%) 80

Liquid Limit (%) 81

Plastic Limit (%) 26

Plasticity Index (%) 55

Modified PI *(%) 55

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

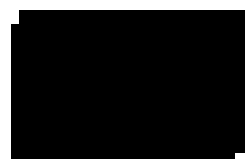
BS Soil Classification C V

Remarks	NHBC Volume change potential classification is high.
----------------	--

Test Code = 604



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Our reference No. GTS2171205010-604
Our Project No PZ1522D1
Your Sample Ref B9
Your Project or Order No. PZ1522
Date Report Issued 14 Mar 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	WS6	Depth	2.5m
Date sampled	05 Dec 2017	Date received	
Date tested	26 Feb 2018		
Sample type	Bulk Disturbed	Sample Mass (g)	686

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil
Description	Soft, light brown and grey, very organic, CLAY.

Supplier	Not applicable	Source	Ex site
-----------------	----------------	---------------	---------

TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	0.5	

Natural MC (%) 65

Liquid Limit (%) 74

Plastic Limit (%) 29

Plasticity Index (%) 44

Modified PI *(%) 44

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

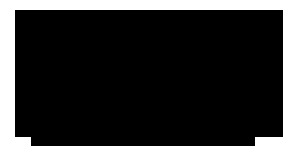
BS Soil Classification C V

Remarks	NHBC Volume change potential classification is high.
----------------	--

Test Code = 604



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Our Project No PZ1522D1
Your Sample Ref U8
Your Project or Order No. PZ1522
Date Report Issued 26 Mar 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	WS7	Depth	3.6m
Date sampled	06 Dec 2017	Date received	08 Feb 2018
Date tested	26 Feb 2018		
Sample type	Undisturbed Sample	Sample Mass (g)	563

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Stiff, laminated, grey, slightly ssandy CLAY with numerous lenses of black organic material and roots.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	4.1	

Natural MC (%) 42

Liquid Limit (%) 66

Plastic Limit (%) 32

Plasticity Index (%) 34

Modified PI *(%) 33

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

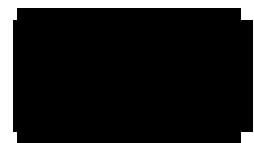
BS Soil Classification C H

Remarks NHBC Volume change potential classification is medium.

Test Code = 604



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Our reference No. GTS2171206024-604
Our Project No PZ1522D1
Your Sample Ref U9
Your Project or Order No. PZ1522
Date Report Issued 26 Mar 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	WS7	Depth	4.8m
Date sampled	06 Dec 2017	Date received	08 Feb 2018
Date tested	01 Mar 2018		
Sample type	Undisturbed Sample	Sample Mass (g)	427

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Firm to stiff, laminated, grey CLAY and black, organic, clayey SILT. Few shell fragments.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	0.8	

Natural MC (%) 49

Liquid Limit (%) 54

Plastic Limit (%) 20

Plasticity Index (%) 34

Modified PI *(%) 34

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

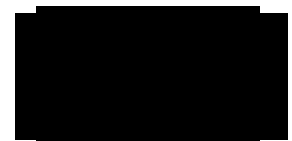
BS Soil Classification C H

Remarks	NHBC Volume change potential classification is medium.
----------------	--

Test Code = 604



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Our reference No. GTS2171206026-604
Our Project No PZ1522D1
Your Sample Ref U11
Your Project or Order No. PZ1522
Date Report Issued 26 Mar 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	WS7	Depth	6.2m
Date sampled	06 Dec 2017	Date received	08 Feb 2018
Date tested	26 Feb 2018		
Sample type	Undisturbed Sample	Sample Mass (g)	627

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Soft to firm, brown, silty CLAY with lenses of black, organic matter.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	2.9	

Natural MC (%) 71

Liquid Limit (%) 80

Plastic Limit (%) 33

Plasticity Index (%) 48

Modified PI *(%) 47

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

BS Soil Classification C V

Remarks	NHBC Volume change potential classification is high.
----------------	--

Test Code = 604



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Your Sample Ref B4
Your Project or Order No. PZ1522
Date Report Issued 30 Apr 2018

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**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	WS9	Depth	0.8m
Date sampled	04 Dec 2017	Date received	04 Dec 2017
Date tested	05 Apr 2018		
Sample type	Bulk Disturbed	Sample Mass (g)	655

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	MADE GROUND comprising dark grey organic very gravelly, very sandy silty clay. Gravel is fine to medium angular to rounded flint, brick & quartz. Some roots.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	27.2	

Natural MC (%) 35

Liquid Limit (%) 60

Plastic Limit (%) 27

Plasticity Index (%) 33

Modified PI *(%) 24

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

BS Soil Classification C H

Remarks NHBC Volume change potential classification is medium.

Test Code = 604



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Your Project or Order No. PZ1522
Date Report Issued 26 Mar 2018

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**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	WS9	Depth	1.7m
Date sampled	04 Dec 2017	Date received	08 Feb 2018
Date tested	26 Feb 2018		
Sample type	Undisturbed Sample	Sample Mass (g)	530

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Stiff, grey, silty CLAY with occasional shell fragments and some roots.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	0.6	

Natural MC (%) 38

Liquid Limit (%) 65

Plastic Limit (%) 29

Plasticity Index (%) 37

Modified PI *(%) 37

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

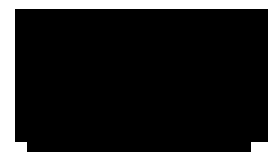
BS Soil Classification C H

Remarks	NHBC Volume change potential classification is medium.
----------------	--

Test Code = 604



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Your Sample Ref U8
Your Project or Order No. PZ1522
Date Report Issued 26 Mar 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	WS9	Depth	3.5m
Date sampled	04 Dec 2017	Date received	08 Feb 2018
Date tested	26 Feb 2018		
Sample type	Undisturbed Sample	Sample Mass (g)	382

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Soft to firm, laminated, grey CLAY with lenses of brown, fibrous peat.		

Supplier	Not applicable	Source	Ex site
-----------------	----------------	---------------	---------

TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	1.2	

Natural MC (%) 68

Liquid Limit (%) 84

Plastic Limit (%) 33

Plasticity Index (%) 51

Modified PI *(%) 50

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

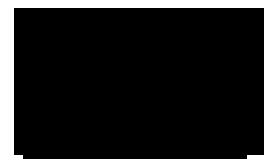
BS Soil Classification C V

Remarks	NHBC Volume change potential classification is high.
----------------	--

Test Code = 604



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Your Sample Ref D6
Your Project or Order No. PZ1522
Date Report Issued 23 May 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	TP1	Depth	1.2m
Date sampled	07 Dec 2017	Date received	08 Dec 2017
Date tested	27 Apr 2018		
Sample type	Small disturbed sample	Sample Mass (g)	580

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	MADE GROUND - comprising firm to stiff dark grey, gravelly, sandy, clayey SILT. Gravel is fine and medium, angular to rounded, flint, coal, glass, brick and quartz.		

Supplier	Not applicable	Source	Ex site
-----------------	----------------	---------------	---------

TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	8.2	

Natural MC (%) 25

Liquid Limit (%) 45

Plastic Limit (%) 27

Plasticity Index (%) 18

Modified PI *(%) 16

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

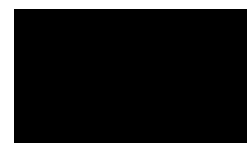
BS Soil Classification M I

Remarks NHBC Volume change potential classification is low.

Test Code = 604



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Your Project or Order No. PZ1522
Date Report Issued 23 May 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	TP1	Depth	2.3m
Date sampled	07 Dec 2017	Date received	08 Dec 2017
Date tested	11 Apr 2018		
Sample type	Small disturbed sample	Sample Mass (g)	481

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Soft to firm grey silty, slightly sandy CLAY, with numerous lenses of brown, fibrous peat. Trace of fine flint gravel.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	0.7	

Natural MC (%)	30
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Liquid Limit (%)	44
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Plastic Limit (%)	21
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Plasticity Index (%)	24
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Modified PI *(%)	23
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*BRE Digest 240:1993.

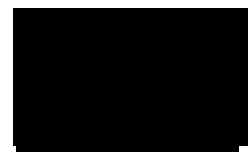
This calculation is outside the scope of UKAS accreditation.
BS Soil Classification C I

Remarks	NHBC Volume change potential classification is medium.
----------------	--

Test Code = 604



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Your Project or Order No. PZ1522
Date Report Issued 23 May 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	TP1B	Depth	1.8m
Date sampled	14 Dec 2017	Date received	15 Dec 2017
Date tested	27 Apr 2018		
Sample type	Small disturbed sample	Sample Mass (g)	472

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil
Description	MADE GROUND - comprising firm to stiff dark grey slightly organic, slightly gravelly, clayey SILT. Gravel is fine and medium, ash, brick, coal and glass.

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	5.9	

Natural MC (%) 29

Liquid Limit (%) 52

Plastic Limit (%) 29

Plasticity Index (%) 23

Modified PI *(%) 21

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

BS Soil Classification M H

Remarks NHBC Volume change potential classification is medium.

Test Code = 604



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Date Report Issued 23 May 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	TP1B	Depth	2m
Date sampled	14 Dec 2017	Date received	15 Dec 2017
Date tested	27 Apr 2018		
Sample type	Small disturbed sample	Sample Mass (g)	352

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Soft to firm, dark grey organic, clayey SILT.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	1.6	

Natural MC (%) 100

Liquid Limit (%) 126

Plastic Limit (%) 51

Plasticity Index (%) 75

Modified PI *(%) 73

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

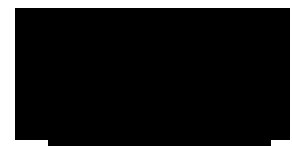
BS Soil Classification M E

Remarks NHBC Volume change potential classification is high.

Test Code = 604



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Our Project No PZ1522D1
Your Sample Ref U2
Your Project or Order No. PZ1522
Date Report Issued 09 Oct 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	WS20	Depth	1.4m
Date sampled	11 Sep 2018	Date received	11 Sep 2018
Date tested	26 Sep 2018		
Sample type	Undisturbed Sample	Sample Mass (g)	466

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil
Description	Soft, grey sandy, very silty CLAY.

Supplier	Not applicable	Source	Ex site
-----------------	----------------	---------------	---------

TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	0.3	

Natural MC (%) 32

Liquid Limit (%) 38

Plastic Limit (%) 20

Plasticity Index (%) 18

Modified PI *(%) 18

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

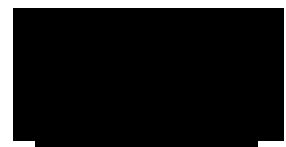
BS Soil Classification C I

Remarks NHBC Volume change potential classification is low.

Test Code = 604



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Date Report Issued 09 Oct 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	WS20	Depth	2.6m
Date sampled	11 Sep 2018	Date received	11 Sep 2018
Date tested	26 Sep 2018		
Sample type	Undisturbed Sample	Sample Mass (g)	502

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Laminated, black organic very silty CLAY, dark grey SILT and light grey sandy SILT.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	0.0	

Natural MC (%) 50

Liquid Limit (%) 52

Plastic Limit (%) 28

Plasticity Index (%) 25

Modified PI *(%) 25

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

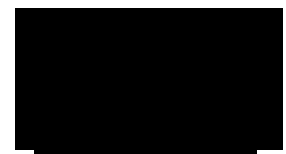
BS Soil Classification C H

Remarks	NHBC Volume change potential classification is medium.
----------------	--

Test Code = 604



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Date Report Issued 09 Oct 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	WS21	Depth	1.4m
Date sampled	12 Sep 2018	Date received	12 Sep 2018
Date tested	26 Sep 2018		
Sample type	Undisturbed Sample	Sample Mass (g)	502

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Laminated and thinly bedded soft to firm, grey and greyish brown, silty CLAY, light grey sandy SILT, dark grey slightly organic, sandy SILT and greyish brown silty fine to medium SAND, with slight hydrocarbon odour.		
Supplier	Not applicable	Source	Ex site

TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	0.8	

Natural MC (%) 28

Liquid Limit (%) 34

Plastic Limit (%) 22

Plasticity Index (%) 12

Modified PI *(%) 12

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

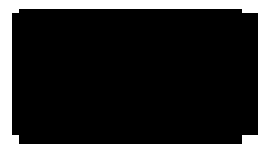
BS Soil Classification CL

Remarks NHBC Volume change potential classification is low.

Test Code = 604



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Date Report Issued 09 Oct 2018

Page 1 of 1

**Determination of Liquid Limit to BS1377-2:1990 CI 4.3 Cone Penetrometer (Definitive Method)
 and Determination of Plasticity Index to BS1377-2:1990 CI 5**

Scheme	Gt Yarmouth 3rd River Crossing		
Location	WS22	Depth	0.55m
Date sampled	10 Sep 2018	Date received	10 Sep 2018
Date tested	26 Sep 2018		
Sample type	Undisturbed Sample	Sample Mass (g)	511

If a Sample Certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	MADE GROUND - comprising laminated, soft to firm, slightly gravelly, light grey silty clay and dark grey slightly organic, silty clay. Gravel is fine and medium, sub-rounded to angular, flint, quartz and slag.		

Supplier	Not applicable	Source	Ex site
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TEST SPECIMEN

Location	Not applicable
Orientation	Not applicable

PREPARATION DETAILS

Method of Division	Quartering	
Preparation Method	Wet sieving	Oven dried @ 40°C
Retained 425µm (%)	6.9	

Natural MC (%) 23

Liquid Limit (%) 36

Plastic Limit (%) 19

Plasticity Index (%) 17

Modified PI *(%) 16

*BRE Digest 240:1993.

This calculation is outside the scope of UKAS accreditation.

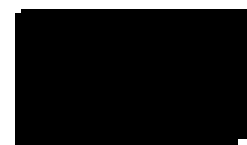
BS Soil Classification C I

Remarks NHBC Volume change potential classification is low.

Test Code = 604



Peter Hardiment (Operations Manager)

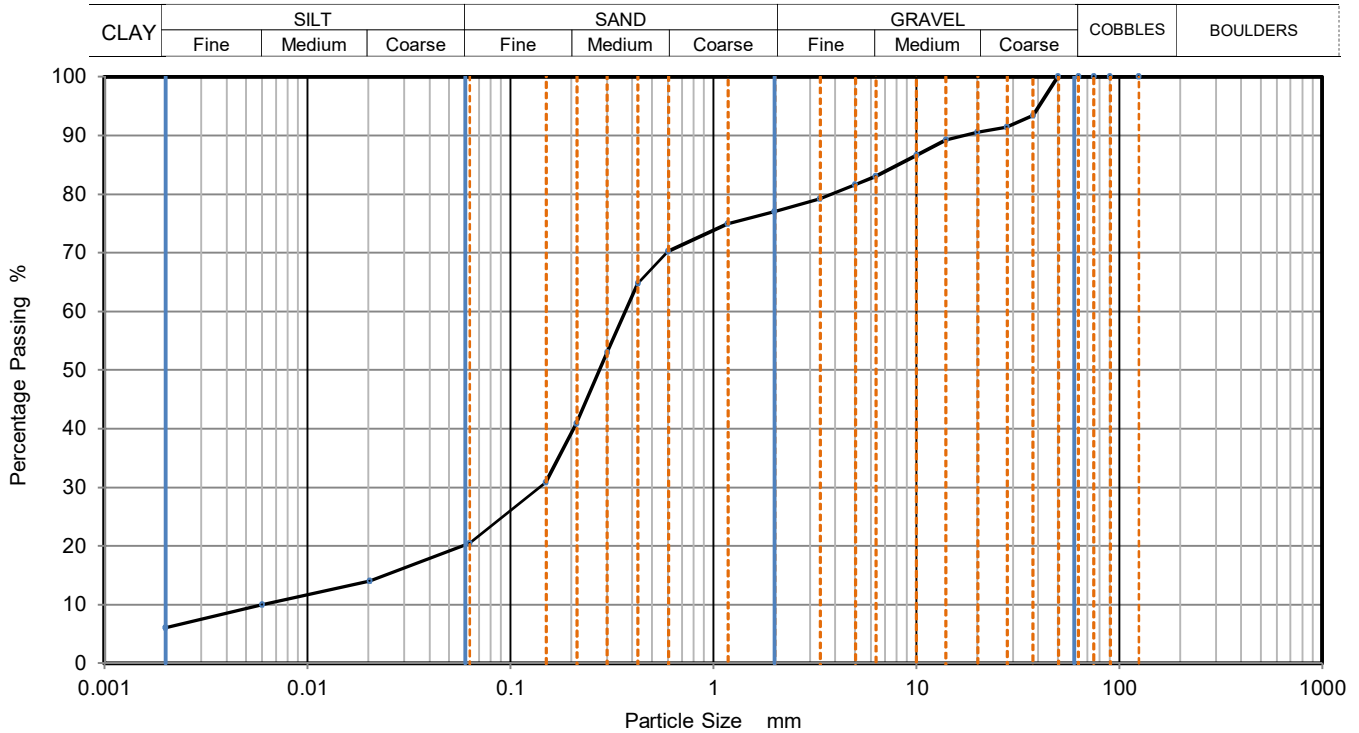




DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH1
Sample Description:	MADE GROUND (Brown and dark brown clayey silty very gravelly SAND. Gravel is of flint, quartzite and occasional brick fragments)	Sample Depth (m)	0.30
		Sample Reference	B2



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	14
90	100	0.0060	10
75	100	0.0020	6
63	100		
50	100		
37.5	93		
28	91		
20	91		
14	89		
10	87		
6.3	83		
5	82		
3.35	79		
2	77		
1.18	75		
0.6	70		
0.425	65	Particle density (assumed) 2.65 Mg/m ³	
0.3	53		
0.212	41		
0.15	31		
0.063	20		

Sample Proportions	% dry mass
Very coarse	0
Gravel	23
Sand	57
Silt	14
Clay	6

Grading Analysis		
D100	mm	
D60	mm	0.369
D30	mm	0.140
D10	mm	0.006
Uniformity Coefficient		57
Curvature Coefficient		8.2

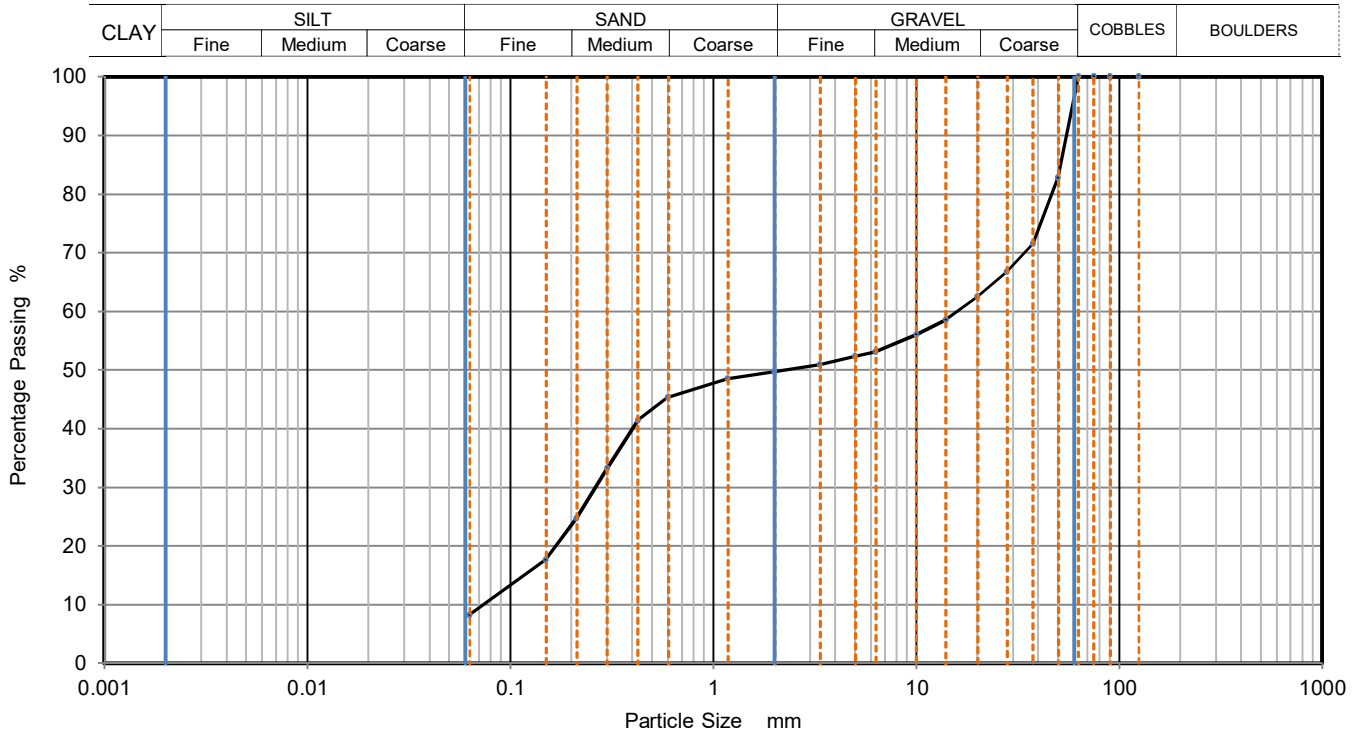
Remarks	Approved	Date	Sheet No.:
	MW	25/01/2018	1 of 1



DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH1
Sample Description:	MADE GROUND (Brown silty very sandy GRAVEL. Gravel is of flint, quartzite and concrete fragments)	Sample Depth (m)	0.50
		Sample Reference	B4



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	83		
37.5	72		
28	67		
20	63		
14	59		
10	56		
6.3	53		
5	52		
3.35	51		
2	50		
1.18	49		
0.6	45		
0.425	41		
0.3	33		
0.212	25		
0.15	18		
0.063	8		

Sample Proportions	% dry mass
Very coarse	0
Gravel	50
Sand	42
Fines <0.063mm	8

Grading Analysis		
D100	mm	
D60	mm	16.000
D30	mm	0.263
D10	mm	0.074
Uniformity Coefficient		220
Curvature Coefficient		0.059

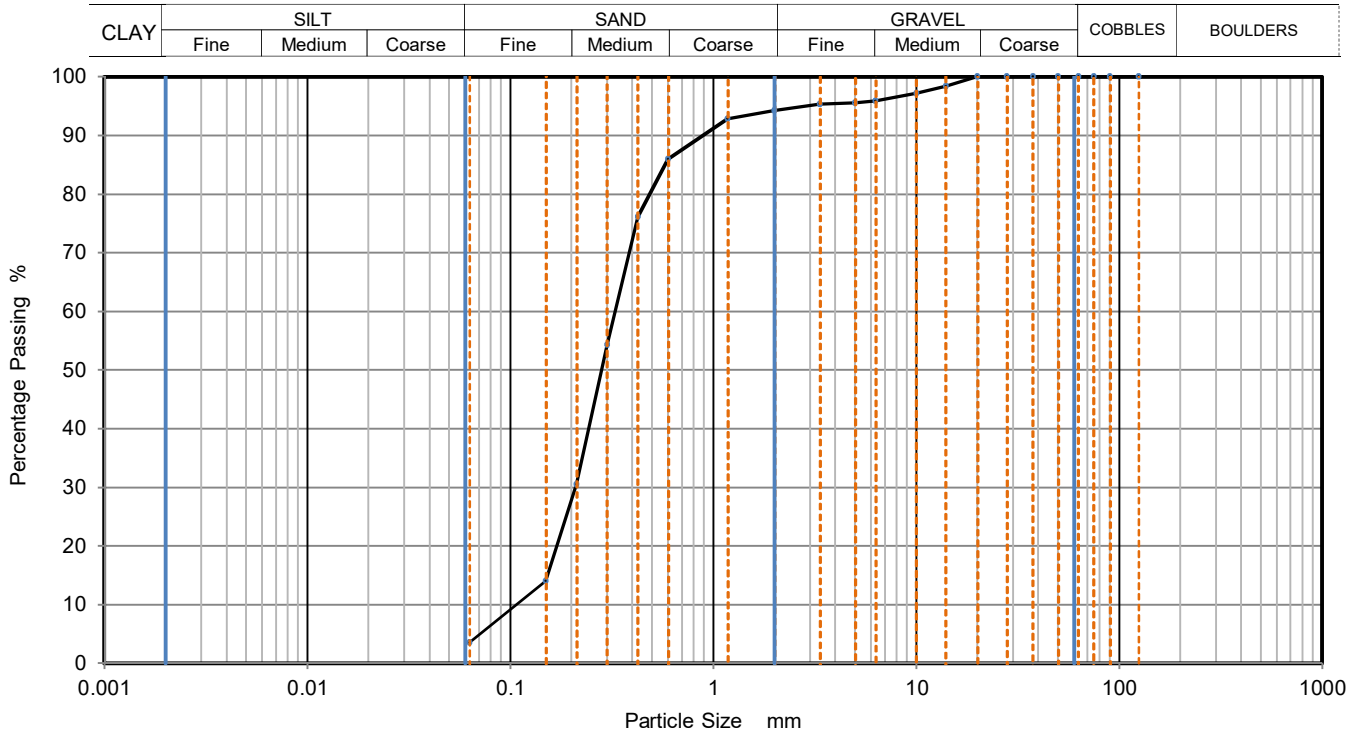
Remarks	Approved	Date	Sheet No.:
	MW	25/01/2018	1 of 1



DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH1
Sample Description:	Light brown slightly silty gravelly SAND. Gravel is of flint and quartzite	Sample Depth (m)	0.90
		Sample Reference	B5



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	98		
10	97		
6.3	96		
5	96		
3.35	95		
2	94		
1.18	93		
0.6	86		
0.425	76		
0.3	54		
0.212	31		
0.15	14		
0.063	4		

Sample Proportions	% dry mass
Very coarse	0
Gravel	6
Sand	91
Fines <0.063mm	4

Grading Analysis		
D100	mm	
D60	mm	0.329
D30	mm	0.210
D10	mm	0.107
Uniformity Coefficient		3.1
Curvature Coefficient		1.2

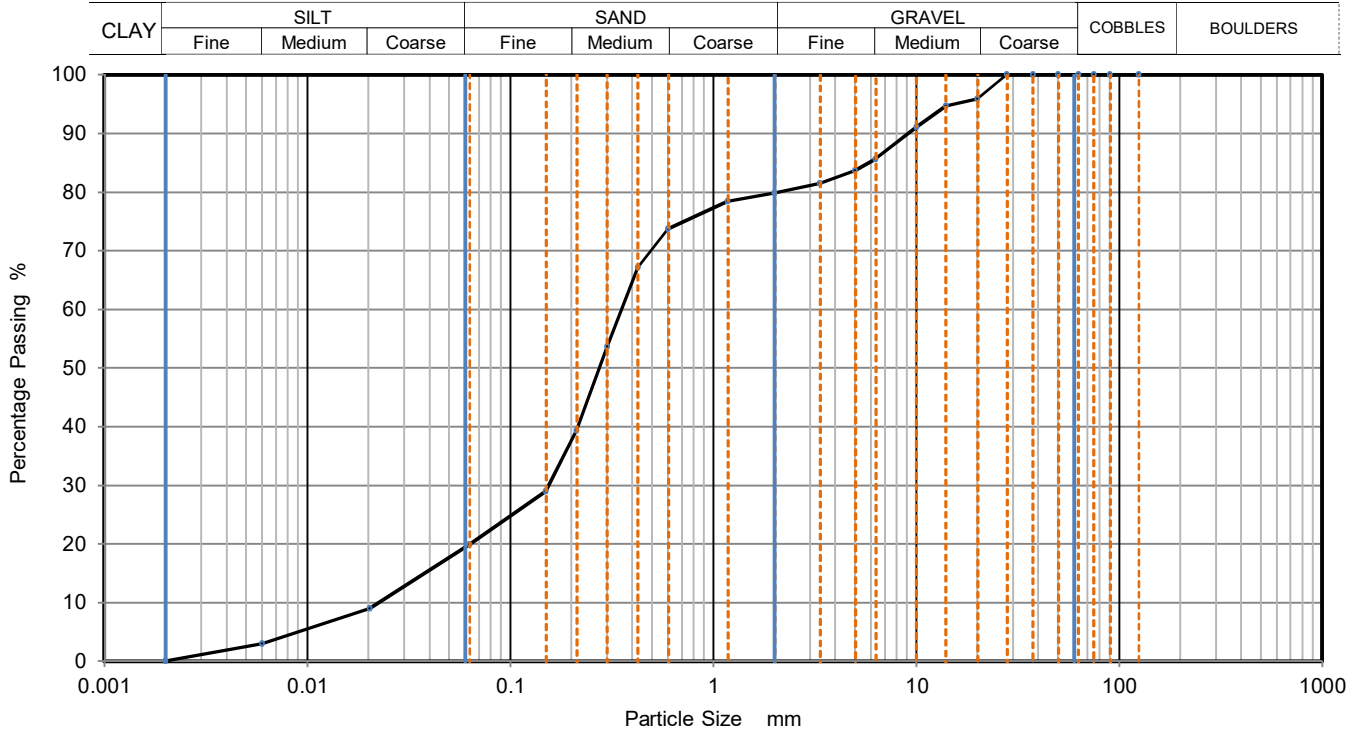
Remarks	Approved	Date	Sheet No.:
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH1
Sample Description:	Brown very silty very gravelly SAND. Gravel is of flint	Sample Depth (m)	1.20
		Sample Reference	B8



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	9
90	100	0.0060	3
75	100	0.0020	0
63	100		
50	100		
37.5	100		
28	100		
20	96		
14	95		
10	91		
6.3	86		
5	84		
3.35	82		
2	80		
1.18	78		
0.6	74		
0.425	67		
0.3	54		
0.212	39		
0.15	29		
0.063	20		
		Particle density (assumed) 2.65 Mg/m ³	

Sample Proportions	% dry mass
Very coarse	0
Gravel	20
Sand	60
Silt	20
Clay	0

Grading Analysis		
D100	mm	
D60	mm	0.353
D30	mm	0.155
D10	mm	0.023
Uniformity Coefficient		16
Curvature Coefficient		3

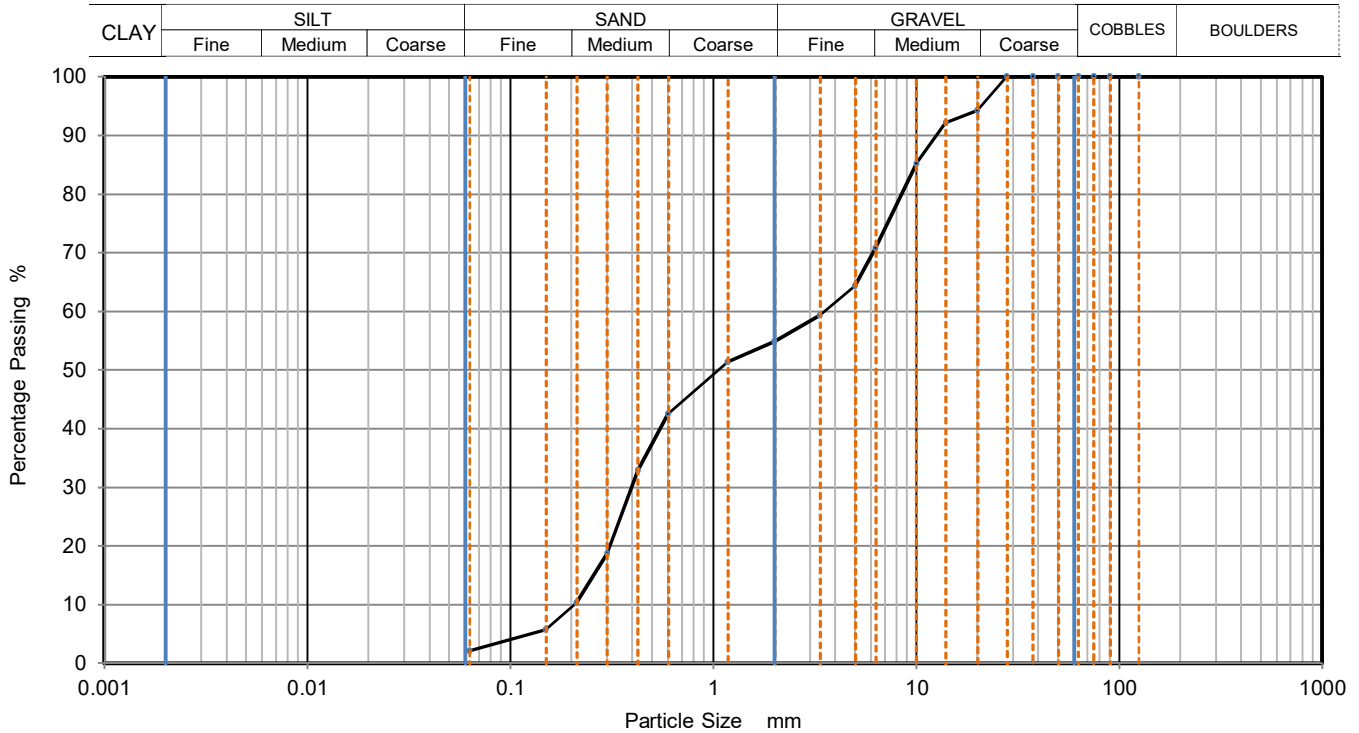
Remarks	Approved	Date	Sheet No.:
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH1
Sample Description:	Light brown slightly silty very gravelly SAND. Gravel is of flint	Sample Depth (m)	2.00
		Sample Reference	B11



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	94		
14	92		
10	85		
6.3	71		
5	64		
3.35	59		
2	55		
1.18	51		
0.6	43		
0.425	33		
0.3	19		
0.212	10		
0.15	6		
0.063	2		

Sample Proportions	% dry mass
Very coarse	0
Gravel	45
Sand	53
Fines <0.063mm	2

Grading Analysis		
D100	mm	
D60	mm	3.540
D30	mm	0.395
D10	mm	0.208
Uniformity Coefficient		17
Curvature Coefficient		0.21

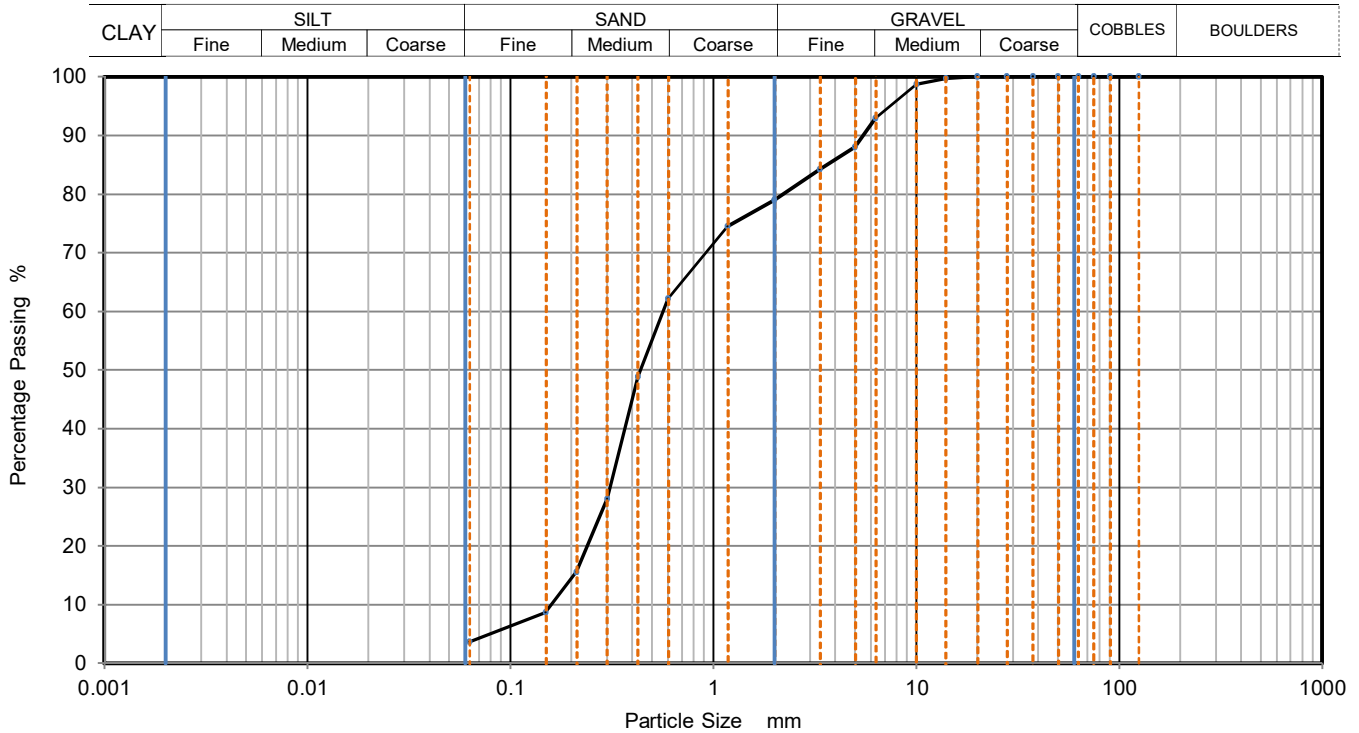
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH1
Sample Description:	Brown slightly silty very gravelly SAND. Gravel is of flint, quartzite and occasional shell fragments	Sample Depth (m)	3.00
		Sample Reference	B14



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99		
6.3	93		
5	88		
3.35	84		
2	79		
1.18	75		
0.6	62		
0.425	49		
0.3	28		
0.212	16		
0.15	9		
0.063	4		

Sample Proportions	% dry mass
Very coarse	0
Gravel	21
Sand	75
Fines <0.063mm	4

Grading Analysis		
D100	mm	
D60	mm	0.567
D30	mm	0.310
D10	mm	0.161
Uniformity Coefficient		3.5
Curvature Coefficient		1.1

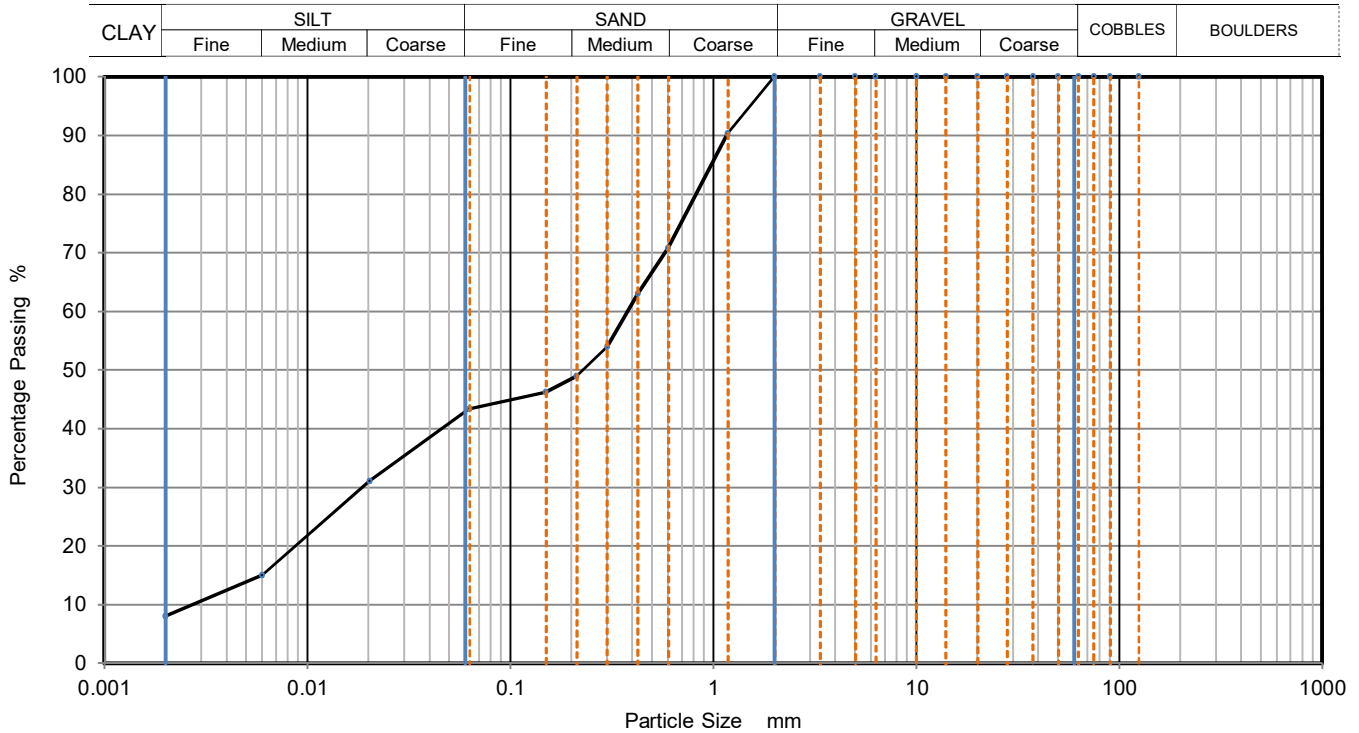
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH1
Sample Description:	Grey brown sandy clayey SILT	Sample Depth (m)	3.60
		Sample Reference	B15



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	31
90	100	0.0060	15
75	100	0.0020	8
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	90		
0.6	71		
0.425	63	Particle density (assumed) 2.65 Mg/m3	
0.3	54		
0.212	49		
0.15	46		
0.063	43		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	57
Silt	35
Clay	8

Grading Analysis		
D100	mm	
D60	mm	0.379
D30	mm	0.019
D10	mm	0.003
Uniformity Coefficient		140
Curvature Coefficient		0.34

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Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1171207003-613**
Our Project No. **PZ1522D1**
Your Sample Ref. **19**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **17-Apr-18**

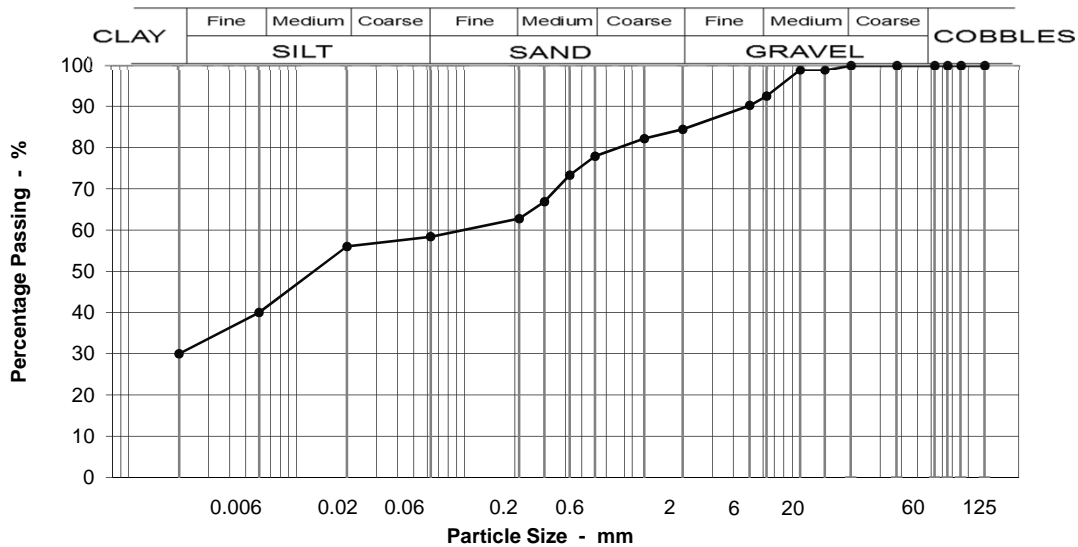
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH1 @ 5 - 6m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	99
10	99
6.3	92
5	90
2	84
1.18	82
0.600	78
0.425	73
0.300	67
0.212	63
0.063	58
0.020	56
0.006	40
0.002	30

Specification for Highway Works Classification
Table 6/2

Moisture content % 52

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	8
Fine GRAVEL	8
Coarse SAND	7
Medium SAND	15
Fine SAND	4
Silt & Clay	58

Grading Analysis	
D100	14
D60	0.12
D10	0.00
Uniformity Coefficient	>10*

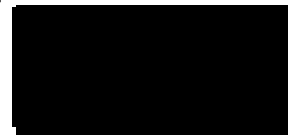
Description
Soft dark grey silty, very sandy CLAY-SILT with lenses of black organic matter.

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)

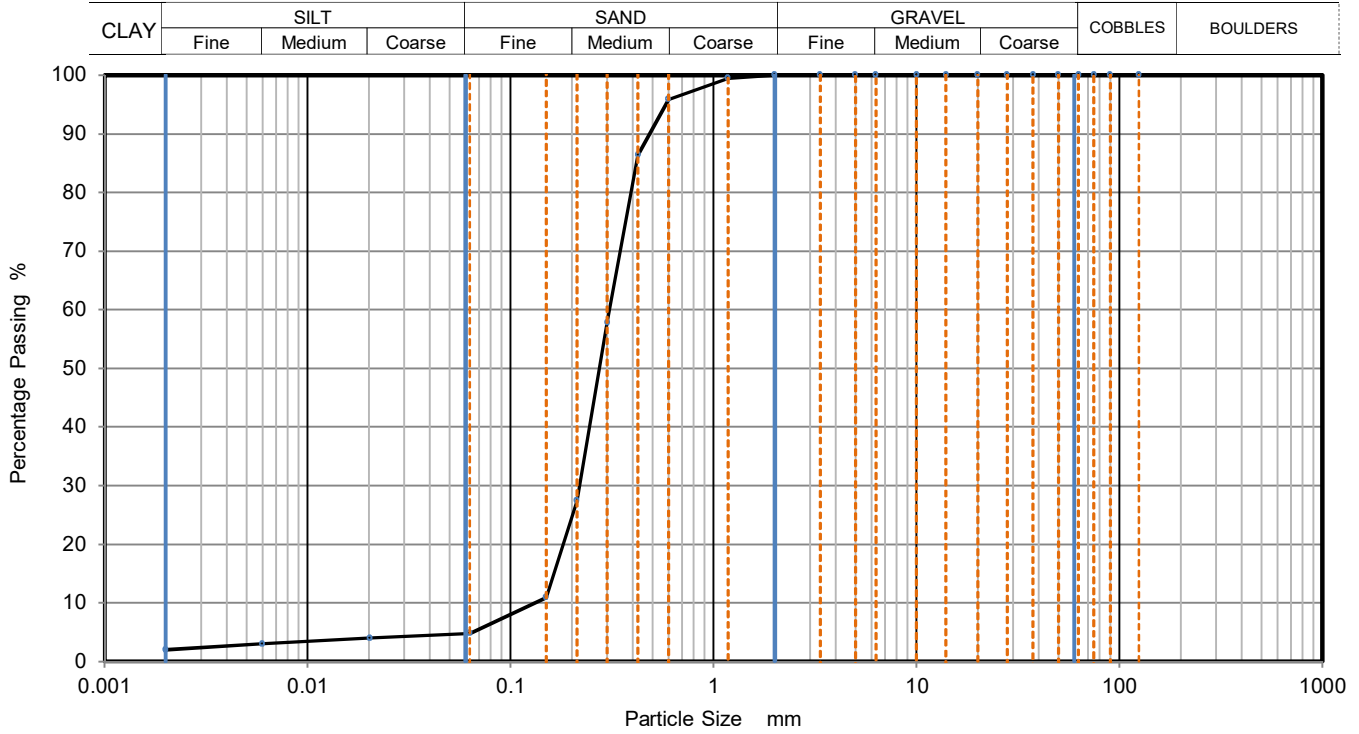




DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH1
Sample Description:	Grey slightly clayey slightly silty SAND	Sample Depth (m)	11.50
		Sample Reference	B42



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	4
90	100	0.0060	3
75	100	0.0020	2
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	96	Particle density (assumed)	
0.425	86	2.65	Mg/m3
0.3	58		
0.212	27		
0.15	11		
0.063	5		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	95
Silt	3
Clay	2

Grading Analysis		
D100	mm	
D60	mm	0.308
D30	mm	0.218
D10	mm	0.132
Uniformity Coefficient		2.3
Curvature Coefficient		1.2

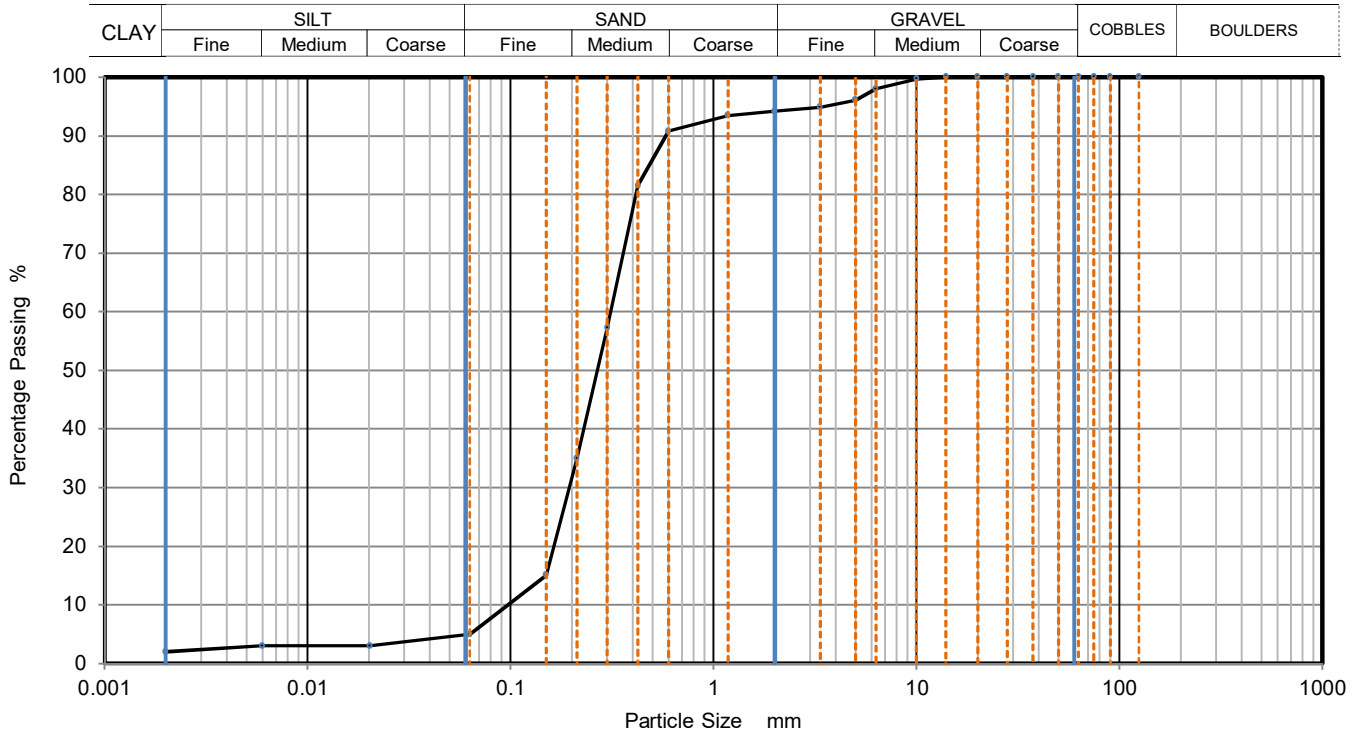
Remarks	Approved	Date	Sheet No.:
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH1
Sample Description:	Grey slightly clayey slightly silty gravelly SAND. Gravel is of flint and quartzite	Sample Depth (m)	13.50
		Sample Reference	B46



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	3
90	100	0.0060	3
75	100	0.0020	2
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	98		
5	96		
3.35	95		
2	94		
1.18	94		
0.6	91		
0.425	82	Particle density (assumed) 2.65 Mg/m ³	
0.3	57		
0.212	35		
0.15	15		
0.063	5		

Sample Proportions	% dry mass
Very coarse	0
Gravel	6
Sand	89
Silt	3
Clay	2

Grading Analysis		
D100	mm	
D60	mm	0.312
D30	mm	0.194
D10	mm	0.097
Uniformity Coefficient		3.2
Curvature Coefficient		1.3

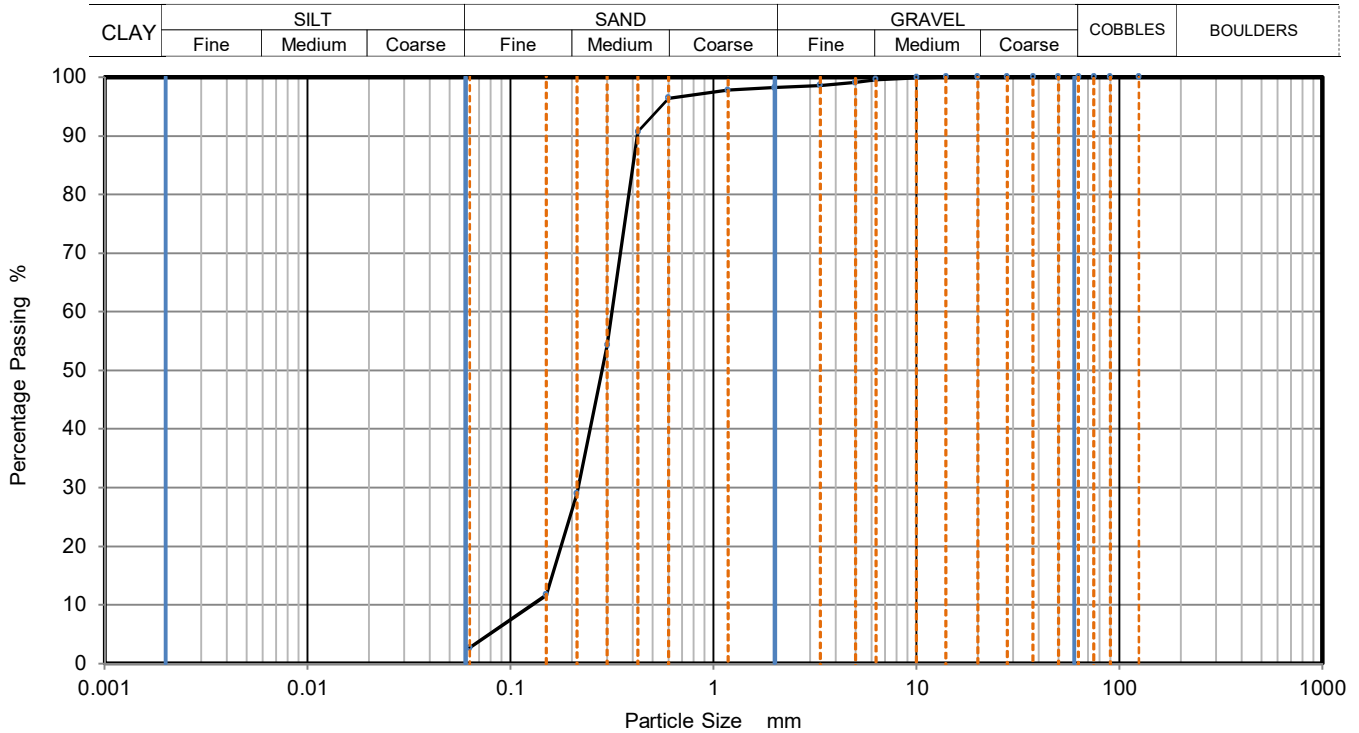
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH1
Sample Description:	Brown slightly silty slightly gravelly SAND. Gravel is of flint and shell fragments	Sample Depth (m)	15.50
		Sample Reference	B50



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	99		
3.35	99		
2	98		
1.18	98		
0.6	96		
0.425	91		
0.3	54		
0.212	29		
0.15	12		
0.063	3		

Sample Proportions	% dry mass
Very coarse	0
Gravel	2
Sand	96
Fines <0.063mm	3

Grading Analysis		
D100	mm	
D60	mm	0.317
D30	mm	0.215
D10	mm	0.127
Uniformity Coefficient		2.5
Curvature Coefficient		1.1

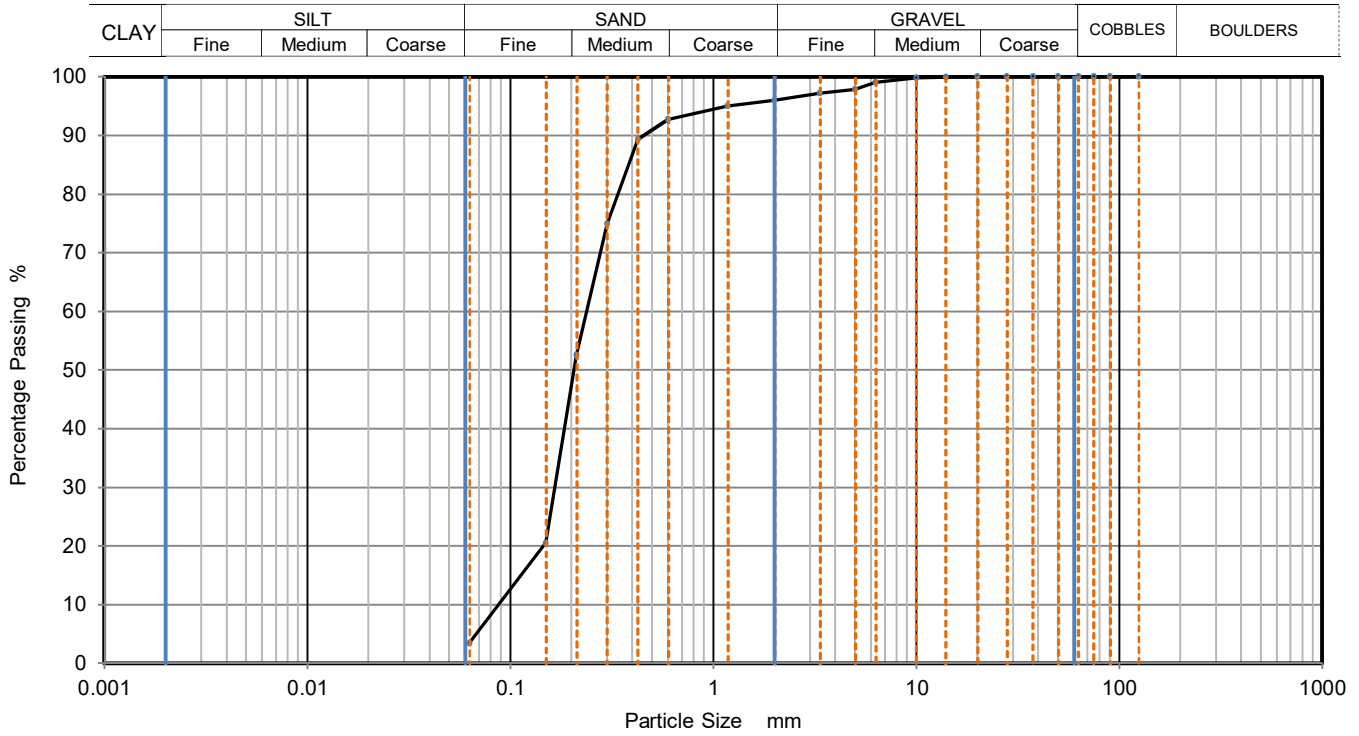
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH1
Sample Description:	Brown slightly silty slightly gravelly SAND. Gravel is of quartzite and siltstone	Sample Depth (m)	18.50
		Sample Reference	B57



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5	98		
3.35	97		
2	96		
1.18	95		
0.6	93		
0.425	89		
0.3	75		
0.212	53		
0.15	21		
0.063	3		

Sample Proportions	% dry mass
Very coarse	0
Gravel	4
Sand	93
Fines <0.063mm	3

Grading Analysis		
D100	mm	
D60	mm	0.238
D30	mm	0.166
D10	mm	0.088
Uniformity Coefficient		2.7
Curvature Coefficient		1.3

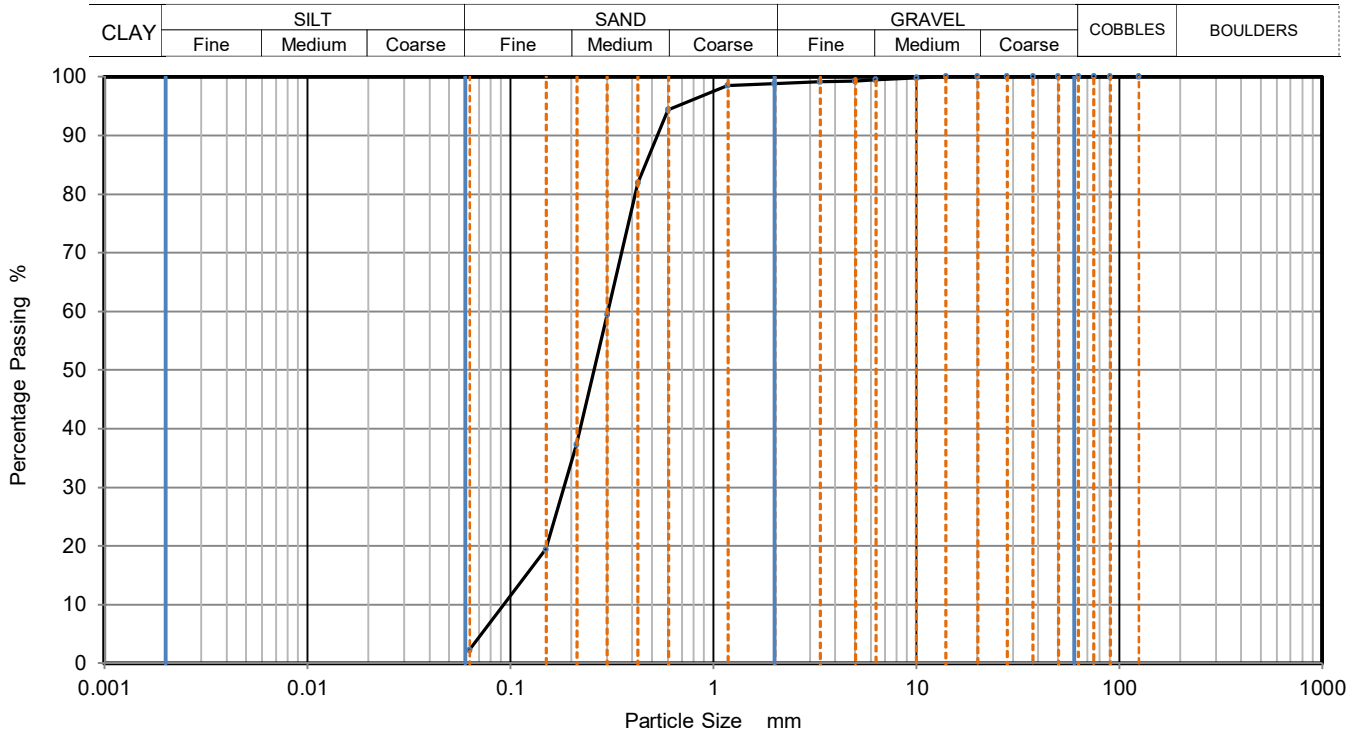
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH1
Sample Description:	Brown slightly silty slightly gravelly SAND. Gravel is of flint and quartzite	Sample Depth (m)	23.00
		Sample Reference	B65



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	99		
3.35	99		
2	99		
1.18	99		
0.6	94		
0.425	82		
0.3	59		
0.212	37		
0.15	19		
0.063	2		

Sample Proportions	% dry mass
Very coarse	0
Gravel	1
Sand	97
Fines <0.063mm	2

Grading Analysis		
D100	mm	
D60	mm	0.303
D30	mm	0.184
D10	mm	0.094
Uniformity Coefficient		3.2
Curvature Coefficient		1.2

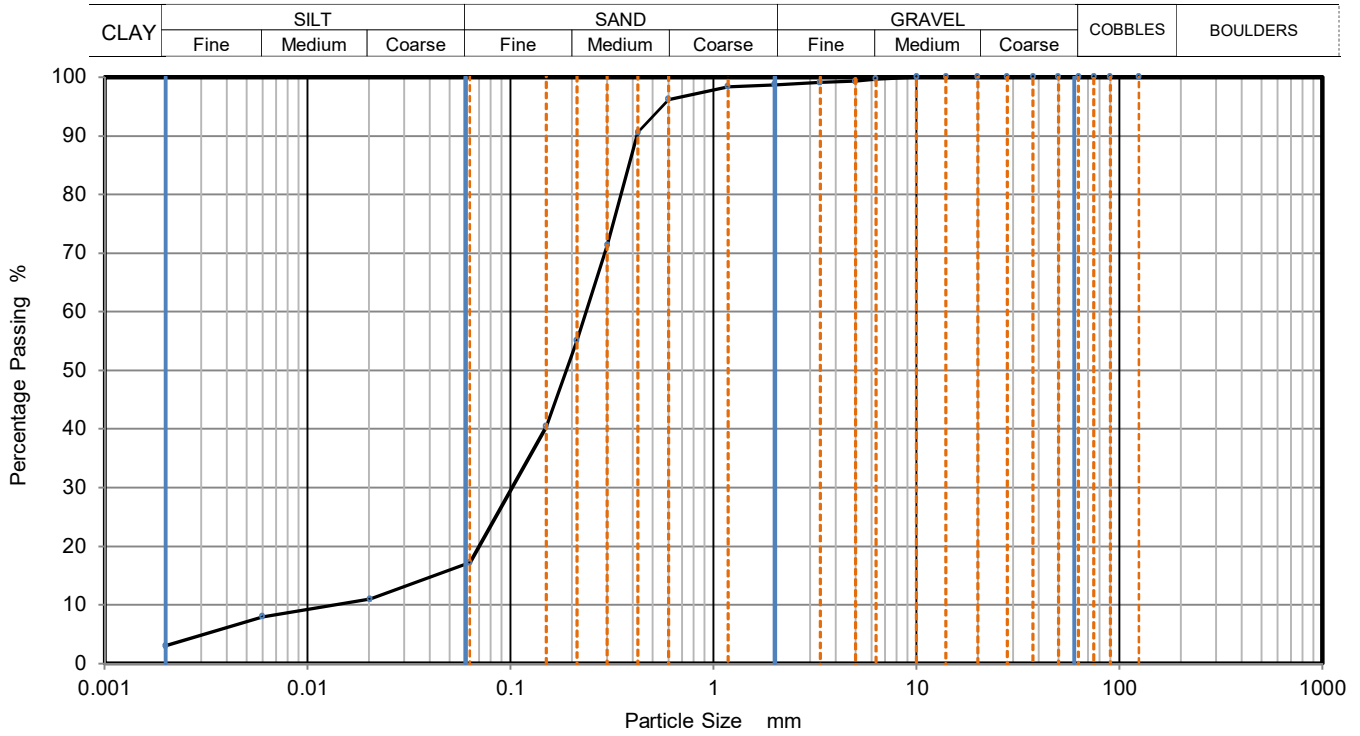
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH1
Sample Description:	Grey slightly clayey silty slightly gravelly SAND. Gravel is of flint	Sample Depth (m)	24.20
		Sample Reference	B66



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	11
90	100	0.0060	8
75	100	0.0020	3
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	99		
3.35	99		
2	99		
1.18	98		
0.6	96		
0.425	91	Particle density (assumed) 2.65 Mg/m3	
0.3	71		
0.212	55		
0.15	40		
0.063	17		

Sample Proportions	% dry mass
Very coarse	0
Gravel	1
Sand	81
Silt	14
Clay	3

Grading Analysis		
D100	mm	
D60	mm	0.235
D30	mm	0.102
D10	mm	0.014
Uniformity Coefficient		16
Curvature Coefficient		3.1

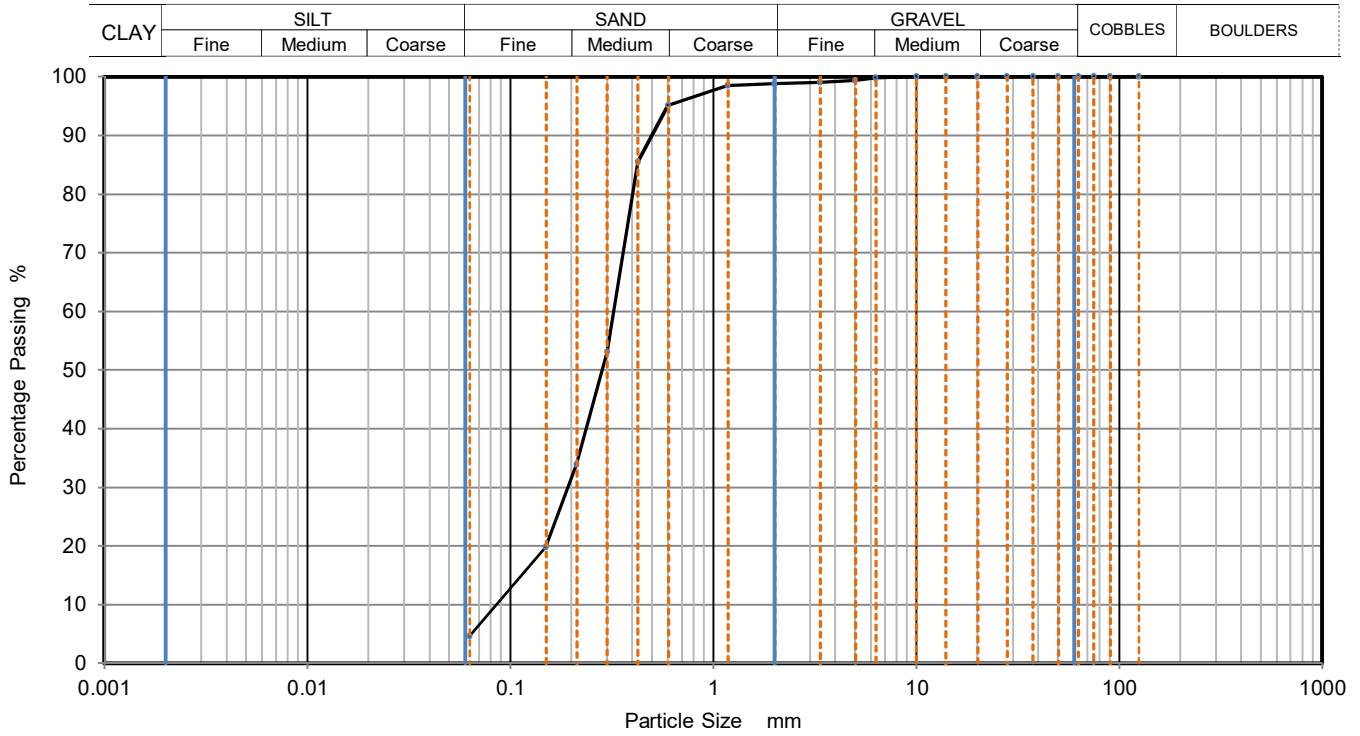
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH1
Sample Description:	Brown slightly silty slightly gravelly SAND. Gravel is of flint	Sample Depth (m)	25.00
		Sample Reference	B68



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	99		
3.35	99		
2	99		
1.18	99		
0.6	95		
0.425	86		
0.3	53		
0.212	34		
0.15	20		
0.063	5		

Sample Proportions	% dry mass
Very coarse	0
Gravel	1
Sand	94
Fines <0.063mm	5

Grading Analysis		
D100	mm	
D60	mm	0.323
D30	mm	0.193
D10	mm	0.086
Uniformity Coefficient		3.8
Curvature Coefficient		1.3

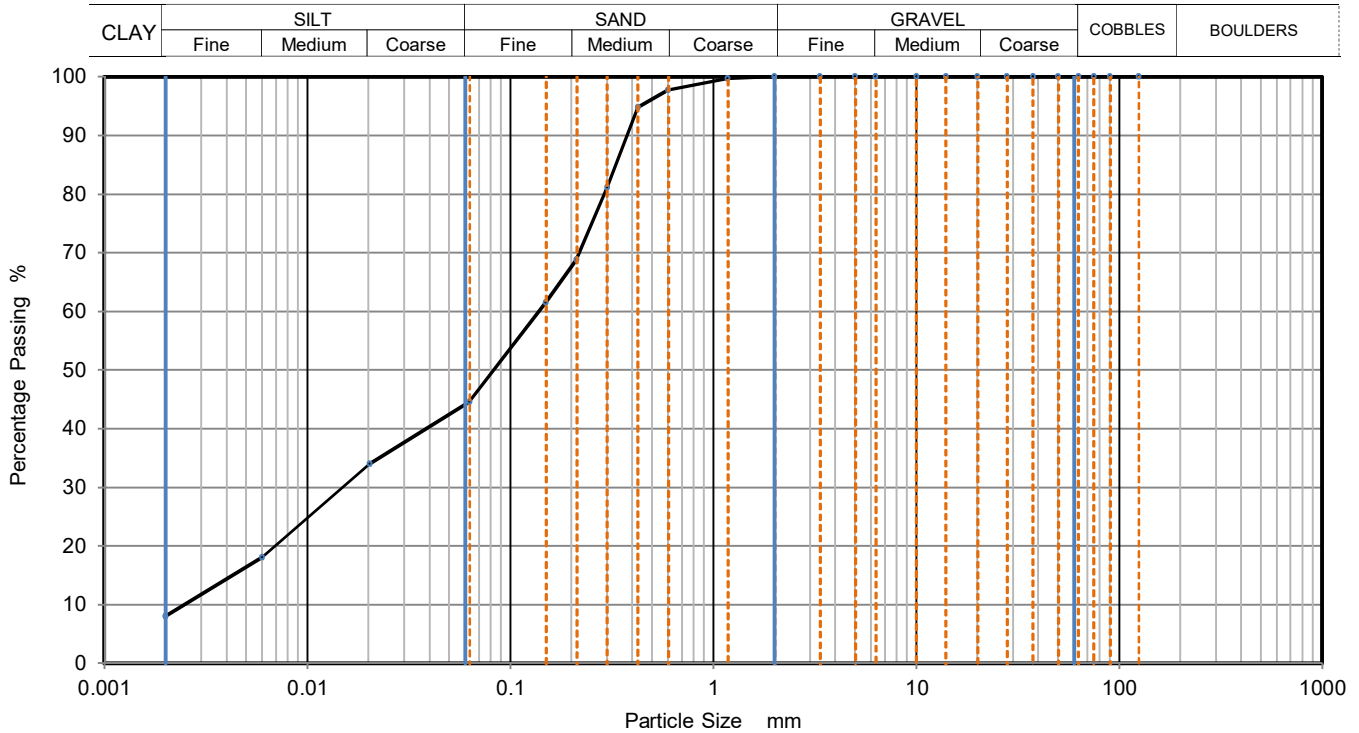
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH1
Sample Description:	Grey sandy clayey SILT	Sample Depth (m)	28.00
		Sample Reference	B72



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	34
90	100	0.0060	18
75	100	0.0020	8
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	98	Particle density (assumed)	
0.425	95	2.65	Mg/m3
0.3	81		
0.212	69		
0.15	62		
0.063	45		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	55
Silt	36
Clay	9

Grading Analysis		
D100	mm	
D60	mm	0.139
D30	mm	0.015
D10	mm	0.002
Uniformity Coefficient		58
Curvature Coefficient		0.64

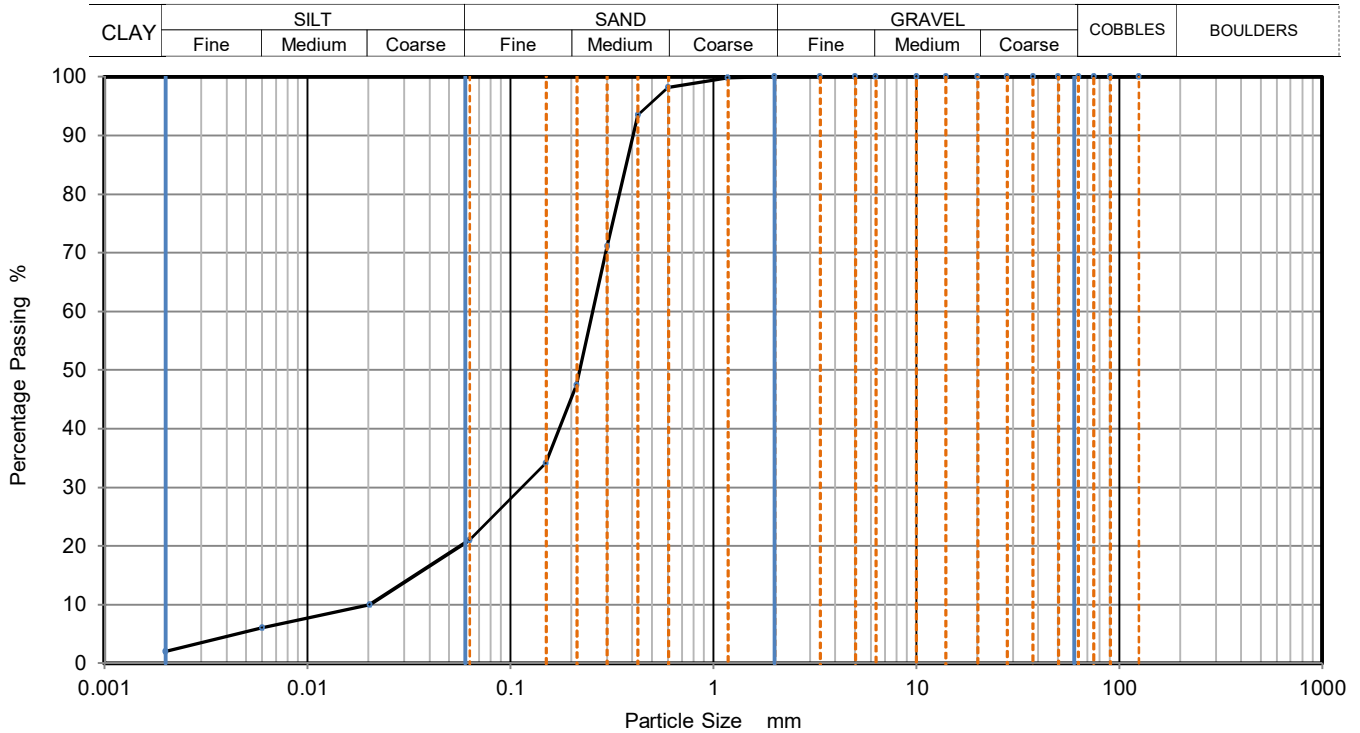
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH1
Sample Description:	Grey clayey silty SAND	Sample Depth (m)	30.00
		Sample Reference	D76



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	10
90	100	0.0060	6
75	100	0.0020	2
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	98		
0.425	94		
0.3	71		
0.212	47		
0.15	34		
0.063	21		
		Particle density (assumed) 2.65 Mg/m ³	

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	79
Silt	19
Clay	2

Grading Analysis		
D100	mm	
D60	mm	0.255
D30	mm	0.114
D10	mm	0.021
Uniformity Coefficient		12
Curvature Coefficient		2.4

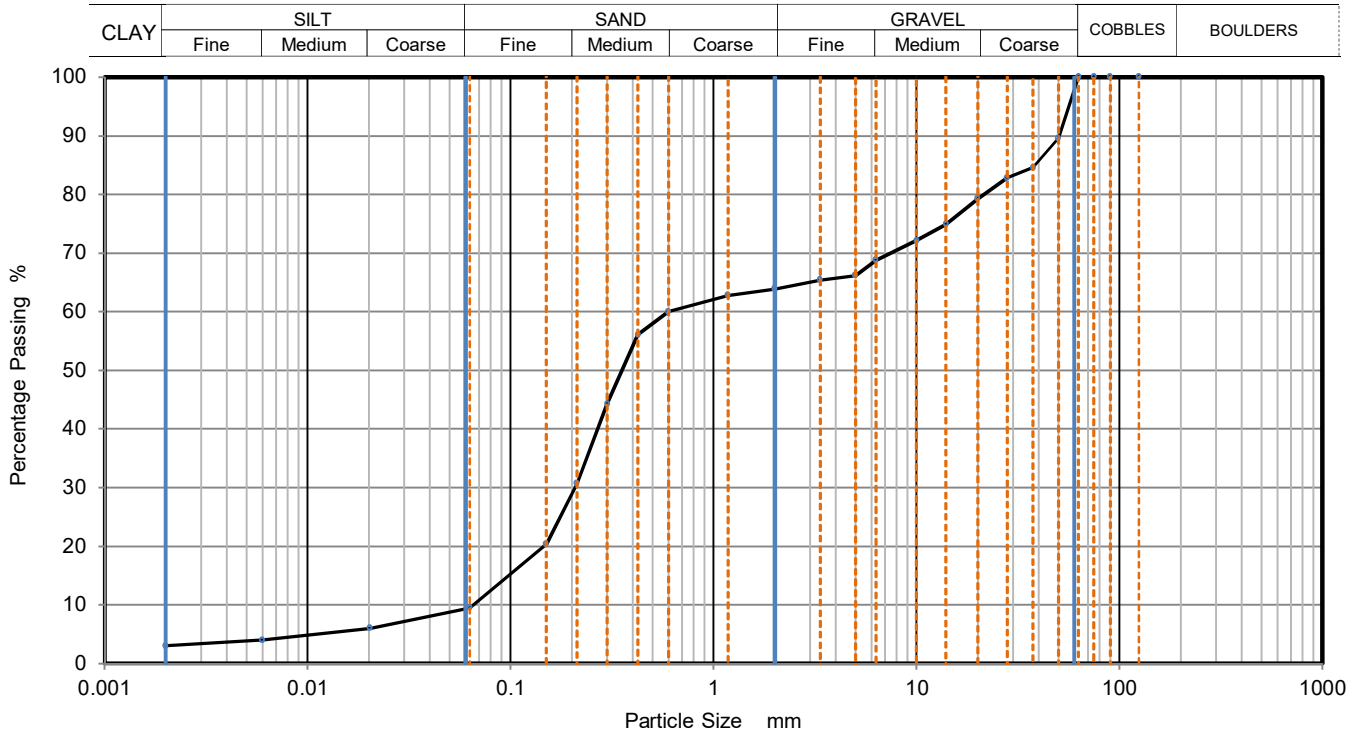
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH2
Sample Description:	MADE GROUND (Brown slightly clayey silty very gravelly SAND. Gravel is of flint, quartzite, asphalt and concrete fragments)	Sample Depth (m)	0.50
		Sample Reference	B2



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	6
90	100	0.0060	4
75	100	0.0020	3
63	100		
50	90		
37.5	85		
28	83		
20	79		
14	75		
10	72		
6.3	69		
5	66		
3.35	65		
2	64		
1.18	63		
0.6	60		
0.425	56	Particle density (assumed) 2.65 Mg/m ³	
0.3	44		
0.212	31		
0.15	20		
0.063	10		

Sample Proportions	% dry mass
Very coarse	0
Gravel	36
Sand	54
Silt	6
Clay	3

Grading Analysis		
D100	mm	
D60	mm	0.606
D30	mm	0.207
D10	mm	0.066
Uniformity Coefficient		9.2
Curvature Coefficient		1.1

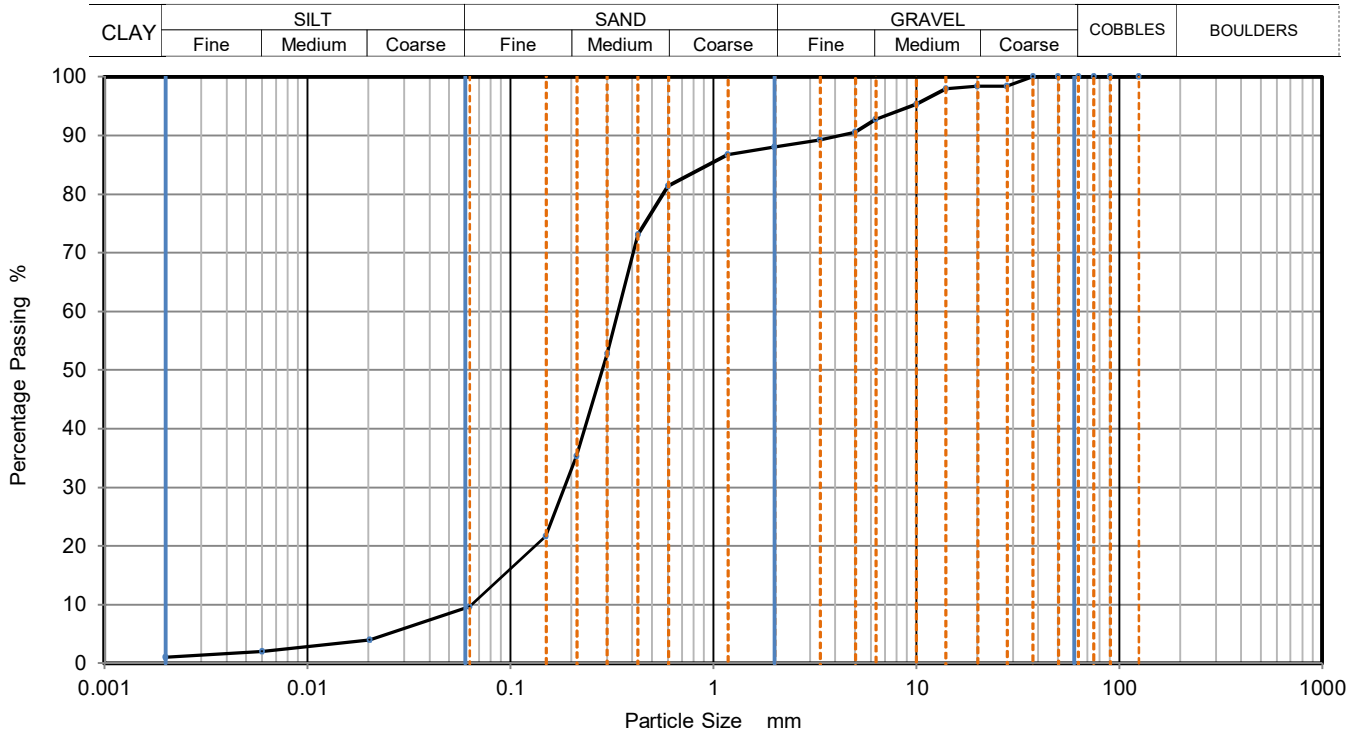
Remarks	Approved	Date	Sheet No.:
	MW	25/01/2018	1 of 1



DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH2
Sample Description:	Dark brown slightly clayey silty gravelly SAND. Gravel is of flint and quartzite	Sample Depth (m)	1.20
		Sample Reference	B6



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	4
90	100	0.0060	2
75	100	0.0020	1
63	100		
50	100		
37.5	100		
28	98		
20	98		
14	98		
10	95		
6.3	93		
5	91		
3.35	89		
2	88		
1.18	87		
0.6	81		
0.425	73	Particle density (assumed) 2.65 Mg/m3	
0.3	53		
0.212	35		
0.15	22		
0.063	10		

Sample Proportions	% dry mass
Very coarse	0
Gravel	12
Sand	78
Silt	9
Clay	1

Grading Analysis		
D100	mm	
D60	mm	0.340
D30	mm	0.186
D10	mm	0.065
Uniformity Coefficient		5.3
Curvature Coefficient		1.6

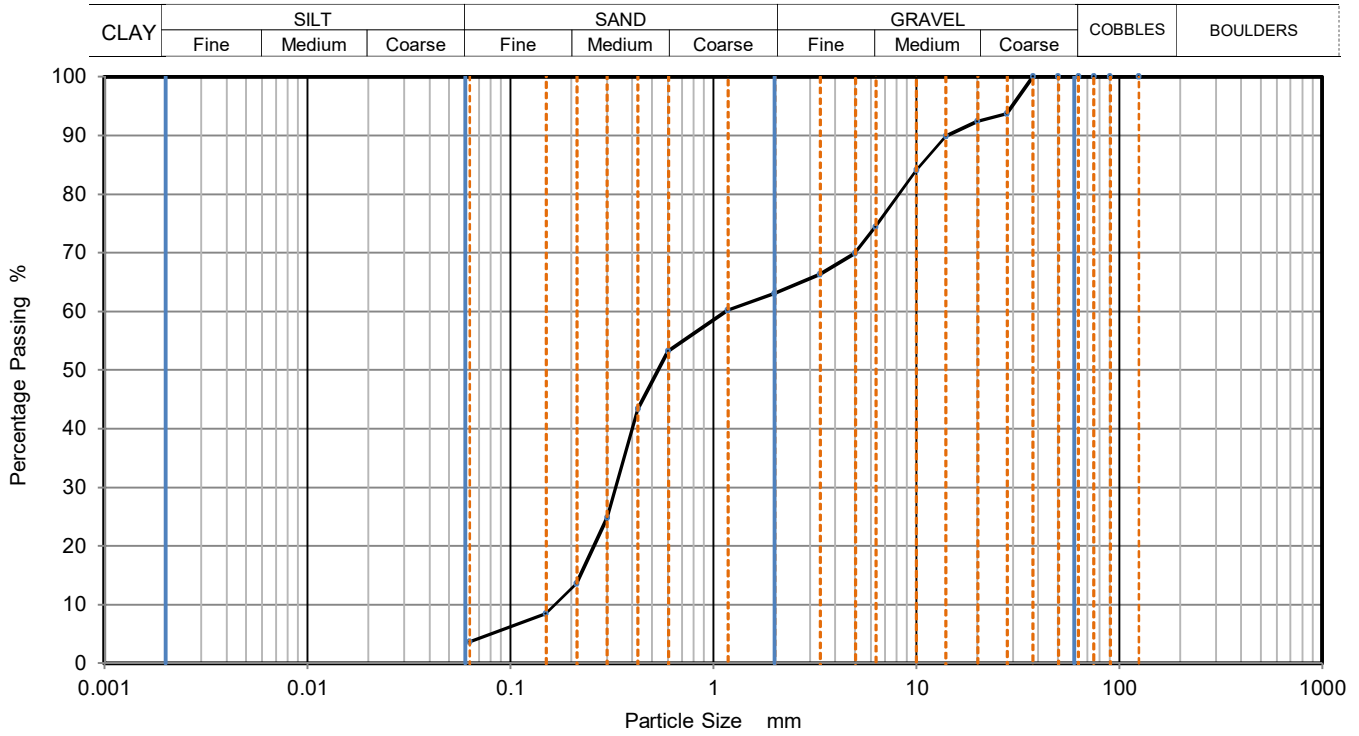
Remarks	Approved	Date	Sheet No.:
	MW	25/01/2018	1 of 1



DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH2
Sample Description:	Dark brown slightly silty very gravelly SAND. Gravel is of flint and quartzite	Sample Depth (m)	2.00
		Sample Reference	B9



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	94		
20	92		
14	90		
10	84		
6.3	74		
5	70		
3.35	66		
2	63		
1.18	60		
0.6	53		
0.425	43		
0.3	25		
0.212	14		
0.15	8		
0.063	4		

Sample Proportions	% dry mass
Very coarse	0
Gravel	37
Sand	59
Fines <0.063mm	4

Grading Analysis		
D100	mm	
D60	mm	1.160
D30	mm	0.331
D10	mm	0.166
Uniformity Coefficient		6.9
Curvature Coefficient		0.57

Remarks	Approved	Date	Sheet No.:
	MW	25/01/2018	1 of 1

Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3171206017-610**
Our Project No. **PZ1522D1**
Your Sample Ref **17**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **22-Feb-18**

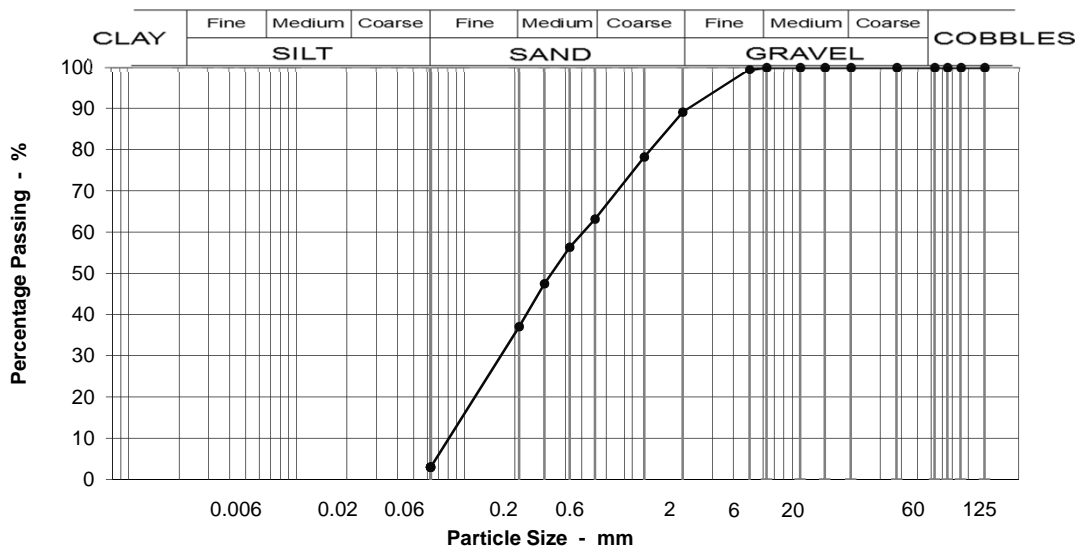
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH2 @ 5 - 5.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R, 6J, 6K, 6M.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	11
20	100		Coarse SAND	26
14	100		Medium SAND	26
10	100		Fine SAND	34
6.3	100		Silt & Clay	3
5	99		Grading Analysis	
2	89		D100	5
1.18	78		D60	0.52
0.600	63		D10	0.09
0.425	56		Uniformity Coefficient	6
0.300	47		Description	
0.212	37	Dark grey gravelly fine, medium and coarse SAND. Gravel is fine sub-angular to sub-rounded flint.		
0.063	3	Moisture content % 67		

Test Code = 610



Simon Holden (Project Technician)

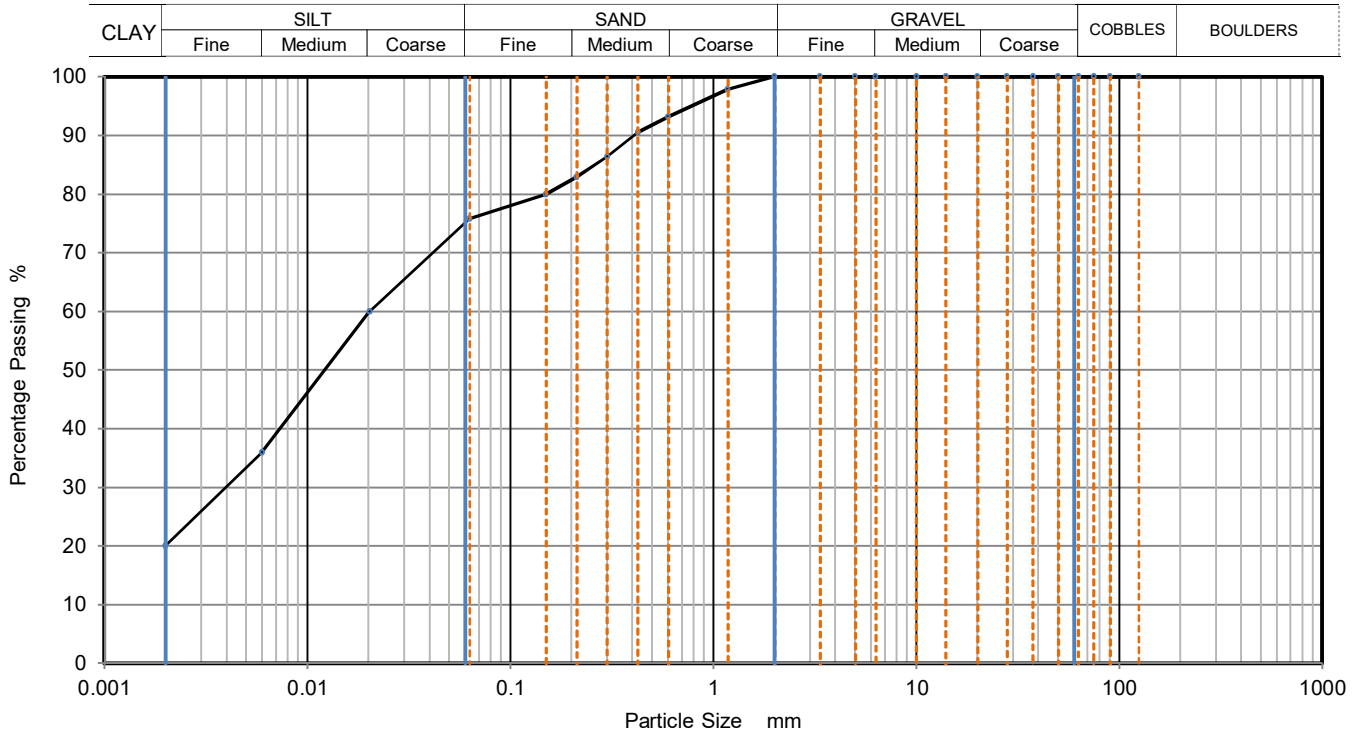




DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH2
Sample Description:	Grey slightly sandy silty CLAY	Sample Depth (m)	6.50
		Sample Reference	B21



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	60
90	100	0.0060	36
75	100	0.0020	20
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	98		
0.6	93		
0.425	91		
0.3	86		
0.212	83		
0.15	80		
0.063	76		
		Particle density (assumed) 2.65 Mg/m ³	

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	24
Silt	56
Clay	20

Grading Analysis		
D100	mm	
D60	mm	0.021
D30	mm	0.004
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

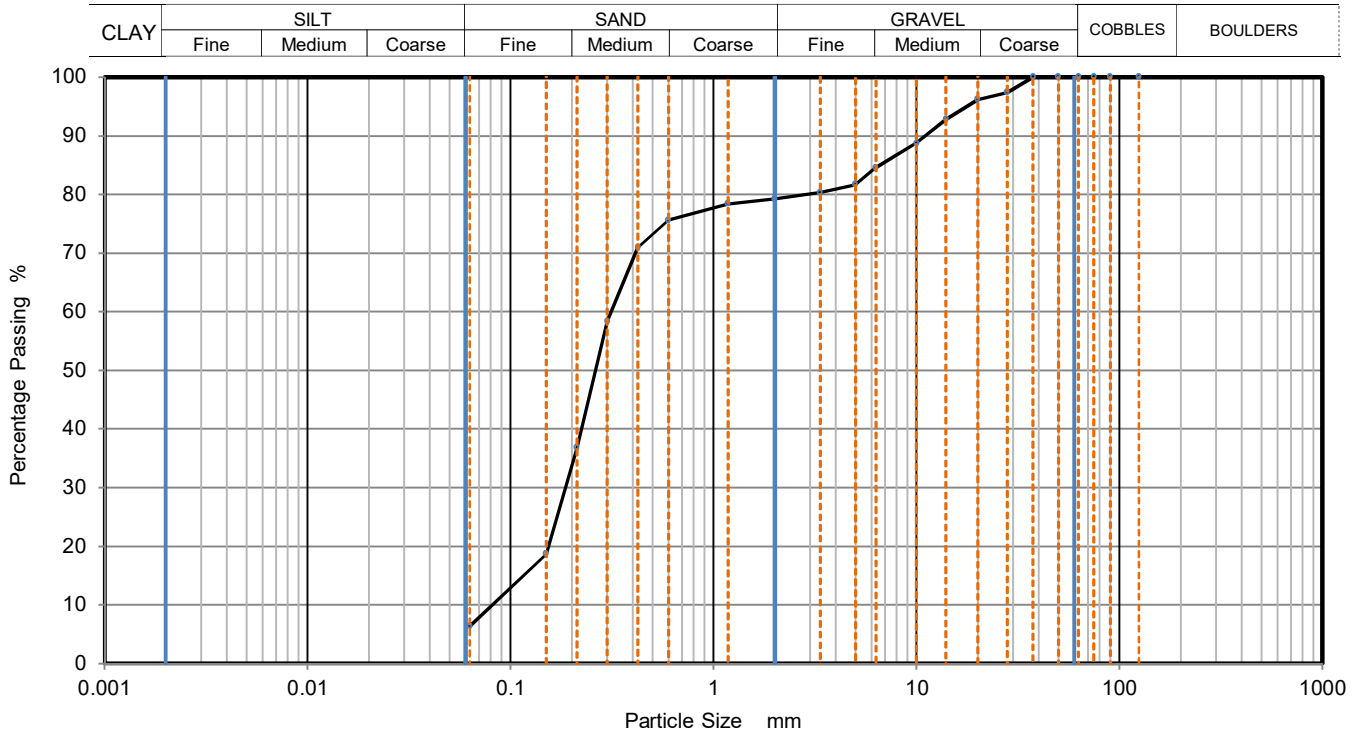
Remarks	Approved	Date	Sheet No.:
	MW	25/01/2018	1 of 1



DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH2
Sample Description:	Dark grey silty very gravelly SAND. Gravel is of flint	Sample Depth (m)	11.50
		Sample Reference	B35



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	97		
20	96		
14	93		
10	89		
6.3	85		
5	82		
3.35	80		
2	79		
1.18	78		
0.6	76		
0.425	71		
0.3	58		
0.212	37		
0.15	19		
0.063	6		

Sample Proportions	% dry mass
Very coarse	0
Gravel	21
Sand	73
Fines <0.063mm	6

Grading Analysis		
D100	mm	
D60	mm	0.314
D30	mm	0.186
D10	mm	0.081
Uniformity Coefficient		3.9
Curvature Coefficient		1.4

Remarks	Approved	Date	Sheet No.:
	MW	25/01/2018	1 of 1

Community & Environmental Services
County Hall
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Our reference No. **GTS3171208010-610**
Our Project No. PZ1522D1
Your Sample Ref 37
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 17-Apr-18

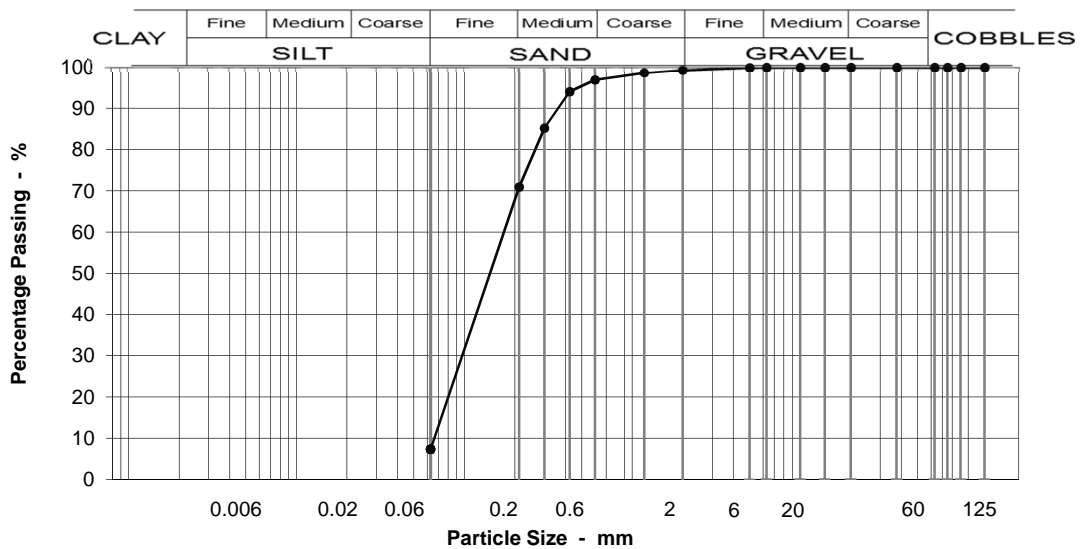
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH2 @ 12.5 - 13m Specimen: 2

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	99
0.600	97
0.425	94
0.300	85
0.212	71
0.063	7

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 48

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	2
Medium SAND	26
Fine SAND	64
Silt & Clay	7

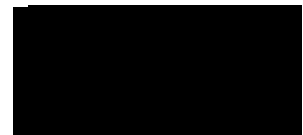
Grading Analysis	
D100	5
D60	0.19
D10	0.07
Uniformity Coefficient	3

Description
Orange slightly silty fine SAND.

Test Code = 610



Simon Holden (Project Technician)

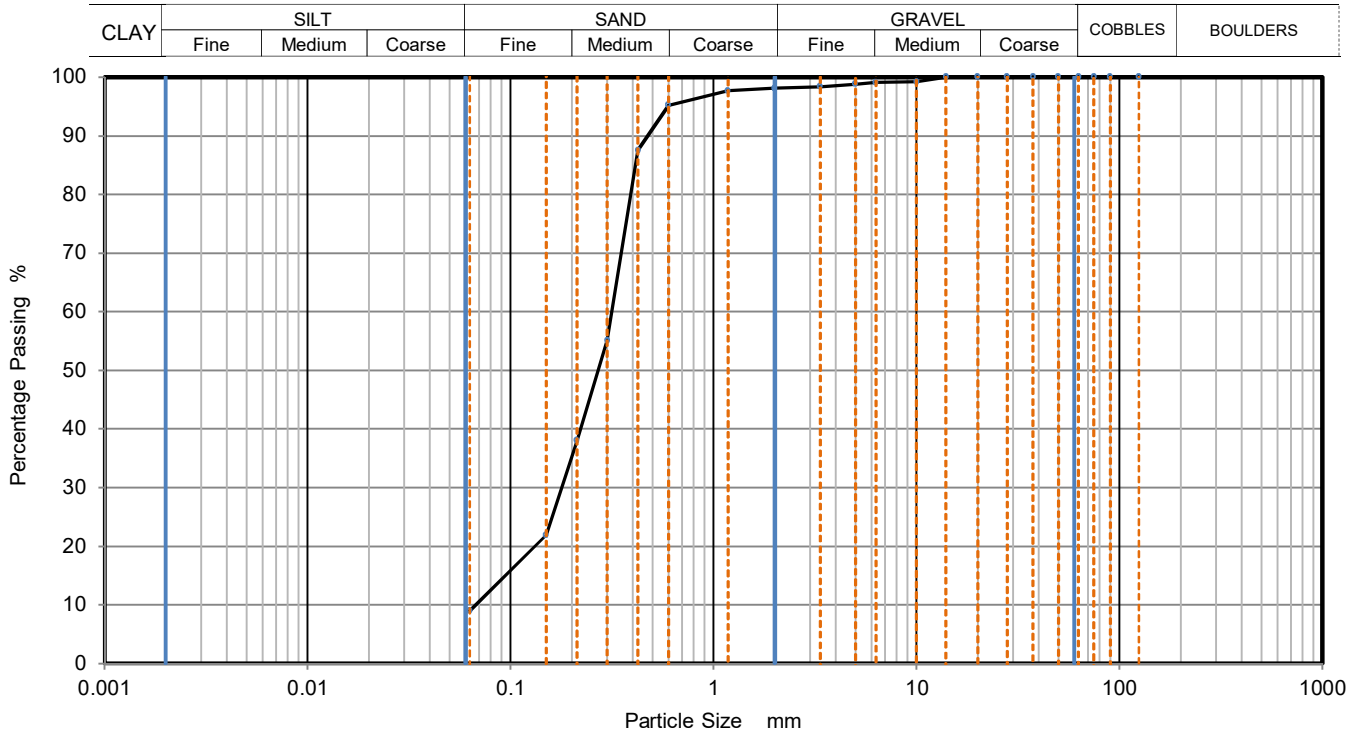




DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH2
Sample Description:	Brown silty slightly gravelly SAND. Gravel is of flint	Sample Depth (m)	14.90
		Sample Reference	D42



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99		
6.3	99		
5	99		
3.35	98		
2	98		
1.18	98		
0.6	95		
0.425	88		
0.3	55		
0.212	38		
0.15	22		
0.063	9		

Sample Proportions	% dry mass
Very coarse	0
Gravel	2
Sand	89
Fines <0.063mm	9

Grading Analysis		
D100	mm	
D60	mm	0.316
D30	mm	0.179
D10	mm	0.067
Uniformity Coefficient		4.7
Curvature Coefficient		1.5

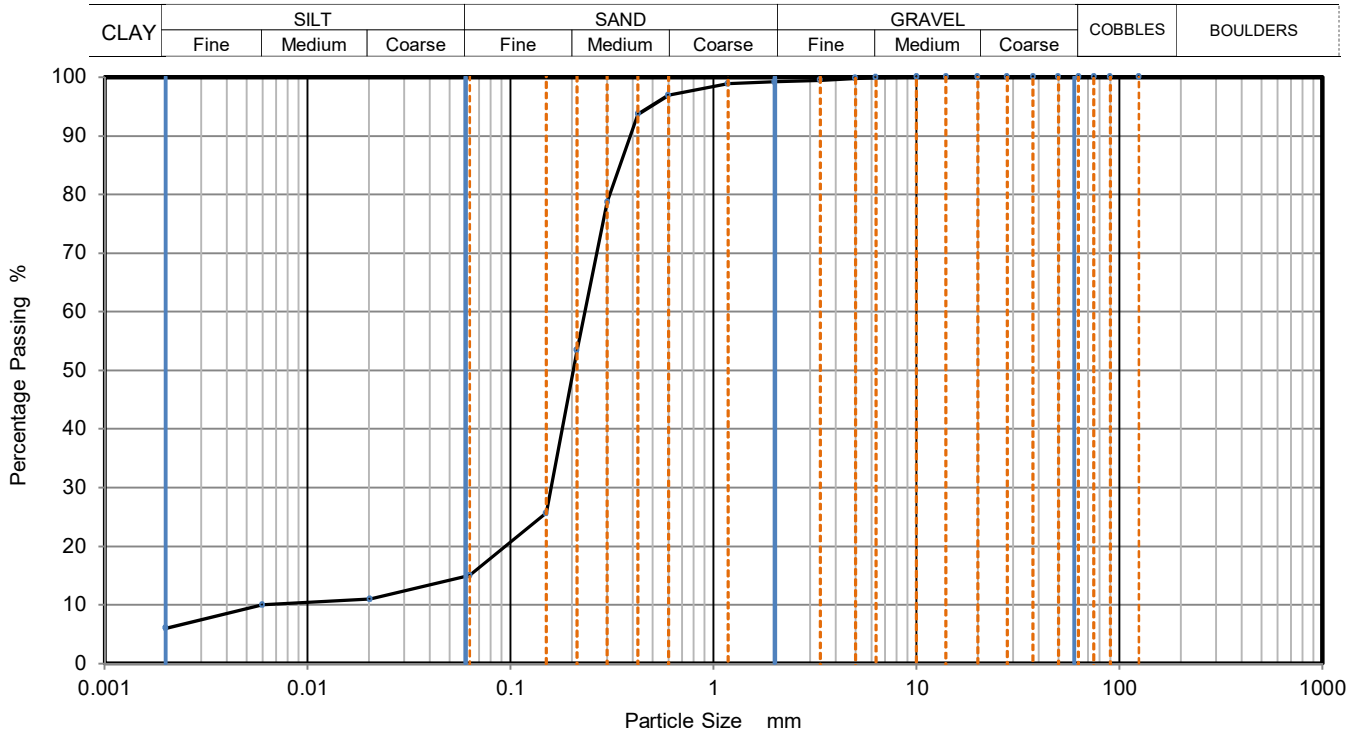
Remarks	Approved	Date	Sheet No.:
	MW	25/01/2018	1 of 1



DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH2
Sample Description:	Brown clayey silty slightly gravelly SAND. Gravel is of flint and occasional siltstone	Sample Depth (m)	15.50
		Sample Reference	B44



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	11
90	100	0.0060	10
75	100	0.0020	6
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	99		
1.18	99		
0.6	97		
0.425	94		
0.3	79		
0.212	53		
0.15	26		
0.063	15		
		Particle density (assumed) 2.65 Mg/m ³	

Sample Proportions	% dry mass
Very coarse	0
Gravel	1
Sand	84
Silt	9
Clay	6

Grading Analysis		
D100	mm	
D60	mm	0.232
D30	mm	0.158
D10	mm	0.007
Uniformity Coefficient		33
Curvature Coefficient		16

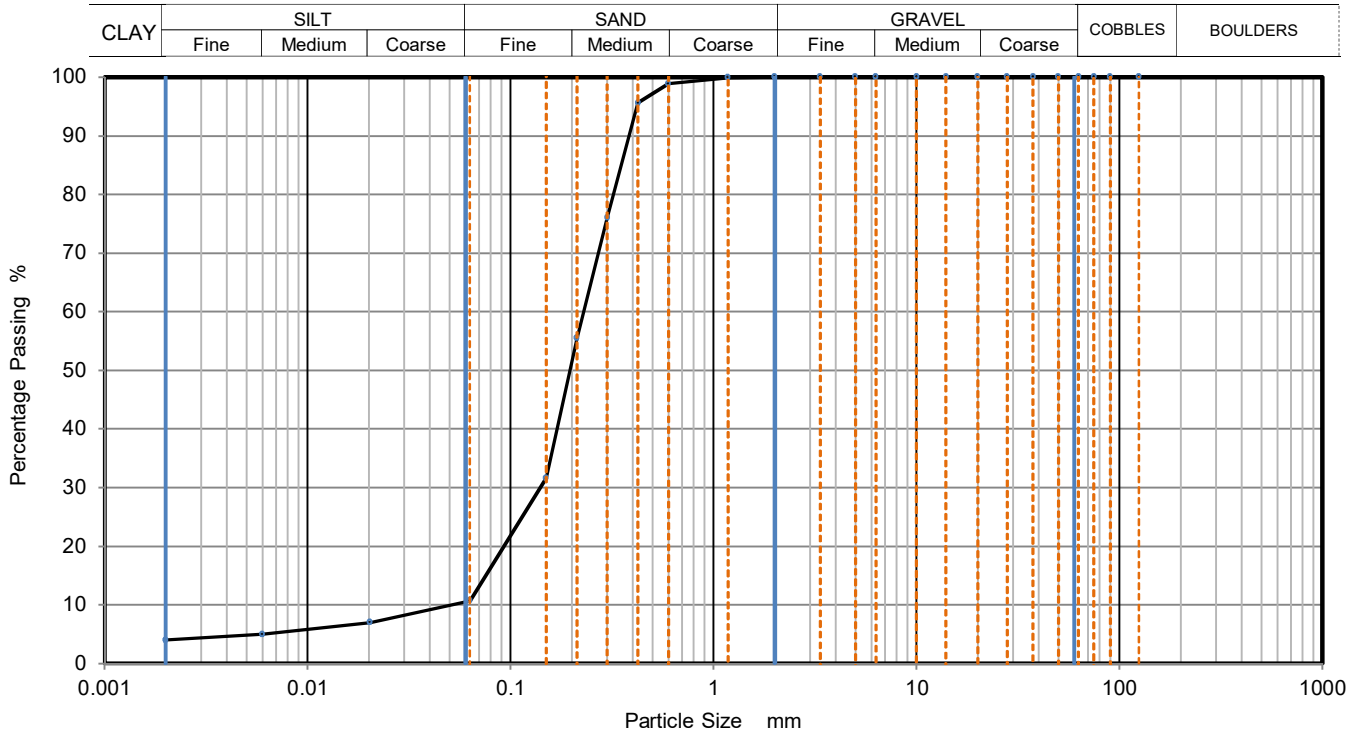
Remarks	Approved	Date	Sheet No.:
	MW	25/01/2018	1 of 1



DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH2
Sample Description:	Brown slightly clayey silty SAND	Sample Depth (m)	16.90
		Sample Reference	D47



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	7
90	100	0.0060	5
75	100	0.0020	4
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99	Particle density (assumed)	
0.425	96	2.65	Mg/m3
0.3	76		
0.212	56		
0.15	32		
0.063	11		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	89
Silt	7
Clay	4

Grading Analysis		
D100	mm	
D60	mm	0.229
D30	mm	0.140
D10	mm	0.051
Uniformity Coefficient		4.5
Curvature Coefficient		1.7

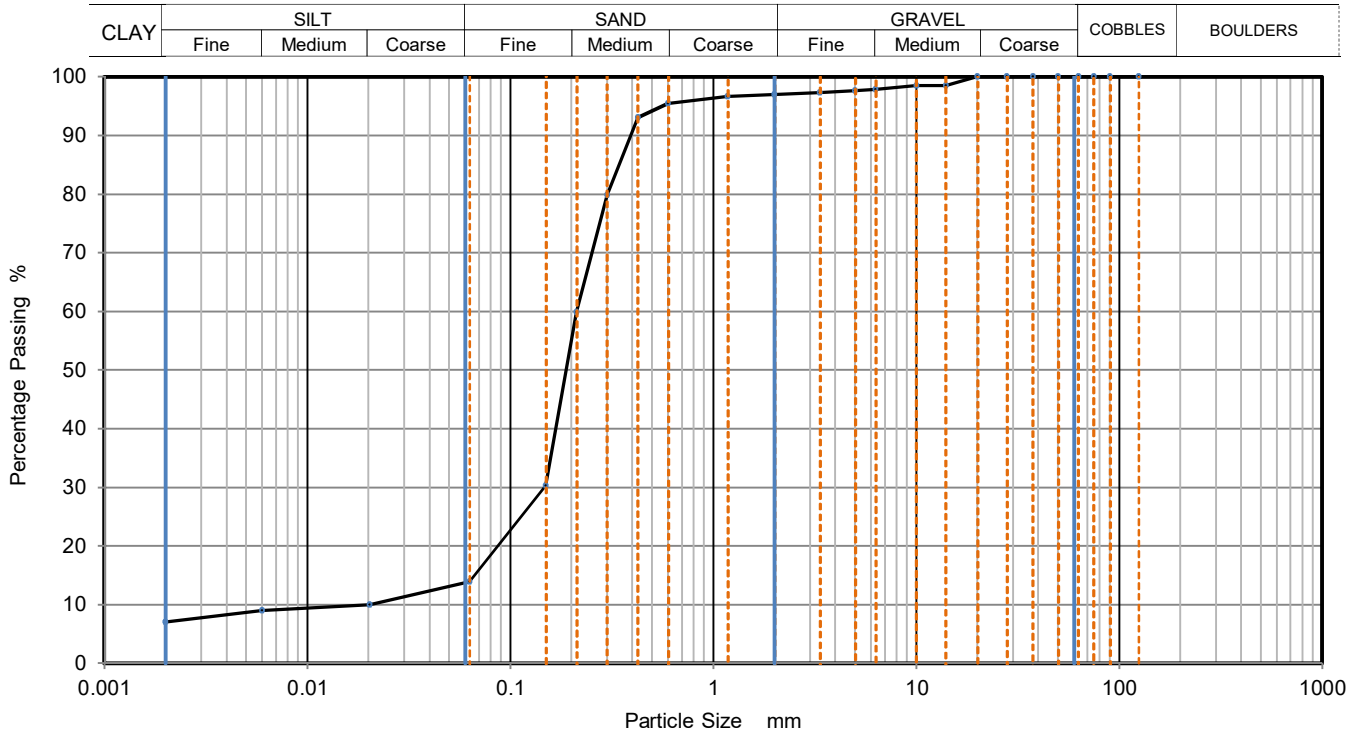
Remarks	Approved	Date	Sheet No.:
	MW	24/01/2018	1 of 1



DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH2
Sample Description:	Dark brown clayey silty slightly gravelly SAND. Gravel is of flint	Sample Depth (m)	18.50
		Sample Reference	B50



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	10
90	100	0.0060	9
75	100	0.0020	7
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	99		
10	99		
6.3	98		
5	98		
3.35	97		
2	97		
1.18	97		
0.6	96		
0.425	93	Particle density (assumed) 2.65 Mg/m3	
0.3	80		
0.212	60		
0.15	30		
0.063	14		

Sample Proportions	% dry mass
Very coarse	0
Gravel	3
Sand	83
Silt	7
Clay	7

Grading Analysis		
D100	mm	
D60	mm	0.212
D30	mm	0.148
D10	mm	0.022
Uniformity Coefficient		9.6
Curvature Coefficient		4.6

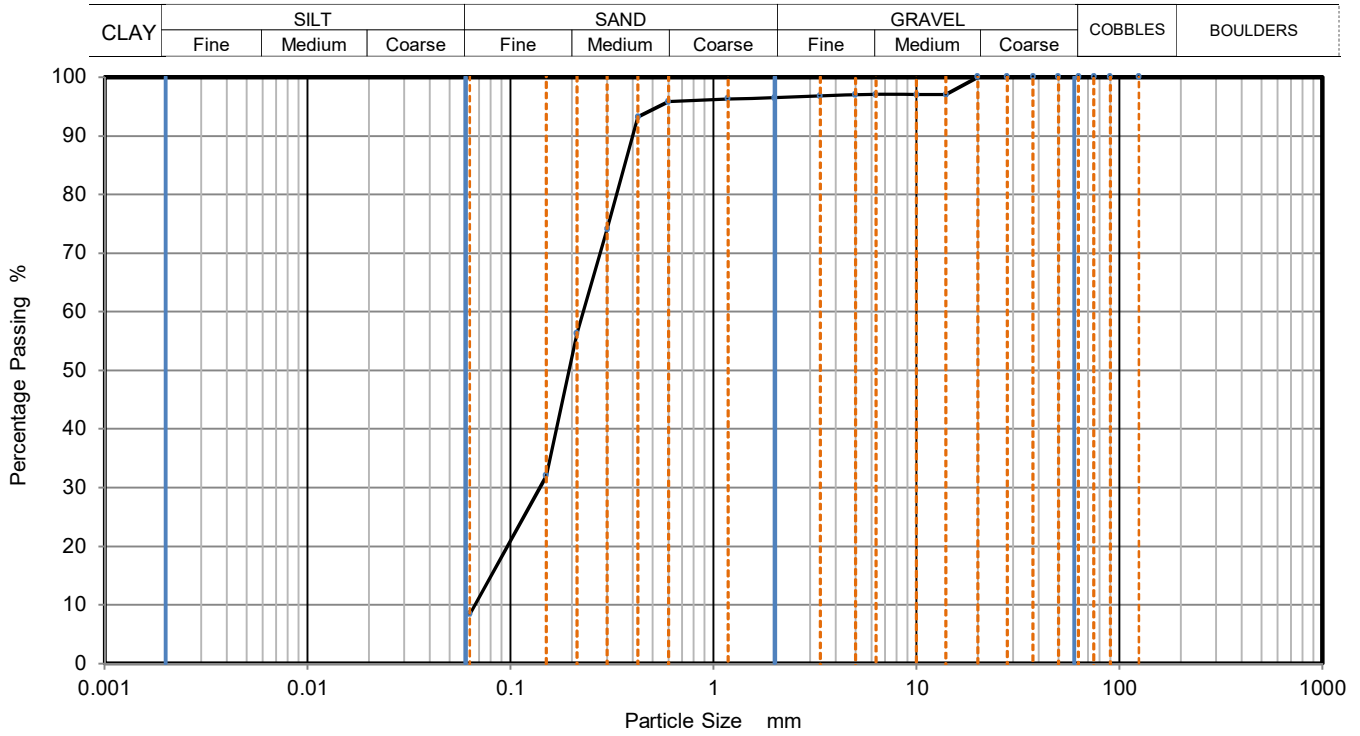
Remarks	Approved	Date	Sheet No.:
	MW	25/01/2018	1 of 1



DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH2
Sample Description:	Dark grey silty slightly gravelly SAND. Gravel is of flint	Sample Depth (m)	18.90
		Sample Reference	D51



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	97		
10	97		
6.3	97		
5	97		
3.35	97		
2	97		
1.18	96		
0.6	96		
0.425	93		
0.3	74		
0.212	56		
0.15	32		
0.063	8		

Sample Proportions	% dry mass
Very coarse	0
Gravel	4
Sand	88
Fines <0.063mm	8

Grading Analysis		
D100	mm	
D60	mm	0.228
D30	mm	0.139
D10	mm	0.067
Uniformity Coefficient		3.4
Curvature Coefficient		1.3

Remarks	Approved	Date	Sheet No.:
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Community & Environmental Services
County Hall
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Norfolk
NR1 2DH

Our reference No. **GTS3171211004-610**
Our Project No. **PZ1522D1**
Your Sample Ref **57**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **17-Apr-18**

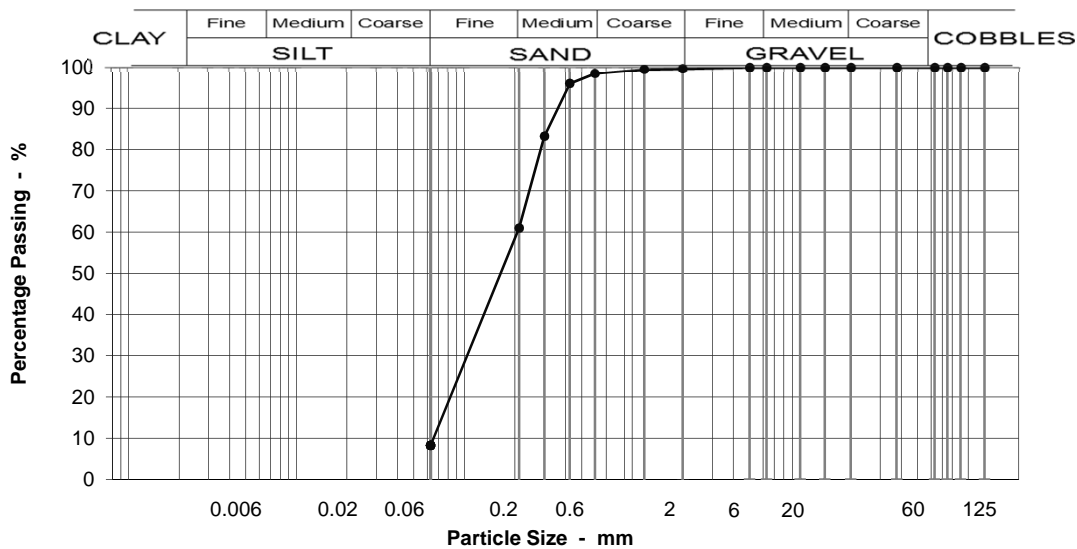
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH2 @ 21 - 22m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	99
0.600	98
0.425	96
0.300	83
0.212	61
0.063	8

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 27

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	1
Medium SAND	37
Fine SAND	53
Silt & Clay	8

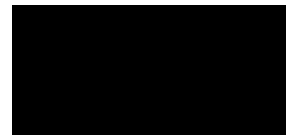
Grading Analysis	
D100	2
D60	0.21
D10	0.07
Uniformity Coefficient	3

Description	
Brown slightly silty fine and medium SAND.	

Test Code = 610



Simon Holden (Project Technician)

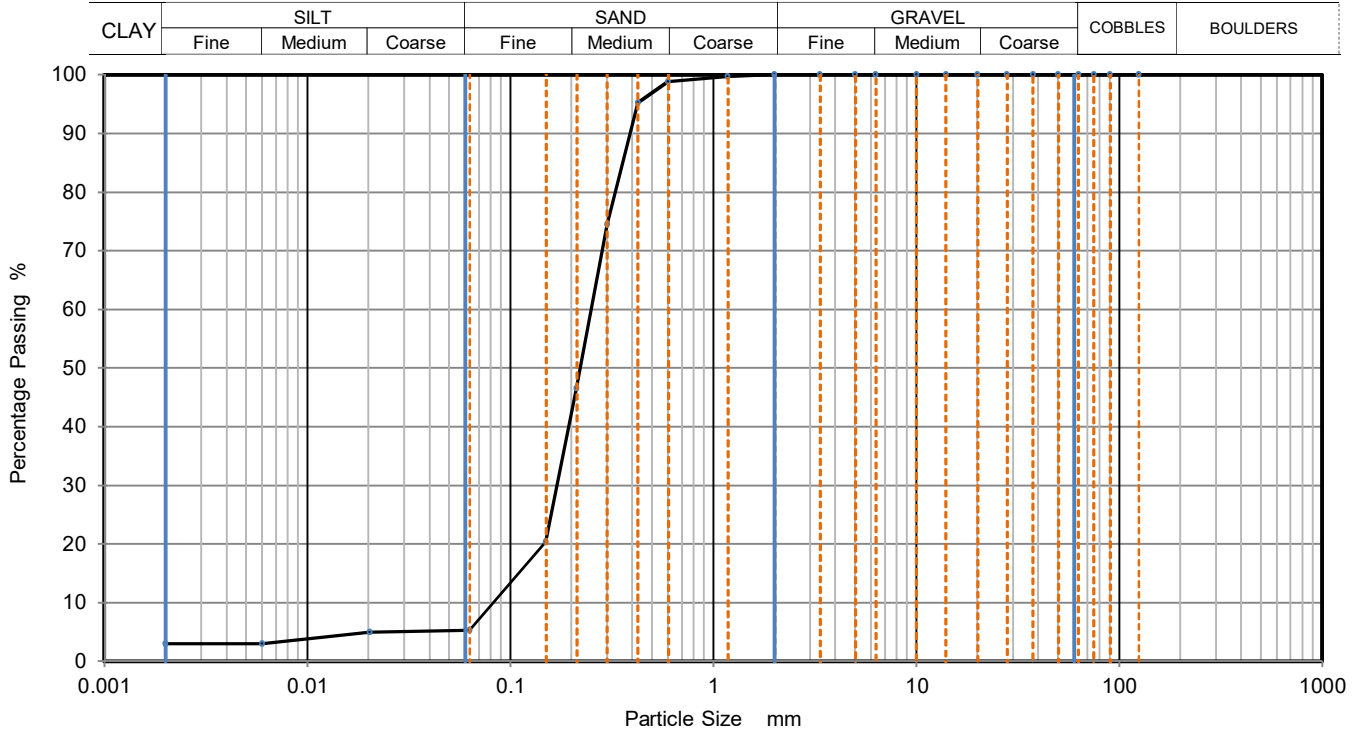




DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH2
Sample Description:	Brown slightly clayey slightly silty SAND	Sample Depth (m)	23.00
		Sample Reference	B59



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	5
90	100	0.0060	3
75	100	0.0020	3
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99	Particle density (assumed)	
0.425	95	2.65	Mg/m3
0.3	75		
0.212	47		
0.15	20		
0.063	5		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	95
Silt	3
Clay	3

Grading Analysis		
D100	mm	
D60	mm	0.251
D30	mm	0.170
D10	mm	0.083
Uniformity Coefficient		3
Curvature Coefficient		1.4

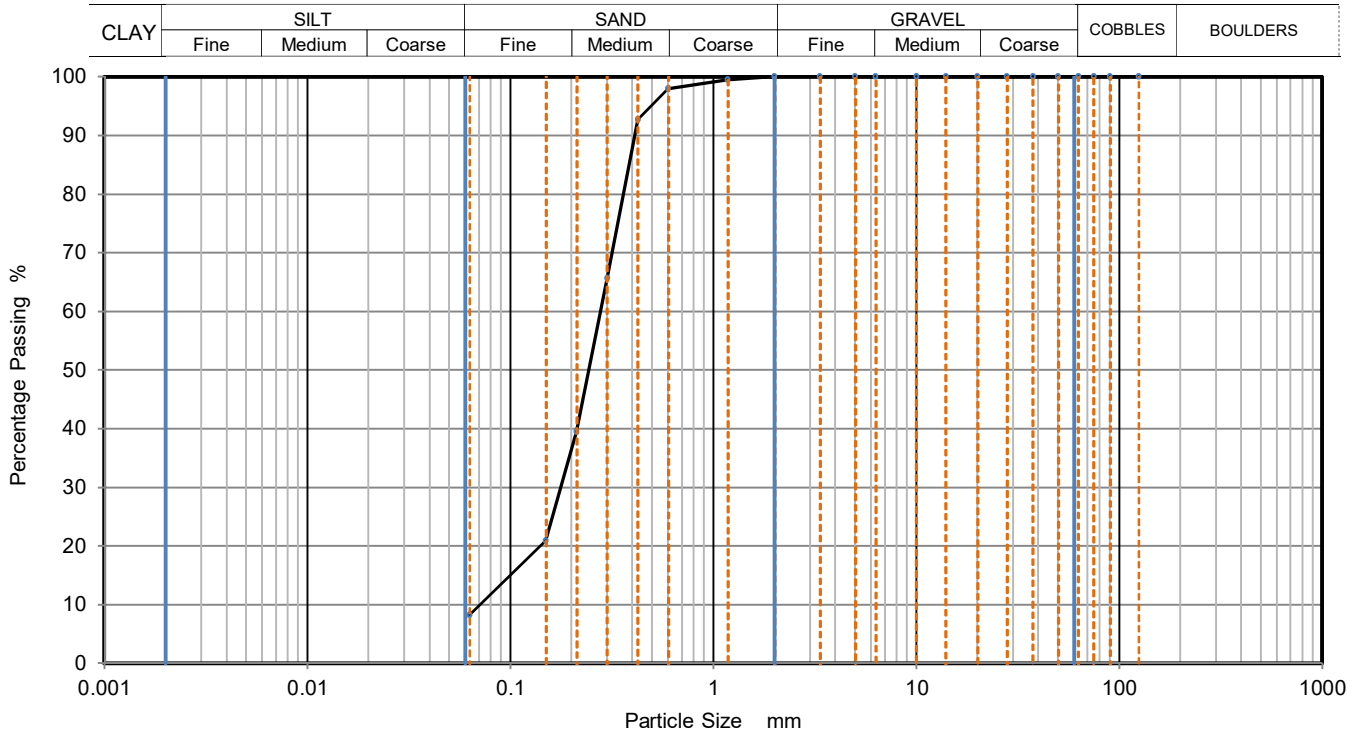
Remarks	Approved	Date	Sheet No.:
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH2
Sample Description:	Brown and grey silty SAND	Sample Depth (m)	25.90
		Sample Reference	D64



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	98		
0.425	93		
0.3	66		
0.212	40		
0.15	21		
0.063	8		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	92
Fines <0.063mm	8

Grading Analysis		
D100	mm	
D60	mm	0.278
D30	mm	0.178
D10	mm	0.071
Uniformity Coefficient		3.9
Curvature Coefficient		1.6

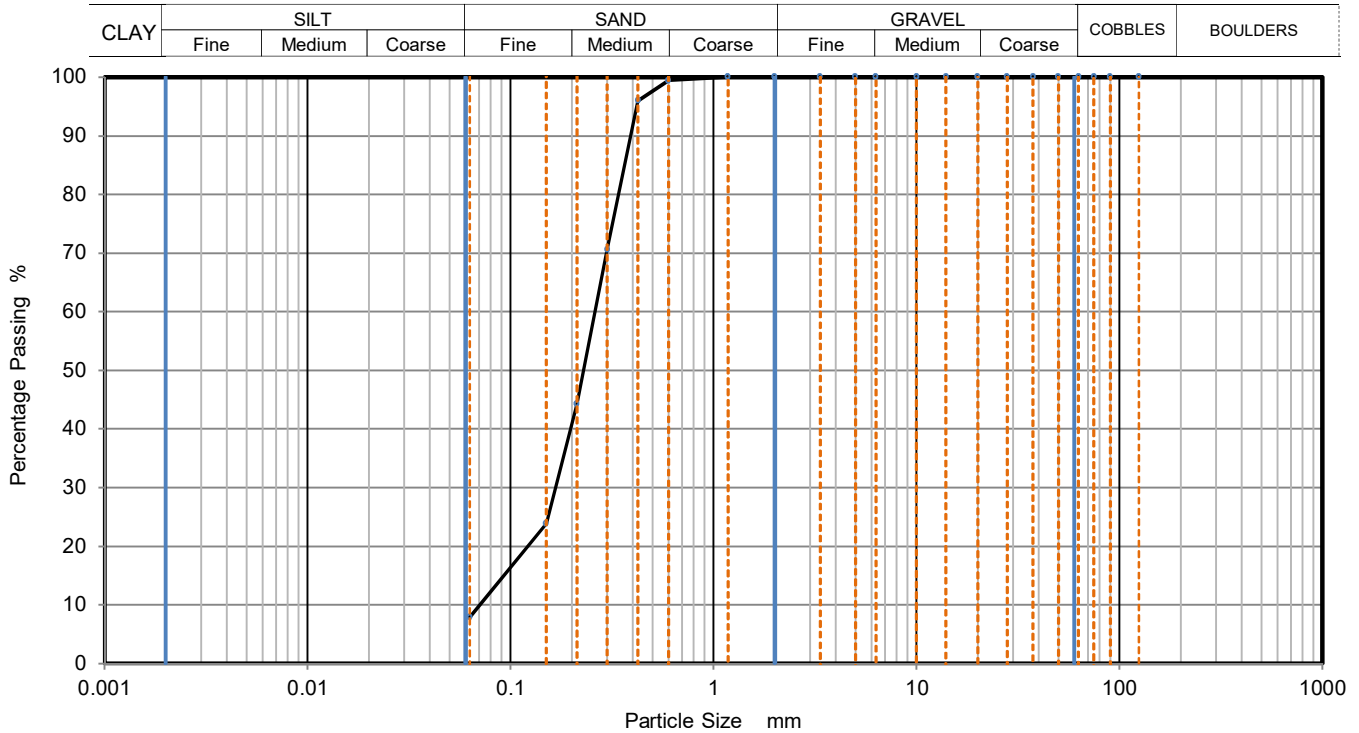
Remarks	Approved	Date	Sheet No.:
	MW	24/01/2018	1 of 1



DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH2
Sample Description:	Brown silty SAND	Sample Depth (m)	26.00
		Sample Reference	B65



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	96		
0.3	71		
0.212	44		
0.15	24		
0.063	8		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	92
Fines <0.063mm	8

Grading Analysis		
D100	mm	
D60	mm	0.261
D30	mm	0.167
D10	mm	0.071
Uniformity Coefficient		3.7
Curvature Coefficient		1.5

Remarks	Approved	Date	Sheet No.:
	MW	25/01/2018	1 of 1

Community & Environmental Services
County Hall
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Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1171128002-610**
Our Project No. PZ1522D1
Your Sample Ref. 2
Your Project or Order No. PZ1522
Date Tested 12/12/2017
Date Report Issued 4-Jan-18

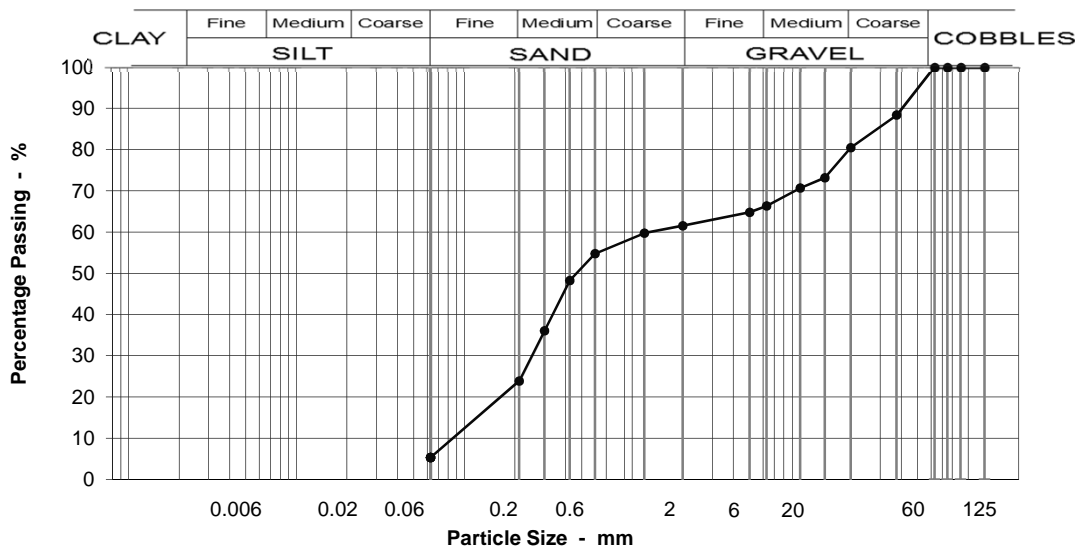
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4 @ 0.3 - 0.5m Specimen: 2

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	88
20	80
14	73
10	71
6.3	66
5	65
2	61
1.18	60
0.600	55
0.425	48
0.300	36
0.212	24
0.063	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6E/6R, 6I, 6M, 6N.

Moisture content % 7.8

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	20
Medium GRAVEL	14
Fine GRAVEL	5
Coarse SAND	7
Medium SAND	31
Fine SAND	19
Silt & Clay	5

Grading Analysis	
D100	38
D60	1.30
D10	0.10
Uniformity Coefficient	13

Description
Greyish brown very gravelly fine to medium SAND. Gravel is medium to coarse subangular to rounded flint, quartz and concrete.

Test Code = 610



Simon Holden (Project Technician)



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Our reference No. **GTS1171128004-610**
Our Project No. **PZ1522D1**
Your Sample Ref **4**
Your Project or Order No. **PZ1522**
Date Tested **14/12/2017**
Date Report Issued **13-Feb-18**

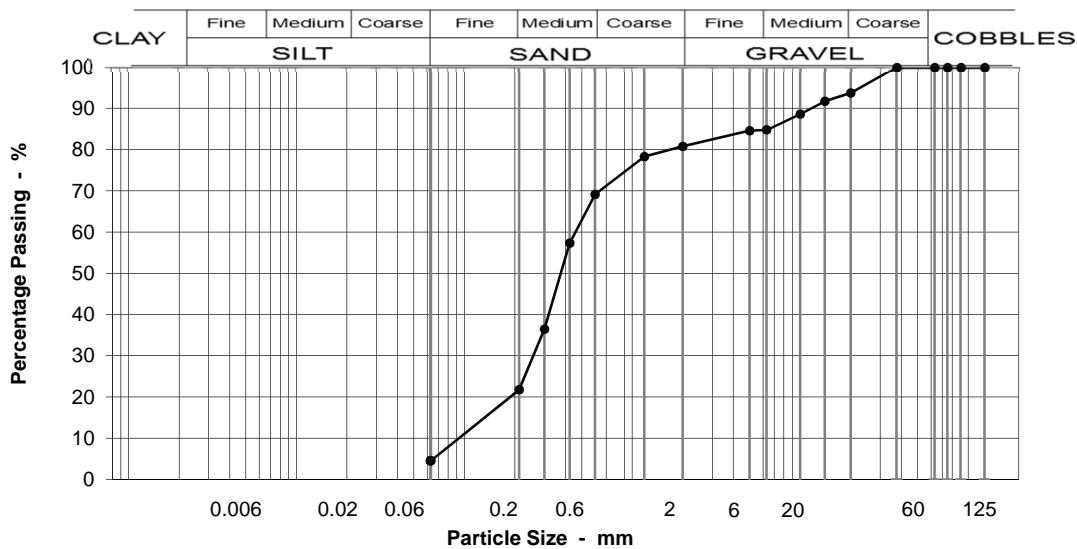
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4 @ 1 - 1.2m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	94
14	92
10	89
6.3	85
5	85
2	81
1.18	78
0.600	69
0.425	57
0.300	36
0.212	22
0.063	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 4.3

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	6
Medium GRAVEL	9
Fine GRAVEL	4
Coarse SAND	12
Medium SAND	47
Fine SAND	17
Silt & Clay	5

Grading Analysis	
D100	20
D60	0.46
D10	0.11
Uniformity Coefficient	4

Description
Brown very gravelly medium SAND. Gravel is medium to coarse subangular to rounded flint, quartz and concrete (MADE GROUND).

Test Code = 610



Simon Holden (Project Technician)



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NR1 2DH

Our reference No. **GTS1171128008-610**
Our Project No. PZ1522D1
Your Sample Ref. 8
Your Project or Order No. PZ1522
Date Tested 13/12/2017
Date Report Issued 4-Jan-18

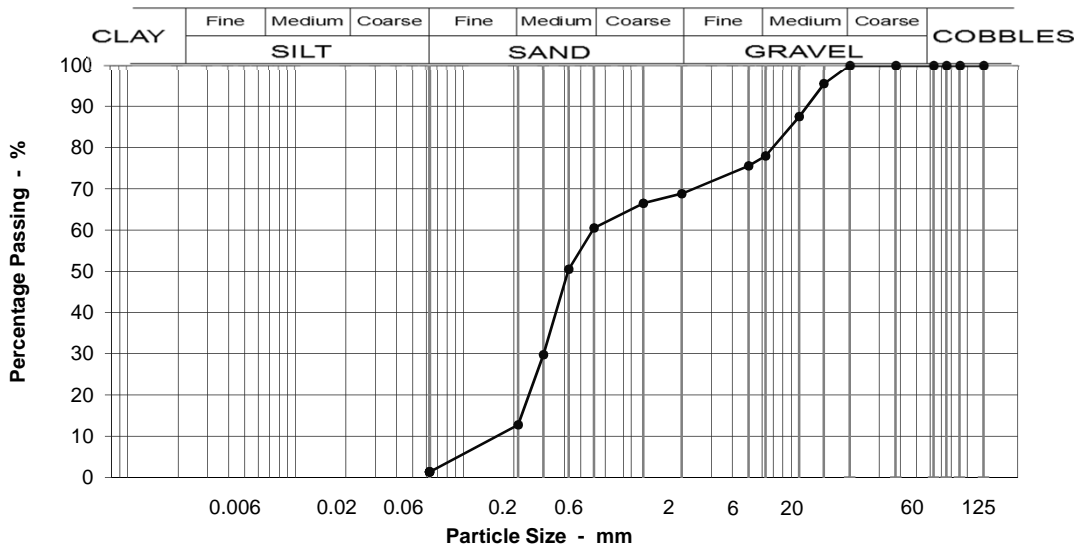
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4 @ 1.2 - 1.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	95
10	87
6.3	78
5	76
2	69
1.18	66
0.600	61
0.425	50
0.300	30
0.212	13
0.063	1

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 13

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	22
Fine GRAVEL	9
Coarse SAND	8
Medium SAND	48
Fine SAND	11
Silt & Clay	1

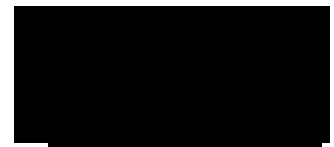
Grading Analysis	
D100	14
D60	0.59
D10	0.18
Uniformity Coefficient	3

Description	
Greyish brown very gravelly medium SAND. Gravel is fine and medium sub-angular to sub-rounded flint and quartz.	

Test Code = 610



Simon Holden (Project Technician)



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Our reference No. **GTS1171128009-610**
Our Project No. PZ1522D1
Your Sample Ref. 9
Your Project or Order No. PZ1522
Date Tested 13/12/2017
Date Report Issued 4-Jan-18

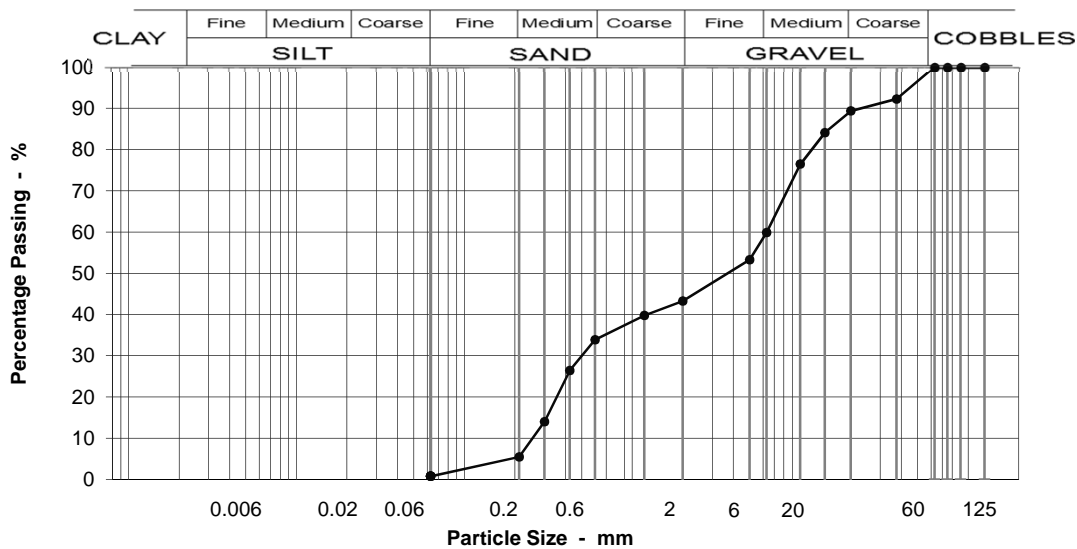
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4 @ 1.6 - 2m Specimen: 2

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	92
20	89
14	84
10	76
6.3	60
5	53
2	43
1.18	40
0.600	34
0.425	26
0.300	14
0.212	5
0.063	1

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6A, 6E/6R, 6F1, 6I, 6M, 6N.

Moisture content % 7.9

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	11
Medium GRAVEL	29
Fine GRAVEL	17
Coarse SAND	9
Medium SAND	28
Fine SAND	5
Silt & Clay	1

Grading Analysis	
D100	38
D60	6.33
D10	0.26
Uniformity Coefficient	24

Description
MADE GROUND: comprising greyish-brown fine to coarse angular to rounded flint, quartz, tile and brick gravel and medium sand.

Test Code = 610



Simon Holden (Project Technician)



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Our reference No. GTS1171128012-610
Our Project No PZ1522D1
Your Sample Ref 12
Your Project or Order No. PZ1522
Date Tested 14/12/2017
Date Report Issued 4-Jan-18

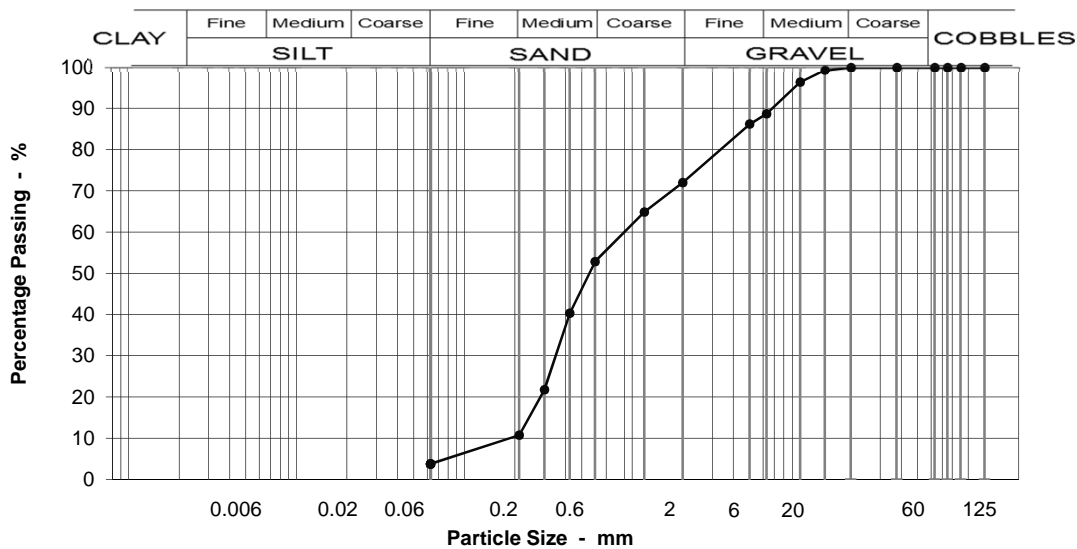
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4 @ 2 - 2.3m **Specimen:** 2

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	99
10	96
6.3	89
5	86
2	72
1.18	65
0.600	53
0.425	40
0.300	22
0.212	11
0.063	4

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 19

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	11
Fine GRAVEL	17
Coarse SAND	19
Medium SAND	42
Fine SAND	7
Silt & Clay	4

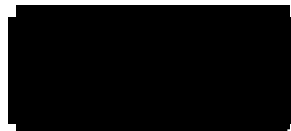
Grading Analysis	
D100	14
D60	0.95
D10	0.20
Uniformity Coefficient	5

Description
MADE GROUND: comprising soft grey gravelly medium to coarse SAND with lenses of soft grey clayey silt. Gravel is fine to coarse angular to subrounded flint, quartz and brick with the occasional shell fragment.

Test Code = 610



Simon Holden (Project Technician)



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NR1 2DH

Our reference No. **GTS1171128013-613**
Our Project No. **PZ1522D1**
Your Sample Ref. **13**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **22-Feb-18**

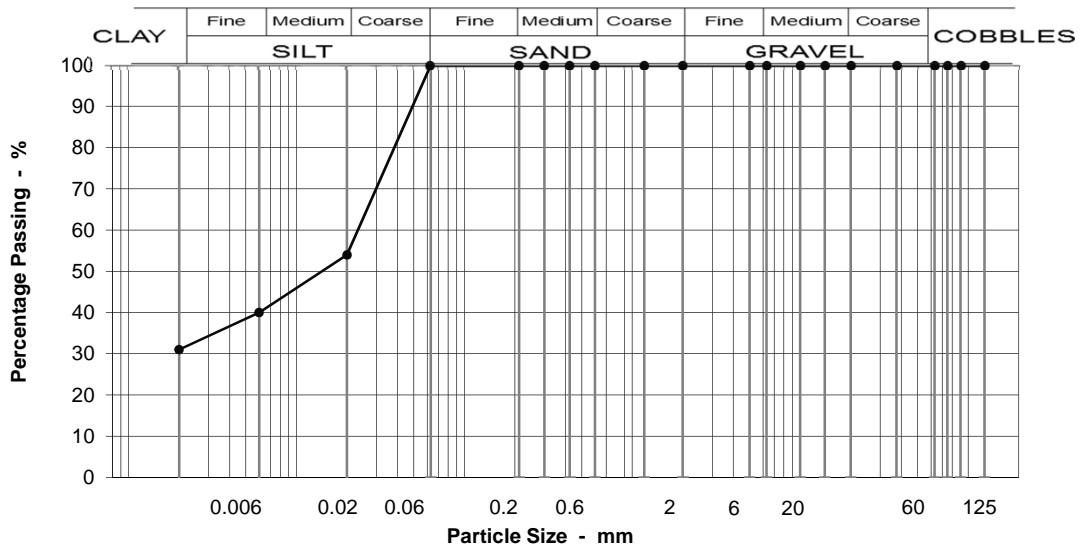
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: **Gt Yarmouth 3rd River Crossing**

Location: **BH4 @ 2.3 - 2.7m Specimen: 1**

Location and orientation within sample not applicable

Bulk disturbed sample



Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	100
0.600	100
0.425	100
0.300	100
0.212	100
0.063	100
0.020	54
0.006	40
0.002	31

Specification for Highway Works Classification
Table 6/2

Moisture content % 0

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	0
Medium SAND	0
Fine SAND	0
Silt & Clay	100

Grading Analysis	
D100	0
D60	0.03
D10	0.00
Uniformity Coefficient	>10*

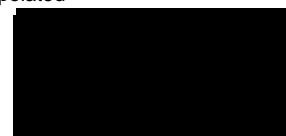
Description	
Soft to firm grey clayey coarse SILT.	

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)



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Norfolk
NR1 2DH

Our reference No. GTS1171128014-610
Our Project No PZ1522D1
Your Sample Ref 14
Your Project or Order No. PZ1522
Date Tested 14/12/2017
Date Report Issued 13-Feb-18

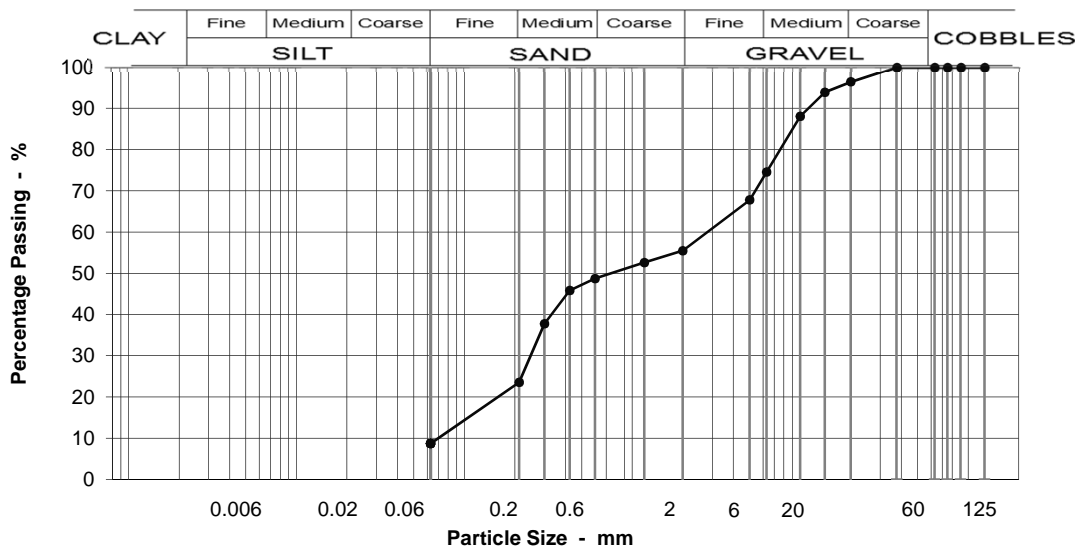
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4 @ 2.7 - 3m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	96
14	94
10	88
6.3	75
5	68
2	55
1.18	53
0.600	49
0.425	46
0.300	38
0.212	24
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6E/6R, 6F1, 6I, 6M, 6N.

Moisture content % 19

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	4
Medium GRAVEL	22
Fine GRAVEL	19
Coarse SAND	7
Medium SAND	25
Fine SAND	15
Silt & Clay	9

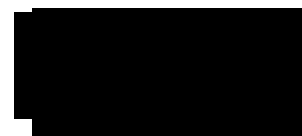
Grading Analysis	
D100	20
D60	3.10
D10	0.08
Uniformity Coefficient	41

Description
Grey slightly clayey medium SAND and fine to medium flint, quartz, ceramics, pottery and brick GRAVEL.

Test Code = 610



Simon Holden (Project Technician)



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Our reference No. GTS1171129001-610
Our Project No PZ1522D1
Your Sample Ref 18
Your Project or Order No. PZ1522
Date Tested 14/12/2017
Date Report Issued 4-Jan-18

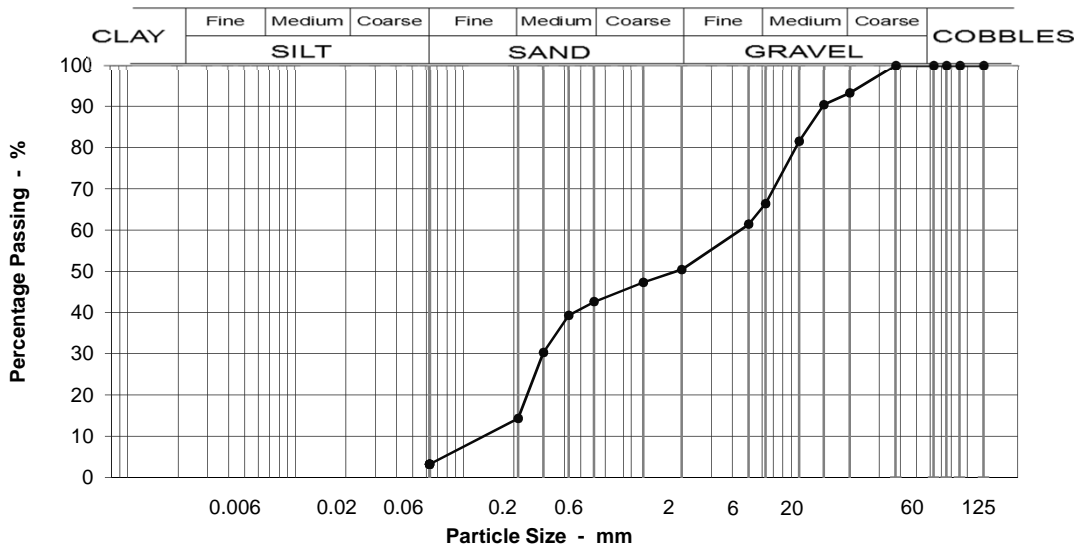
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4 @ 3 - 3.3m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	93
14	90
10	82
6.3	66
5	61
2	50
1.18	47
0.600	43
0.425	39
0.300	30
0.212	14
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6A, 6E/6R, 6F1, 6I, 6M, 6N.

Moisture content % 12

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	7
Medium GRAVEL	27
Fine GRAVEL	16
Coarse SAND	8
Medium SAND	28
Fine SAND	11
Silt & Clay	3

Grading Analysis	
D100	20
D60	4.62
D10	0.15
Uniformity Coefficient	30

Description
MADE GROUND: comprising of greyish brown fine and medium flint, quartz, ceramics, pottery and brick gravel and fine to medium sand.

Test Code = 610



Simon Holden (Project Technician)



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NR1 2DH

Our reference No. **GTS1171129002-613**
Our Project No. PZ1522D1
Your Sample Ref. 19
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 22-Feb-18

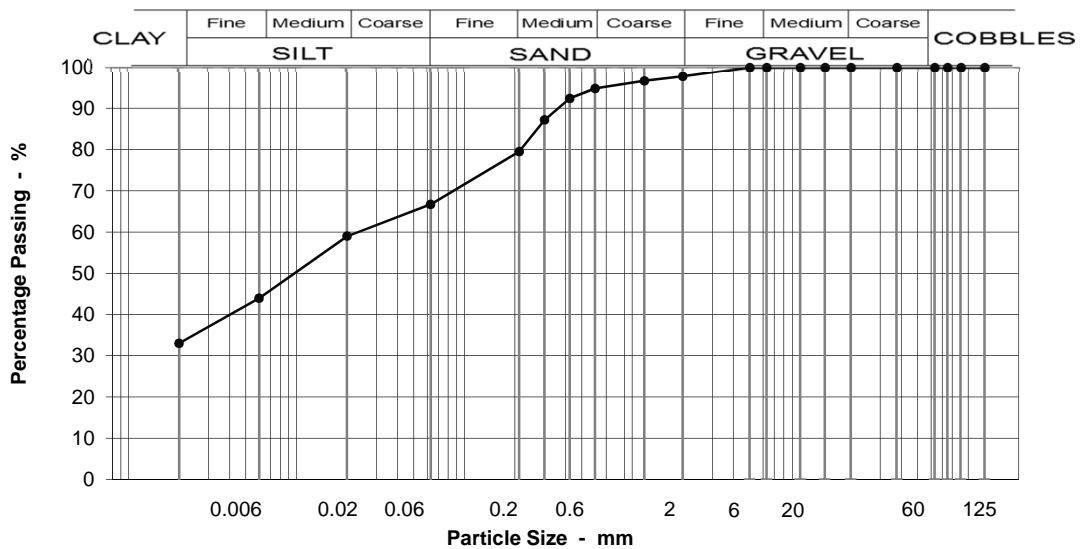
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4 @ 3.3 - 3.8m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	98
1.18	97
0.600	95
0.425	92
0.300	87
0.212	80
0.063	67
0.020	59
0.006	44
0.002	33

Specification for Highway Works Classification
Table 6/2

Moisture content % 0

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	2
Coarse SAND	3
Medium SAND	15
Fine SAND	13
Silt & Clay	67

Grading Analysis	
D100	2
D60	0.03
D10	0.00
Uniformity Coefficient	>10*

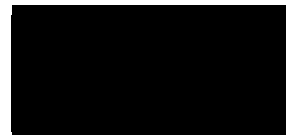
Description	
Soft to very soft, grey very sandy CLAY/SILT	

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)



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County Hall
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Norfolk
NR1 2DH

Our reference No. GTS1171129012-610
Our Project No PZ1522D1
Your Sample Ref 29
Your Project or Order No. PZ1522
Date Tested 07/12/2017
Date Report Issued 4-Jan-18

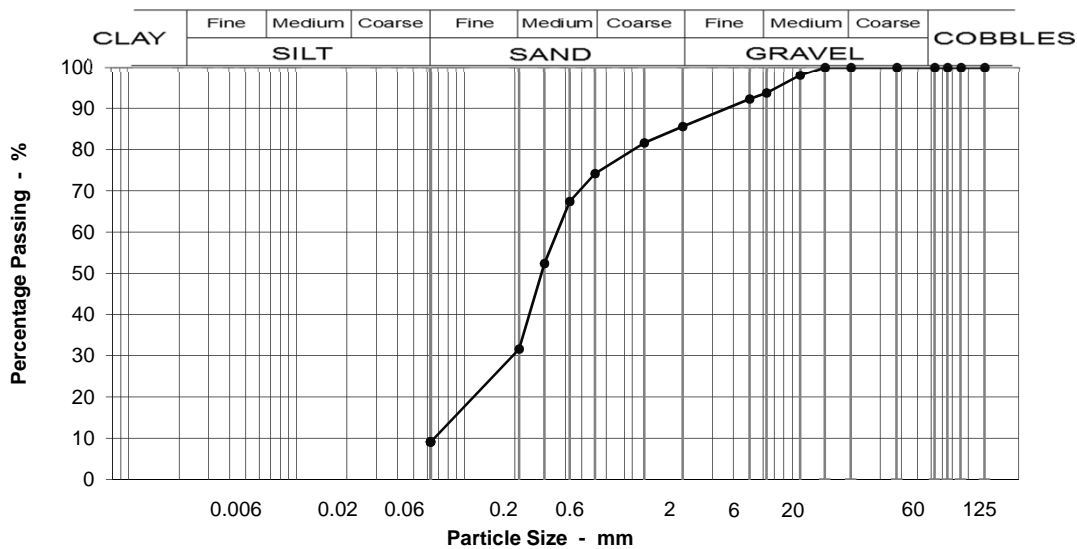
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4 @ 6 - 6.5m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	98
6.3	94
5	92
2	86
1.18	82
0.600	74
0.425	67
0.300	52
0.212	32
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J, 6K, 6M.

Moisture content % 86

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	6
Fine GRAVEL	8
Coarse SAND	11
Medium SAND	43
Fine SAND	22
Silt & Clay	9

Grading Analysis	
D100	10
D60	0.36
D10	0.07
Uniformity Coefficient	5

Description
Grey gravelly slightly silty fine to coarse SAND with lenses of black organic silty fine sand. Gravel is fine and medium angular to rounded flint and quartz.

Test Code = 610



Simon Holden (Project Technician)



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Our reference No. GTS1171129014-610
Our Project No PZ1522D1
Your Sample Ref 31
Your Project or Order No. PZ1522
Date Tested 15/12/2017
Date Report Issued 4-Jan-18

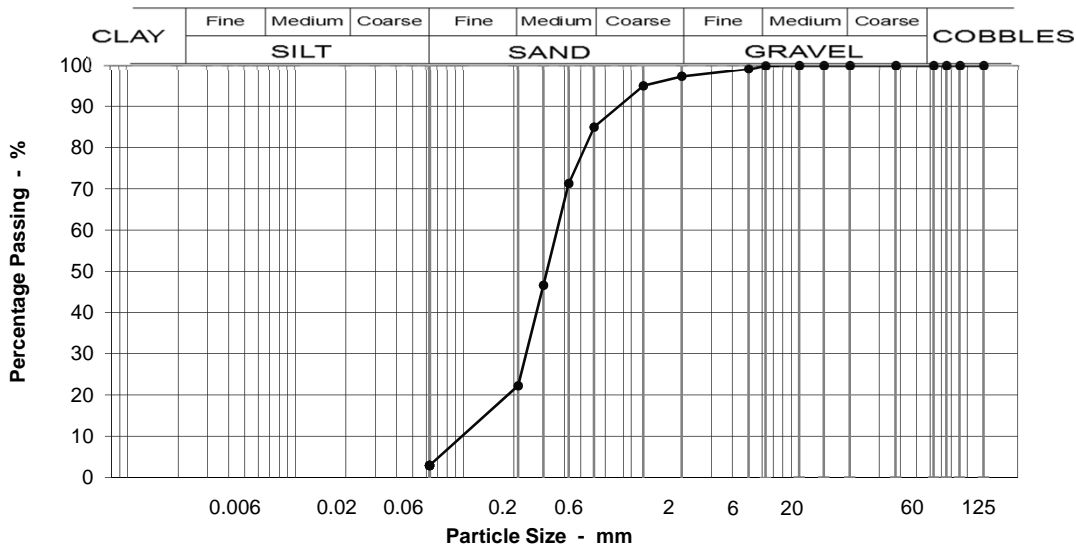
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4 @ 7 - 7.5m Specimen: 2

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	99
2	97
1.18	95
0.600	85
0.425	71
0.300	47
0.212	22
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 19

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	3
Coarse SAND	12
Medium SAND	63
Fine SAND	19
Silt & Clay	3

Grading Analysis	
D100	6
D60	0.37
D10	0.12
Uniformity Coefficient	3

Description	
Grey slightly organic medium SAND.	

Test Code = 610



Simon Holden (Project Technician)



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Norfolk
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Our reference No. GTS1171130001-610
Our Project No PZ1522D1
Your Sample Ref 34
Your Project or Order No. PZ1522
Date Tested 14/12/2017
Date Report Issued 4-Jan-18

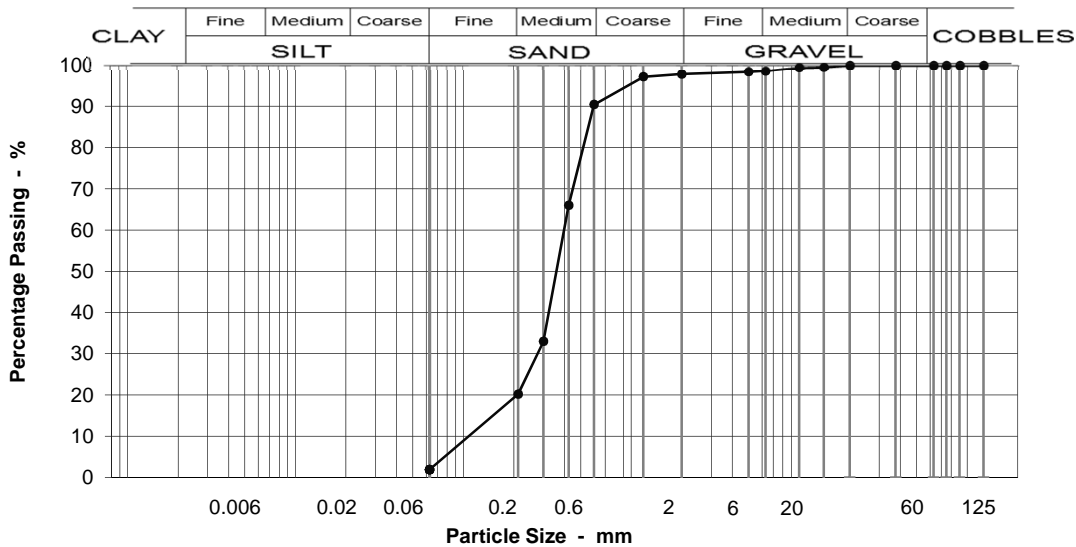
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4 @ 8 - 8.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	99
6.3	99
5	98
2	98
1.18	97
0.600	90
0.425	66
0.300	33
0.212	20
0.063	2

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 21

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	1
Fine GRAVEL	1
Coarse SAND	7
Medium SAND	70
Fine SAND	18
Silt & Clay	2

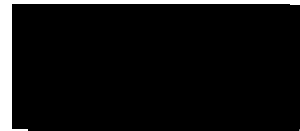
Grading Analysis	
D100	14
D60	0.40
D10	0.13
Uniformity Coefficient	3

Description	
Grey slightly organic medium SAND.	

Test Code = 610



Simon Holden (Project Technician)



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Norfolk
NR1 2DH

Our reference No. GTS1171201002-610
Our Project No PZ1522D1
Your Sample Ref 37
Your Project or Order No. PZ1522
Date Tested 21/12/2017
Date Report Issued 4-Jan-18

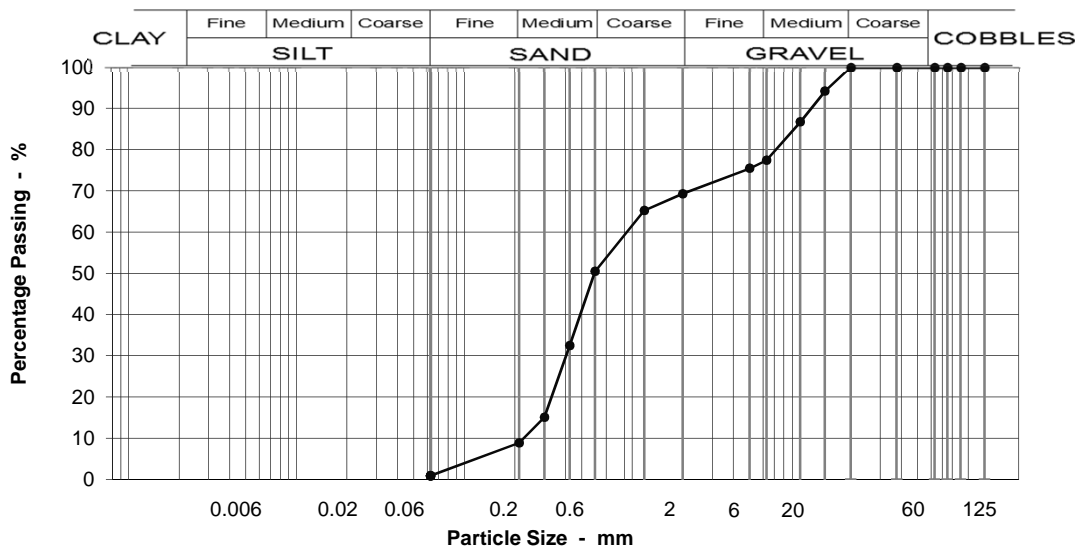
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4 @ 9 - 9.5m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	94
10	87
6.3	77
5	75
2	69
1.18	65
0.600	50
0.425	33
0.300	15
0.212	9
0.063	1

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 13

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	23
Fine GRAVEL	8
Coarse SAND	19
Medium SAND	42
Fine SAND	8
Silt & Clay	1

Grading Analysis	
D100	14
D60	0.97
D10	0.23
Uniformity Coefficient	4

Description
Brown very gravelly medium and coarse SAND. Gravel is fine and medium angular to rounded flint and quartz.

Test Code = 610



Simon Holden (Project Technician)



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Norfolk
NR1 2DH

Our reference No. **GTS1171201004-610**
Our Project No. **PZ1522D1**
Your Sample Ref **39**
Your Project or Order No. **PZ1522**
Date Tested **22/12/2017**
Date Report Issued **13-Feb-18**

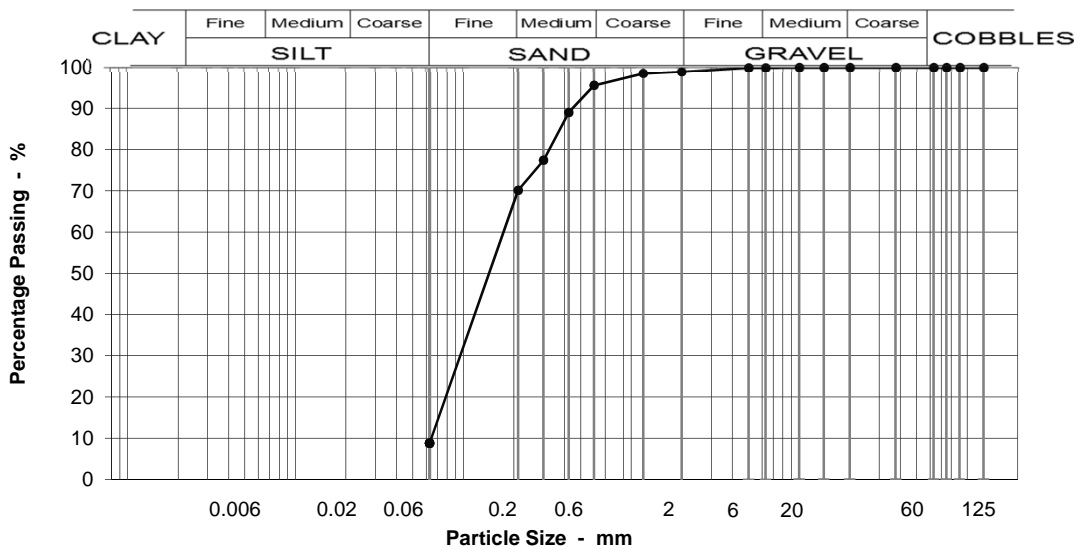
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4 @ 10 - 10.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	98
0.600	96
0.425	89
0.300	77
0.212	70
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 23

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	3
Medium SAND	25
Fine SAND	61
Silt & Clay	9

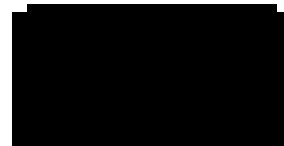
Grading Analysis	
D100	6
D60	0.19
D10	0.07
Uniformity Coefficient	3

Description	
Brown fine SAND.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1171201011-610**
Our Project No. PZ1522D1
Your Sample Ref 46
Your Project or Order No. PZ1522
Date Tested 21/12/2017
Date Report Issued 4-Jan-18

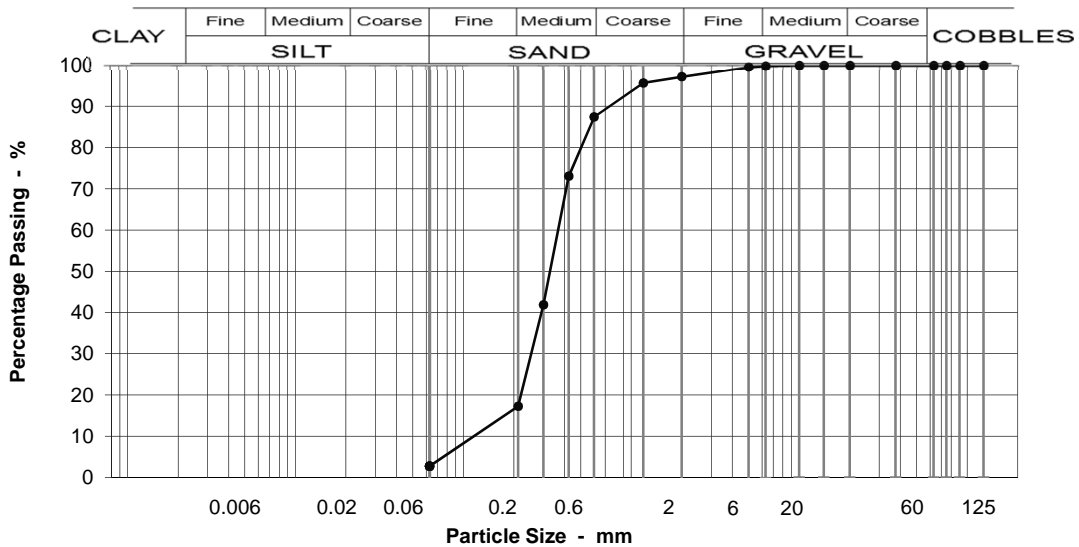
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4 @ 13 - 13.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	97
1.18	96
0.600	87
0.425	73
0.300	42
0.212	17
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 20

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	3
Coarse SAND	10
Medium SAND	70
Fine SAND	15
Silt & Clay	3

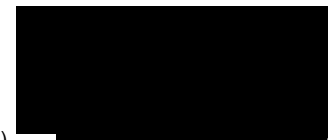
Grading Analysis	
D100	6
D60	0.37
D10	0.14
Uniformity Coefficient	3

Description	
Greyish brown medium SAND.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS1171204002-610
Our Project No PZ1522D1
Your Sample Ref 53
Your Project or Order No. PZ1522
Date Tested 22/12/2017
Date Report Issued 4-Jul-18

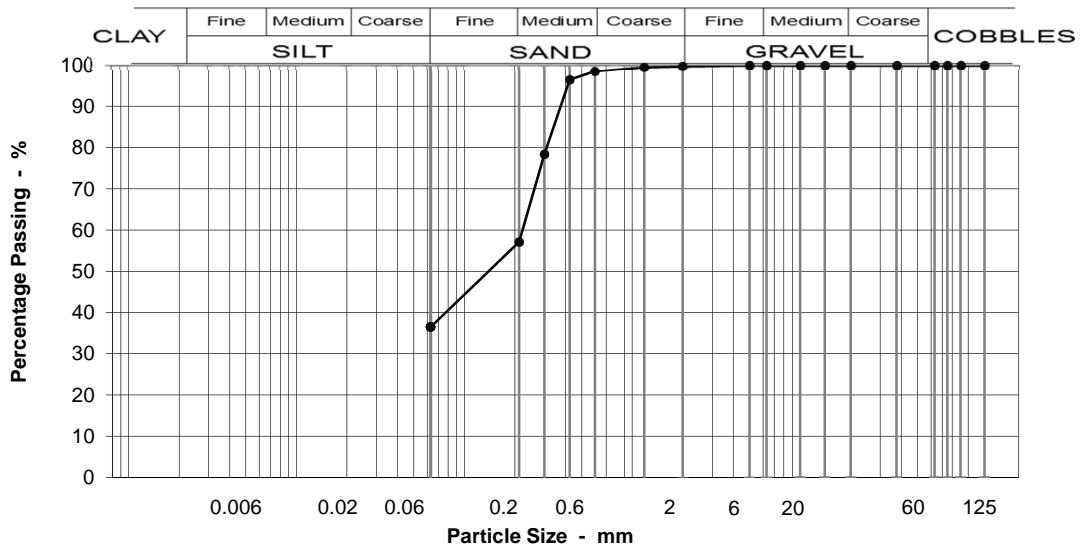
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4 @ 16 - 16.5m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	100
0.600	99
0.425	96
0.300	78
0.212	57
0.063	37

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes
2A/2B, 2A/2B.

Moisture content % 57

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	1
Medium SAND	41
Fine SAND	21
Silt & Clay	37

Grading Analysis	
D100	6
D60	0.22
D10	0.03
Uniformity Coefficient	7

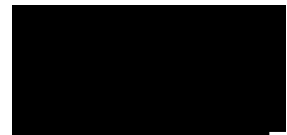
Description	
Dark brown clayey very silty fine and medium SAND.	

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



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County Hall
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Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1171204009-610**
Our Project No. PZ1522D1
Your Sample Ref. 60
Your Project or Order No. PZ1522
Date Tested 22/12/2017
Date Report Issued 4-Jan-18

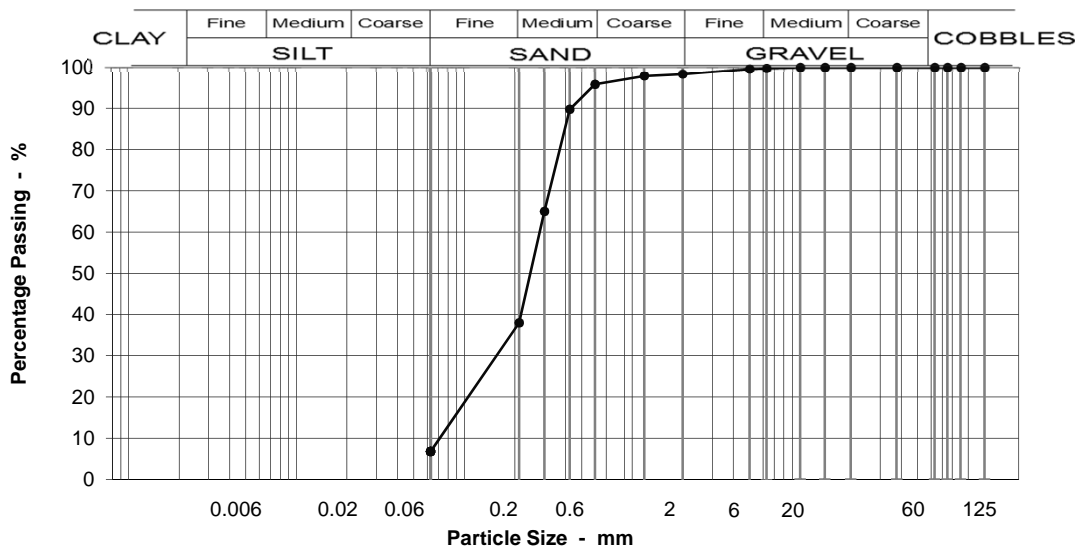
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4 @ 19 - 19.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	98
1.18	98
0.600	96
0.425	90
0.300	65
0.212	38
0.063	7

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 37

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	3
Medium SAND	58
Fine SAND	31
Silt & Clay	7

Grading Analysis	
D100	6
D60	0.28
D10	0.08
Uniformity Coefficient	4

Description
Brownish grey slightly silty fine and medium SAND.

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS1171204015-610
Our Project No PZ1522D1
Your Sample Ref 66
Your Project or Order No. PZ1522
Date Tested 21/12/2017
Date Report Issued 4-Jan-18

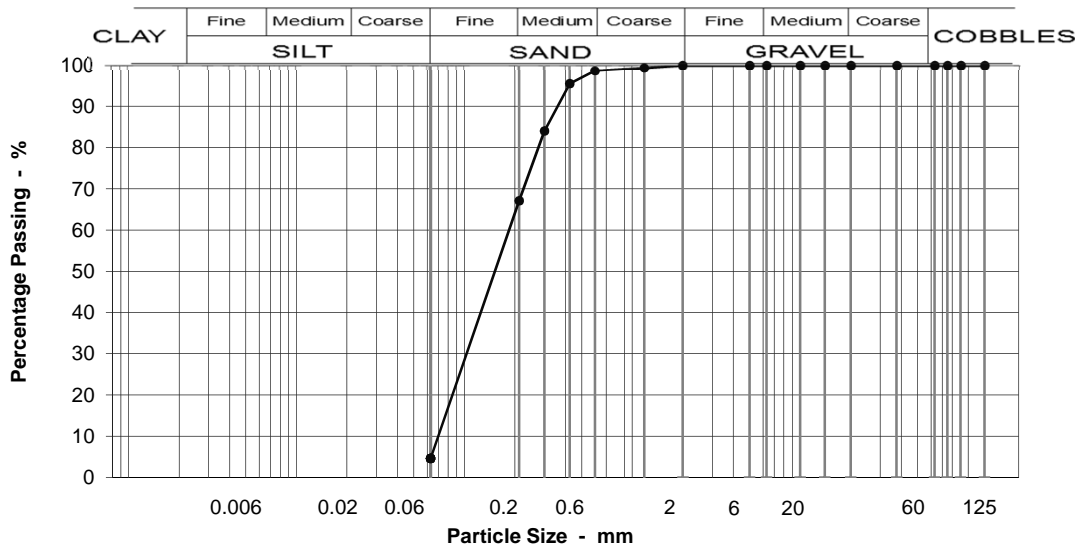
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4 @ 22 - 22.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	99
0.600	99
0.425	95
0.300	84
0.212	67
0.063	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 23

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	1
Medium SAND	32
Fine SAND	62
Silt & Clay	5

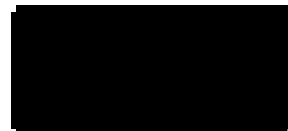
Grading Analysis	
D100	1
D60	0.20
D10	0.08
Uniformity Coefficient	3

Description	
Brownish grey slightly silty fine and medium SAND.	

Test Code = 610



Simon Holden (Project Technician)



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County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1171204016-610**
Our Project No. PZ1522D1
Your Sample Ref 67
Your Project or Order No. PZ1522
Date Tested 21/12/2017
Date Report Issued 4-Jan-18

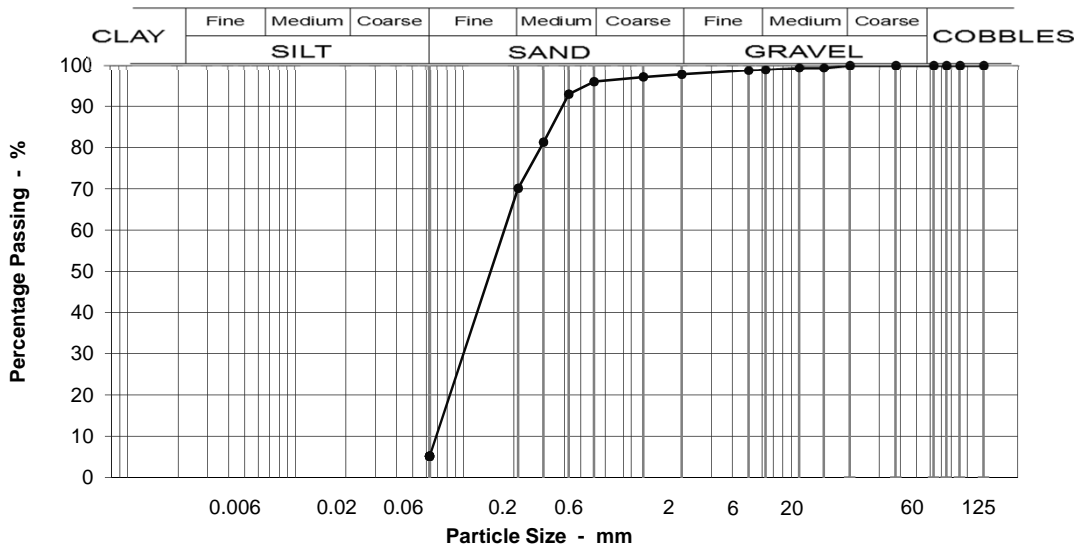
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4 @ 23 - 23.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	99
10	99
6.3	99
5	99
2	98
1.18	97
0.600	96
0.425	93
0.300	81
0.212	70
0.063	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 25

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	1
Fine GRAVEL	1
Coarse SAND	2
Medium SAND	26
Fine SAND	65
Silt & Clay	5

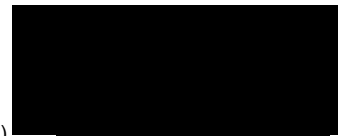
Grading Analysis	
D100	14
D60	0.19
D10	0.07
Uniformity Coefficient	3

Description	
Brownish grey slightly silty fine and medium SAND.	

Test Code = 610



Simon Holden (Project Technician)



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County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS5171205001-610**
Our Project No. PZ1522D1
Your Sample Ref. 69
Your Project or Order No. PZ1522
Date Tested 20/12/2017
Date Report Issued 4-Jan-18

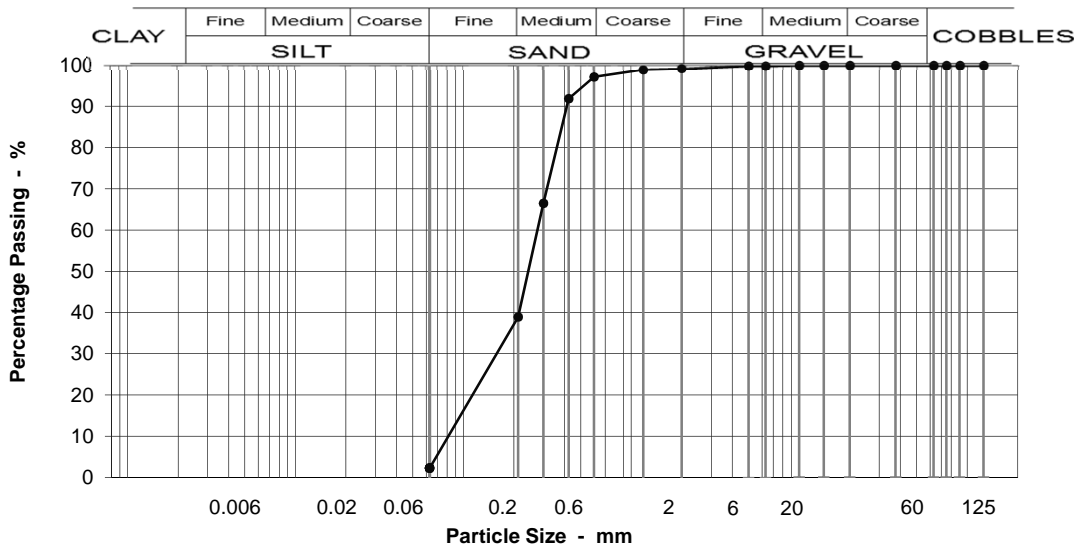
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4 @ 24.45 - 25m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	99
0.600	97
0.425	92
0.300	66
0.212	39
0.063	2

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 22

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	2
Medium SAND	58
Fine SAND	37
Silt & Clay	2

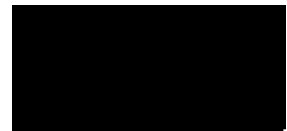
Grading Analysis	
D100	6
D60	0.28
D10	0.09
Uniformity Coefficient	3

Description	
Grey fine and medium SAND.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS5171205005-610**
Our Project No. PZ1522D1
Your Sample Ref. 73
Your Project or Order No. PZ1522
Date Tested 21/12/2017
Date Report Issued 4-Jan-18

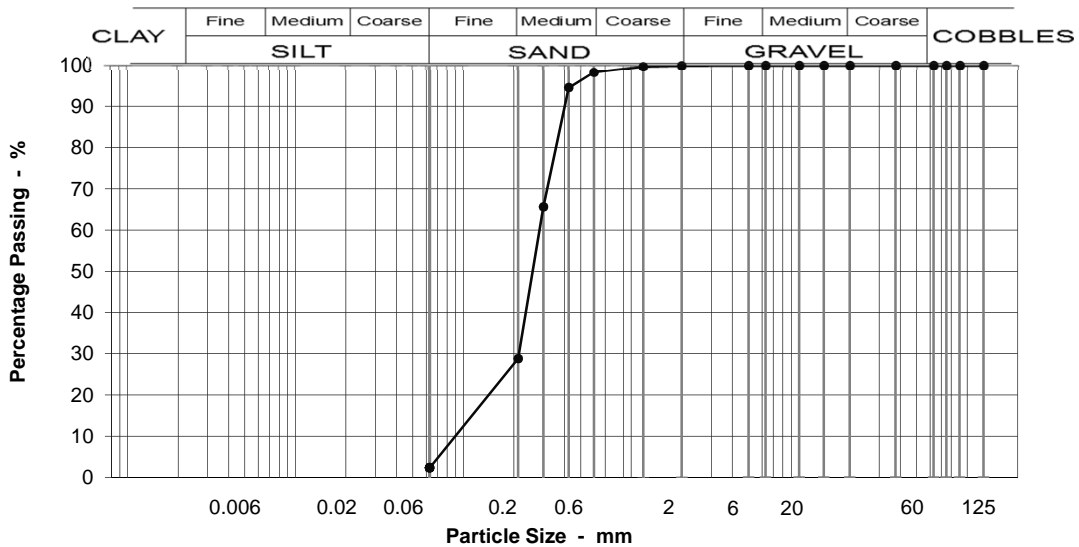
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4 @ 27 - 27.6m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	100
0.600	98
0.425	95
0.300	66
0.212	29
0.063	2

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 22

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	2
Medium SAND	69
Fine SAND	26
Silt & Clay	2

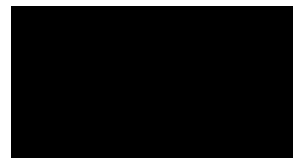
Grading Analysis	
D100	2
D60	0.29
D10	0.11
Uniformity Coefficient	3

Description	
Grey fine and medium SAND.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
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Norwich
Norfolk
NR1 2DH

Our reference No. **GTS5171205009-610**
Our Project No. PZ1522D1
Your Sample Ref 76
Your Project or Order No. PZ1522
Date Tested 21/12/2017
Date Report Issued 4-Jan-18

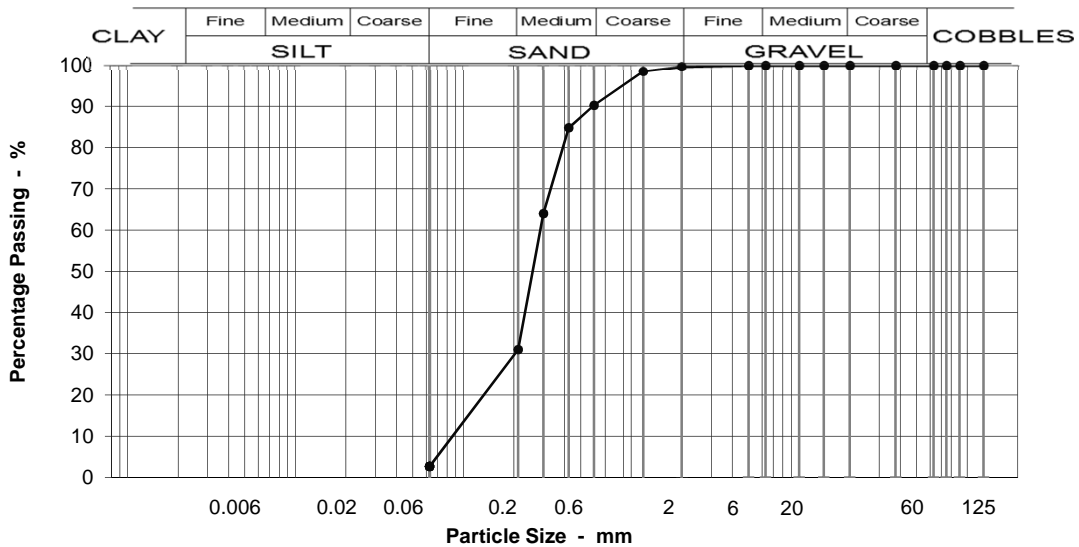
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4 @ 28 - 28.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	99
0.600	90
0.425	85
0.300	64
0.212	31
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 18

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	9
Medium SAND	59
Fine SAND	28
Silt & Clay	3

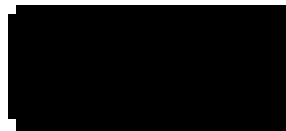
Grading Analysis	
D100	2
D60	0.29
D10	0.10
Uniformity Coefficient	3

Description	
Grey fine and medium SAND with some shell fragments.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3171204002-610**
Our Project No. PZ1522D1
Your Sample Ref. 1
Your Project or Order No. PZ1522
Date Tested 24/12/2018
Date Report Issued 4-Jan-18

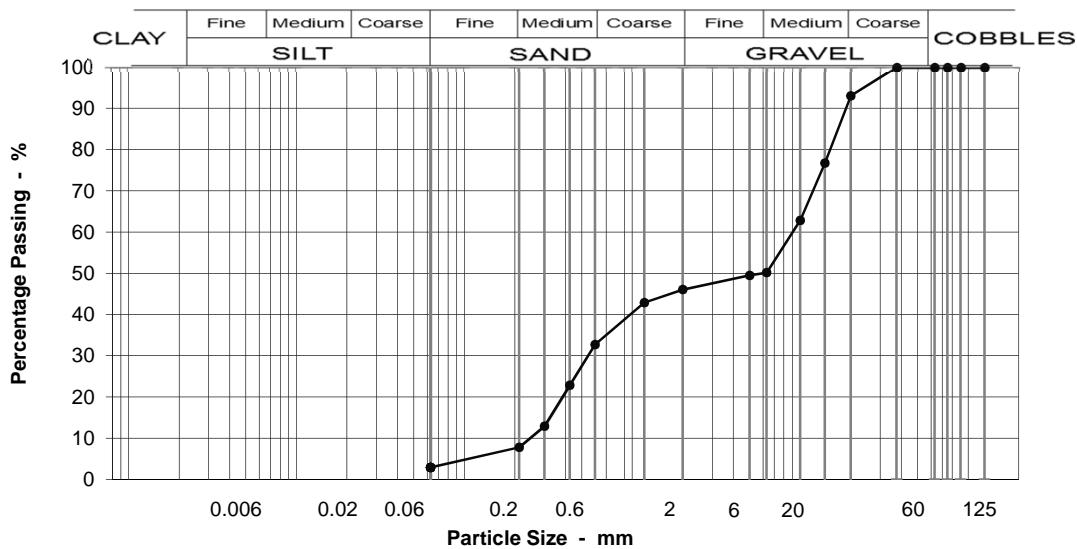
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4A @ 0.2 - 0.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	93
14	77
10	63
6.3	50
5	49
2	46
1.18	43
0.600	33
0.425	23
0.300	13
0.212	8
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6A, 6E/6R, 6F1, 6I, 6M, 6N.

Moisture content % 6.9

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	7
Medium GRAVEL	43
Fine GRAVEL	4
Coarse SAND	13
Medium SAND	25
Fine SAND	5
Silt & Clay	3

Grading Analysis	
D100	20
D60	9.18
D10	0.25
Uniformity Coefficient	37

Description
MADE GROUND: comprising medium gravel sized angular to rounded concrete, flint, asphalt and quartz in a matrix of greyish-brown medium and coarse sand.

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3171204004-613**
Our Project No. **PZ1522D1**
Your Sample Ref **3**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **5-Feb-18**

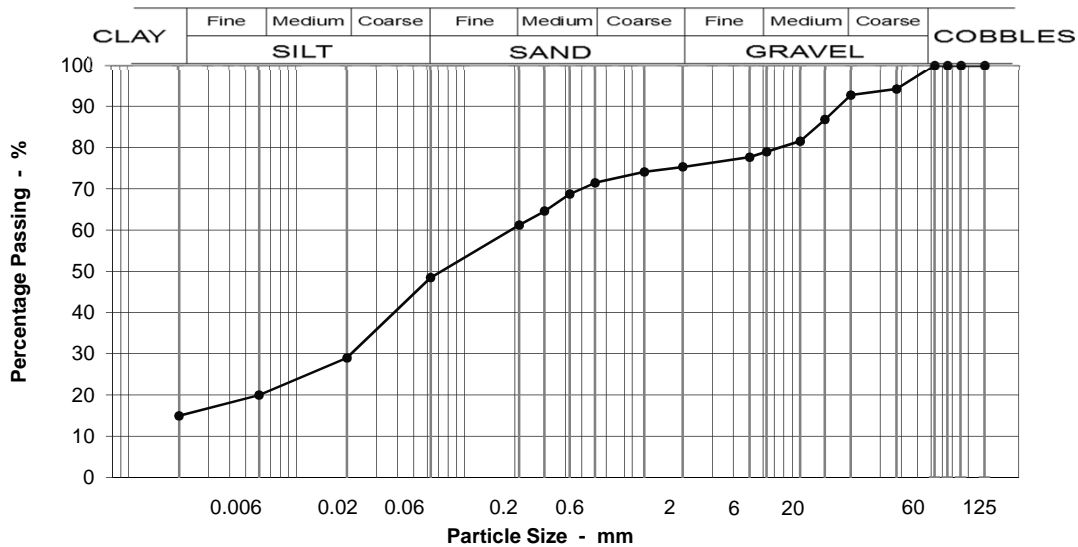
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4A @ 0.5 - 1m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100		BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	7
63	100		Medium GRAVEL	14
37.5	94		Fine GRAVEL	4
20	93		Coarse SAND	4
14	87		Medium SAND	10
10	82		Fine SAND	13
6.3	79		Silt & Clay	48
5	78			
2	75			
1.18	74			
0.600	71			
0.425	69			
0.300	65			
0.212	61			
0.063	48			
0.020	29			
0.006	20			
0.002	15			
		Moisture content %		23

Grading Analysis	
D100	38
D60	0.20
D10	0.00
Uniformity Coefficient	>10*

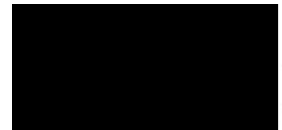
Description	
Firm dark grey very gravelly, very sandy clayey SILT with some roots. Gravel is medium angular to sub-angular concrete, brick, flint, quartz and asphalt (MADE GROUND)	

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS3171205006-610
Our Project No PZ1522D1
Your Sample Ref 15
Your Project or Order No. PZ1522
Date Tested 02/01/2018
Date Report Issued 12-Jan-18

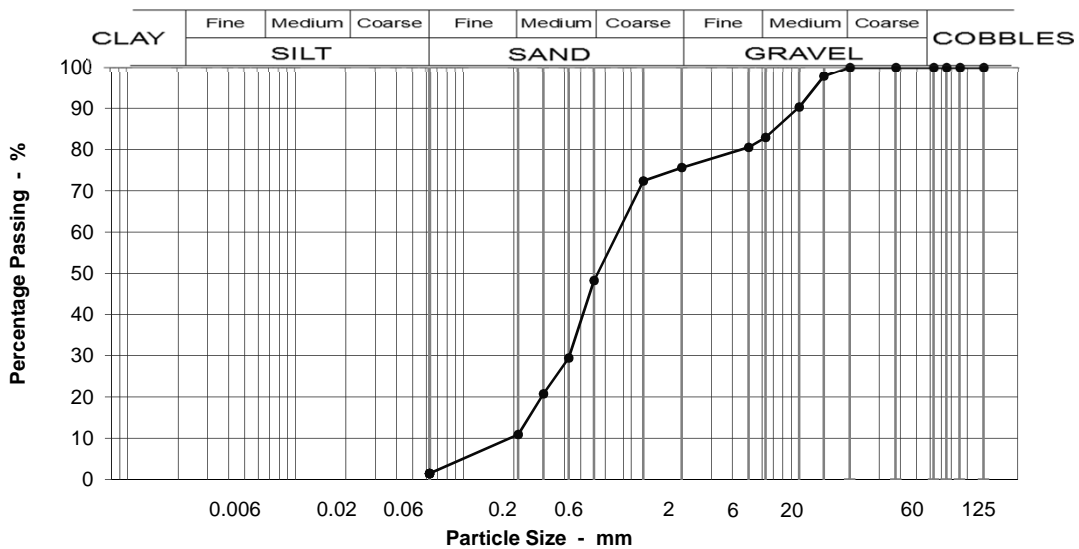
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4A @ 4 - 4.5m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	98
10	90
6.3	83
5	81
2	76
1.18	72
0.600	48
0.425	29
0.300	21
0.212	11
0.063	1

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6F1, 6M.

Moisture content % 9

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	17
Fine GRAVEL	7
Coarse SAND	27
Medium SAND	37
Fine SAND	9
Silt & Clay	1

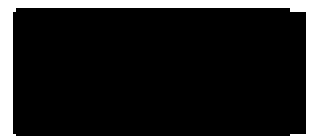
Grading Analysis	
D100	14
D60	0.88
D10	0.20
Uniformity Coefficient	4

Description
Dark brown very gravelly medium and coarse SAND. Gravel is fine and medium subangular to rounded flint and quartz.

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL201803025-610**
Our Project No. PZ1522D1
Your Sample Ref 3
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 17-Apr-18

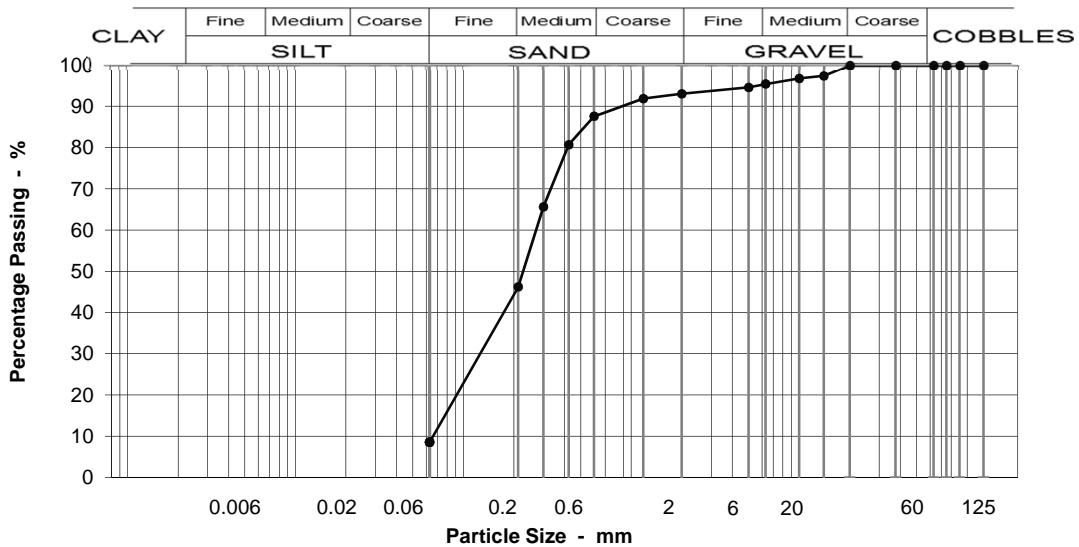
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4ASU @ 0.5 - 0.8m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	97
10	97
6.3	95
5	95
2	93
1.18	92
0.600	88
0.425	81
0.300	66
0.212	46
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 11

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	5
Fine GRAVEL	2
Coarse SAND	5
Medium SAND	41
Fine SAND	38
Silt & Clay	9

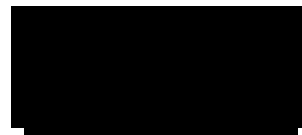
Grading Analysis	
D100	14
D60	0.27
D10	0.07
Uniformity Coefficient	4

Description
MADE GROUND: comprising of brown slightly silty, slightly gravelly fine and medium SAND, Gravel is fine and medium sub angular to rounded flint and quartz.

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL201803029-610**
Our Project No. **PZ1522D1**
Your Sample Ref **1**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **17-Apr-18**

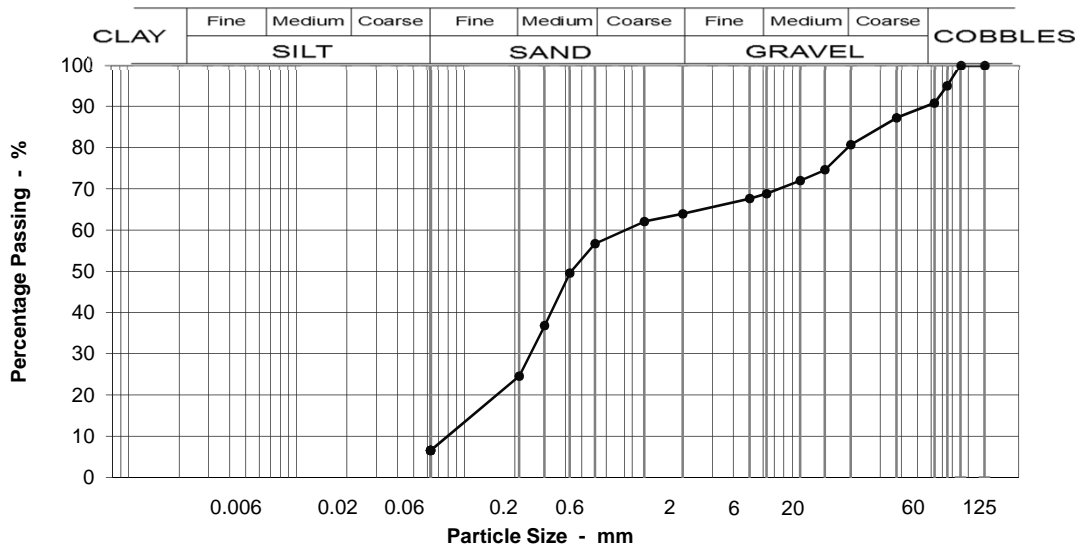
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4ASU @ 0.2 - 0.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	95
63	91
37.5	87
20	81
14	75
10	72
6.3	69
5	68
2	64
1.18	62
0.600	57
0.425	50
0.300	37
0.212	25
0.063	7

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6E/6R, 6I.

Moisture content % 9.6

Sample Proportions	
BOULDERS	0
COBBLES	9
Coarse GRAVEL	10
Medium GRAVEL	12
Fine GRAVEL	5
Coarse SAND	7
Medium SAND	32
Fine SAND	18
Silt & Clay	7

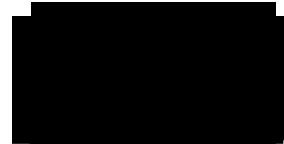
Grading Analysis	
D100	75
D60	0.96
D10	0.09
Uniformity Coefficient	10

Description
MADE GROUND: comprising brown slightly silty very gravelly fine and medium SAND, Gravel is medium and coarse angular flint, concrete and asphalt with occasional concrete cobbles.

Test Code = 610



Simon Holden (Project Technician)



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County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. NCCL2018030214-610
Our Project No PZ1522D1
Your Sample Ref 7
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 4-Jul-18

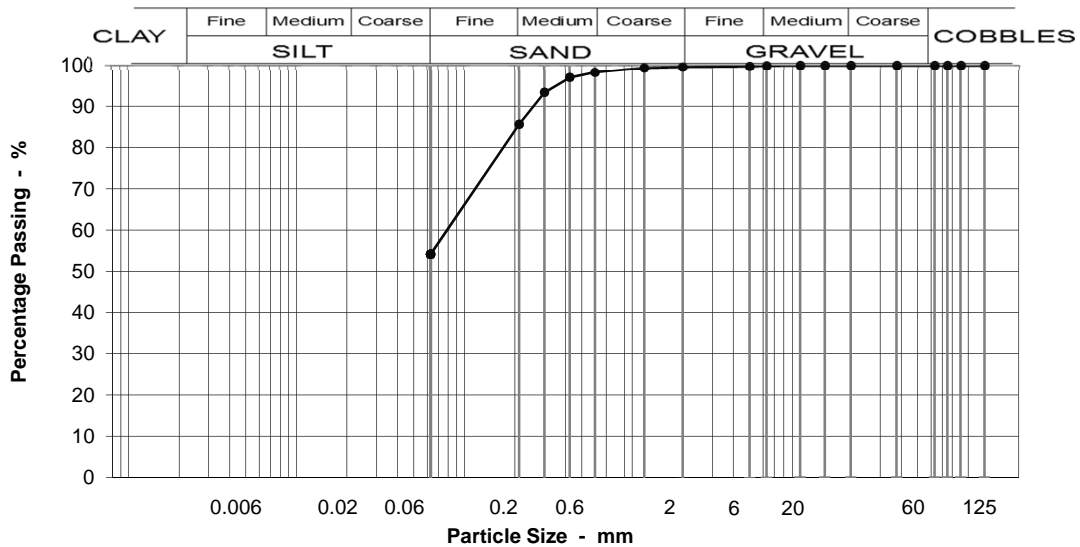
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4ASU @ 2 - 3m **Specimen:** 2 @ 2.35m

Location and orientation within sample not applicable

Disturbed sample



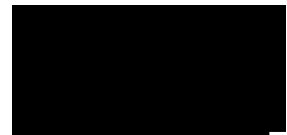
Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 2A/2B, 2A/2B.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	1
14	100		Medium SAND	13
10	100		Fine SAND	31
6.3	100		Silt & Clay	54
5	100		Grading Analysis	
2	100		D100	6
1.18	99		D60	0.09
0.600	98		D10	0.02
0.425	97		Uniformity Coefficient	4
0.300	93		Description	
0.212	86	Dark grey very asndy very clayey organic SILT with some roots.		
0.063	54			
Moisture content %		23		

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
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Norwich
Norfolk
NR1 2DH

Our reference No. NCCL2018030212-610
Our Project No PZ1522D1
Your Sample Ref 10
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 17-Apr-18

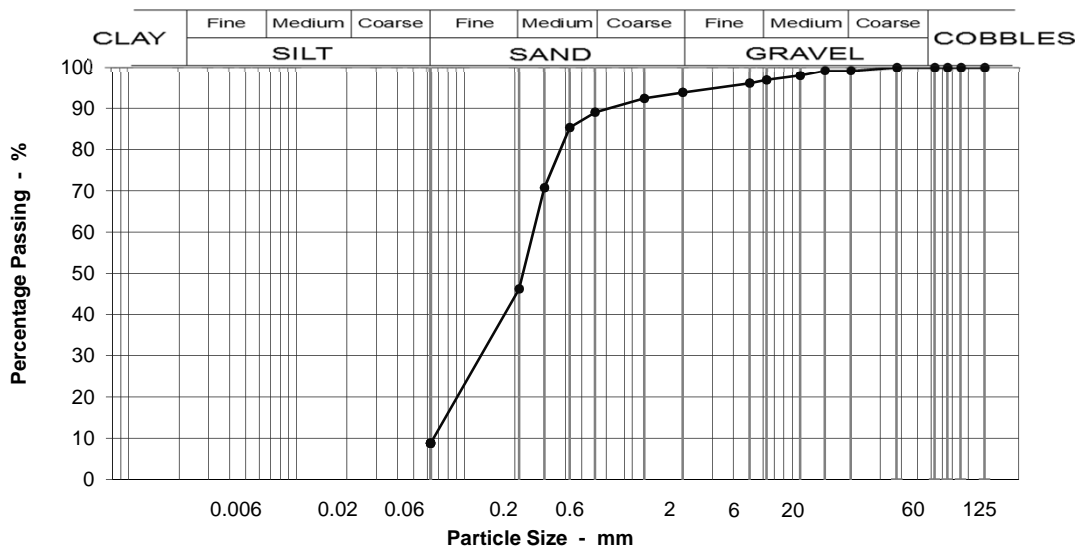
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4ASU @ 5 - 6m **Specimen:** 1 @ 5.2m

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	99
14	99
10	98
6.3	97
5	96
2	94
1.18	92
0.600	89
0.425	85
0.300	71
0.212	46
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 19

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	1
Medium GRAVEL	2
Fine GRAVEL	3
Coarse SAND	5
Medium SAND	43
Fine SAND	37
Silt & Clay	9

Grading Analysis	
D100	20
D60	0.26
D10	0.07
Uniformity Coefficient	4

Description
Laminated greyish brown fine and medium SAND with laminae of soft grey clay.

Test Code = 610



Simon Holden (Project Technician)

Community & Environmental Services
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Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL2018030215-610**
Our Project No. **PZ1522D1**
Your Sample Ref. **1**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **17-Apr-18**

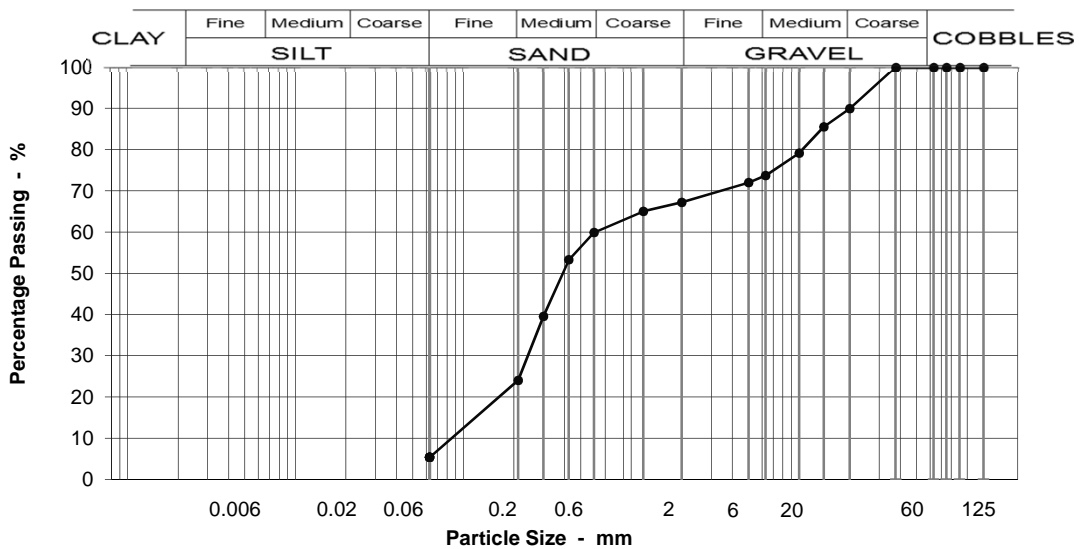
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4BU @ 0.1 - 0.4m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	90
14	86
10	79
6.3	74
5	72
2	67
1.18	65
0.600	60
0.425	53
0.300	40
0.212	24
0.063	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J, 6M.

Moisture content % 9.5

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	10
Medium GRAVEL	16
Fine GRAVEL	7
Coarse SAND	7
Medium SAND	36
Fine SAND	19
Silt & Clay	5

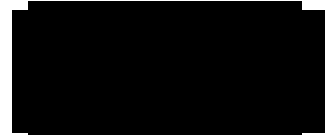
Grading Analysis	
D100	20
D60	0.61
D10	0.10
Uniformity Coefficient	6

Description
Dark greyish brown very sandy, gravelly TOPSOIL with some roots

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
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Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL2018030217-610**
Our Project No. **PZ1522D1**
Your Sample Ref. **3**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **17-Apr-18**

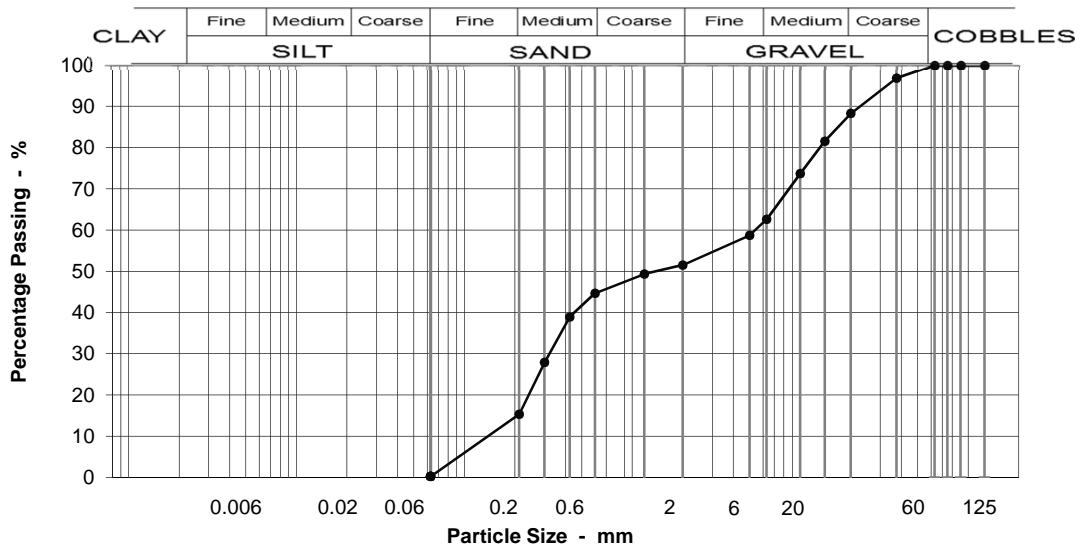
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4BU @ 0.5 - 0.8m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	97
20	88
14	82
10	74
6.3	63
5	59
2	52
1.18	49
0.600	45
0.425	39
0.300	28
0.212	15
0.063	0

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6A, 6E/6R, 6F1, 6I, 6M, 6N.

Moisture content % 7.4

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	12
Medium GRAVEL	26
Fine GRAVEL	11
Coarse SAND	7
Medium SAND	29
Fine SAND	15
Silt & Clay	0

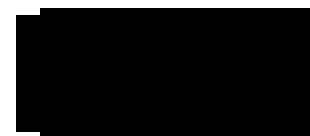
Grading Analysis	
D100	38
D60	5.43
D10	0.16
Uniformity Coefficient	34

Description	
Brown fine to coarse SAND and fine to coarse rounded to subangular flint and quartz GRAVEL.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
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Norfolk
NR1 2DH

Our reference No. NCCL2018030218-610
Our Project No PZ1522D1
Your Sample Ref 4
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 4-Jul-18

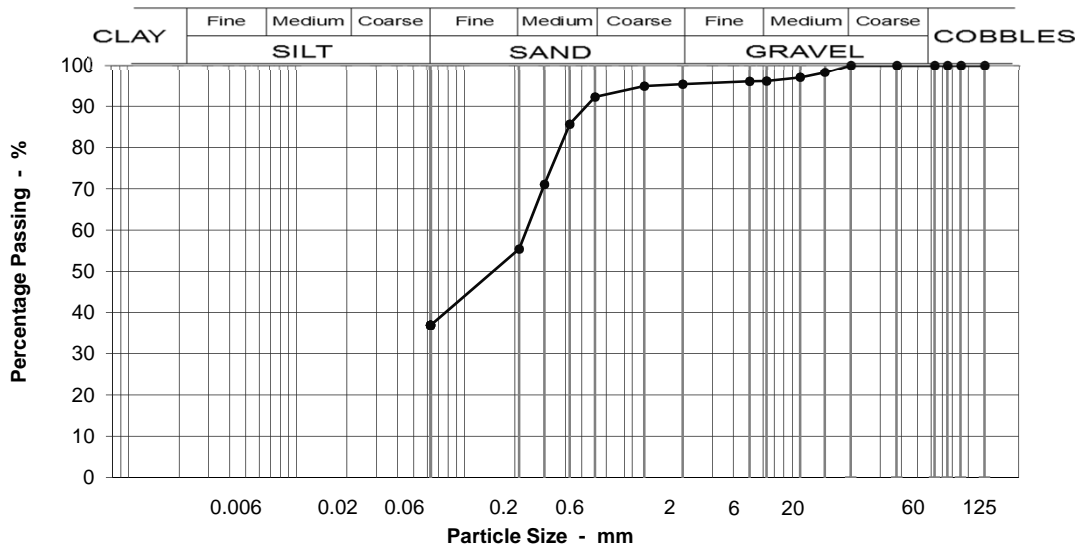
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4BU @ 0.9 - 1.2m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 2A/2B, 2A/2B.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	4
37.5	100		Fine GRAVEL	1
20	100		Coarse SAND	3
14	98		Medium SAND	37
10	97		Fine SAND	18
6.3	96		Silt & Clay	37
5	96		Grading Analysis	
2	95		D100	14
1.18	95		D60	0.24
0.600	92		D10	0.03
0.425	86		Uniformity Coefficient	7
0.300	71		Description	
0.212	55	Orangey-brown slightly gravelly very silty fine and medium SAND. Gravel is medium rounded to subrounded flint and quartz.		
0.063	37			

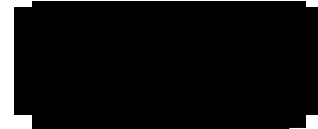
Moisture content % 7

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



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Norfolk
NR1 2DH

Our reference No. **NCCL2018030220-610**
Our Project No. PZ1522D1
Your Sample Ref. 6
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 17-Apr-18

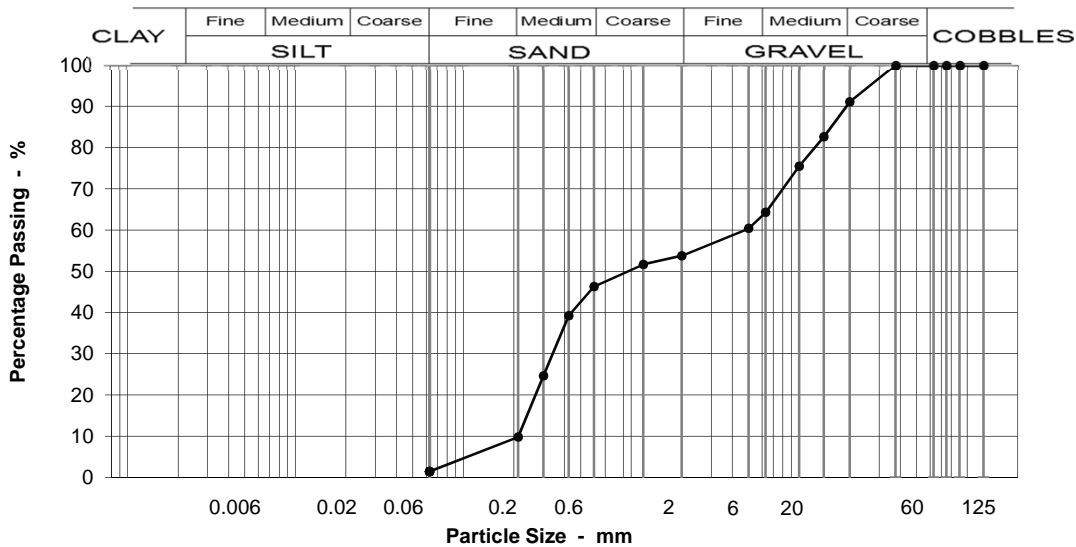
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4BU @ 1.2 - 2m Specimen: 1 @ 1.35m

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	91
14	83
10	76
6.3	64
5	60
2	54
1.18	52
0.600	46
0.425	39
0.300	25
0.212	10
0.063	2

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6E/6R, 6F1, 6I, 6M, 6N.

Moisture content % 7.5

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	9
Medium GRAVEL	27
Fine GRAVEL	11
Coarse SAND	7
Medium SAND	36
Fine SAND	8
Silt & Clay	2

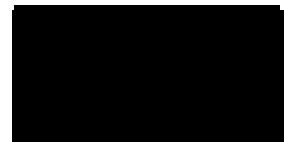
Grading Analysis	
D100	20
D60	4.82
D10	0.21
Uniformity Coefficient	23

Description	
Brown medium SAND and fine and medium rounded to sub-angular flint and quartz GRAVEL.	

Test Code = 610



Simon Holden (Project Technician)



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County Hall
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Norfolk
NR1 2DH

Our reference No. **NCCL2018030221-**
Our Project No. PZ1522D1
Your Sample Ref. 7
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 11-Jun-18

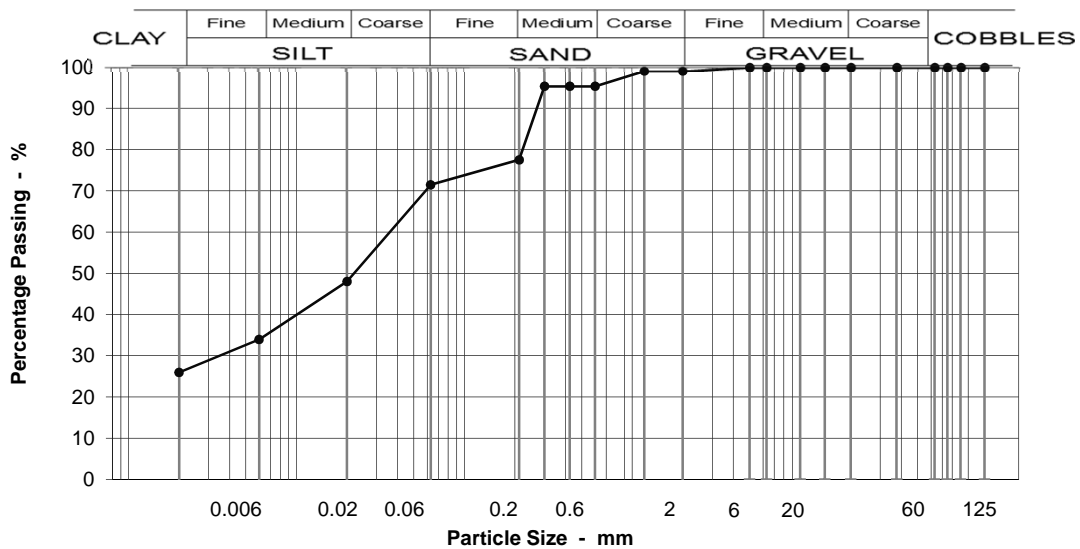
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4BU @ 2 - 3m Specimen: 2 @ 2.6m

Location and orientation within sample not applicable

Disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100		BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	1
20	100		Coarse SAND	4
14	100		Medium SAND	18
10	100		Fine SAND	6
6.3	100		Silt & Clay	71
5	100			
2	99			
1.18	99			
0.600	95			
0.425	95			
0.300	95			
0.212	78			
0.063	71			
0.020	48			
0.006	34			
0.002	26			
		Moisture content %		0

Grading Analysis	
D100	2
D60	0.04
D10	0.00
Uniformity Coefficient	>10*

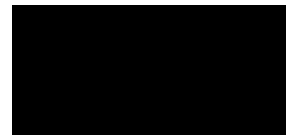
Description	
Laminated light grey very sandy clayey SILT, black organic silty CLAY and light grey, silty CLAY.	

* Uniformity coefficient extrapolated

Test Code =



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
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Norfolk
NR1 2DH

Our reference No. **NCCL2018030224-610**
Our Project No. **PZ1522D1**
Your Sample Ref. **10**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **17-Apr-18**

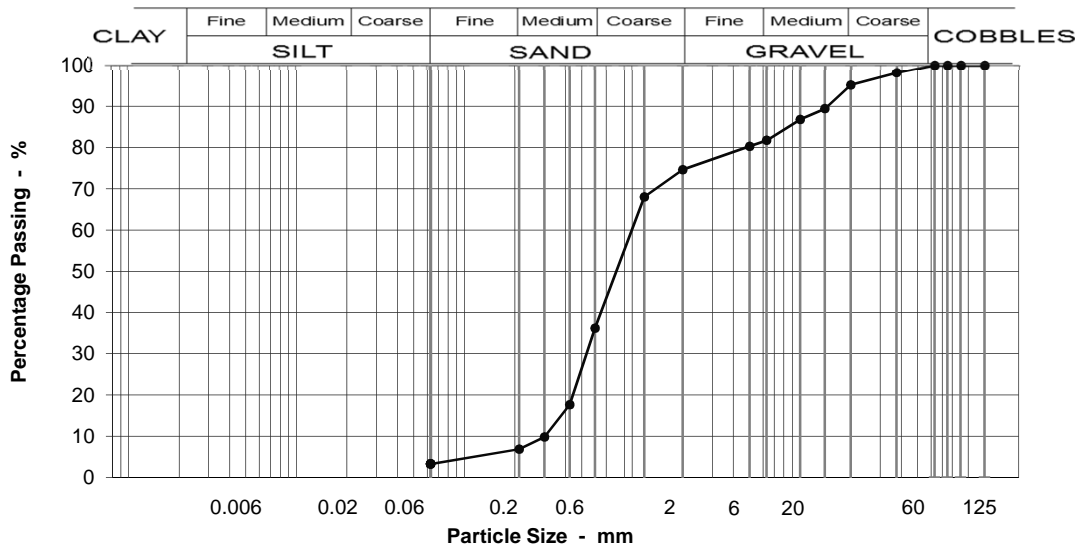
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4BU @ 4 - 5m Specimen: 1

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	98
20	95
14	89
10	87
6.3	82
5	80
2	75
1.18	68
0.600	36
0.425	18
0.300	10
0.212	7
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6F1, 6M.

Moisture content % 18

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	5
Medium GRAVEL	13
Fine GRAVEL	7
Coarse SAND	38
Medium SAND	29
Fine SAND	4
Silt & Clay	3

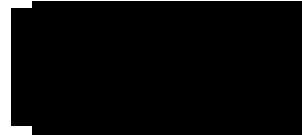
Grading Analysis	
D100	38
D60	1.03
D10	0.30
Uniformity Coefficient	3

Description	
Greyish brown very gravelly medium and coarse SAND. Gravel is medium angular to rounded flint and quartz.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
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Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3171212001-613**
Our Project No. **PZ1522D1**
Your Sample Ref **1**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **17-Apr-18**

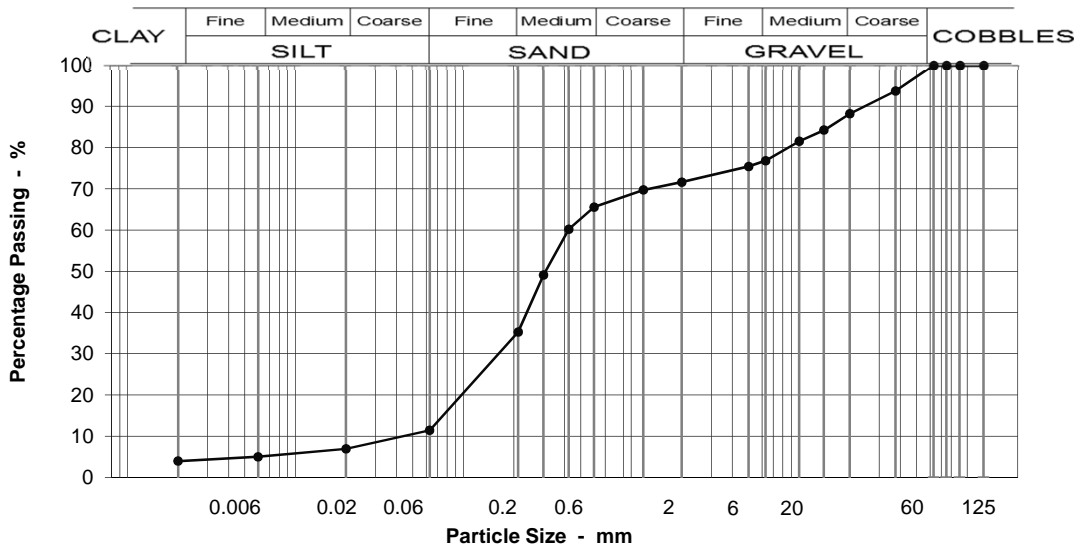
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4D @ 0.25 - 0.6m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	94
20	88
14	84
10	82
6.3	77
5	75
2	72
1.18	70
0.600	66
0.425	60
0.300	49
0.212	35
0.063	11
0.020	7
0.006	5
0.002	4

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R.

Moisture content % 12

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	12
Medium GRAVEL	11
Fine GRAVEL	5
Coarse SAND	6
Medium SAND	30
Fine SAND	24
Silt & Clay	11

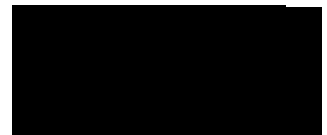
Grading Analysis	
D100	38
D60	0.42
D10	0.11
Uniformity Coefficient	4

Description
MADE GROUND comprising fine, medium and coarse gravel size, angular flint, brick, asphalt, concrete and wood in a matrix of dark grey sandy topsoil.

Source : Inspection pit: Hand dug. Gen
Test Code = 613



Simon Holden (Project Technician)



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County Hall
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Norwich
Norfolk
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Our reference No. **GTS3171212005-613**
Our Project No. **PZ1522D1**
Your Sample Ref **5**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **17-Apr-18**

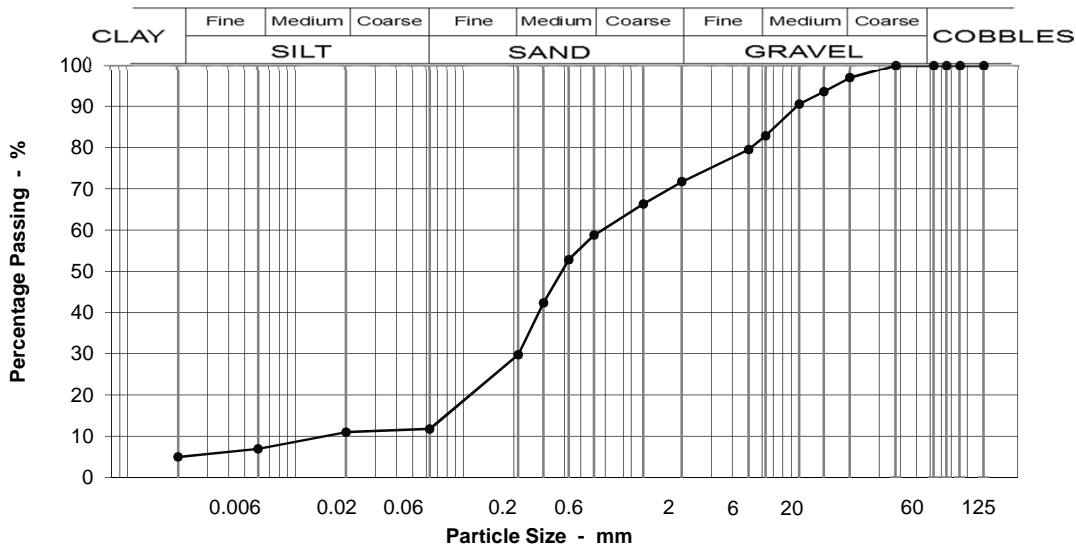
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4D @ 1 - 1.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	97
14	94
10	91
6.3	83
5	79
2	72
1.18	66
0.600	59
0.425	53
0.300	42
0.212	30
0.063	12
0.020	11
0.006	7
0.002	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J.

Moisture content % 33

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	3
Medium GRAVEL	14
Fine GRAVEL	11
Coarse SAND	13
Medium SAND	29
Fine SAND	18
Silt & Clay	12

Grading Analysis	
D100	20
D60	0.70
D10	0.09
Uniformity Coefficient	8

Description
MADE GROUND comprising very gravelly fine, medium and coarse SAND, gravel is fine and medium angular brick, flint, asphalt, slate and ash.

Source : Inspection pit: Hand dug. Gen
Test Code = 613



Simon Holden (Project Technician)

Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS3171212015-610
Our Project No PZ1522D1
Your Sample Ref 15
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 5-Feb-18

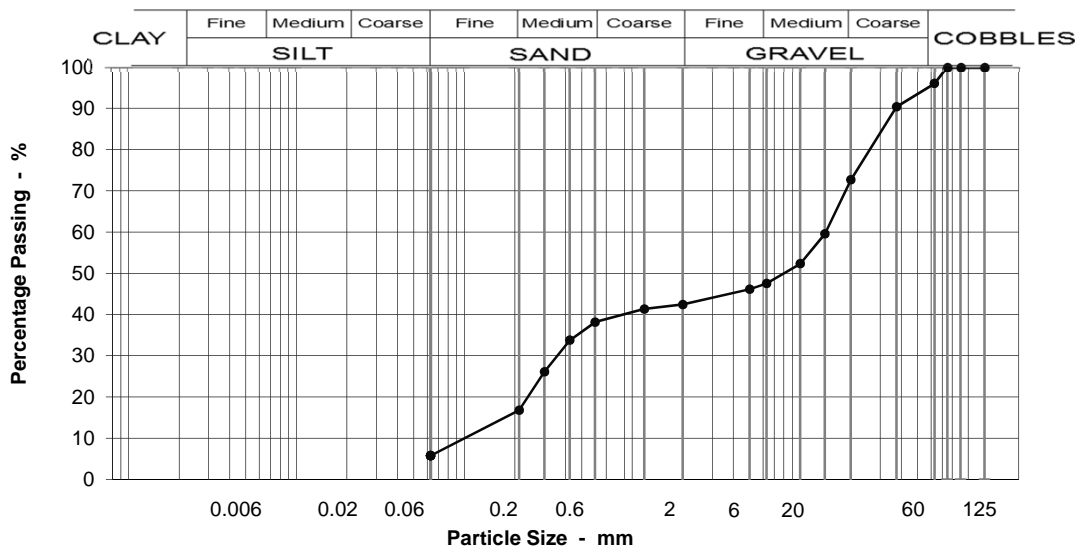
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4D @ 4 - 5m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	96
37.5	90
20	73
14	60
10	52
6.3	48
5	46
2	42
1.18	41
0.600	38
0.425	34
0.300	26
0.212	17
0.063	6

Specification for Highway Works Classification
Table 6/2

Sample Proportions	
BOULDERS	0
COBBLES	4
Coarse GRAVEL	23
Medium GRAVEL	25
Fine GRAVEL	5
Coarse SAND	4
Medium SAND	21
Fine SAND	11
Silt & Clay	6

Grading Analysis	
D100	63
D60	14.18
D10	0.12
Uniformity Coefficient	118

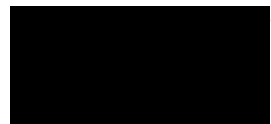
Description
Greyish brown very sandy medium to coarse rounded to sub-rounded flint and quartz GRAVEL.

Moisture content % 9.6

Source : Inspection pit: Hand dug. Gen
Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS3171212017-613
Our Project No PZ1522D1
Your Sample Ref 17
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 17-Apr-18

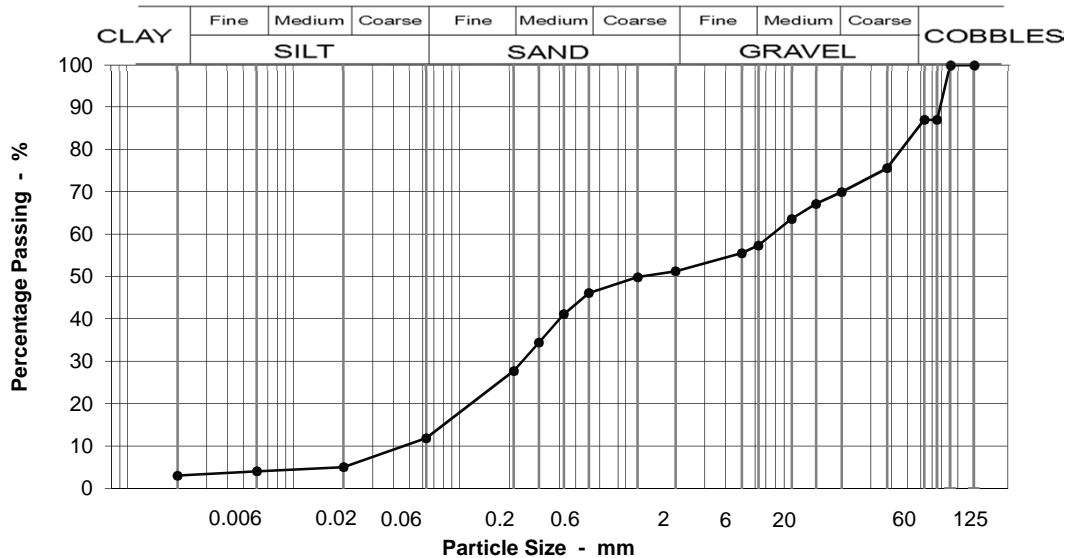
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4D @ 5 - 6m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving Particle Size mm	% Passin
125	100
90	100
75	87
63	87
37.5	76
20	70
14	67
10	64
6.3	57
5	55
2	51
1.18	50
0.600	46
0.425	41
0.300	34
0.212	28
0.063	12
0.020	5
0.006	4
0.002	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6E/6R, 6I.

Moisture content % 11

Sample Proportions	
BOULDERS	0
COBBLES	13
Coarse GRAVEL	17
Medium GRAVEL	13
Fine GRAVEL	6
Coarse SAND	5
Medium SAND	18
Fine SAND	16
Silt & Clay	12

Grading Analysis	
D100	75
D60	7.89
D10	0.12
Uniformity Coefficient	63

Description
Greyish brown slightly silty, cobbly fine and medium SAND and medium and coarse rounded to sub-rounded flint and quartz gravel.

Source : Inspection pit: Hand dug.

Test Code = 613



Simon Holden (Project Technician)



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Our reference No. **GTS3171212020-610**
Our Project No. PZ1522D1
Your Sample Ref. 20
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 5-Feb-18

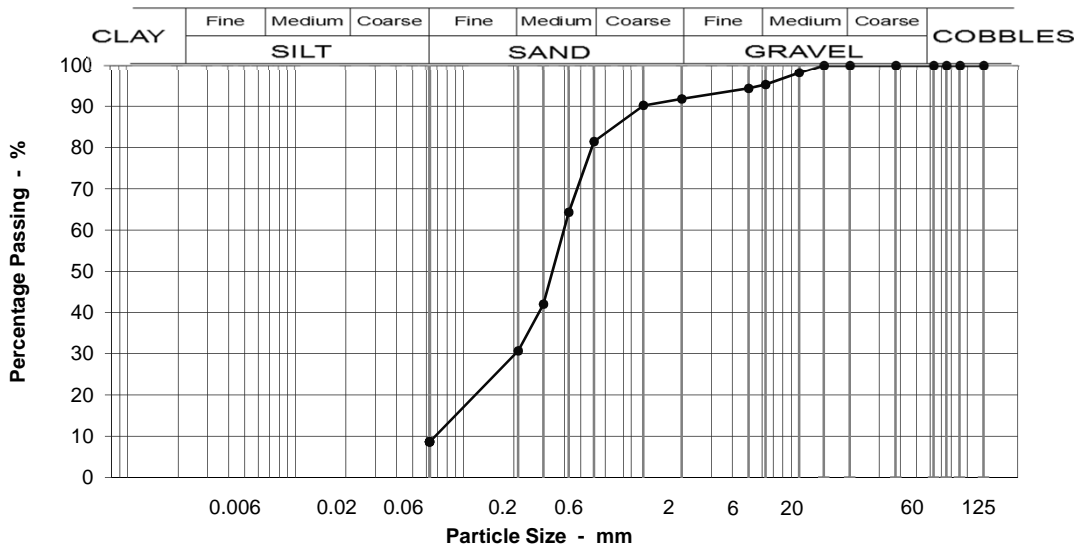
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4D @ 6 - 7m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	98
6.3	95
5	94
2	92
1.18	90
0.600	81
0.425	64
0.300	42
0.212	31
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J, 6K, 6M.

Moisture content % 15

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	5
Fine GRAVEL	3
Coarse SAND	10
Medium SAND	51
Fine SAND	22
Silt & Clay	9

Grading Analysis	
D100	10
D60	0.40
D10	0.07
Uniformity Coefficient	6

Description
Orange slightly silty slightly gravelly medium SAND with lenses of soft grey clay. Gravel is fine to medium sub-rounded flint and quartz.

Source : Inspection pit: Hand dug. Gen
Test Code = 610



Simon Holden (Project Technician)



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NR1 2DH

Our reference No. **GTS3171212024-610**
Our Project No. **PZ1522D1**
Your Sample Ref. **24**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **5-Feb-18**

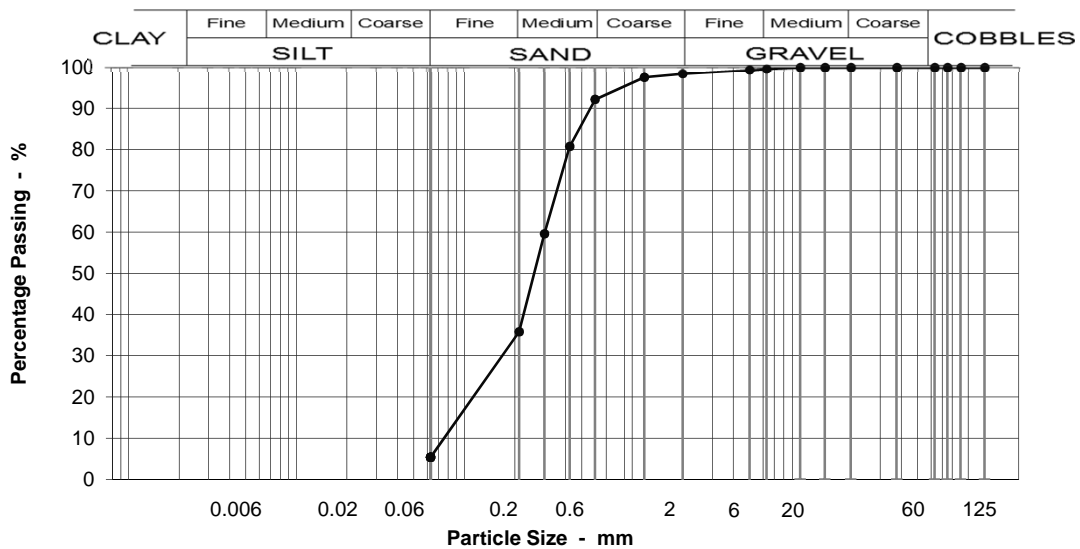
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: **Gt Yarmouth 3rd River Crossing**

Location: **BH4D @ 8 - 9m Specimen: 1**

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	99
2	98
1.18	98
0.600	92
0.425	81
0.300	60
0.212	36
0.063	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	6
Medium SAND	56
Fine SAND	30
Silt & Clay	5

Grading Analysis	
D100	6
D60	0.30
D10	0.09
Uniformity Coefficient	4

Description
Orange fine to medium SAND.

Moisture content % 18

Source : Inspection pit: Hand dug. Gen
Test Code = 610



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Our reference No. **GTS3171213002-610**
Our Project No. PZ1522D1
Your Sample Ref. 29
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 5-Feb-18

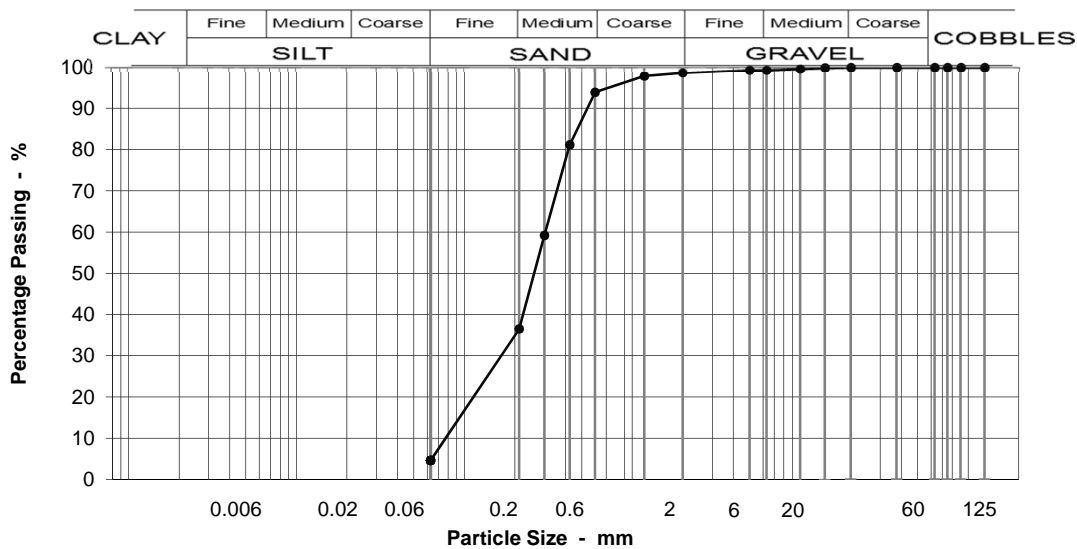
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4D @ 10 - 10.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	99
5	99
2	99
1.18	98
0.600	94
0.425	81
0.300	59
0.212	36
0.063	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 20

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	1
Fine GRAVEL	1
Coarse SAND	5
Medium SAND	57
Fine SAND	32
Silt & Clay	5

Grading Analysis	
D100	14
D60	0.30
D10	0.09
Uniformity Coefficient	3

Description
Brown fine and medium SAND.

Source : Inspection pit: Hand dug. Gen
Test Code = 610



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Our reference No. **GTS3171213003-610**
Our Project No. PZ1522D1
Your Sample Ref 30
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 5-Feb-18

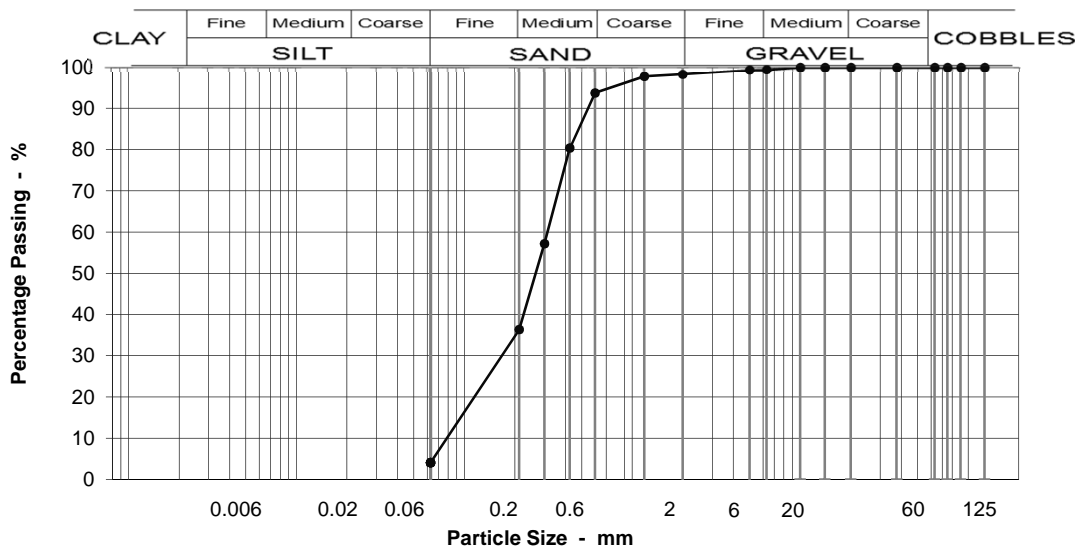
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4D @ 11 - 11.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	99
5	99
2	98
1.18	98
0.600	94
0.425	80
0.300	57
0.212	36
0.063	4

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 17

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	1
Fine GRAVEL	1
Coarse SAND	5
Medium SAND	57
Fine SAND	32
Silt & Clay	4

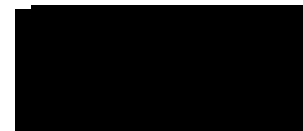
Grading Analysis	
D100	6
D60	0.32
D10	0.09
Uniformity Coefficient	3

Description	
Brown fine and medium SAND.	

Source : Inspection pit: Hand dug. Gen
Test Code = 610



Simon Holden (Project Technician)



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Our reference No. **GTS3171213005-610**
Our Project No. PZ1522D1
Your Sample Ref 32
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 5-Feb-18

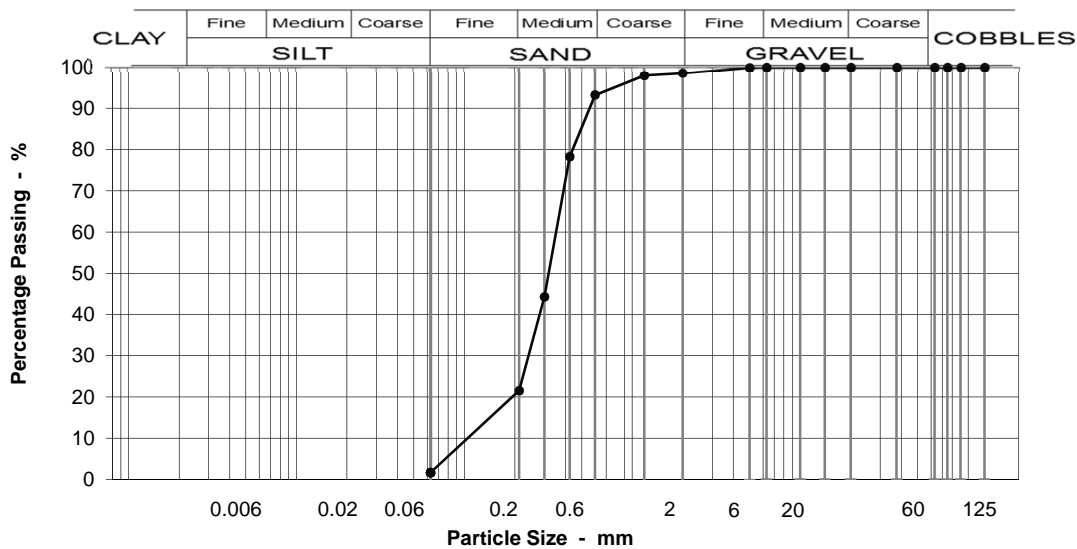
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4D @ 12 - 12.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	98
0.600	93
0.425	78
0.300	44
0.212	22
0.063	2

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	5
Medium SAND	72
Fine SAND	20
Silt & Clay	2

Grading Analysis	
D100	5
D60	0.36
D10	0.13
Uniformity Coefficient	3

Description
Brown medium SAND.

Moisture content % 20

Source : Inspection pit: Hand dug. Gen
Test Code = 610



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Our reference No. **GTS3171213007-610**
Our Project No. PZ1522D1
Your Sample Ref 34
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 5-Feb-18

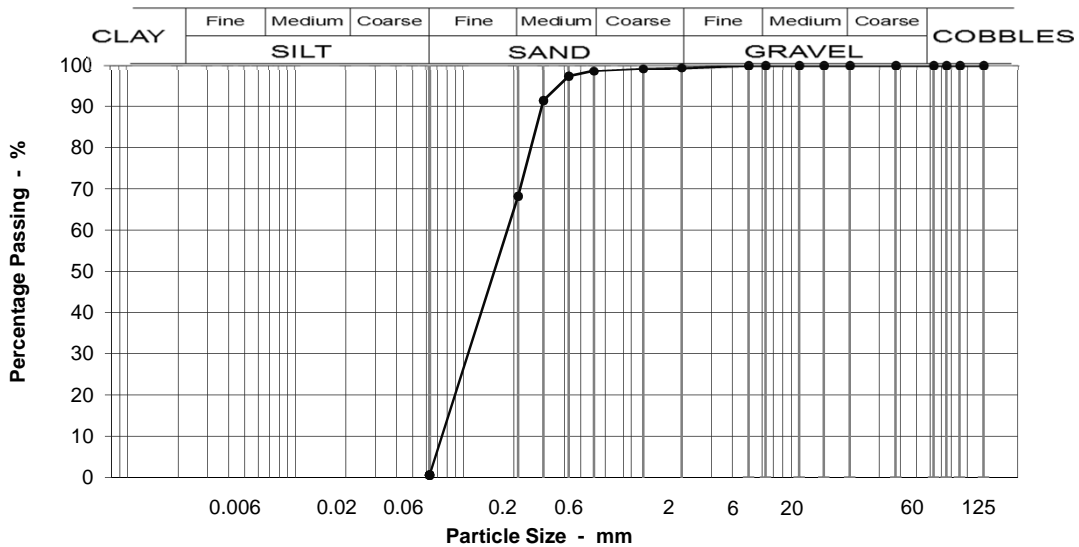
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4D @ 13 - 13.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	99
0.600	99
0.425	97
0.300	91
0.212	68
0.063	1

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 24

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	1
Medium SAND	30
Fine SAND	68
Silt & Clay	1

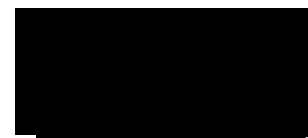
Grading Analysis	
D100	2
D60	0.19
D10	0.08
Uniformity Coefficient	2

Description	
Brown fine SAND.	

Source : Inspection pit: Hand dug. Gen
Test Code = 610



Simon Holden (Project Technician)



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Our reference No. **GTS3171213013-610**
Our Project No. **PZ1522D1**
Your Sample Ref **40**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **5-Feb-18**

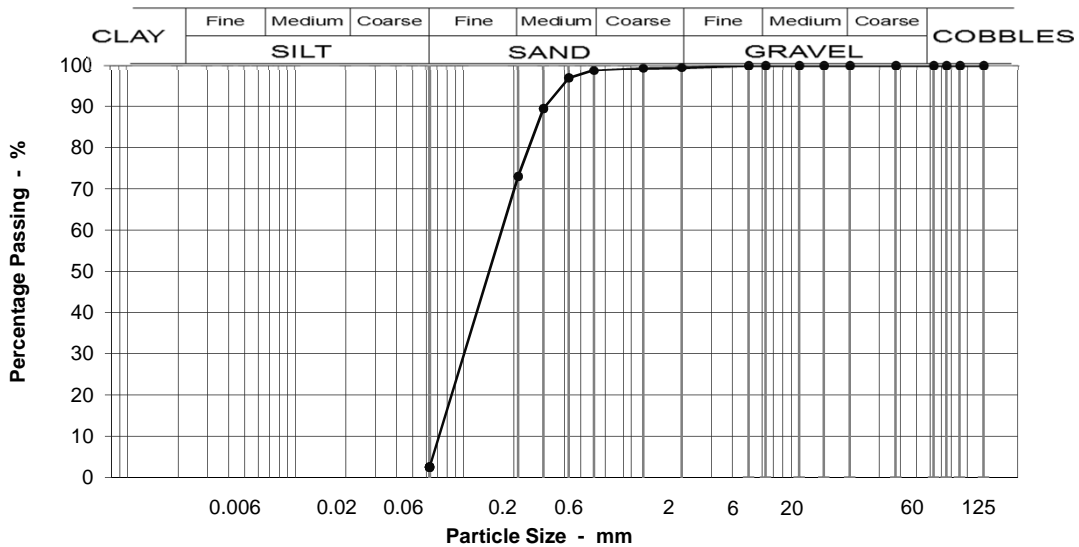
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4D @ 16 - 16.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	99
0.600	99
0.425	97
0.300	89
0.212	73
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 23

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	1
Medium SAND	26
Fine SAND	70
Silt & Clay	3

Grading Analysis	
D100	2
D60	0.18
D10	0.08
Uniformity Coefficient	2

Description	
Brown fine SAND.	

Source : Inspection pit: Hand dug. Gen
Test Code = 610



Simon Holden (Project Technician)



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Our reference No. GTS3171213015-613
Our Project No PZ1522D1
Your Sample Ref 42
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 17-Apr-18

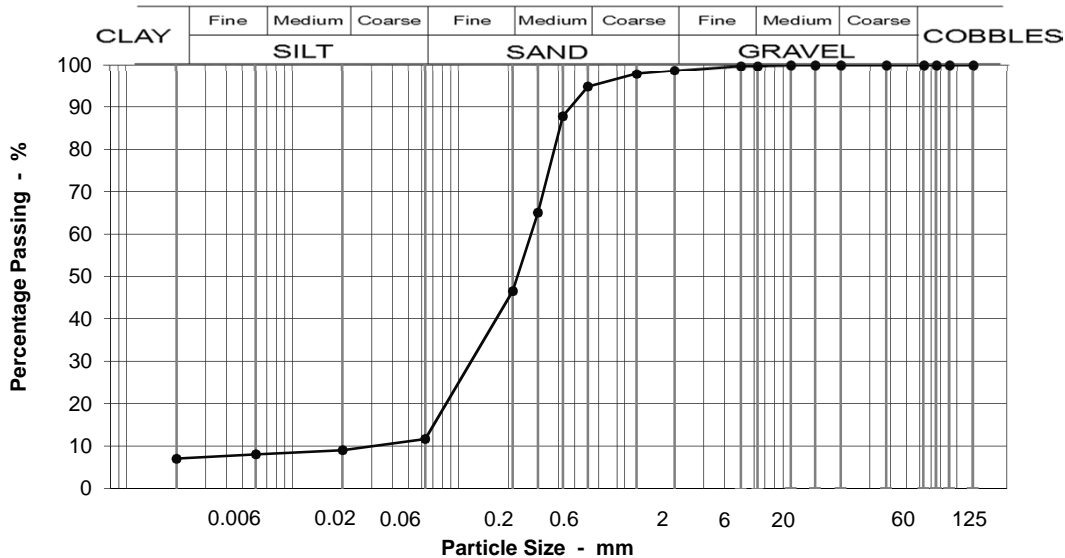
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4D @ 17 - 17.5m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving Particle Size mm	% Passin
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	98
0.600	95
0.425	88
0.300	65
0.212	47
0.063	12
0.020	9
0.006	8
0.002	7

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R.

Moisture content % 27

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	4
Medium SAND	48
Fine SAND	35
Silt & Clay	12

Grading Analysis	
D100	6
D60	0.28
D10	0.08
Uniformity Coefficient	3

Description
Brown fine and medium SAND with laminae of soft brown clay.

Source : Inspection pit: Hand dug.

Test Code = 613



Simon Holden (Project Technician)



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Our reference No. GTS3171213017-613
Our Project No PZ1522D1
Your Sample Ref 44
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 17-Apr-18

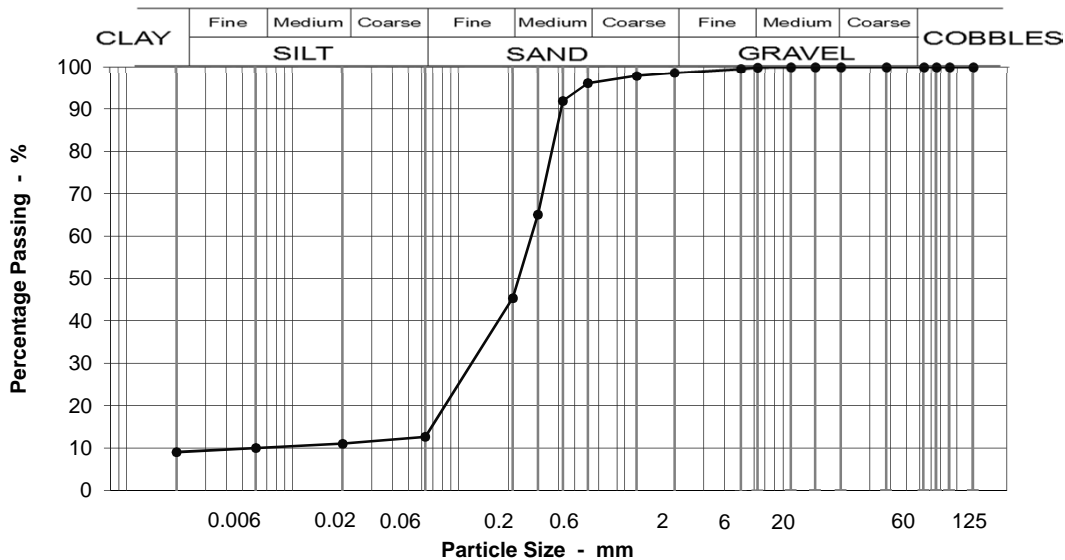
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4D @ 18 - 18.5m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving Particle Size mm	% Passin
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	98
0.600	96
0.425	92
0.300	65
0.212	45
0.063	13
0.020	11
0.006	10
0.002	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J.

Moisture content % 31

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	3
Medium SAND	51
Fine SAND	33
Silt & Clay	13

Grading Analysis	
D100	6
D60	0.28
D10	0.05
Uniformity Coefficient	5

Description
Reddish brown fine and medium SAND with laminae of soft grey clay.

* Uniformity coefficient extrapolated

Source : Inspection pit: Hand dug.

Test Code = 613



Simon Holden (Project Technician)



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Norfolk
NR1 2DH

Our reference No. **GTS3171214001-610**
Our Project No. PZ1522D1
Your Sample Ref. 46
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 5-Feb-18

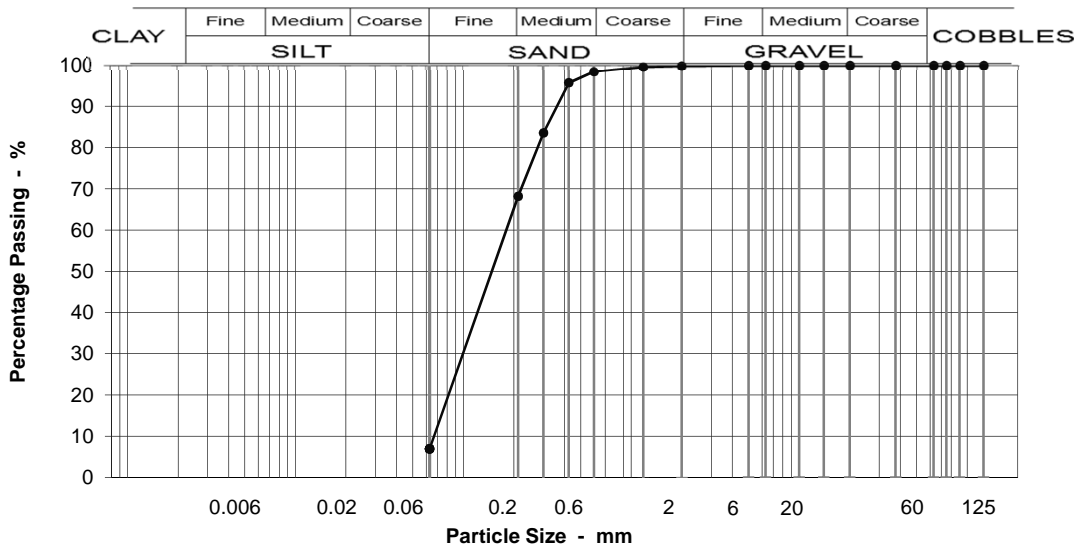
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4D @ 19 - 19.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	100
0.600	98
0.425	96
0.300	84
0.212	68
0.063	7

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 26

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	1
Medium SAND	30
Fine SAND	61
Silt & Clay	7

Grading Analysis	
D100	2
D60	0.19
D10	0.07
Uniformity Coefficient	3

Description	
Reddish brown fine to medium SAND.	

Source : Inspection pit: Hand dug. Gen
Test Code = 610



Simon Holden (Project Technician)



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NR1 2DH

Our reference No. **GTS3171214004-610**
Our Project No. PZ1522D1
Your Sample Ref. 49
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 5-Feb-18

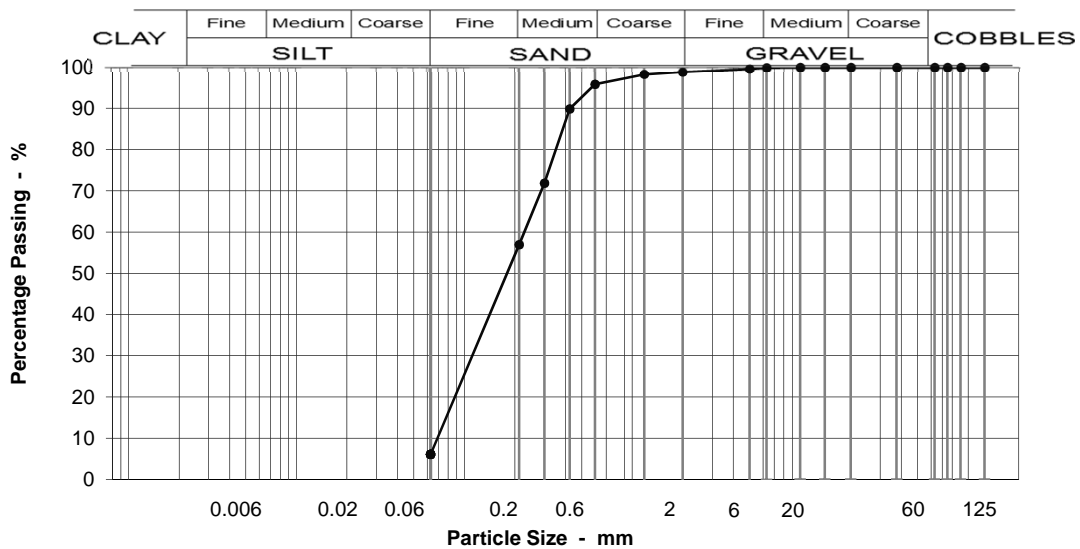
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4D @ 21 - 21.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	98
0.600	96
0.425	90
0.300	72
0.212	57
0.063	6

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	3
Medium SAND	39
Fine SAND	51
Silt & Clay	6

Grading Analysis	
D100	6
D60	0.23
D10	0.07
Uniformity Coefficient	3

Description
Laminated and thinly bedded greyish brown fine and medium SAND, orange silty fine and medium SAND and reddish brown silty fine to coarse SAND.

Moisture content % 20

Source : Inspection pit: Hand dug. Gen
Test Code = 610



Simon Holden (Project Technician)



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Our reference No. GTS3171214007-610
Our Project No PZ1522D1
Your Sample Ref 52
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 5-Feb-18

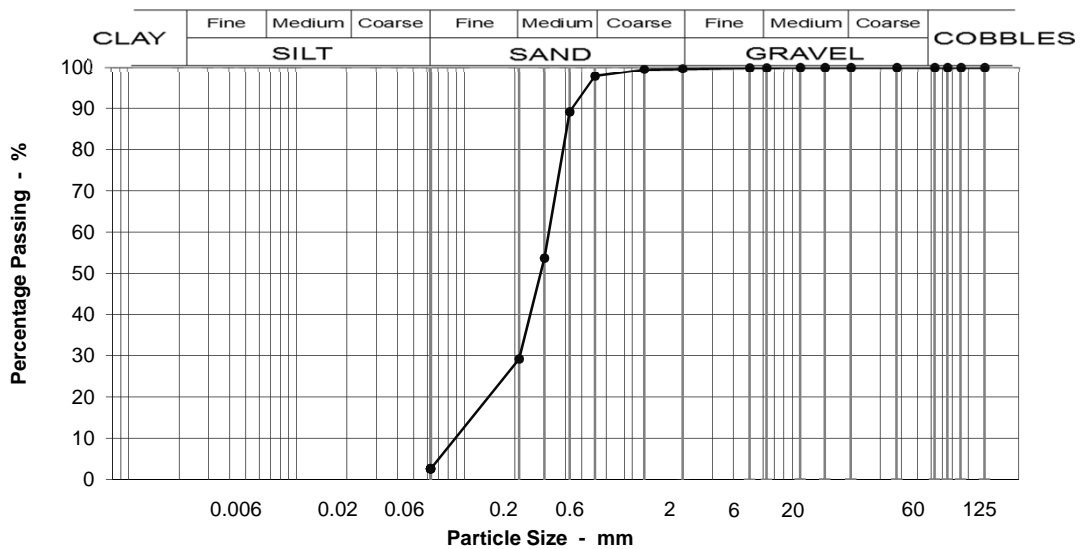
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4D @ 23 - 23.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R, 6M.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	2
14	100		Medium SAND	69
10	100		Fine SAND	27
6.3	100		Silt & Clay	3
5	100		Grading Analysis	
2	100		D100	6
1.18	99		D60	0.32
0.600	98		D10	0.10
0.425	89		Uniformity Coefficient	3
0.300	54		Description	
0.212	29	Dark greyish brown medium SAND with laminae of soft grey clay.		
0.063	3	Moisture content % 22		

Source : Inspection pit: Hand dug. Gen
Test Code = 610



Simon Holden (Project Technician)



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Our reference No. **GTS3171214009-610**
Our Project No. **PZ1522D1**
Your Sample Ref **54**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **5-Feb-18**

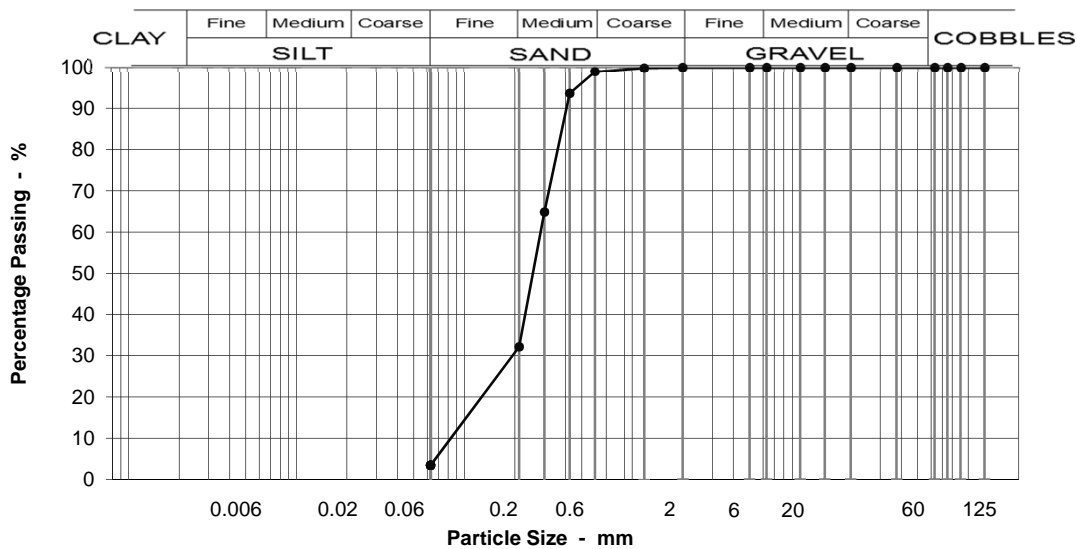
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4D @ 24 - 24.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	100
0.600	99
0.425	94
0.300	65
0.212	32
0.063	4

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	1
Medium SAND	67
Fine SAND	29
Silt & Clay	4

Grading Analysis	
D100	1
D60	0.29
D10	0.10
Uniformity Coefficient	3

Description
Greyish brown fine to medium SAND.

Moisture content % 21

Source : Inspection pit: Hand dug. Gen
Test Code = 610



Simon Holden (Project Technician)



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NR1 2DH

Our reference No. **GTS3171214010-610**
Our Project No. PZ1522D1
Your Sample Ref. 55
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 5-Feb-18

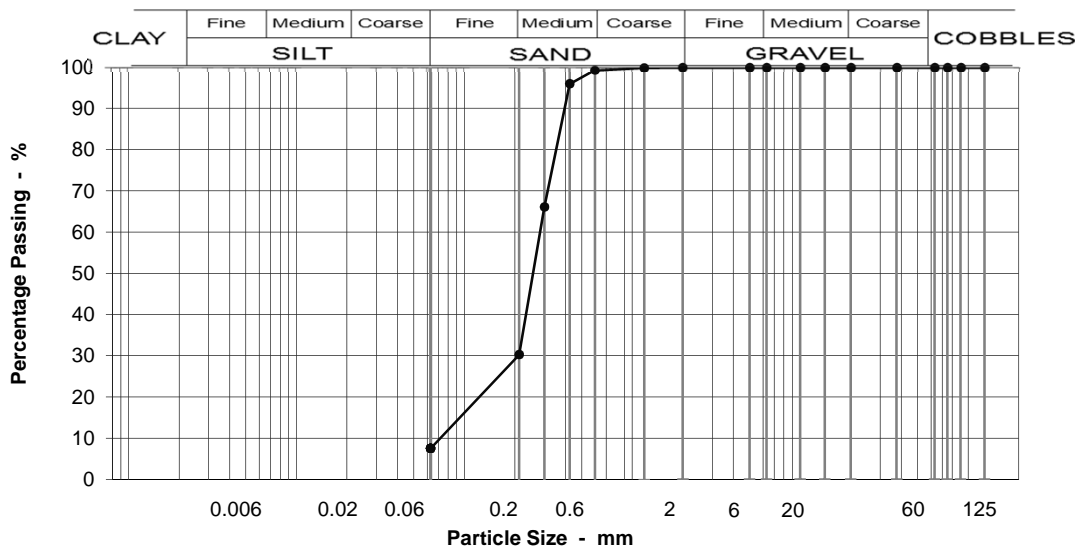
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4D @ 25 - 25.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	100
0.600	99
0.425	96
0.300	66
0.212	30
0.063	8

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	1
Medium SAND	69
Fine SAND	23
Silt & Clay	8

Grading Analysis	
D100	1
D60	0.29
D10	0.08
Uniformity Coefficient	4

Description
Greyish brown medium SAND with laminae of soft grey clay.

Moisture content % 22

Source : Inspection pit: Hand dug. Gen
Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS3171214017-613
Our Project No PZ1522D1
Your Sample Ref 62
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 17-Apr-18

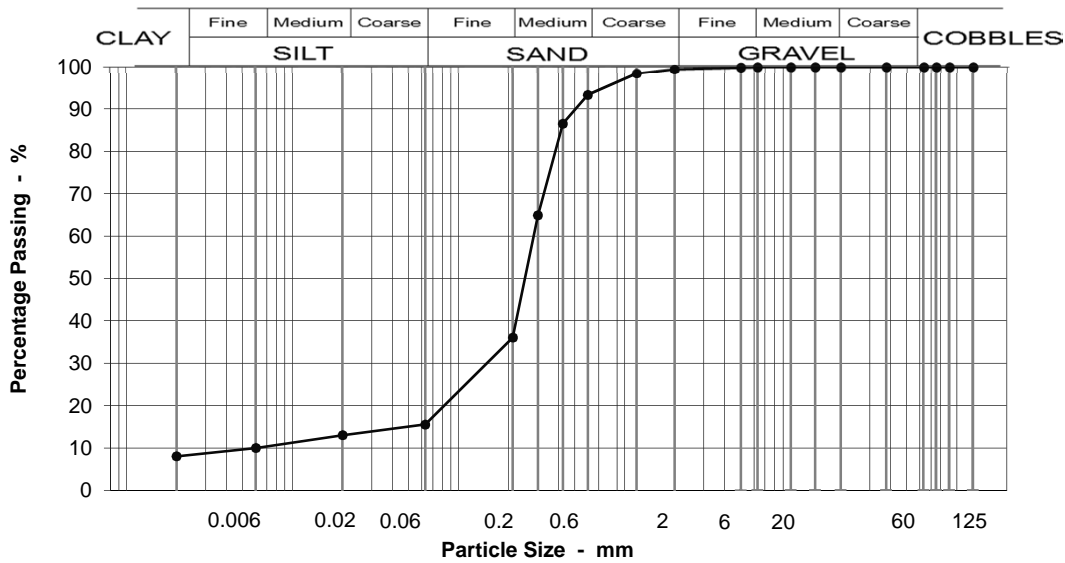
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4D @ 27 - 27.5m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving Particle Size mm	% Passin
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	98
0.600	93
0.425	87
0.300	65
0.212	36
0.063	16
0.020	13
0.006	10
0.002	8

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes
2A/2B, 2A/2B.

Moisture content % 28

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	6
Medium SAND	57
Fine SAND	21
Silt & Clay	16

Grading Analysis	
D100	5
D60	0.29
D10	0.06
Uniformity Coefficient	5

Description
Grey slightly silty medium SAND with laminae of soft grey clay.

* Uniformity coefficient extrapolated

Source : Inspection pit: Hand dug.

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS3171214021-613
Our Project No PZ1522D1
Your Sample Ref 66
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 17-Apr-18

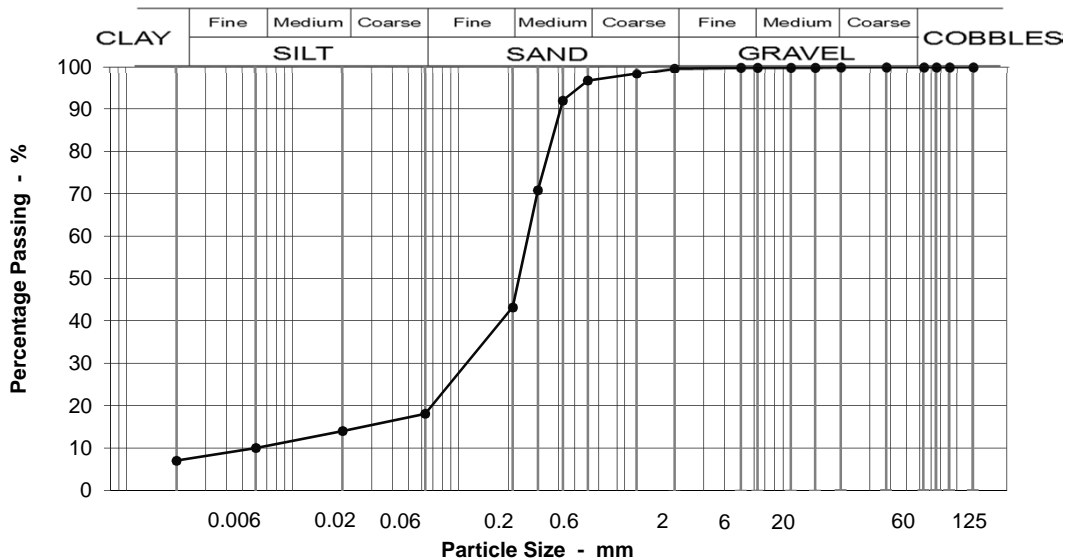
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH4D @ 29 - 29.5m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving Particle Size mm	% Passin
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	98
0.600	97
0.425	92
0.300	71
0.212	43
0.063	18
0.020	14
0.006	10
0.002	7

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes
2A/2B, 2A/2B.

Moisture content % -2

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	3
Medium SAND	54
Fine SAND	25
Silt & Clay	18

Grading Analysis	
D100	14
D60	0.27
D10	0.05
Uniformity Coefficient	5

Description
Grey silty medium SAND with thin beds of soft grey clay.

* Uniformity coefficient extrapolated

Source : Inspection pit: Hand dug.

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3171201002-610**
Our Project No. **PZ1522D1**
Your Sample Ref **2**
Your Project or Order No. **PZ1522**
Date Tested **02/01/2018**
Date Report Issued **12-Jan-18**

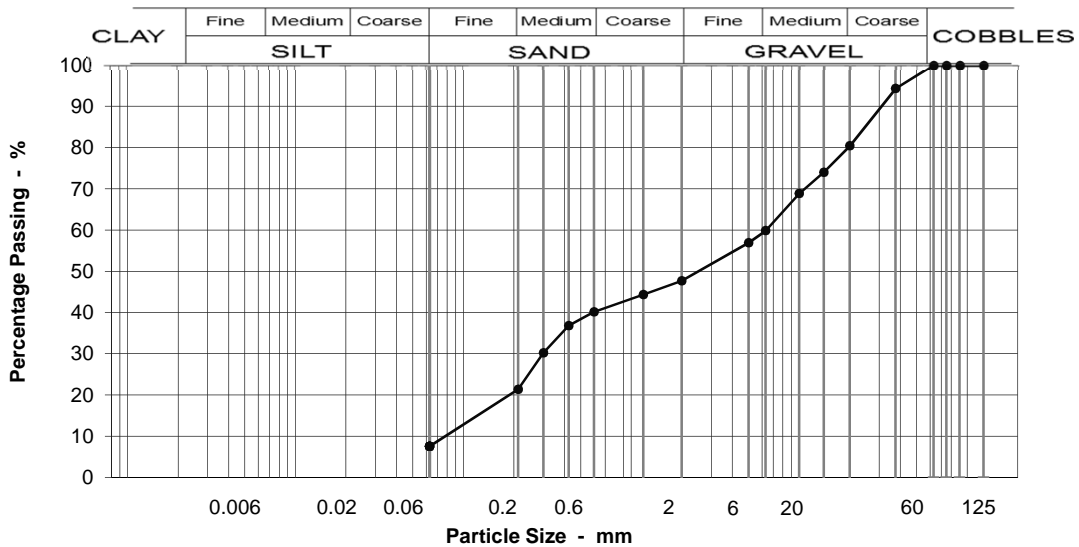
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH5 @ 0.3 - 0.8m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	94
20	80
14	74
10	69
6.3	60
5	57
2	48
1.18	44
0.600	40
0.425	37
0.300	30
0.212	21
0.063	8

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6E/6R, 6F1, 6I, 6M, 6N.

Moisture content % 15

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	20
Medium GRAVEL	21
Fine GRAVEL	12
Coarse SAND	7
Medium SAND	19
Fine SAND	14
Silt & Clay	8

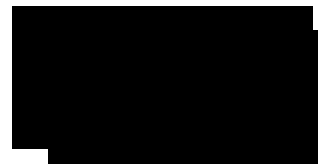
Grading Analysis	
D100	38
D60	6.36
D10	0.09
Uniformity Coefficient	72

Description
MADE GROUND: comprising fine to coarse brick, asphalt and slate in a matrix of dark reddish brown slightly silty fine and medium SAND.

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3171201005-613**
Our Project No. **PZ1522D1**
Your Sample Ref **5**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **5-Feb-18**

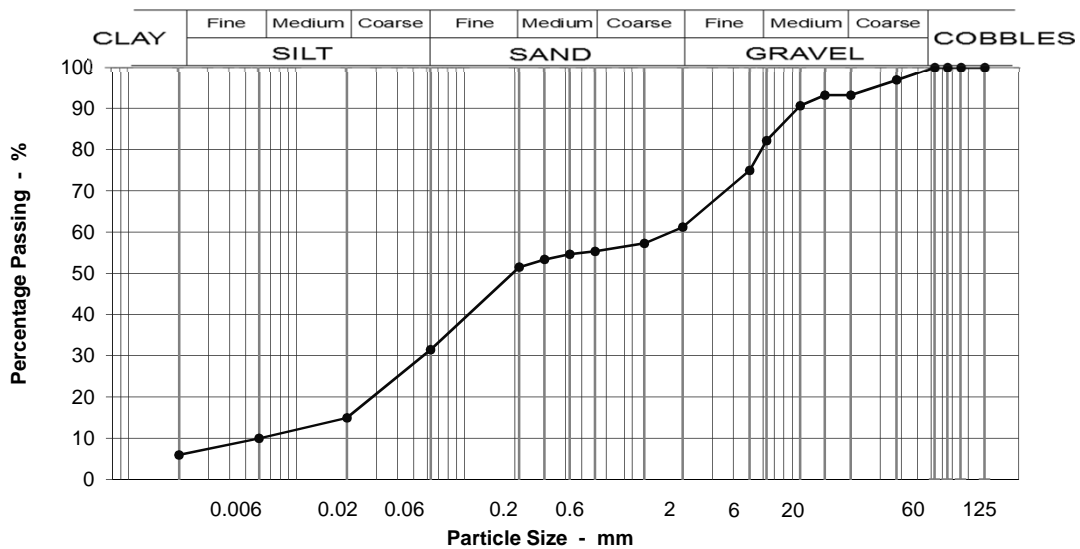
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH5 @ 1.2 - 1.7m Specimen: 1

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	97
20	93
14	93
10	91
6.3	82
5	75
2	61
1.18	57
0.600	55
0.425	55
0.300	53
0.212	51
0.063	32
0.020	15
0.006	10
0.002	6

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 2C.

Moisture content % 22

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	7
Medium GRAVEL	11
Fine GRAVEL	21
Coarse SAND	6
Medium SAND	4
Fine SAND	20
Silt & Clay	32

Grading Analysis	
D100	38
D60	1.75
D10	0.04
Uniformity Coefficient	42*

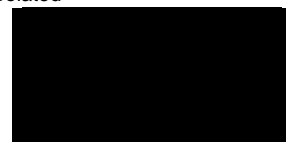
Description
MADE GROUND - comprising soft to very soft dark grey slightly gravelly, slightly sandy, silty clay. Gravel is fine to medium angular brick, concrete, asphalt, flint & wood.

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS3171201015-610
Our Project No PZ1522D1
Your Sample Ref 15
Your Project or Order No. PZ1522
Date Tested 02/01/2018
Date Report Issued 12-Jan-18

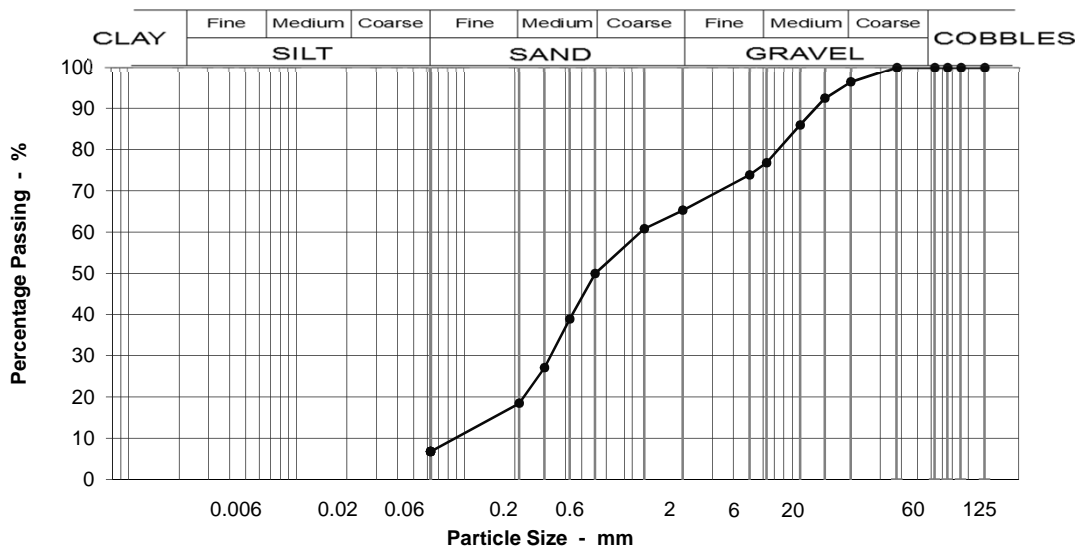
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH5 @ 3.4 - 3.8m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	96
14	92
10	86
6.3	77
5	74
2	65
1.18	61
0.600	50
0.425	39
0.300	27
0.212	18
0.063	7

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6E/6R, 6F1, 6I, 6M, 6N.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	4
Medium GRAVEL	20
Fine GRAVEL	12
Coarse SAND	15
Medium SAND	31
Fine SAND	12
Silt & Clay	7

Grading Analysis	
D100	20
D60	1.14
D10	0.10
Uniformity Coefficient	11

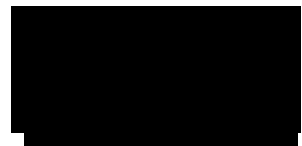
Description
Dark brown organic slightly clayey very gravelly fine to coarse SAND. Gravel is fine and medium angular to rounded flint and quartz.

Moisture content % 44

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
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NR1 2DH

Our reference No. **GTS1171212002-610**
Our Project No. **PZ1522D1**
Your Sample Ref **2**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **5-Feb-18**

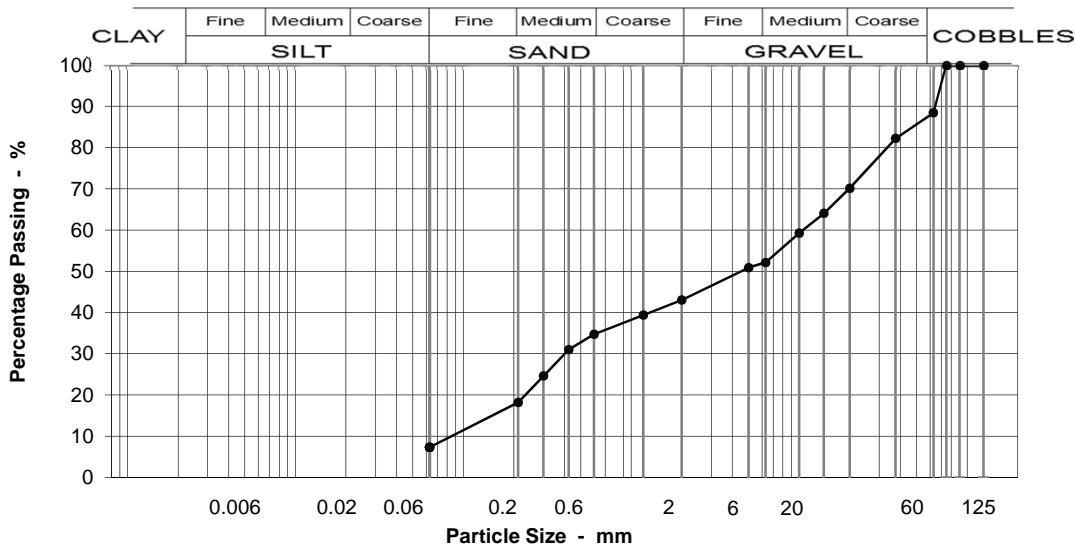
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH5A @ 0.15 - 0.3m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	88
37.5	82
20	70
14	64
10	59
6.3	52
5	51
2	43
1.18	39
0.600	35
0.425	31
0.300	25
0.212	18
0.063	7

Specification for Highway Works Classification
Table 6/2

Sample Proportions	
BOULDERS	0
COBBLES	12
Coarse GRAVEL	18
Medium GRAVEL	18
Fine GRAVEL	9
Coarse SAND	8
Medium SAND	16
Fine SAND	11
Silt & Clay	7

Grading Analysis	
D100	63
D60	10.61
D10	0.10
Uniformity Coefficient	107

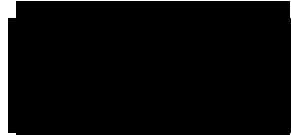
Description
MADE GROUND: Comprising up to cobble size brick in a matrix of reddish brown slightly silty fine to coarse .

Moisture content % 15

Test Code = 610



Simon Holden (Project Technician)



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County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1171212007-613**
Our Project No. **PZ1522D1**
Your Sample Ref. **6**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **22-Feb-18**

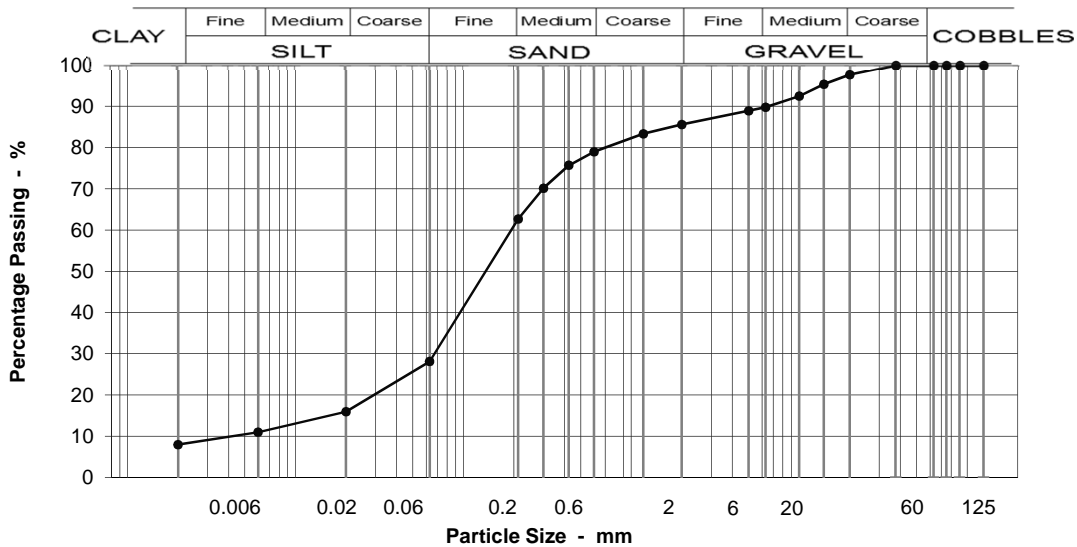
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH5A @ 1.1 - 1.2m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	98
14	95
10	92
6.3	90
5	89
2	86
1.18	83
0.600	79
0.425	76
0.300	70
0.212	63
0.063	28
0.020	16
0.006	11
0.002	8

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 2A/2B, 2A/2B.

Moisture content % 34

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	2
Medium GRAVEL	8
Fine GRAVEL	4
Coarse SAND	7
Medium SAND	16
Fine SAND	34
Silt & Clay	28

Grading Analysis	
D100	20
D60	0.20
D10	0.04
Uniformity Coefficient	5

Description
Soft to firm dark brown slightly clayey, very silty, gravelly fine SAND. Gravel is fine, medium and coarse angular brick, wood, flint, concrete and asphalt.

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1171212012-613**
Our Project No. **PZ1522D1**
Your Sample Ref **11**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **22-Feb-18**

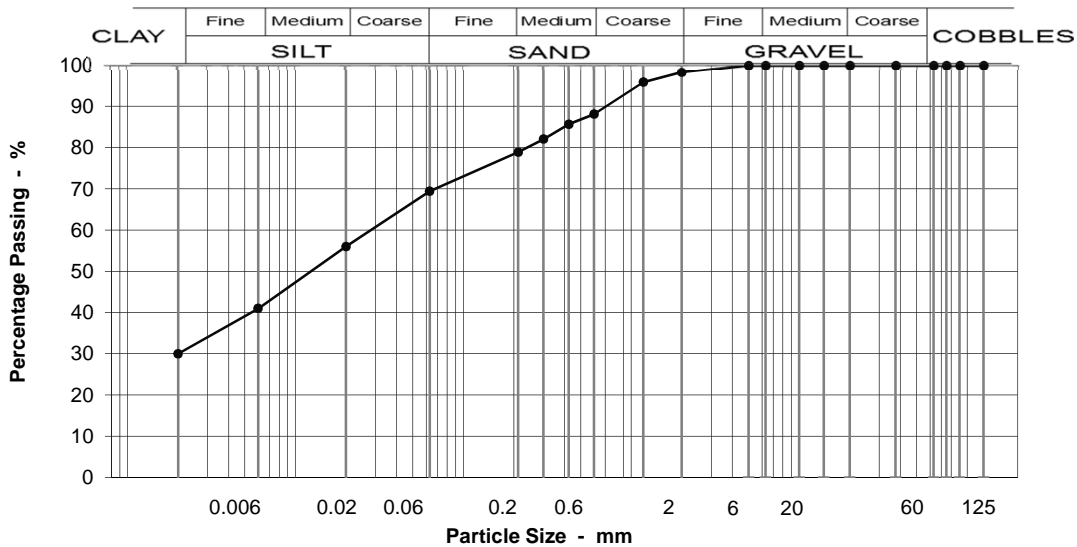
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH5A @ 2.4 - 2.5m Specimen: 1

Location and orientation within sample not applicable

Disturbed sample



Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	98
1.18	96
0.600	88
0.425	86
0.300	82
0.212	79
0.063	69
0.020	56
0.006	41
0.002	30

Specification for Highway Works Classification
Table 6/2

Moisture content % 0

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	2
Coarse SAND	10
Medium SAND	9
Fine SAND	10
Silt & Clay	69

Grading Analysis	
D100	2
D60	0.03
D10	0.00
Uniformity Coefficient	>10*

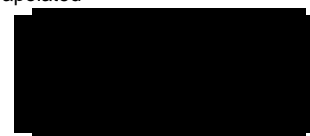
Description	
Grey very clayey, very sandy fine, medium and coarse SILT.	

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)



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County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1171213010-610**
Our Project No. PZ1522D1
Your Sample Ref. 23
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 5-Feb-18

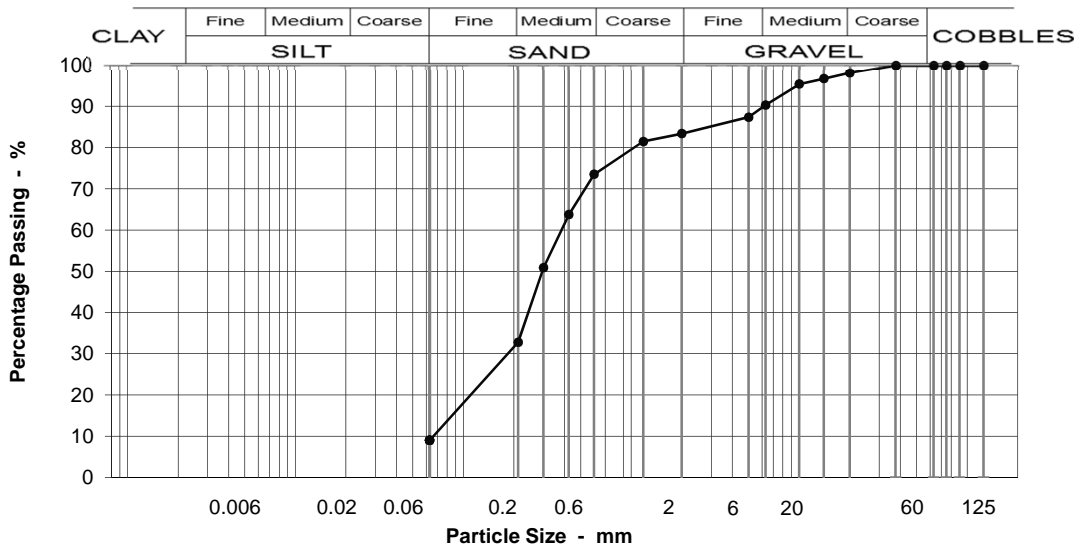
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH5A @ 5 - 5.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	98
14	97
10	95
6.3	90
5	87
2	83
1.18	81
0.600	74
0.425	64
0.300	51
0.212	33
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J, 6M.

Moisture content % 21

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	2
Medium GRAVEL	8
Fine GRAVEL	7
Coarse SAND	10
Medium SAND	41
Fine SAND	24
Silt & Clay	9

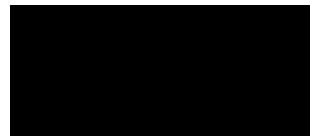
Grading Analysis	
D100	20
D60	0.39
D10	0.07
Uniformity Coefficient	6

Description
Orangey-brown gravelly SAND with soft grey silty clay: Gravel is fine and medium rounded to subrounded flint, quartz and quartzite.

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS1171213013-613
Our Project No PZ1522D1
Your Sample Ref 26
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 22-Feb-18

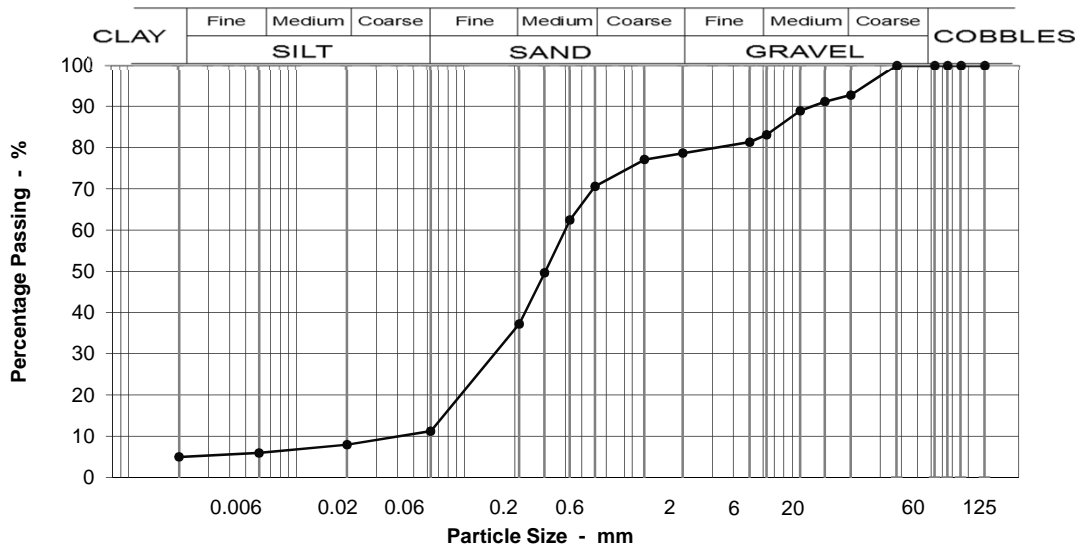
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH5A @ 6 - 6.5m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	93
14	91
10	89
6.3	83
5	81
2	79
1.18	77
0.600	71
0.425	62
0.300	50
0.212	37
0.063	11
0.020	8
0.006	6
0.002	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R.

Moisture content % 18

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	7
Medium GRAVEL	10
Fine GRAVEL	4
Coarse SAND	8
Medium SAND	33
Fine SAND	26
Silt & Clay	11

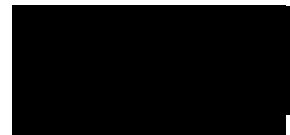
Grading Analysis	
D100	20
D60	0.40
D10	0.10
Uniformity Coefficient	4

Description
Grey very gravely fine and medium SAND. Gravel is fine, medium and coarse rounded to sub-angular flint, quartz and quartzite.

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1171213016-610**
Our Project No. **PZ1522D1**
Your Sample Ref. **29**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **5-Feb-18**

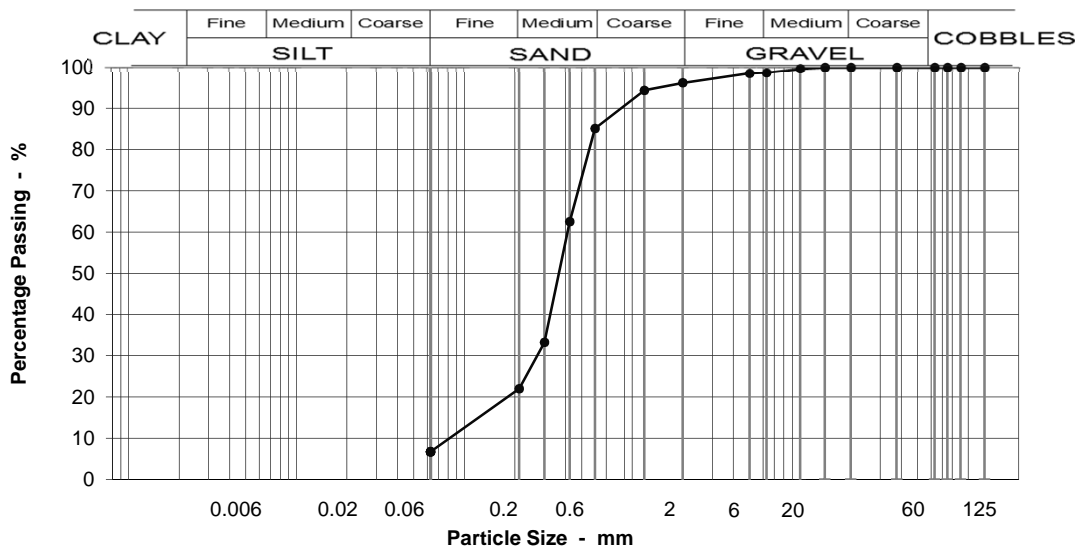
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH5A @ 7 - 7.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	99
5	99
2	96
1.18	94
0.600	85
0.425	62
0.300	33
0.212	22
0.063	7

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	1
Fine GRAVEL	3
Coarse SAND	11
Medium SAND	63
Fine SAND	15
Silt & Clay	7

Grading Analysis	
D100	10
D60	0.41
D10	0.09
Uniformity Coefficient	4

Description
Orangey brown medium SAND.

Moisture content % 17

Test Code = 610



Simon Holden (Project Technician)



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County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1171213019-610**
Our Project No. **PZ1522D1**
Your Sample Ref **32**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **5-Feb-18**

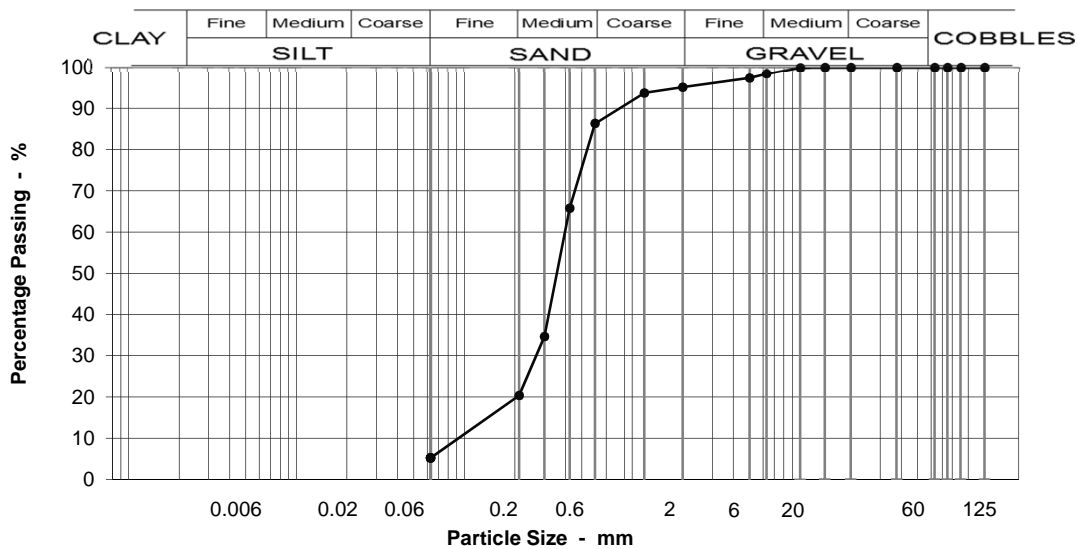
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH5A @ 8 - 8.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	98
5	97
2	95
1.18	94
0.600	86
0.425	66
0.300	35
0.212	20
0.063	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	2
Fine GRAVEL	3
Coarse SAND	9
Medium SAND	66
Fine SAND	15
Silt & Clay	5

Grading Analysis	
D100	10
D60	0.40
D10	0.11
Uniformity Coefficient	4

Description
Orangey-brown medium SAND.

Moisture content % 17

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
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NR1 2DH

Our reference No. **GTS1171213025-610**
Our Project No. **PZ1522D1**
Your Sample Ref **38**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **5-Feb-18**

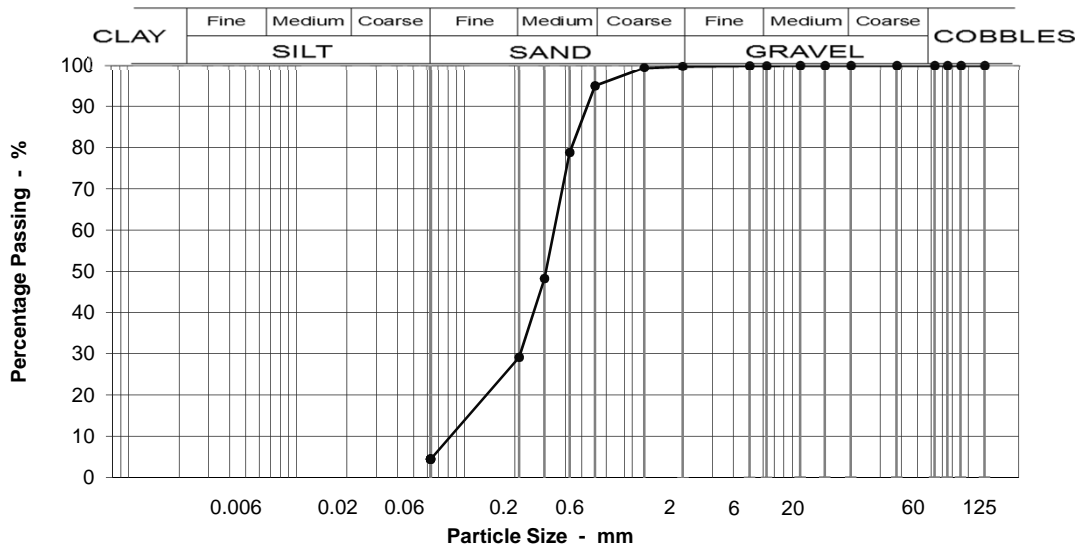
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH5A @ 10 - 10.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	99
0.600	95
0.425	79
0.300	48
0.212	29
0.063	4

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 20

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	5
Medium SAND	66
Fine SAND	25
Silt & Clay	4

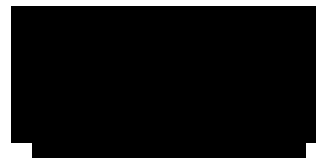
Grading Analysis	
D100	6
D60	0.35
D10	0.10
Uniformity Coefficient	4

Description	
Orange fine and medium SAND with occasional shell fragments.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS1171213031-610
Our Project No PZ1522D1
Your Sample Ref 44
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 5-Feb-18

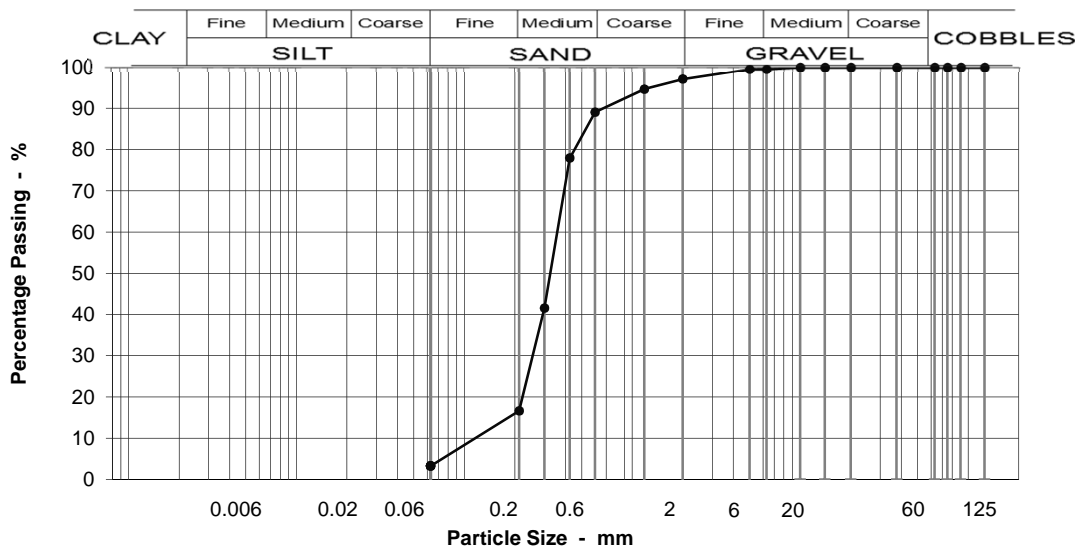
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH5A @ 13 - 13.5m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	97
1.18	95
0.600	89
0.425	78
0.300	42
0.212	17
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 19

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	2
Coarse SAND	8
Medium SAND	72
Fine SAND	13
Silt & Clay	3

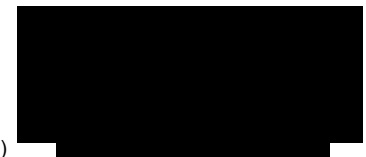
Grading Analysis	
D100	6
D60	0.36
D10	0.14
Uniformity Coefficient	3

Description	
Orangey brown medium SAND with numerous shell fragments.	

Test Code = 610



Simon Holden (Project Technician)



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County Hall
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NR1 2DH

Our reference No. **GTS1171213032-610**
Our Project No. **PZ1522D1**
Your Sample Ref **45**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **5-Feb-18**

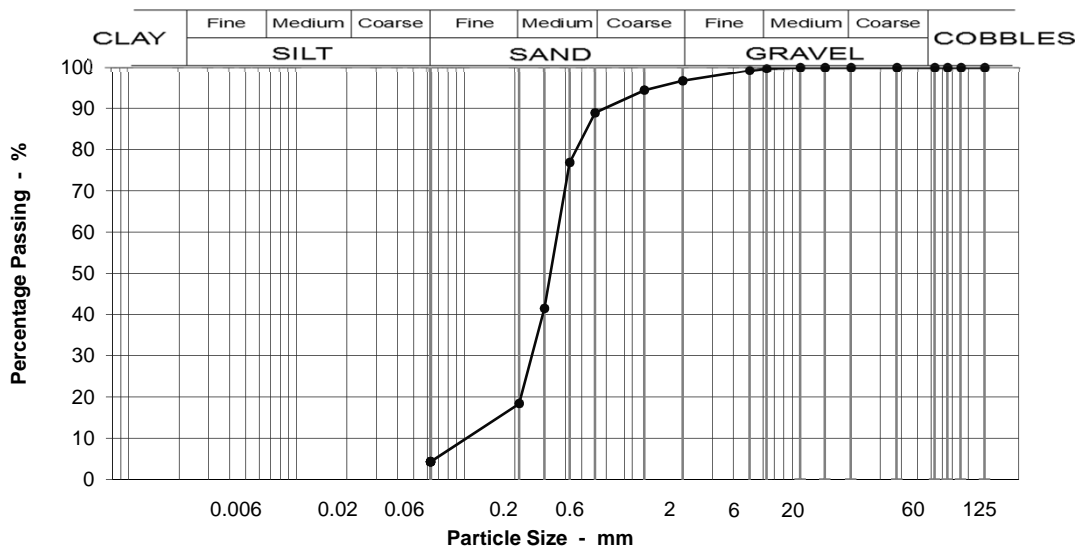
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH5A @ 14 - 14.45m Specimen: 1

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	99
2	97
1.18	94
0.600	89
0.425	77
0.300	42
0.212	18
0.063	4

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 22

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	3
Coarse SAND	8
Medium SAND	70
Fine SAND	14
Silt & Clay	4

Grading Analysis	
D100	6
D60	0.37
D10	0.12
Uniformity Coefficient	3

Description
Orangey medium SAND with numerous shell fragments.

Test Code = 610



Simon Holden (Project Technician)



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NR1 2DH

Our reference No. **GTS1171214006-613**
Our Project No. **PZ1522D1**
Your Sample Ref **53**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **22-Feb-18**

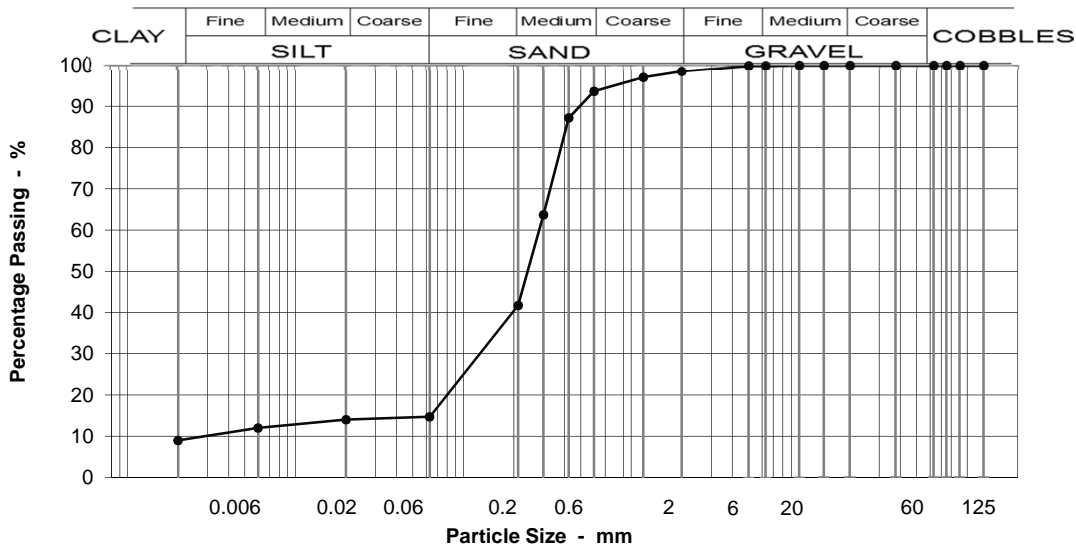
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH5A @ 17 - 17.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	97
0.600	94
0.425	87
0.300	64
0.212	42
0.063	15
0.020	14
0.006	12
0.002	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J.

Moisture content % 27

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	5
Medium SAND	52
Fine SAND	27
Silt & Clay	15

Grading Analysis	
D100	10
D60	0.29
D10	0.05
Uniformity Coefficient	5

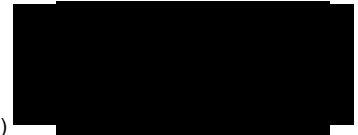
Description	
Dark brownish grey slightly clayey medium SAND with numerous shell fragments.	

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)



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County Hall
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Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1171214010-610**
Our Project No. **PZ1522D1**
Your Sample Ref **57**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **22-Feb-18**

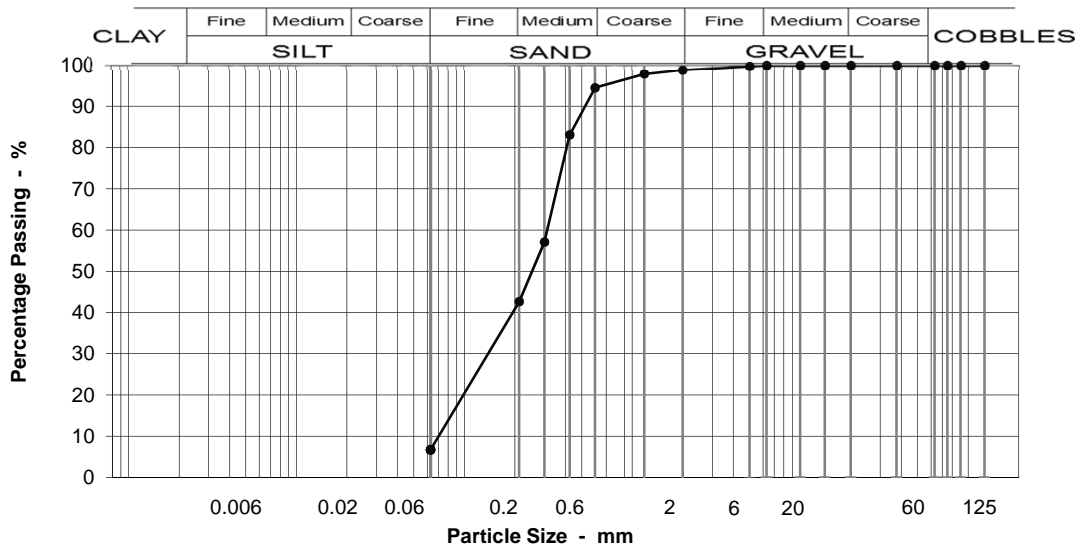
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH5A @ 19 - 19.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	98
0.600	94
0.425	83
0.300	57
0.212	43
0.063	7

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 20

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	4
Medium SAND	52
Fine SAND	36
Silt & Clay	7

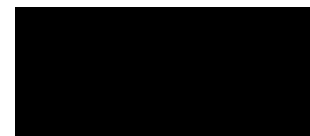
Grading Analysis	
D100	5
D60	0.31
D10	0.08
Uniformity Coefficient	4

Description	
Dark brownish grey slightly silty fine to medium SAND with numerous shell fragments	

Test Code = 610



Simon Holden (Project Technician)



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Norfolk
NR1 2DH

Our reference No. **GTS1171214016-610**
Our Project No. **PZ1522D1**
Your Sample Ref. **63**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **5-Feb-18**

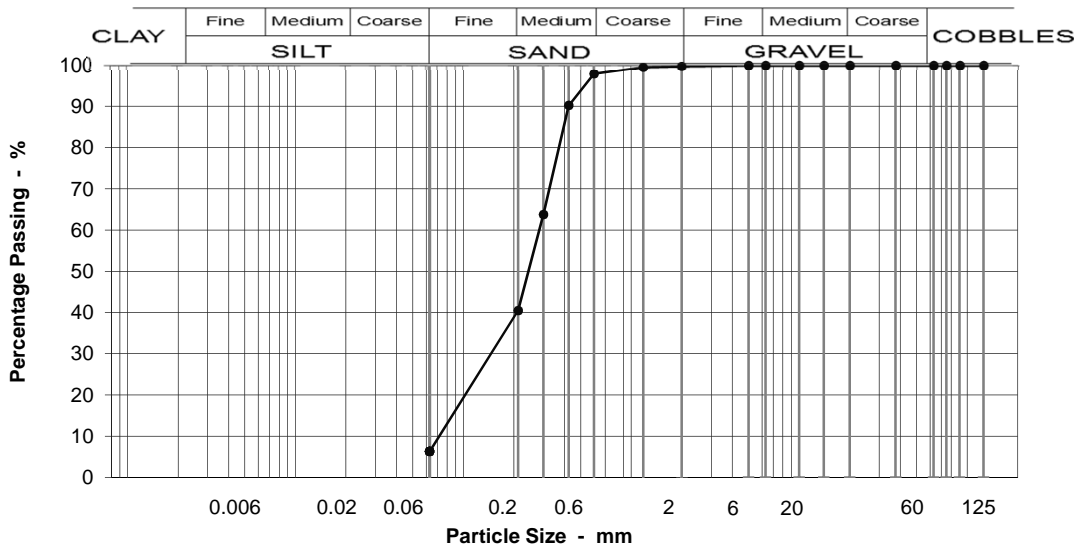
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH5A @ 22 - 22.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	100
0.600	98
0.425	90
0.300	64
0.212	41
0.063	6

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 20

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	2
Medium SAND	57
Fine SAND	34
Silt & Clay	6

Grading Analysis	
D100	2
D60	0.29
D10	0.08
Uniformity Coefficient	4

Description
Orangey brown slightly silty fine and medium SAND with some shell fragments.

Test Code = 610



Simon Holden (Project Technician)



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Our reference No. **GTS1171214019-610**
Our Project No. **PZ1522D1**
Your Sample Ref **66**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **5-Feb-18**

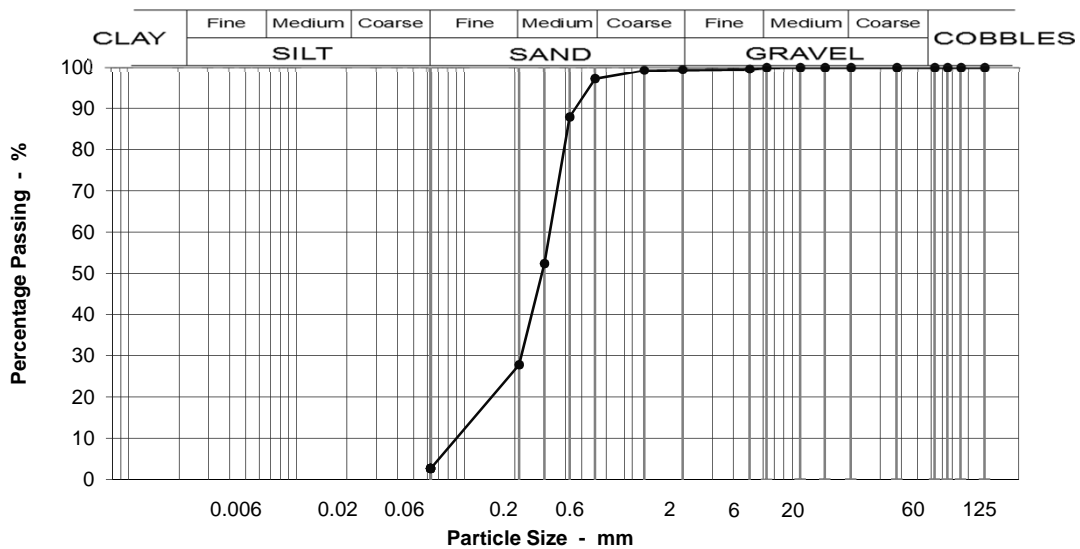
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH5A @ 24 - 24.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	99
0.600	97
0.425	88
0.300	52
0.212	28
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 20

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	2
Medium SAND	69
Fine SAND	25
Silt & Clay	3

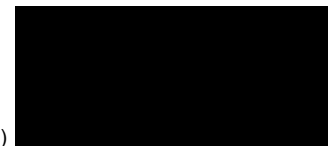
Grading Analysis	
D100	6
D60	0.33
D10	0.11
Uniformity Coefficient	3

Description
Orangey brown fine and medium SAND with some shell fragments.

Test Code = 610



Simon Holden (Project Technician)



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NR1 2DH

Our reference No. **GTS1171214020-610**
Our Project No. **PZ1522D1**
Your Sample Ref. **67**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **5-Feb-18**

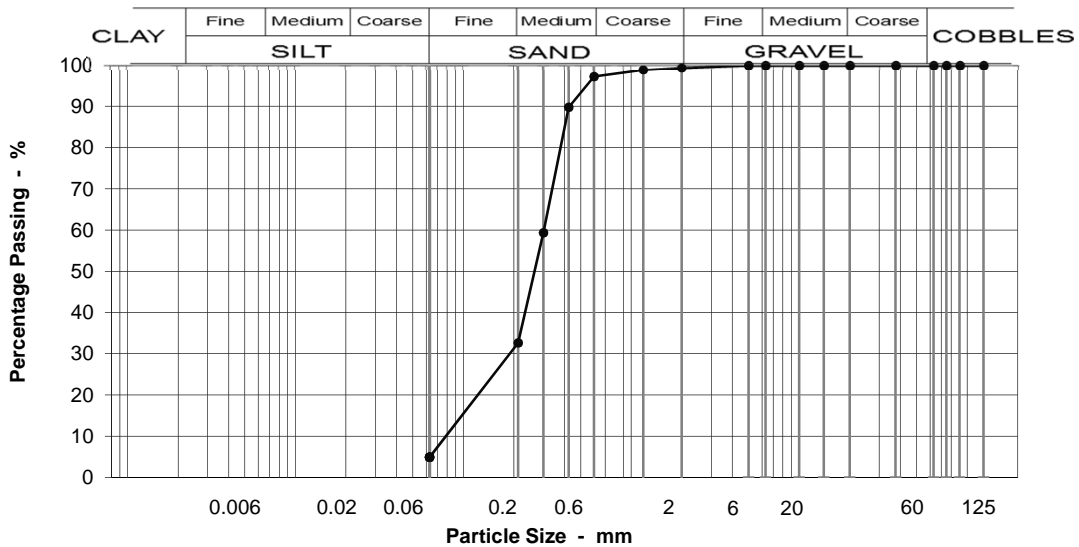
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH5A @ 25 - 25.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	99
0.600	97
0.425	90
0.300	59
0.212	33
0.063	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 18

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	2
Medium SAND	65
Fine SAND	28
Silt & Clay	5

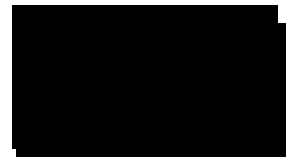
Grading Analysis	
D100	2
D60	0.30
D10	0.09
Uniformity Coefficient	3

Description
Brownish grey fine and medium SAND with lenses of soft grey silty CLAY. Some shell fragments.

Test Code = 610



Simon Holden (Project Technician)



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County Hall
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Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1171214023-613**
Our Project No. **PZ1522D1**
Your Sample Ref **70**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **22-Feb-18**

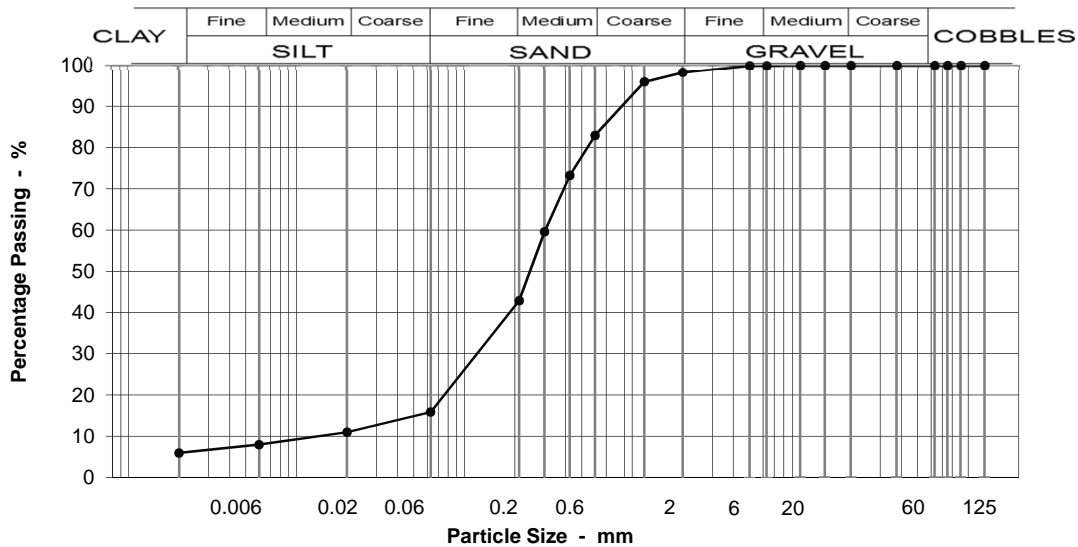
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH5A @ 26 - 26.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	98
1.18	96
0.600	83
0.425	73
0.300	60
0.212	43
0.063	16
0.020	11
0.006	8
0.002	6

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 2A/2B, 2A/2B.

Moisture content % 21

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	2
Coarse SAND	15
Medium SAND	40
Fine SAND	27
Silt & Clay	16

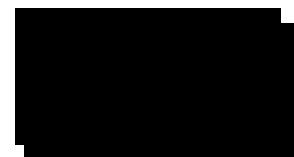
Grading Analysis	
D100	6
D60	0.30
D10	0.06
Uniformity Coefficient	5

Description
Grey slightly clayey, slightly silty fine, medium and coarse SAND with some shell fragments.

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
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Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1171214024-613**
Our Project No. **PZ1522D1**
Your Sample Ref **71**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **22-Feb-18**

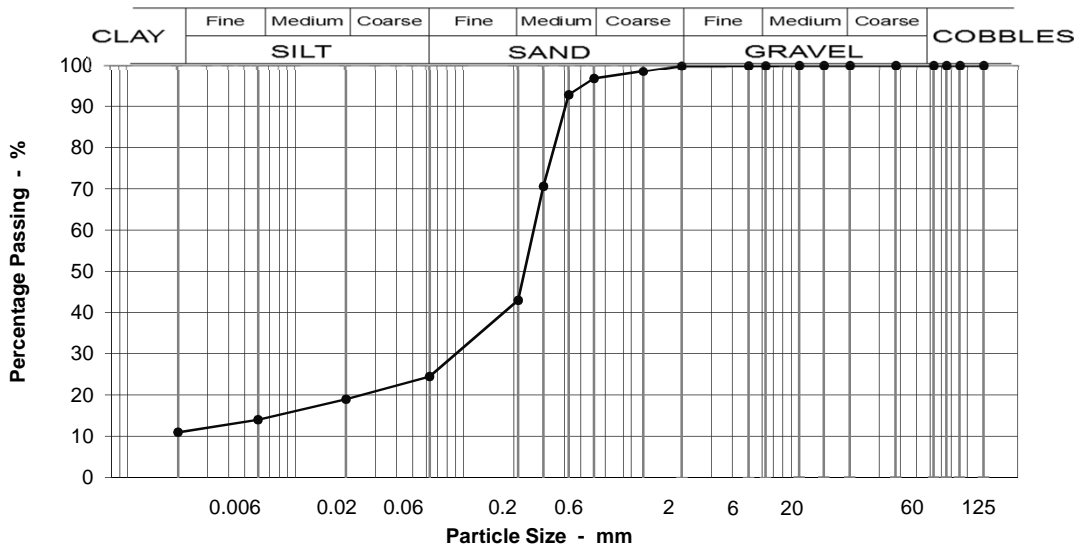
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH5A @ 27 - 27.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	99
0.600	97
0.425	93
0.300	71
0.212	43
0.063	24
0.020	19
0.006	14
0.002	11

Specification for Highway Works Classification
Table 6/2

Moisture content % 23

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	3
Medium SAND	54
Fine SAND	19
Silt & Clay	24

Grading Analysis	
D100	6
D60	0.27
D10	0.00
Uniformity Coefficient	>10*

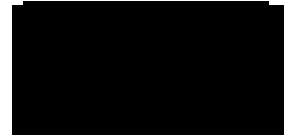
Description
Laminated and thickly bedded brownish grey silty SAND. Firm to stiff grey silty CLAY and sandy SILT with some shell fragments.

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1171214026-613**
Our Project No. **PZ1522D1**
Your Sample Ref **73**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **22-Feb-18**

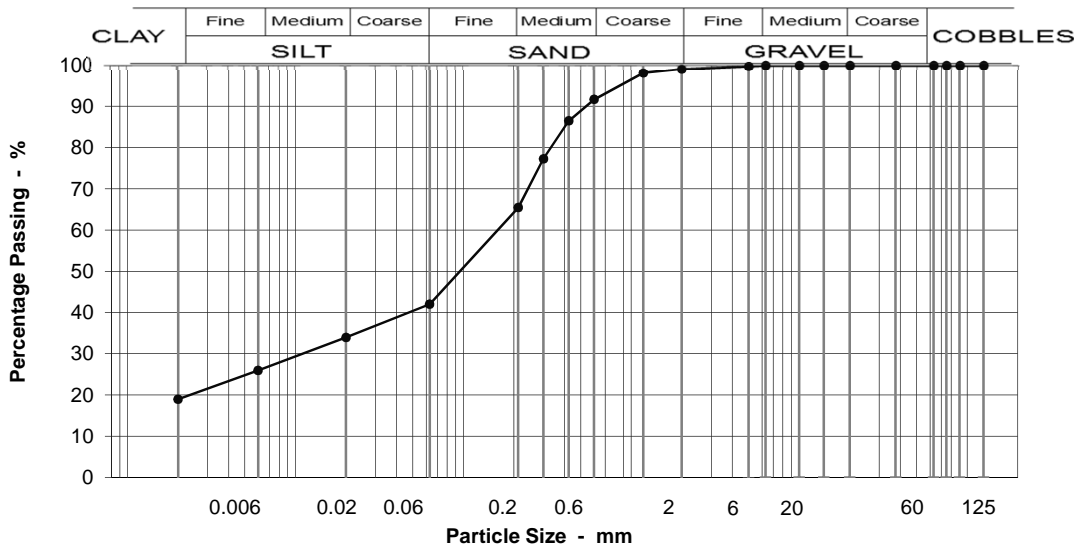
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH5A @ 28 - 28.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	98
0.600	92
0.425	86
0.300	77
0.212	65
0.063	42
0.020	34
0.006	26
0.002	19

Specification for Highway Works Classification
Table 6/2

Moisture content % 47

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	7
Medium SAND	26
Fine SAND	23
Silt & Clay	42

Grading Analysis	
D100	5
D60	0.18
D10	0.00
Uniformity Coefficient	>10*

Description
Laminated and thickly bedded brownish grey silty SAND. Firm to stiff grey silty CLAY and sandy SILT with some shell fragments.

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3171123001-610**
Our Project No. **PZ1522D1**
Your Sample Ref **1**
Your Project or Order No. **PZ1522**
Date Tested **11/12/2017**
Date Report Issued **9-Jan-18**

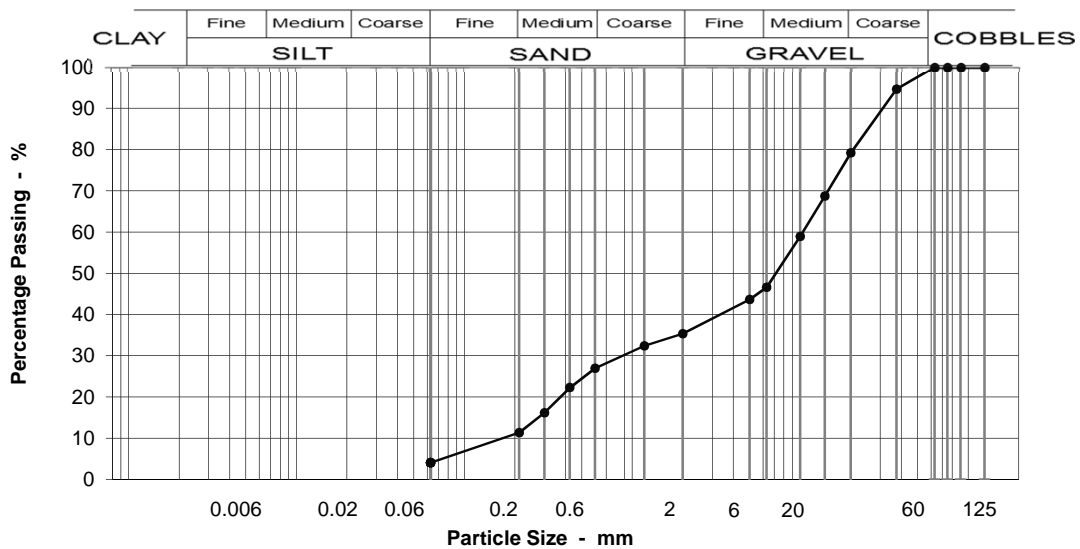
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH6 @ 0 - 0.4m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	95
20	79
14	69
10	59
6.3	47
5	44
2	35
1.18	32
0.600	27
0.425	22
0.300	16
0.212	11
0.063	4

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6A, 6E/6R, 6F1, 6I, 6M, 6N.

Moisture content % 8.4

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	21
Medium GRAVEL	33
Fine GRAVEL	11
Coarse SAND	8
Medium SAND	16
Fine SAND	7
Silt & Clay	4

Grading Analysis	
D100	38
D60	10.42
D10	0.18
Uniformity Coefficient	57

Description
MADE GROUND: comprising up to coarse gravel size angular concrete, brick and flint in a matrix of greyish brown medium sand.

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS3171123004-610
Our Project No PZ1522D1
Your Sample Ref 4
Your Project or Order No. PZ1522
Date Tested 15/12/2017
Date Report Issued 9-Jan-18

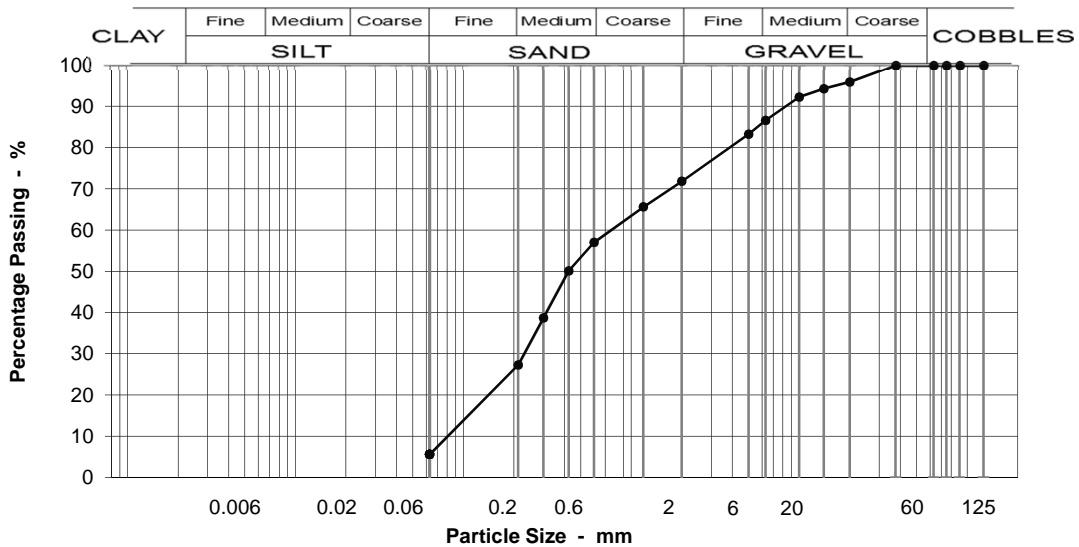
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH6 @ 0.4 - 0.9m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	96
14	94
10	92
6.3	87
5	83
2	72
1.18	66
0.600	57
0.425	50
0.300	39
0.212	27
0.063	6

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J, 6M.

Moisture content % 18

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	4
Medium GRAVEL	9
Fine GRAVEL	15
Coarse SAND	15
Medium SAND	30
Fine SAND	22
Silt & Clay	6

Grading Analysis	
D100	20
D60	0.80
D10	0.09
Uniformity Coefficient	9

Description
MADE GROUND: comprising dark grey very gravelly slightly silty fine to coarse sand. Gravel is fine and medium angular flint, brick, concrete and slate,

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3171123005-613**
Our Project No. **PZ1522D1**
Your Sample Ref **5**
Your Project or Order No. **PZ1522**
Date Tested **11/12/2017**
Date Report Issued **5-Feb-18**

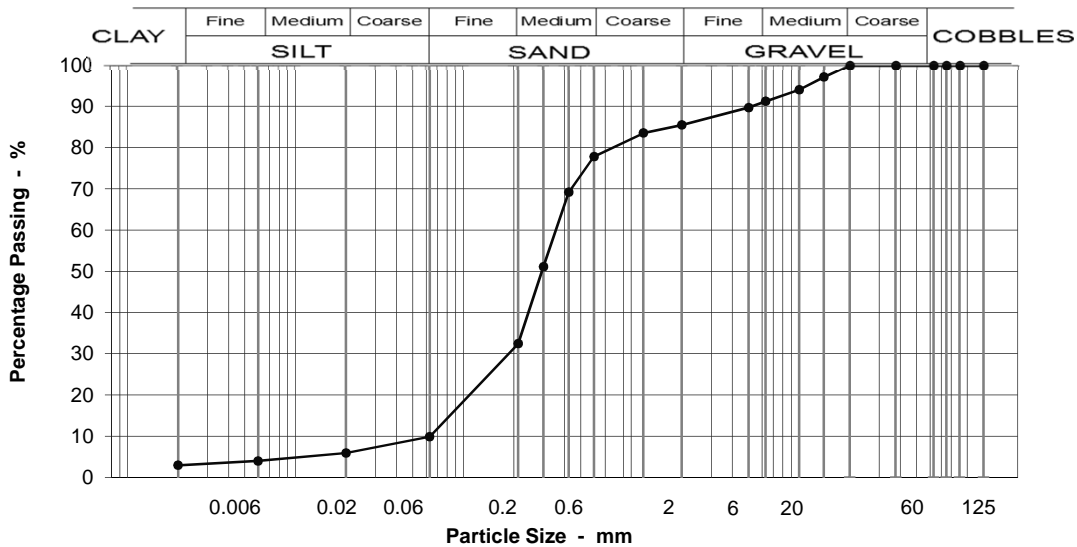
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH6 @ 1 - 1.2m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	97
10	94
6.3	91
5	90
2	85
1.18	84
0.600	78
0.425	69
0.300	51
0.212	32
0.063	10
0.020	6
0.006	4
0.002	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J, 6K, 6M.

Moisture content % 16

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	9
Fine GRAVEL	6
Coarse SAND	8
Medium SAND	45
Fine SAND	23
Silt & Clay	10

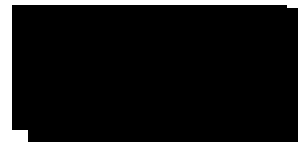
Grading Analysis	
D100	14
D60	0.36
D10	0.06
Uniformity Coefficient	6

Description
MADE GROUND: Comprising of dark grey gravelly, slightly silty fine and medium SAND. Gravel is fine and medium flint, brick, concrete and slate.

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
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Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3171123012-610**
Our Project No. **PZ1522D1**
Your Sample Ref **11**
Your Project or Order No. **PZ1522**
Date Tested **11/12/2017**
Date Report Issued **9-Jan-18**

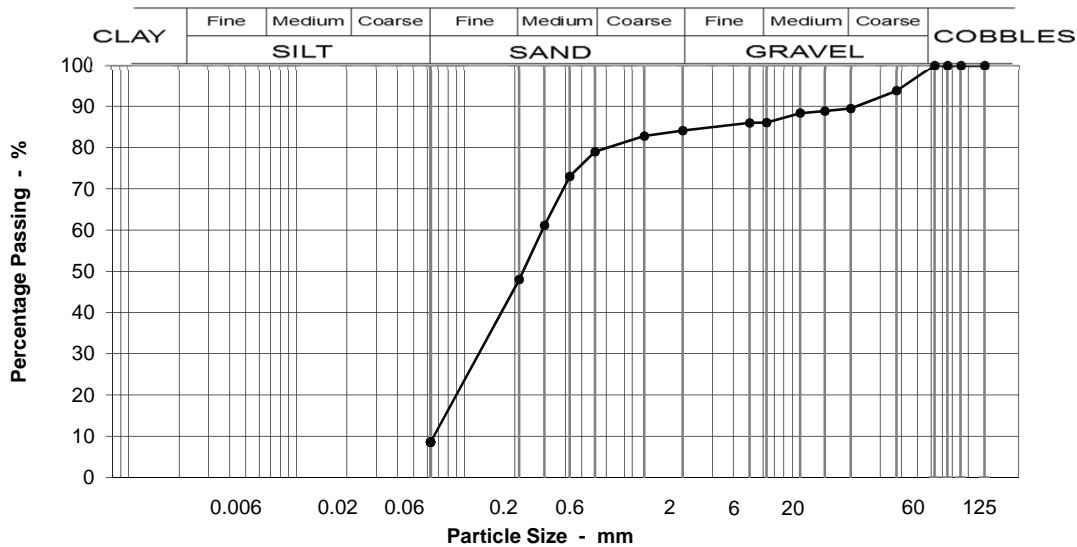
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH6 @ 2 - 2.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	94
20	89
14	89
10	88
6.3	86
5	86
2	84
1.18	83
0.600	79
0.425	73
0.300	61
0.212	48
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	11
Medium GRAVEL	3
Fine GRAVEL	2
Coarse SAND	5
Medium SAND	31
Fine SAND	39
Silt & Clay	9

Grading Analysis	
D100	38
D60	0.29
D10	0.07
Uniformity Coefficient	4

Description
Dark grey organic slightly clayey gravelly fine to medium SAND. Gravel is coarse angular flint.

Moisture content % 27

Test Code = 610



Simon Holden (Project Technician)



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Norfolk
NR1 2DH

Our reference No. **GTS3171123014-610**
Our Project No. **PZ1522D1**
Your Sample Ref **13**
Your Project or Order No. **PZ1522**
Date Tested **07/12/2017**
Date Report Issued **9-Jan-18**

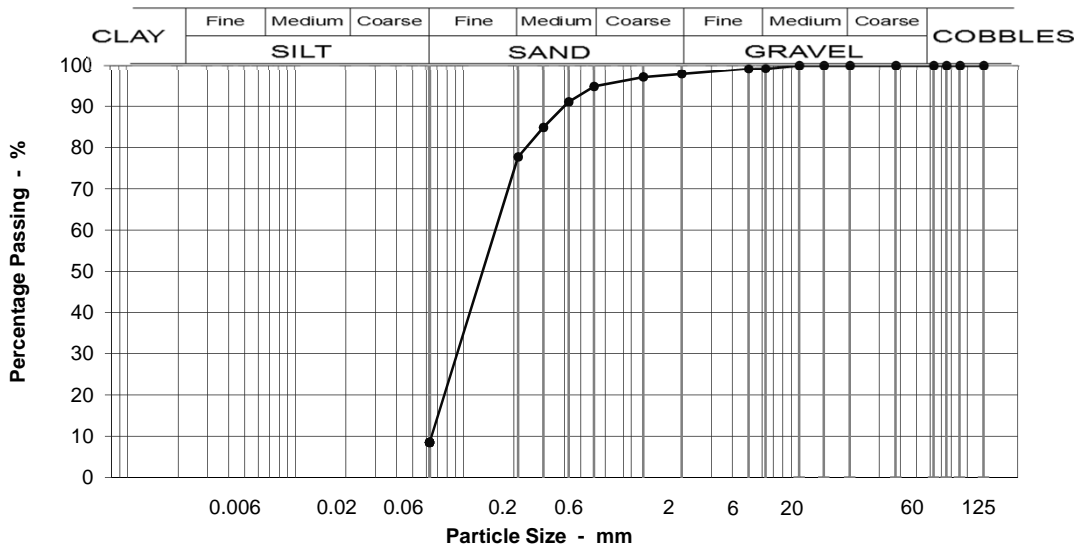
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH6 @ 3 - 3.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	99
5	99
2	98
1.18	97
0.600	95
0.425	91
0.300	85
0.212	78
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 26

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	1
Fine GRAVEL	1
Coarse SAND	3
Medium SAND	17
Fine SAND	69
Silt & Clay	9

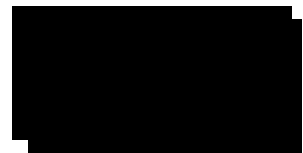
Grading Analysis	
D100	6
D60	0.17
D10	0.07
Uniformity Coefficient	3

Description
Dark brownish grey slightly clayey fine sand.

Test Code = 610



Simon Holden (Project Technician)



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NR1 2DH

Our reference No. GTS3171123022-610
Our Project No PZ1522D1
Your Sample Ref 20
Your Project or Order No. PZ1522
Date Tested 14/12/2017
Date Report Issued 9-Jan-18

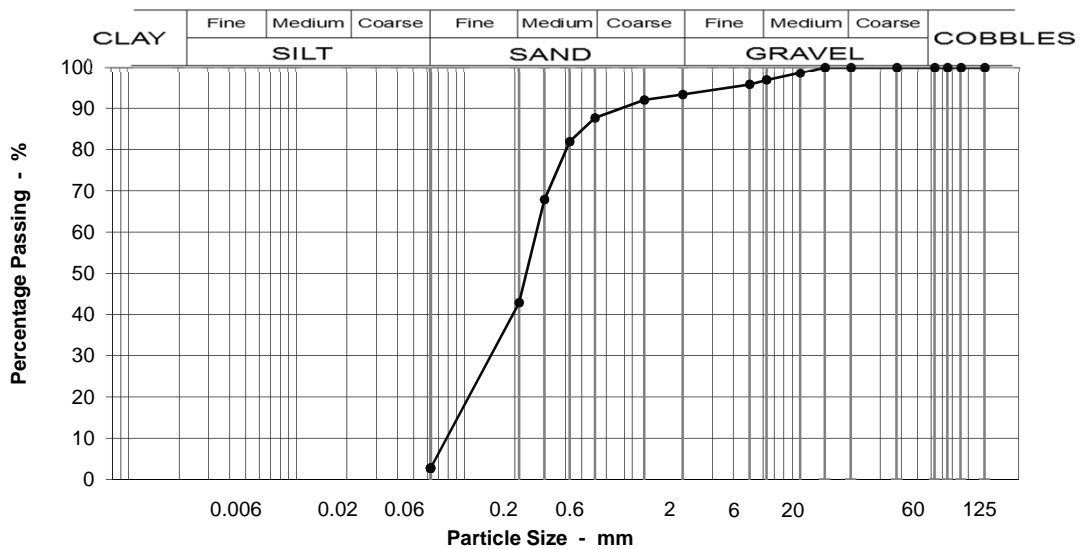
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH6 @ 4 - 4.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	99
6.3	97
5	96
2	93
1.18	92
0.600	88
0.425	82
0.300	68
0.212	43
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 19

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	3
Fine GRAVEL	4
Coarse SAND	6
Medium SAND	45
Fine SAND	40
Silt & Clay	3

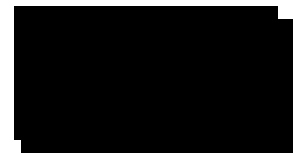
Grading Analysis	
D100	10
D60	0.27
D10	0.09
Uniformity Coefficient	3

Description	
Dark brownish grey slightly gravelly fine and medium SAND. Gravel is fine and medium sub-rounded to rounded flint and quartz.	

Test Code = 610



Simon Holden (Project Technician)



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Norwich
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NR1 2DH

Our reference No. **GTS3171123024-610**
Our Project No. PZ1522D1
Your Sample Ref. 22
Your Project or Order No. PZ1522
Date Tested 11/12/2017
Date Report Issued 9-Jan-18

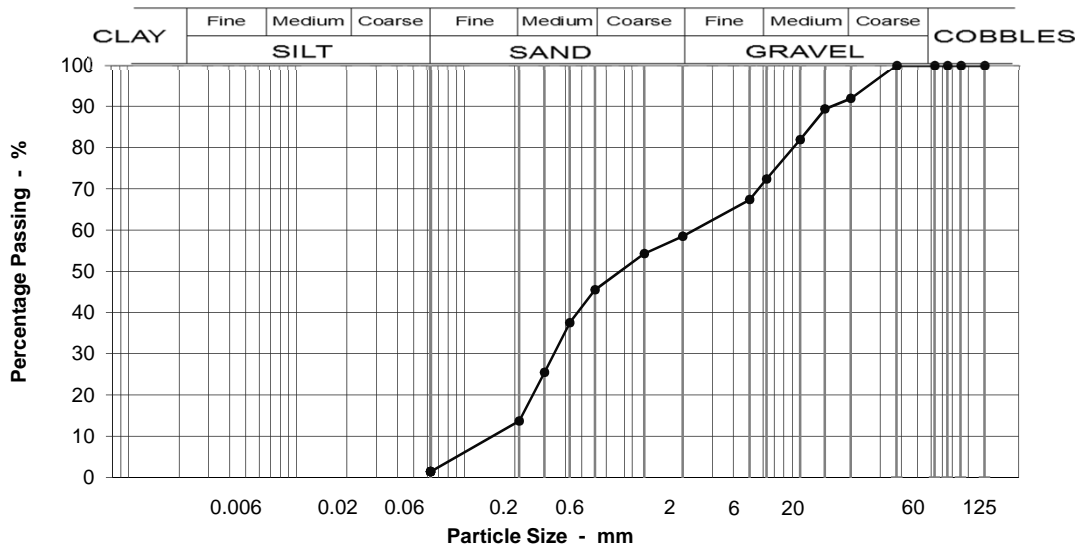
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH6 @ 5 - 5.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	92
14	89
10	82
6.3	72
5	67
2	58
1.18	54
0.600	46
0.425	38
0.300	26
0.212	14
0.063	1

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6E/6R, 6F1, 6I, 6M, 6N.

Moisture content % 12

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	8
Medium GRAVEL	20
Fine GRAVEL	14
Coarse SAND	13
Medium SAND	32
Fine SAND	12
Silt & Clay	1

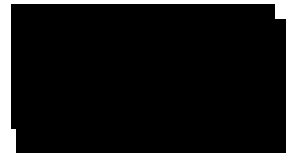
Grading Analysis	
D100	20
D60	2.51
D10	0.17
Uniformity Coefficient	15

Description	
Greyish brown fine to coarse sand and fine and medium angular to sub-angular flint GRAVEL.	

Test Code = 610



Simon Holden (Project Technician)



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Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3171123026-610**
Our Project No. **PZ1522D1**
Your Sample Ref **24**
Your Project or Order No. **PZ1522**
Date Tested **07/12/2017**
Date Report Issued **9-Jan-18**

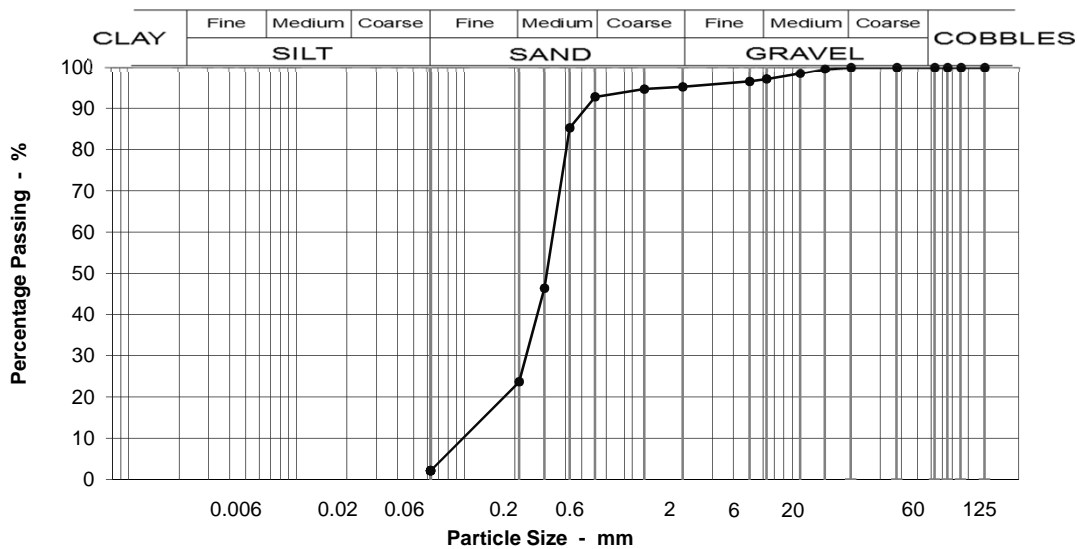
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH6 @ 6 - 6.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	98
6.3	97
5	96
2	95
1.18	95
0.600	93
0.425	85
0.300	46
0.212	24
0.063	2

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	3
Fine GRAVEL	2
Coarse SAND	2
Medium SAND	69
Fine SAND	22
Silt & Clay	2

Grading Analysis	
D100	14
D60	0.34
D10	0.12
Uniformity Coefficient	3

Description
Orange slightly gravelly fine and medium SAND.

Moisture content % 17

Test Code = 610



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NR1 2DH

Our reference No. **GTS3171123030-610**
Our Project No. PZ1522D1
Your Sample Ref 28
Your Project or Order No. PZ1522
Date Tested 11/12/2017
Date Report Issued 9-Jan-18

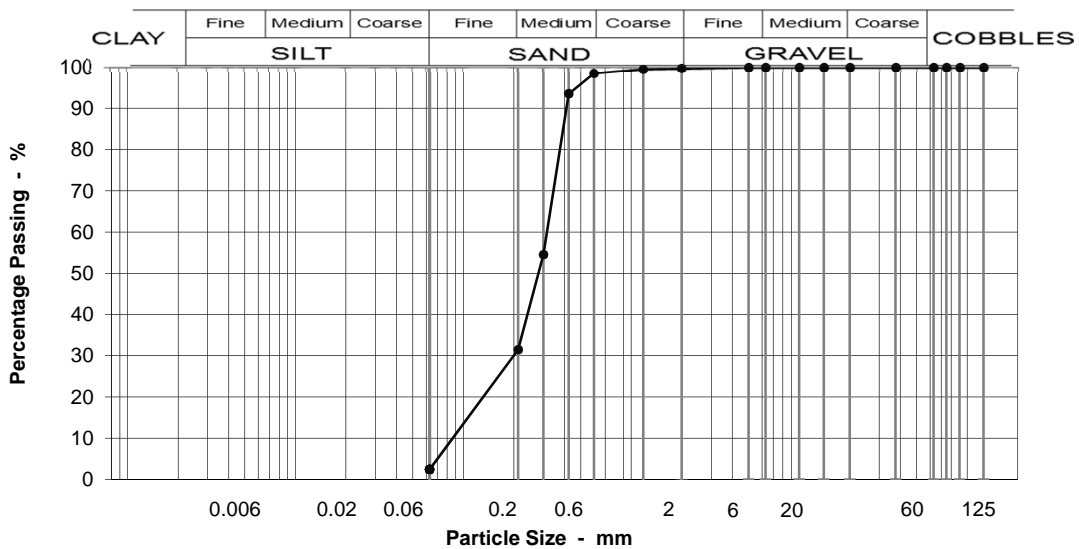
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH6 @ 7 - 7.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	100
0.600	99
0.425	94
0.300	55
0.212	31
0.063	2

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 20

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	1
Medium SAND	67
Fine SAND	29
Silt & Clay	2

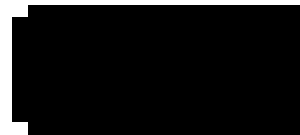
Grading Analysis	
D100	2
D60	0.32
D10	0.10
Uniformity Coefficient	3

Description	
Orange fine and medium SAND.	

Test Code = 610



Simon Holden (Project Technician)



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NR1 2DH

Our reference No. **GTS3171124001-610**
Our Project No. PZ1522D1
Your Sample Ref 30
Your Project or Order No. PZ1522
Date Tested 11/12/2017
Date Report Issued 9-Jan-18

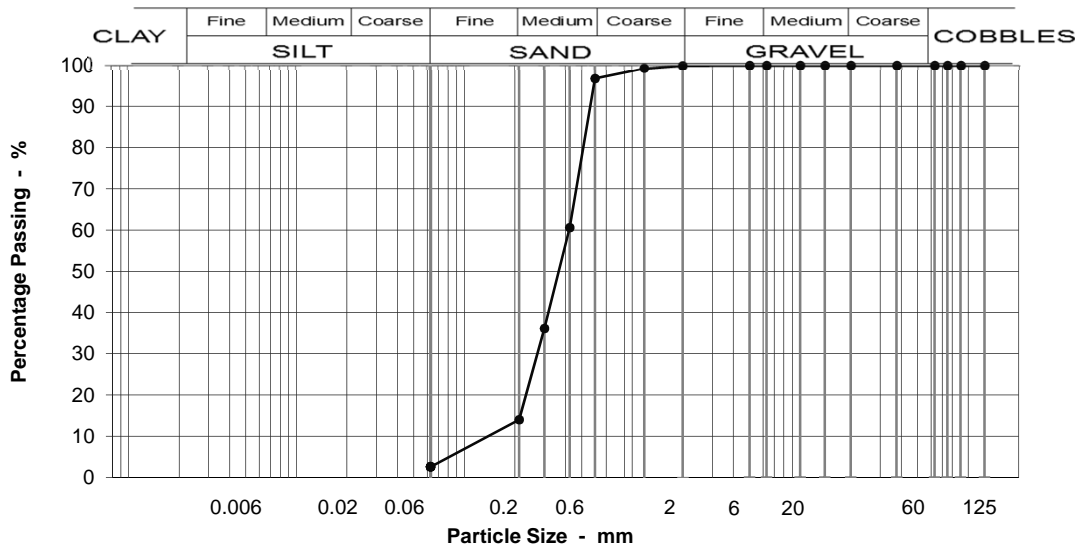
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH6 @ 8 - 8.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	99
0.600	97
0.425	61
0.300	36
0.212	14
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	3
Medium SAND	83
Fine SAND	11
Silt & Clay	3

Grading Analysis	
D100	2
D60	0.42
D10	0.16
Uniformity Coefficient	3

Description
Orange medium SAND.

Moisture content % 22

Test Code = 610



Simon Holden (Project Technician)



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Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3171124010-610**
Our Project No. PZ1522D1
Your Sample Ref 37
Your Project or Order No. PZ1522
Date Tested 08/12/2017
Date Report Issued 9-Jan-18

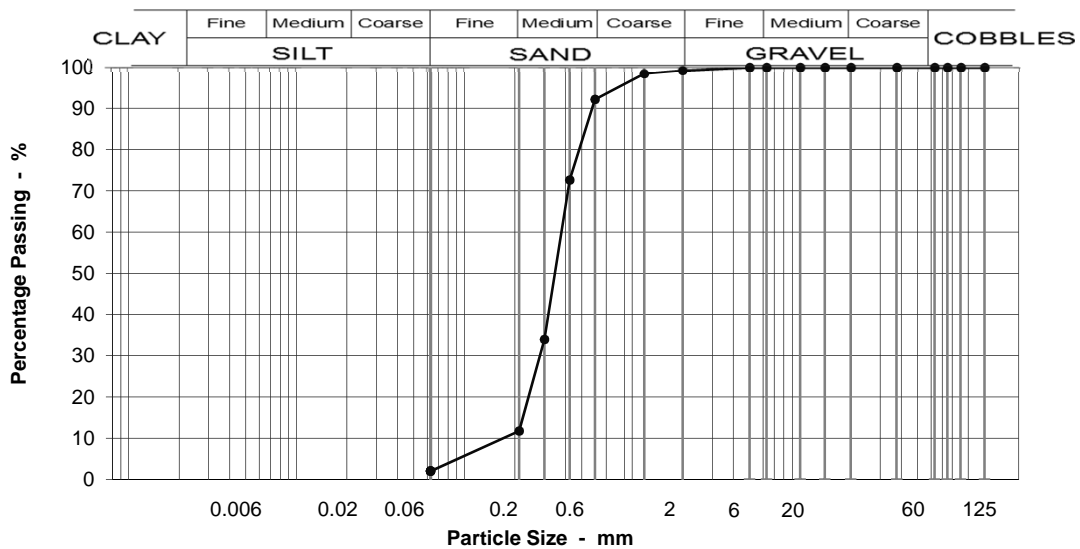
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH6 @ 11 - 11.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	98
0.600	92
0.425	73
0.300	34
0.212	12
0.063	2

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	7
Medium SAND	80
Fine SAND	10
Silt & Clay	2

Grading Analysis	
D100	2
D60	0.38
D10	0.18
Uniformity Coefficient	2

Description
Laminated orange, reddish brown and grey medium SAND.

Moisture content % 20

Test Code = 610



Simon Holden (Project Technician)



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Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3171124014-610**
Our Project No. **PZ1522D1**
Your Sample Ref **41**
Your Project or Order No. **PZ1522**
Date Tested **12/12/2017**
Date Report Issued **9-Jan-18**

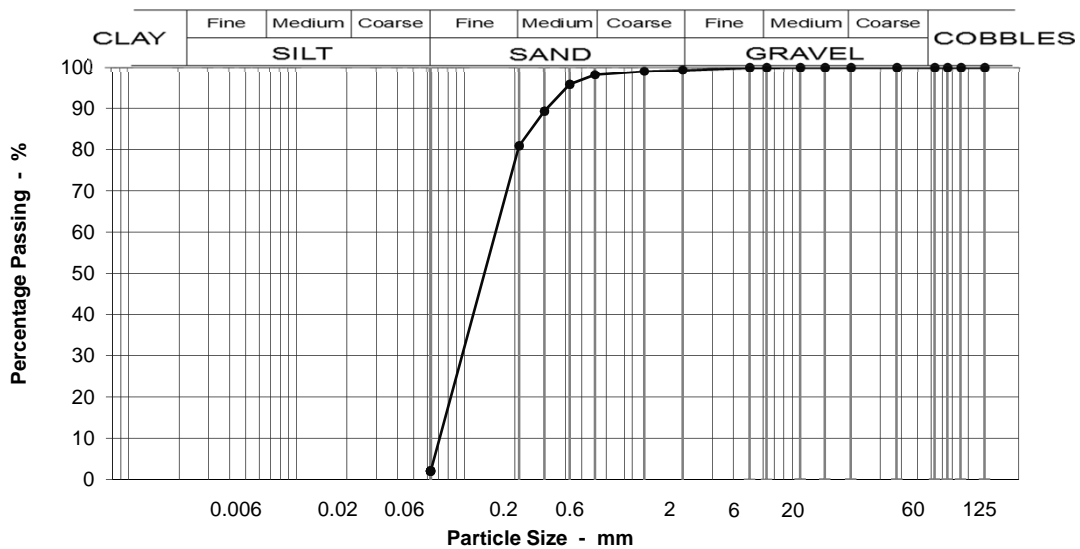
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH6 @ 13 - 13.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	99
0.600	98
0.425	96
0.300	89
0.212	81
0.063	2

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	1
Medium SAND	17
Fine SAND	79
Silt & Clay	2

Grading Analysis	
D100	6
D60	0.17
D10	0.08
Uniformity Coefficient	2

Description
Orangey brown fine SAND.

Moisture content % 52

Test Code = 610



Simon Holden (Project Technician)



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County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3171127002-613**
Our Project No. PZ1522D1
Your Sample Ref. 48
Your Project or Order No. PZ1522
Date Tested 08/12/2017
Date Report Issued 5-Feb-18

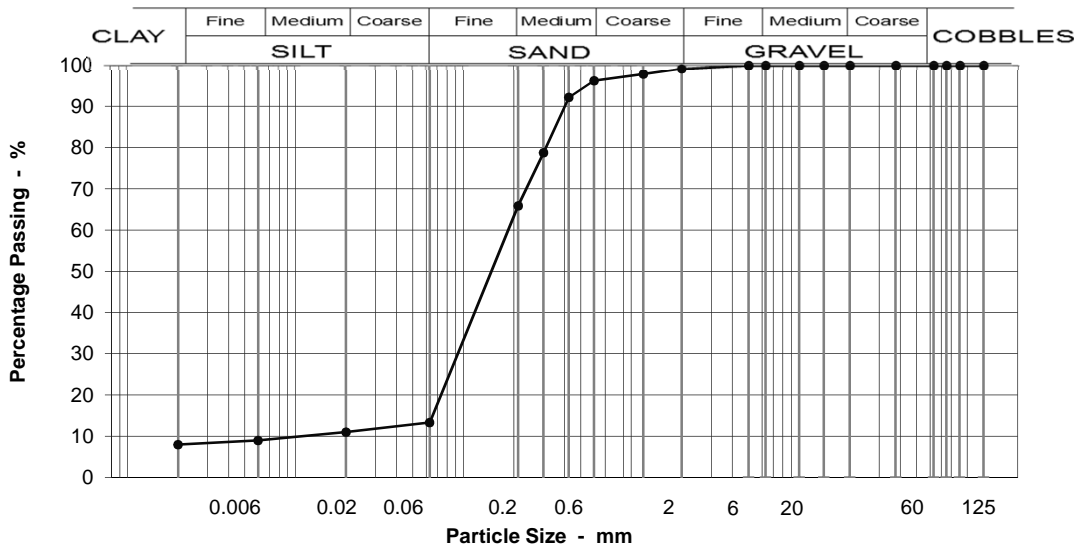
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH6 @ 16 - 16.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	98
0.600	96
0.425	92
0.300	79
0.212	66
0.063	13
0.020	11
0.006	9
0.002	8

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R.

Moisture content % 39

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	3
Medium SAND	30
Fine SAND	53
Silt & Clay	13

Grading Analysis	
D100	2
D60	0.20
D10	0.05
Uniformity Coefficient	4

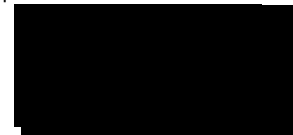
Description	
Laminated brown silty fine and medium SAND and grey very sandy silty clay.	

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3171127004-613**
Our Project No. **PZ1522D1**
Your Sample Ref **50**
Your Project or Order No. **PZ1522**
Date Tested **07/12/2017**
Date Report Issued **5-Feb-18**

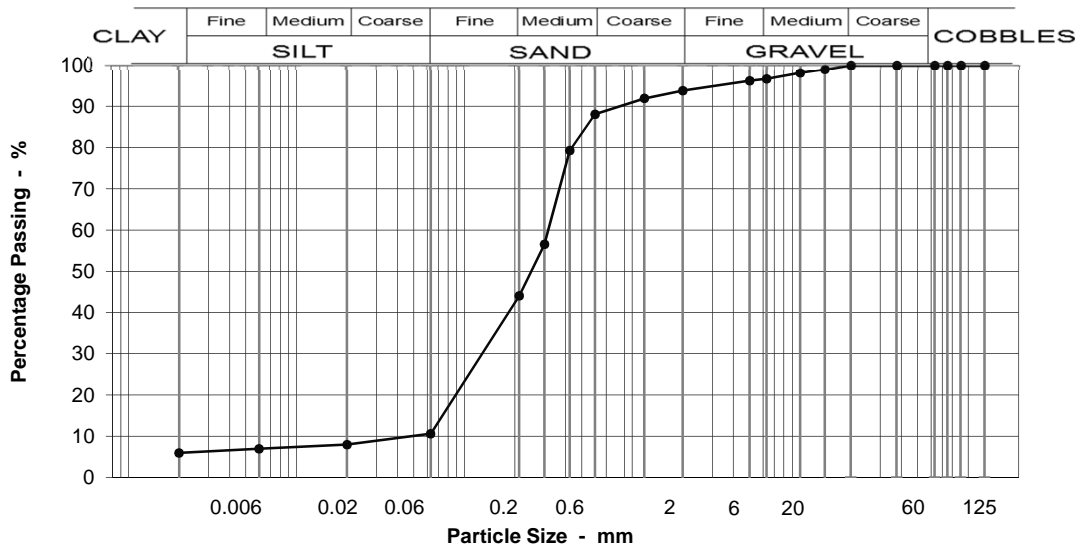
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH6 @ 17.4 - 17.8m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	99
10	98
6.3	97
5	96
2	94
1.18	92
0.600	88
0.425	79
0.300	57
0.212	44
0.063	11
0.020	8
0.006	7
0.002	6

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R.

Moisture content % 27

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	3
Fine GRAVEL	3
Coarse SAND	6
Medium SAND	44
Fine SAND	33
Silt & Clay	11

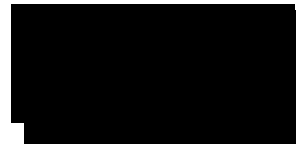
Grading Analysis	
D100	14
D60	0.32
D10	0.10
Uniformity Coefficient	3

Description
Reddish brown slightly clayey, slightly gravelly fine and medium SAND with numerous shell fragments. Gravel is fine and medium angular flint.

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3171127008-610**
Our Project No. PZ1522D1
Your Sample Ref 54
Your Project or Order No. PZ1522
Date Tested 08/12/2017
Date Report Issued 9-Jan-18

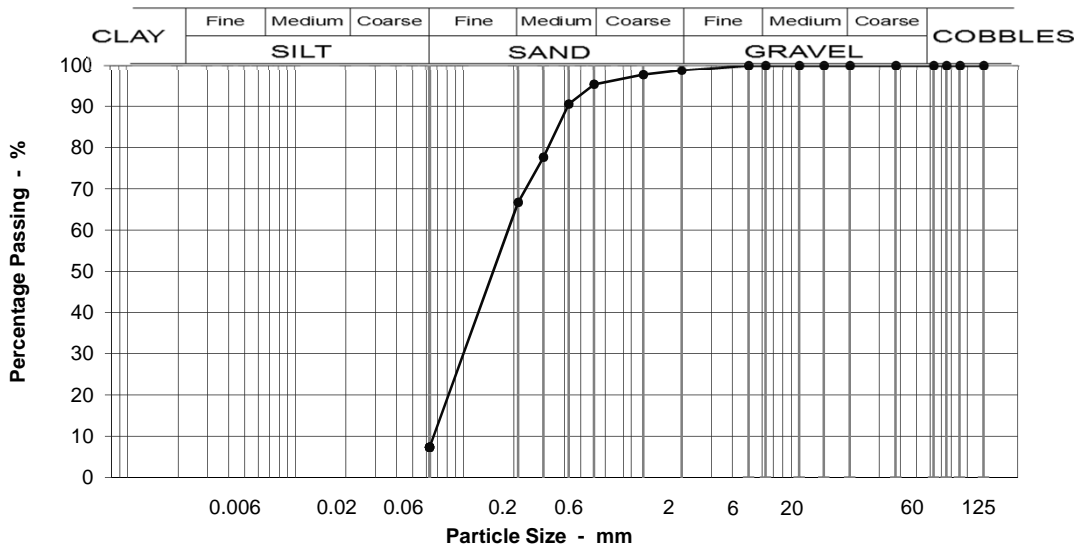
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH6 @ 19 - 19.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	98
0.600	95
0.425	91
0.300	78
0.212	67
0.063	7

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 25

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	3
Medium SAND	29
Fine SAND	59
Silt & Clay	7

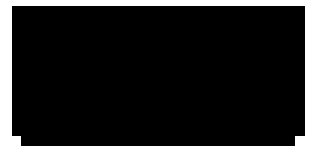
Grading Analysis	
D100	2
D60	0.20
D10	0.07
Uniformity Coefficient	3

Description	
Reddish brown slightly silty fine and medium SAND with numerous shell fragments.	

Test Code = 610



Simon Holden (Project Technician)



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County Hall
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Norfolk
NR1 2DH

Our reference No. **GTS3171127010-610**
Our Project No. **PZ1522D1**
Your Sample Ref **56**
Your Project or Order No. **PZ1522**
Date Tested **07/12/2017**
Date Report Issued **9-Jan-18**

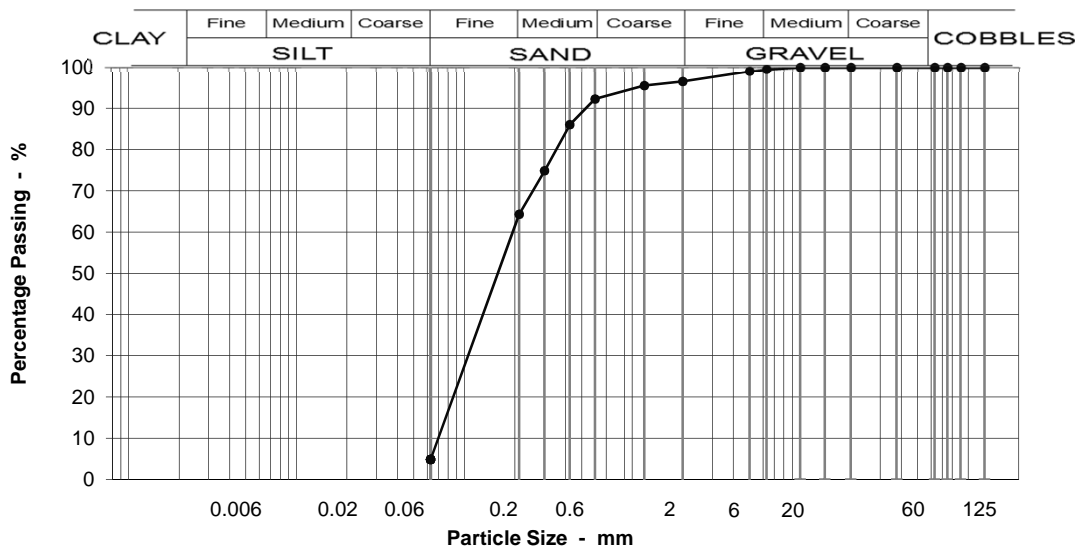
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH6 @ 20 - 20.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	99
2	97
1.18	95
0.600	92
0.425	86
0.300	75
0.212	64
0.063	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	3
Coarse SAND	4
Medium SAND	28
Fine SAND	59
Silt & Clay	5

Grading Analysis	
D100	6
D60	0.20
D10	0.08
Uniformity Coefficient	3

Description
Brownish grey fine and medium SAND with some shell fragments.

Moisture content % 22

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3171127011-610**
Our Project No. PZ1522D1
Your Sample Ref 57
Your Project or Order No. PZ1522
Date Tested 11/12/2017
Date Report Issued 9-Jan-18

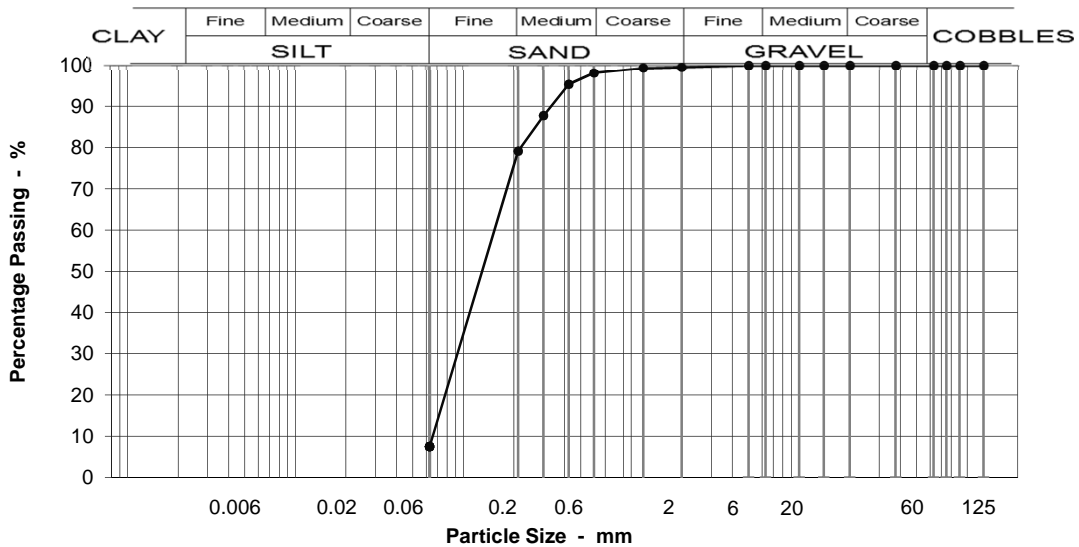
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH6 @ 21 - 21.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	99
0.600	98
0.425	95
0.300	88
0.212	79
0.063	8

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 27

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	1
Medium SAND	19
Fine SAND	72
Silt & Clay	8

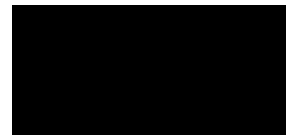
Grading Analysis	
D100	2
D60	0.17
D10	0.07
Uniformity Coefficient	3

Description	
Grey fine SAND with some shell fragments.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3171127015-610**
Our Project No. PZ1522D1
Your Sample Ref. 61
Your Project or Order No. PZ1522
Date Tested 11/12/2017
Date Report Issued 5-Feb-18

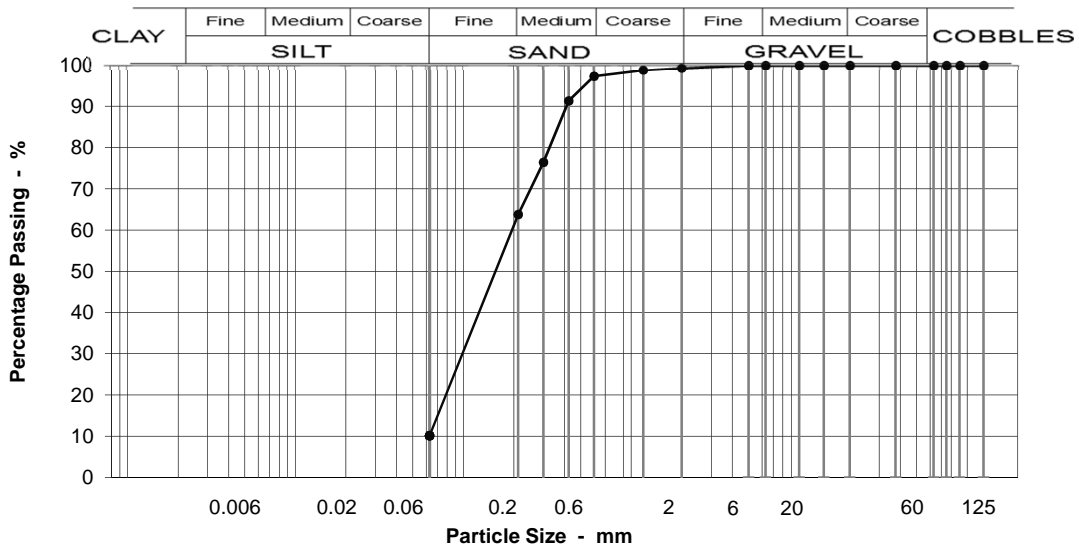
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH6 @ 23.1 - 23.6m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	99
0.600	97
0.425	91
0.300	76
0.212	64
0.063	10

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J.

Moisture content % 24

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	2
Medium SAND	34
Fine SAND	54
Silt & Clay	10

Grading Analysis	
D100	2
D60	0.20
D10	0.03
Uniformity Coefficient	6

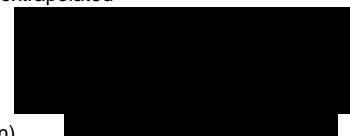
Description	
Grey fine and medium SAND with some shell fragments.	

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



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Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3171127019-610**
Our Project No. PZ1522D1
Your Sample Ref. 65
Your Project or Order No. PZ1522
Date Tested 11/12/2017
Date Report Issued 9-Jan-18

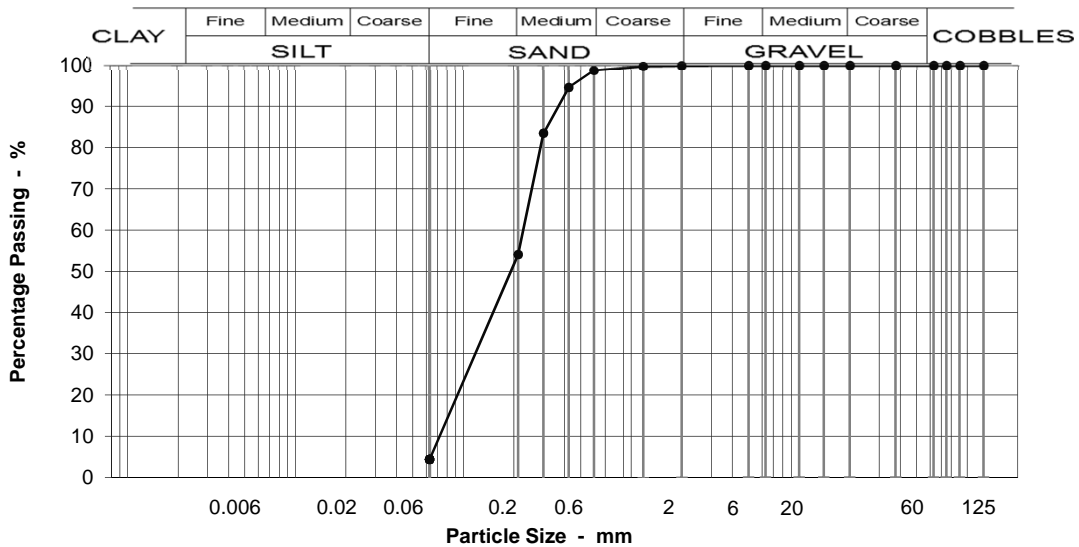
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH6 @ 25 - 25.1m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	100
0.600	99
0.425	95
0.300	83
0.212	54
0.063	4

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 20

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	1
Medium SAND	45
Fine SAND	50
Silt & Clay	4

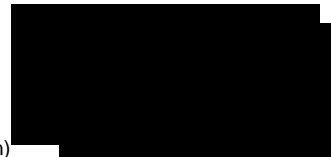
Grading Analysis	
D100	2
D60	0.23
D10	0.08
Uniformity Coefficient	3

Description	
Grey fine and medium SAND with occasional shell fragments.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
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NR1 2DH

Our reference No. **GTS3171127021-610**
Our Project No. PZ1522D1
Your Sample Ref. 67
Your Project or Order No. PZ1522
Date Tested 12/12/2017
Date Report Issued 9-Jan-18

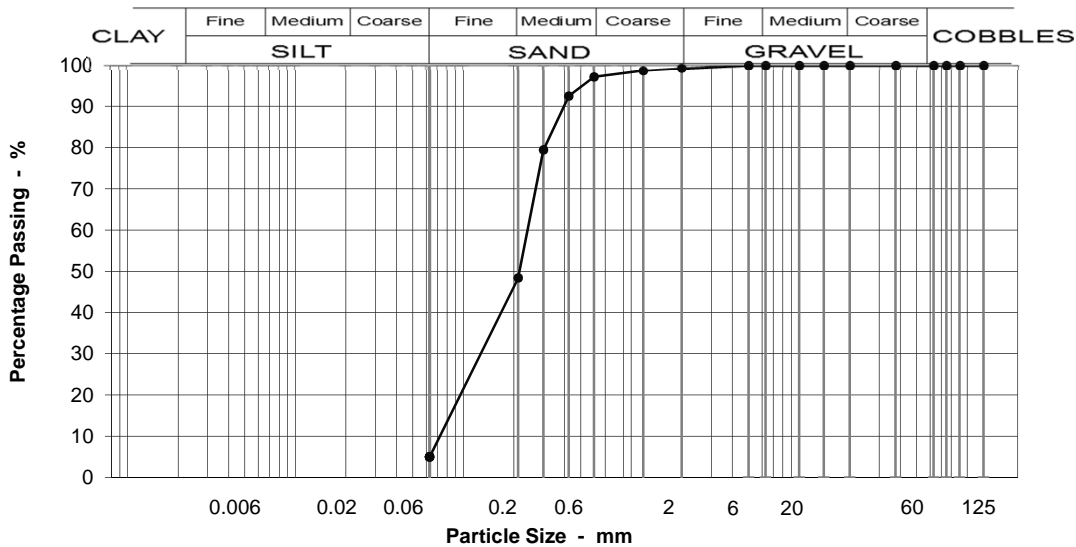
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH6 @ 26 - 26.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	99
0.600	97
0.425	92
0.300	79
0.212	48
0.063	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 20

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	2
Medium SAND	49
Fine SAND	43
Silt & Clay	5

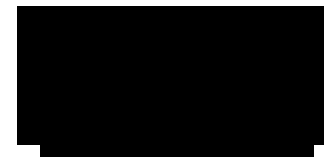
Grading Analysis	
D100	2
D60	0.24
D10	0.08
Uniformity Coefficient	3

Description	
Grey fine and medium SAND with occasional shell fragments.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
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Norwich
Norfolk
NR1 2DH

Our reference No. GTS3171127023-613
Our Project No PZ1522D1
Your Sample Ref 69
Your Project or Order No. PZ1522
Date Tested 07/12/2017
Date Report Issued 5-Feb-18

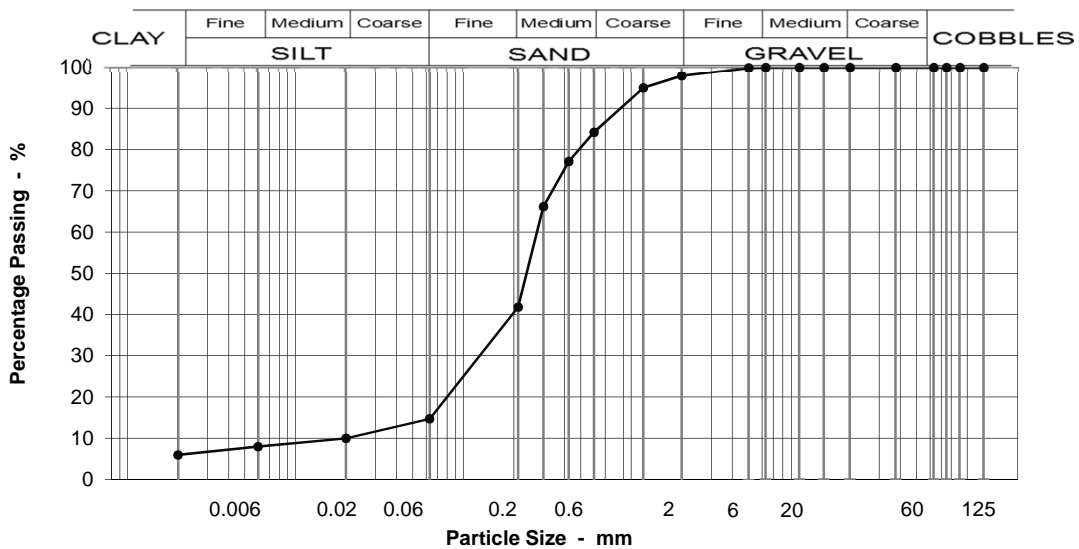
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH6 @ 27 - 27.5m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	98
1.18	95
0.600	84
0.425	77
0.300	66
0.212	42
0.063	15
0.020	10
0.006	8
0.002	6

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R.

Moisture content % 20

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	2
Coarse SAND	14
Medium SAND	42
Fine SAND	27
Silt & Clay	15

Grading Analysis	
D100	5
D60	0.28
D10	0.07
Uniformity Coefficient	4

Description
Laminated and thickly bedded orangey brown fine to coarse SAND, firm grey sandy CLAY and grey very sandy clayey SILT with some shell fragments.

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3171127025-613**
Our Project No. **PZ1522D1**
Your Sample Ref **71**
Your Project or Order No. **PZ1522**
Date Tested **12/12/2017**
Date Report Issued **5-Feb-18**

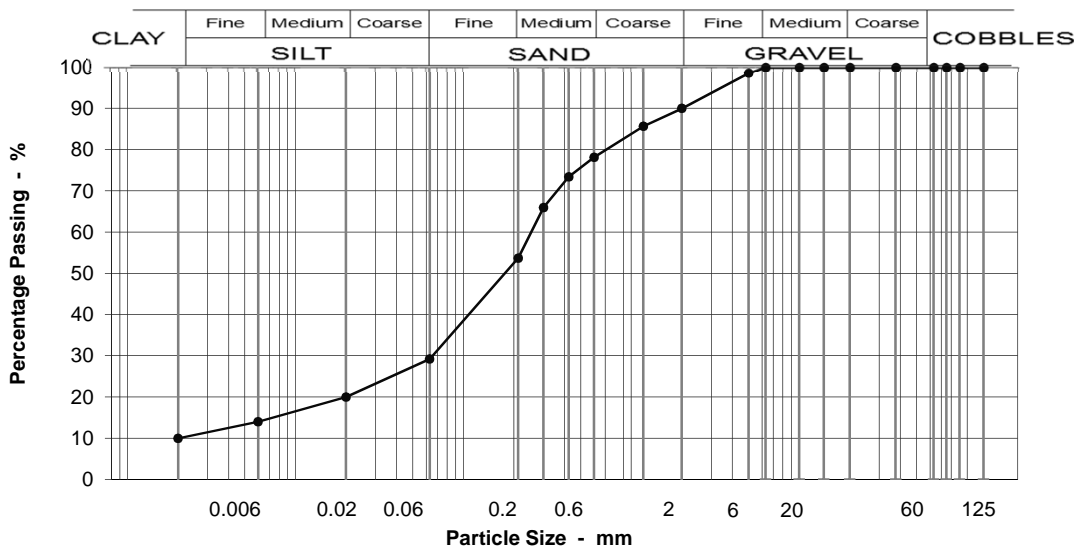
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH6 @ 28 - 28.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	99
2	90
1.18	86
0.600	78
0.425	73
0.300	66
0.212	54
0.063	29
0.020	20
0.006	14
0.002	10

Specification for Highway Works Classification
Table 6/2

Moisture content % 34

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	10
Coarse SAND	12
Medium SAND	24
Fine SAND	24
Silt & Clay	29

Grading Analysis	
D100	5
D60	0.26
D10	0.00
Uniformity Coefficient	>10*

Description	
Laminated and thickly bedded orangey brown fine to coarse SAND, firm grey sandy CLAY and grey very sandy clayey SILT with some shell fragments.	

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3171128001-610**
Our Project No. **PZ1522D1**
Your Sample Ref **1**
Your Project or Order No. **PZ1522**
Date Tested **12/12/2017**
Date Report Issued **9-Jan-18**

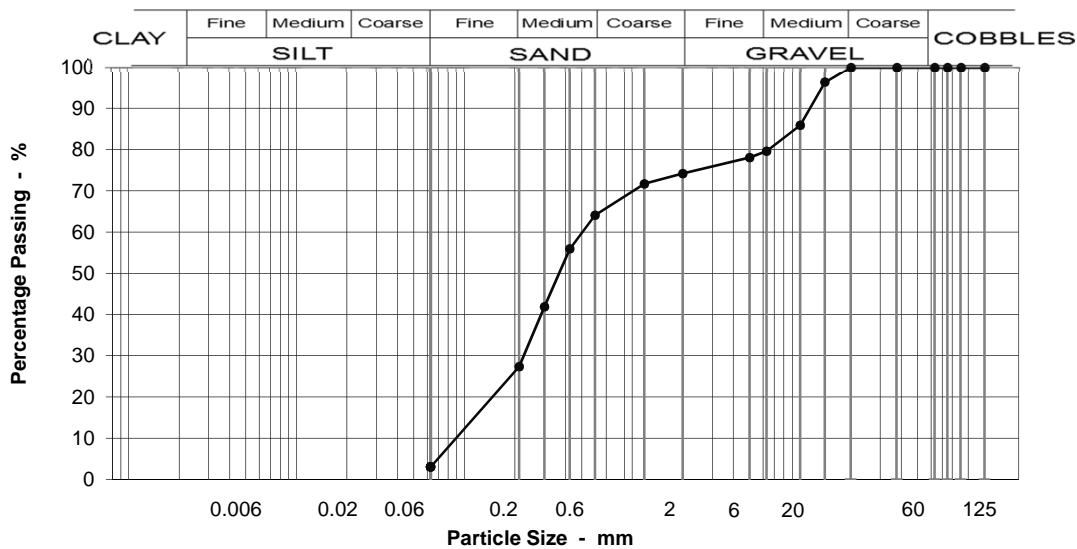
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH7 @ 0.2 - 0.45m Specimen: 2

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	96
10	86
6.3	80
5	78
2	74
1.18	72
0.600	64
0.425	56
0.300	42
0.212	27
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 8.9

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	20
Fine GRAVEL	5
Coarse SAND	10
Medium SAND	37
Fine SAND	24
Silt & Clay	3

Grading Analysis	
D100	14
D60	0.51
D10	0.11
Uniformity Coefficient	5

Description
MADE GROUND: comprising greyish brown very gravelly fine to coarse SAND. Gravel is angular to subrounded flint, concrete and quartz.

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3171128003-613**
Our Project No. PZ1522D1
Your Sample Ref. 3
Your Project or Order No. PZ1522
Date Tested 15/12/2017
Date Report Issued 5-Feb-18

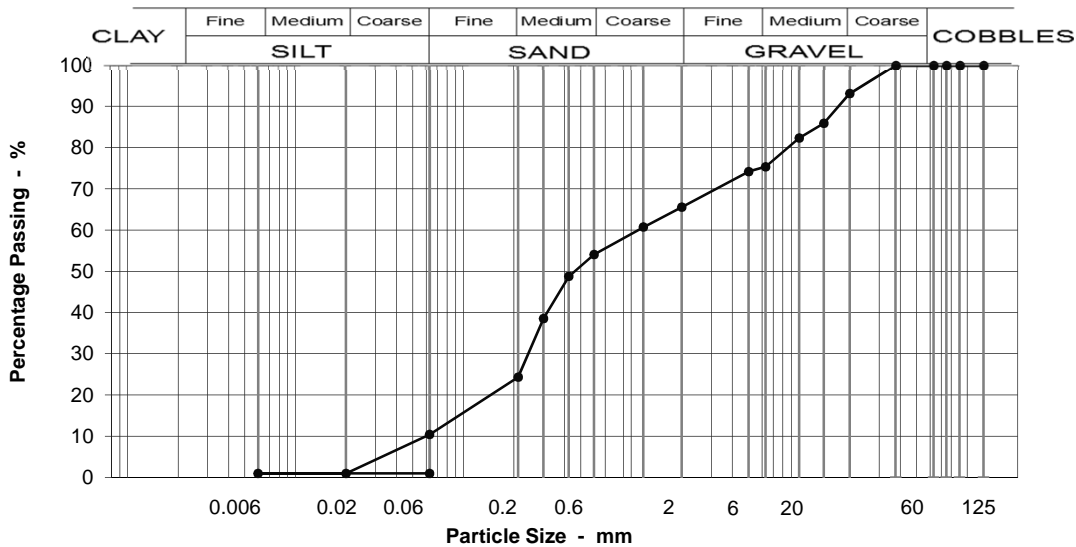
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH7 @ 0.5 - 1m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	93
14	86
10	82
6.3	75
5	74
2	66
1.18	61
0.600	54
0.425	49
0.300	39
0.212	24
0.063	10
0.020	1
0.006	1
0.002	0

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J.

Moisture content % 22

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	7
Medium GRAVEL	18
Fine GRAVEL	10
Coarse SAND	11
Medium SAND	30
Fine SAND	14
Silt & Clay	10

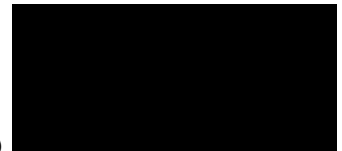
Grading Analysis	
D100	20
D60	1.12
D10	0.14
Uniformity Coefficient	8

Description
(MADE GROUND) Comprising greyish brown slightly organic very gravelly silty medium SAND. Gravel is fine and medium angular to sub-rounded red brick, flint, concrete, quartz and pottery.

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
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Norwich
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NR1 2DH

Our reference No. **GTS3171129001-613**
Our Project No. **PZ1522D1**
Your Sample Ref **7**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **5-Feb-18**

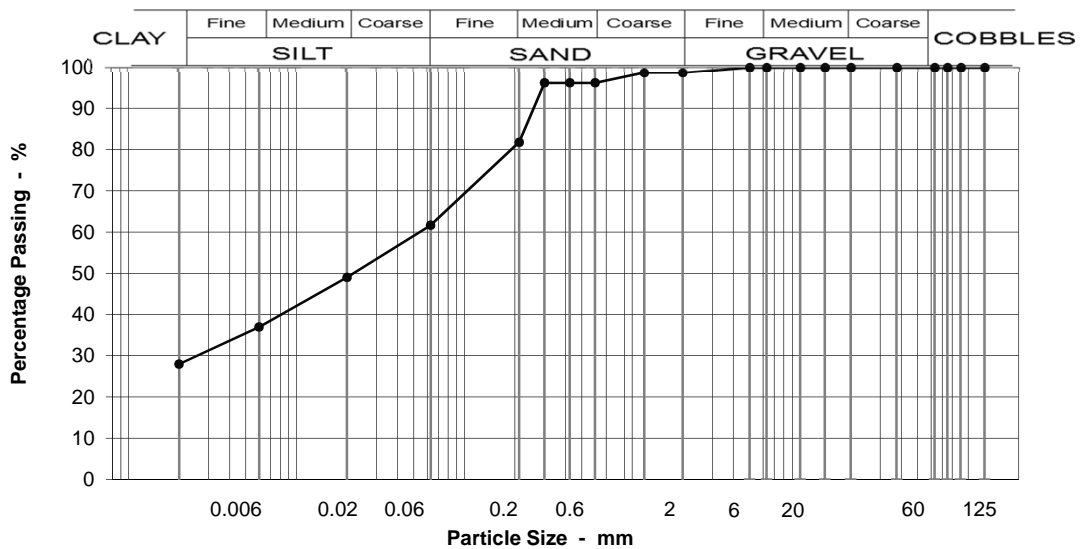
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH7 @ 1.4 - 1.8m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100		BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	1
20	100		Coarse SAND	2
14	100		Medium SAND	14
10	100		Fine SAND	20
6.3	100		Silt & Clay	62
5	100			
2	99			
1.18	99			
0.600	96			
0.425	96			
0.300	96			
0.212	82			
0.063	62			
0.020	49			
0.006	37			
0.002	28			
		Moisture content %		0

Grading Analysis	
D100	2
D60	0.06
D10	0.00
Uniformity Coefficient	>10*

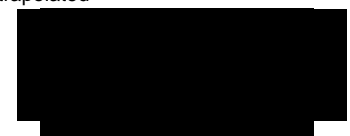
Description	
soft grey slightly organic very clayey SILT with lenses of dark brown amorphous peat.	

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3171128005-613**
Our Project No. **PZ1522D1**
Your Sample Ref. **5**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **5-Feb-18**

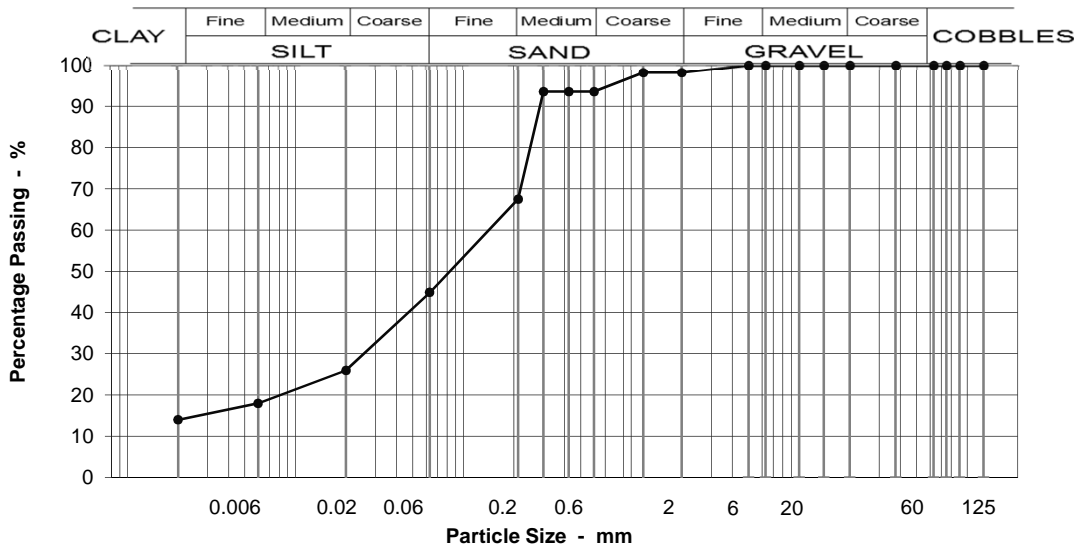
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH7 @ 1 - 1.2m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	98
1.18	98
0.600	94
0.425	94
0.300	94
0.212	67
0.063	45
0.020	26
0.006	18
0.002	14

Specification for Highway Works Classification
Table 6/2

Moisture content % 0

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	2
Coarse SAND	5
Medium SAND	26
Fine SAND	23
Silt & Clay	45

Grading Analysis	
D100	2
D60	0.16
D10	0.00
Uniformity Coefficient	>10*

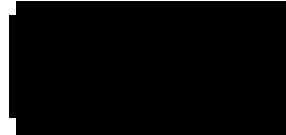
Description	
Fine to medium slightly organic clayey very sandy SILT	

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
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Norfolk
NR1 2DH

Our reference No. **GTS3171129005-613**
Our Project No. **PZ1522D1**
Your Sample Ref **11**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **5-Feb-18**

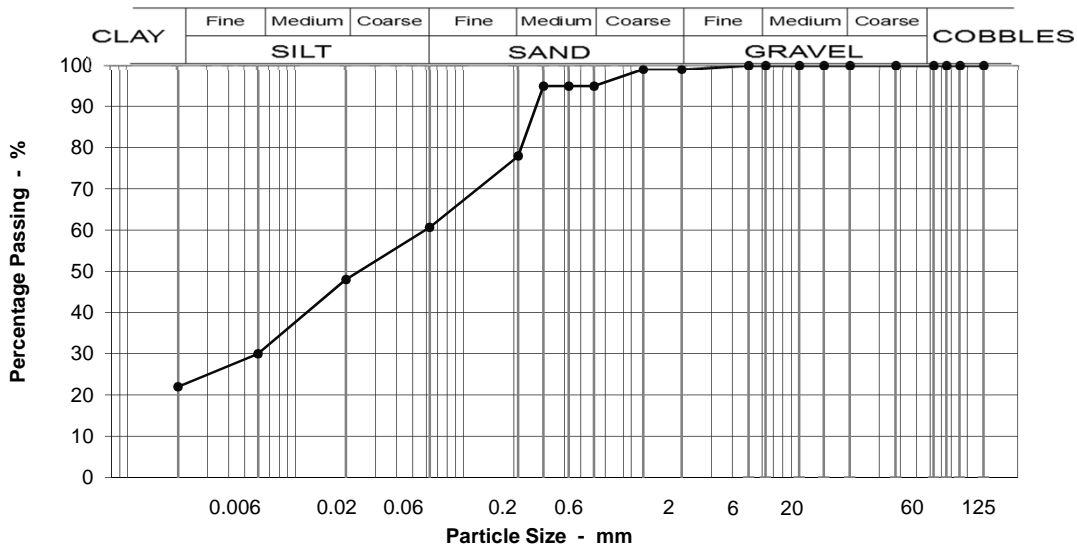
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH7 @ 2 - 2.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	99
0.600	95
0.425	95
0.300	95
0.212	78
0.063	61
0.020	48
0.006	30
0.002	22

Specification for Highway Works Classification
Table 6/2

Moisture content % 0

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	4
Medium SAND	17
Fine SAND	17
Silt & Clay	61

Grading Analysis	
D100	2
D60	0.06
D10	0.00
Uniformity Coefficient	>10*

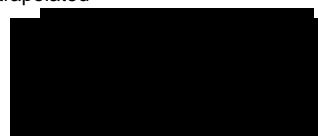
Description	
very soft dark brown organic very calyey very sandy SILT with lenses of dark brown pseudo-fibrous peat.	

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3171129008-613**
Our Project No. PZ1522D1
Your Sample Ref 13
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 5-Feb-18

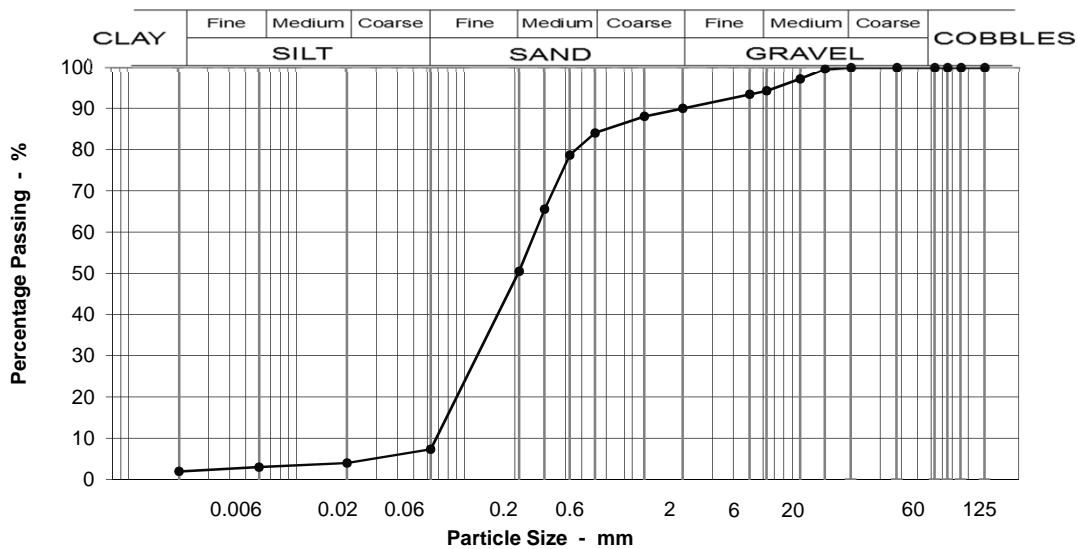
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH7 @ 3 - 3.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	97
6.3	94
5	93
2	90
1.18	88
0.600	84
0.425	79
0.300	66
0.212	50
0.063	7
0.020	4
0.006	3
0.002	2

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 51

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	6
Fine GRAVEL	4
Coarse SAND	6
Medium SAND	34
Fine SAND	43
Silt & Clay	7

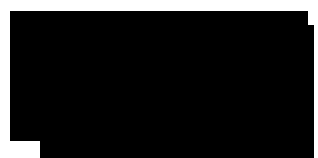
Grading Analysis	
D100	14
D60	0.27
D10	0.07
Uniformity Coefficient	4

Description
Dark brown organic gravelly fine and medium SAND with lenses of dark brown PEAT. Gravel is fine and medium angular flint and quartz.

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3171129011-613**
Our Project No. **PZ1522D1**
Your Sample Ref. **16**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **5-Feb-18**

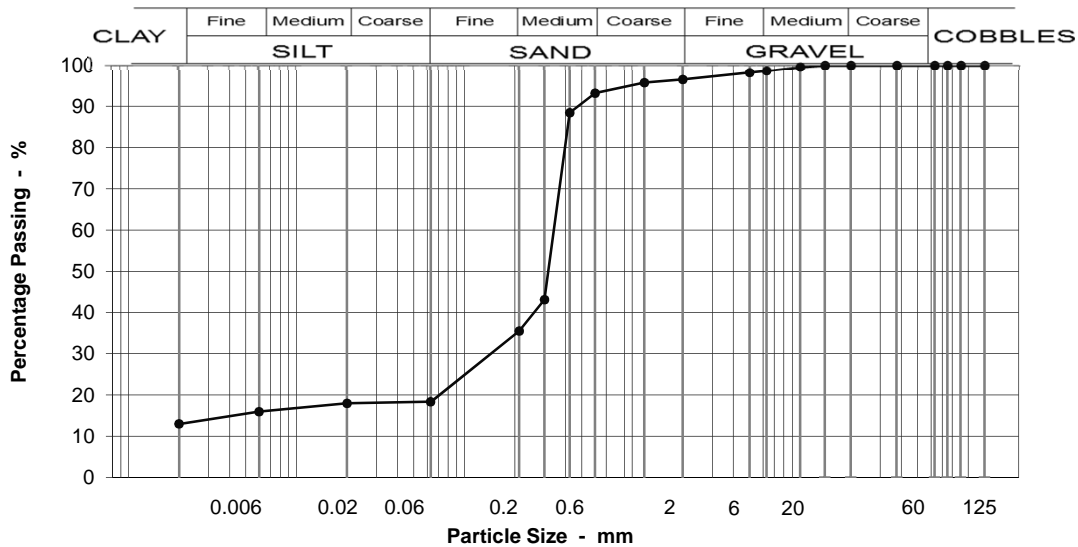
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH7 @ 4 - 4.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	99
5	98
2	96
1.18	96
0.600	93
0.425	88
0.300	43
0.212	36
0.063	18
0.020	18
0.006	16
0.002	13

Specification for Highway Works Classification
Table 6/2

Moisture content % 24

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	1
Fine GRAVEL	2
Coarse SAND	3
Medium SAND	58
Fine SAND	17
Silt & Clay	18

Grading Analysis	
D100	10
D60	0.35
D10	0.00
Uniformity Coefficient	>10*

Description	
Yellowish grey slightly silty clayey medium SAND.	

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS5180123004-613**
Our Project No. **PZ1522D1**
Your Sample Ref **4**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **17-Apr-18**

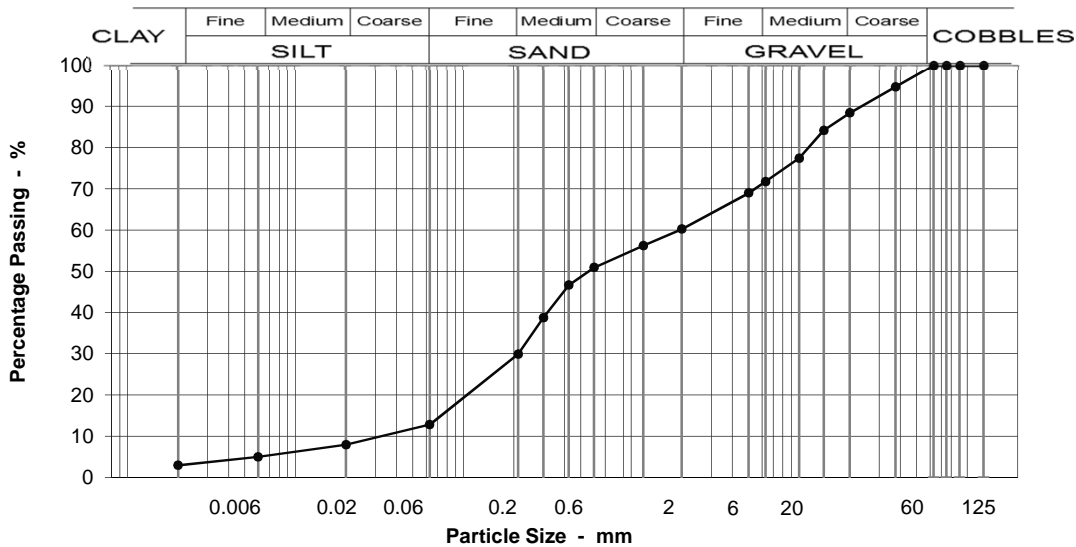
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH8 @ 0.8 - 1m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	95
20	88
14	84
10	77
6.3	72
5	69
2	60
1.18	56
0.600	51
0.425	47
0.300	39
0.212	30
0.063	13
0.020	8
0.006	5
0.002	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6E/6R, 6I, 6N.

Moisture content % 19

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	12
Medium GRAVEL	17
Fine GRAVEL	12
Coarse SAND	9
Medium SAND	21
Fine SAND	17
Silt & Clay	13

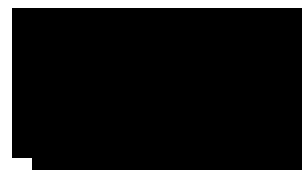
Grading Analysis	
D100	38
D60	1.95
D10	0.11
Uniformity Coefficient	19

Description
MADE GROUND comprising angular, medium to coarse gravel size brick, concrete, ash, slag and flint in a matrix of dark brown silty fine and medium sand.

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS5180123007-610**
Our Project No. **PZ1522D1**
Your Sample Ref **7**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **1-Mar-18**

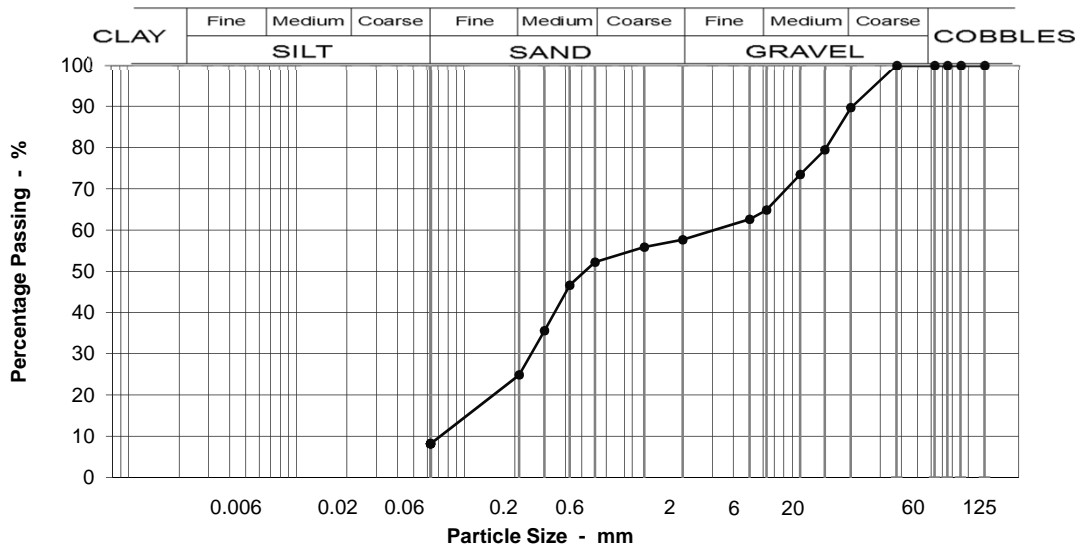
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH8 @ 1.1 - 1.2m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	90
14	79
10	73
6.3	65
5	63
2	58
1.18	56
0.600	52
0.425	47
0.300	36
0.212	25
0.063	8

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6E/6R, 6I, 6M, 6N.

Moisture content % 11

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	10
Medium GRAVEL	25
Fine GRAVEL	7
Coarse SAND	5
Medium SAND	27
Fine SAND	17
Silt & Clay	8

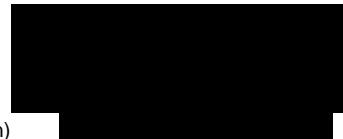
Grading Analysis	
D100	20
D60	3.43
D10	0.08
Uniformity Coefficient	43

Description	
Greyish brown silty fine to medium SAND and medium rounded to subrounded flint and quartz GRAVEL (made ground)	

Test Code = 610



Simon Holden (Project Technician)



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NR1 2DH

Our reference No. **GTS5180123010-610**
Our Project No. **PZ1522D1**
Your Sample Ref **10**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **1-Mar-18**

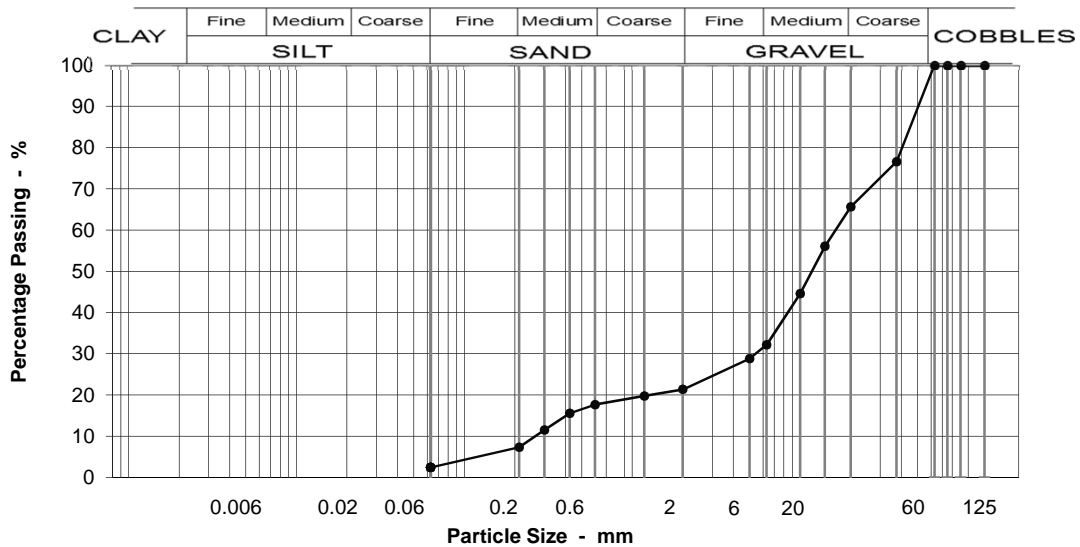
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH8 @ 1.2 - 1.7m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	77
20	66
14	56
10	45
6.3	32
5	29
2	21
1.18	20
0.600	18
0.425	16
0.300	12
0.212	7
0.063	2

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6A, 6E/6R, 6F2/6F3, 6I, 6M, 6N.

Moisture content % 8.9

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	34
Medium GRAVEL	33
Fine GRAVEL	11
Coarse SAND	4
Medium SAND	10
Fine SAND	5
Silt & Clay	2

Grading Analysis	
D100	38
D60	16.47
D10	0.27
Uniformity Coefficient	62

Description	
Greyish brown sandy fine to coarse rounded to subrounded flint and quartz and angular brick GRAVEL	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
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Norfolk
NR1 2DH

Our reference No. **GTS5180123014-613**
Our Project No. **PZ1522D1**
Your Sample Ref **14**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **17-Apr-18**

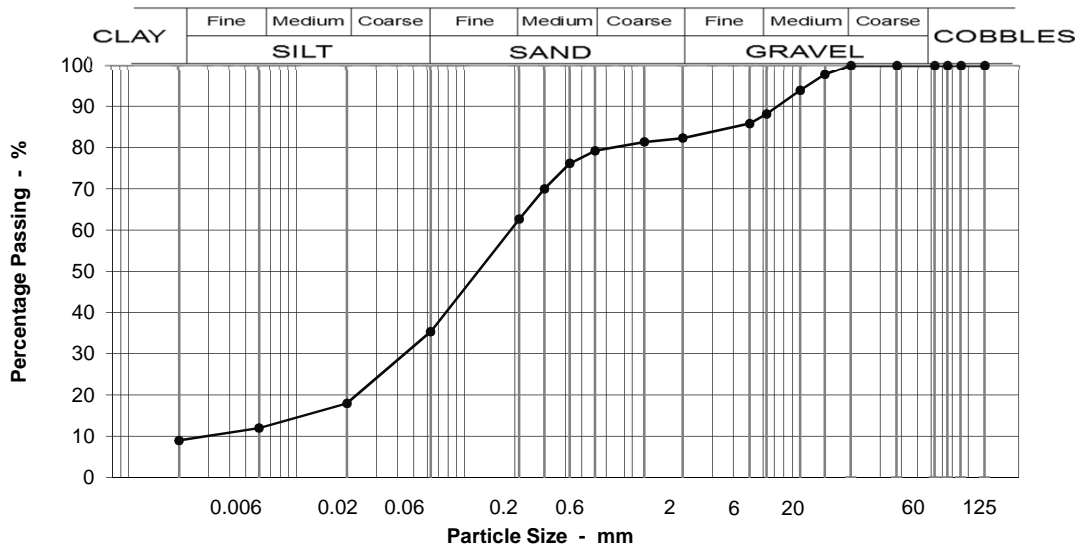
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH8 @ 2 - 2.2m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	98
10	94
6.3	88
5	86
2	82
1.18	81
0.600	79
0.425	76
0.300	70
0.212	63
0.063	35
0.020	18
0.006	12
0.002	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 2A/2B, 2A/2B.

Moisture content % 35

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	12
Fine GRAVEL	6
Coarse SAND	3
Medium SAND	17
Fine SAND	27
Silt & Clay	35

Grading Analysis	
D100	14
D60	0.20
D10	0.03
Uniformity Coefficient	6

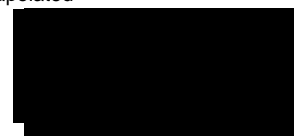
Description	
Soft to firm dark brown and black slightly orangey, very sandy clayey SILT.	

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
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Norwich
Norfolk
NR1 2DH

Our reference No. **GTS5180123019-610**
Our Project No. **PZ1522D1**
Your Sample Ref. **19**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **1-Mar-18**

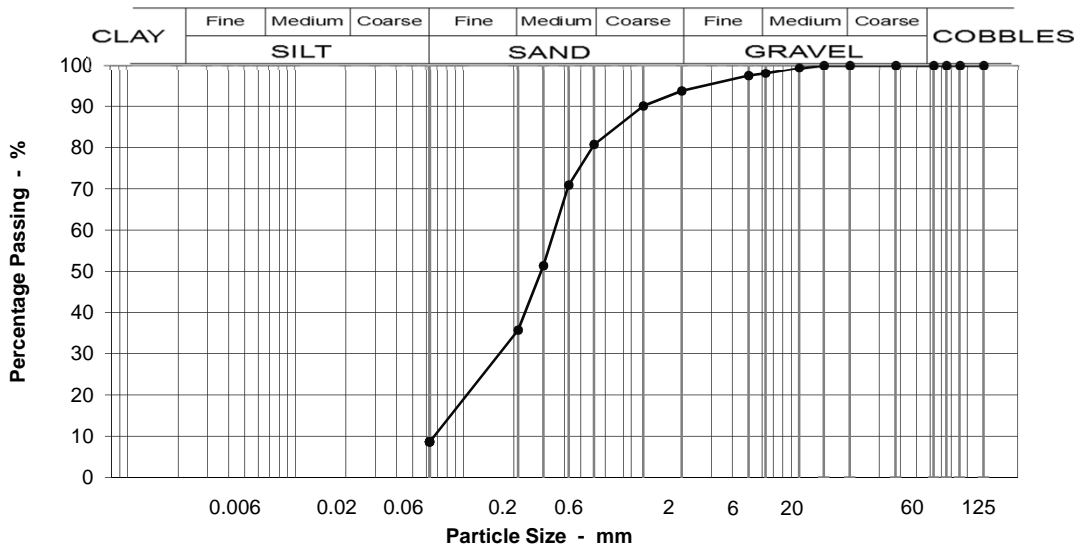
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH8 @ 3 - 3.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	99
6.3	98
5	97
2	94
1.18	90
0.600	81
0.425	71
0.300	51
0.212	36
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J, 6K, 6M.

Moisture content % 41

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	2
Fine GRAVEL	4
Coarse SAND	13
Medium SAND	45
Fine SAND	27
Silt & Clay	9

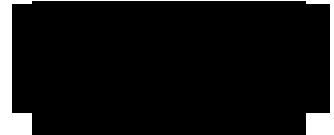
Grading Analysis	
D100	10
D60	0.36
D10	0.07
Uniformity Coefficient	5

Description
Grey slightly gravely slightly silty fine to coarse SAND with lenses of brown pseudo-fibrous peat. Gravel is fine to medium rounded flint and quartz

Test Code = 610



Simon Holden (Project Technician)



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County Hall
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Norfolk
NR1 2DH

Our reference No. **GTS5180123022-610**
Our Project No. PZ1522D1
Your Sample Ref. 22
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 1-Mar-18

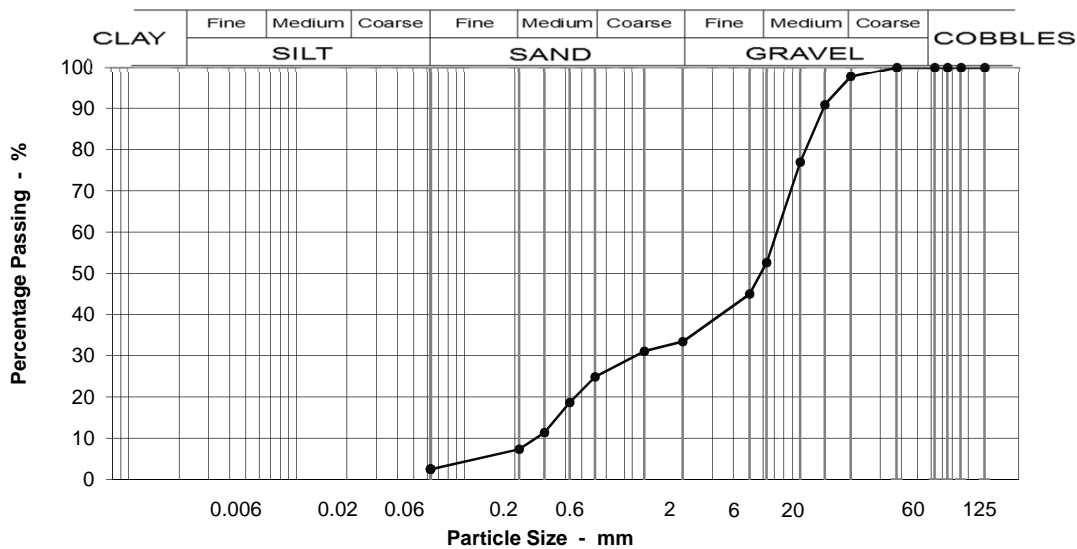
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH8 @ 4 - 4.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	98
14	91
10	77
6.3	53
5	45
2	33
1.18	31
0.600	25
0.425	19
0.300	11
0.212	7
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6A, 6E/6R, 6F1, 6I, 6M, 6N.

Moisture content % 9.7

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	2
Medium GRAVEL	45
Fine GRAVEL	19
Coarse SAND	9
Medium SAND	18
Fine SAND	5
Silt & Clay	3

Grading Analysis	
D100	20
D60	7.43
D10	0.27
Uniformity Coefficient	28

Description
Greyish brown very sandy fine to medium angular to rounded flint and quartz GRAVEL

Test Code = 610



Simon Holden (Project Technician)



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Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1180123025-610**
Our Project No. PZ1522D1
Your Sample Ref. 25
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 1-Mar-18

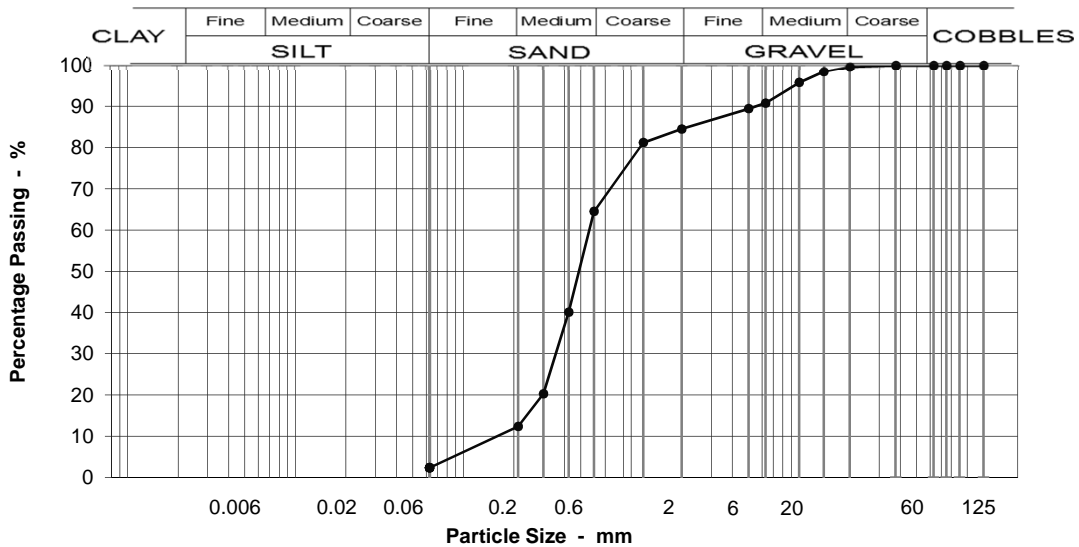
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH8 @ 5 - 5.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	98
10	96
6.3	91
5	89
2	84
1.18	81
0.600	64
0.425	40
0.300	20
0.212	12
0.063	2

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 13

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	9
Fine GRAVEL	6
Coarse SAND	20
Medium SAND	52
Fine SAND	10
Silt & Clay	2

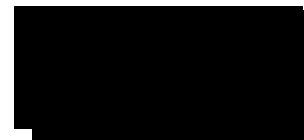
Grading Analysis	
D100	20
D60	0.57
D10	0.18
Uniformity Coefficient	3

Description
Greyish brown gravelly medium SAND. Gravel is fine and medium angular to rounded flint and quartz.

Test Code = 610



Simon Holden (Project Technician)



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Our reference No. **GTS1180123028-610**
Our Project No. **PZ1522D1**
Your Sample Ref. **28**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **1-Mar-18**

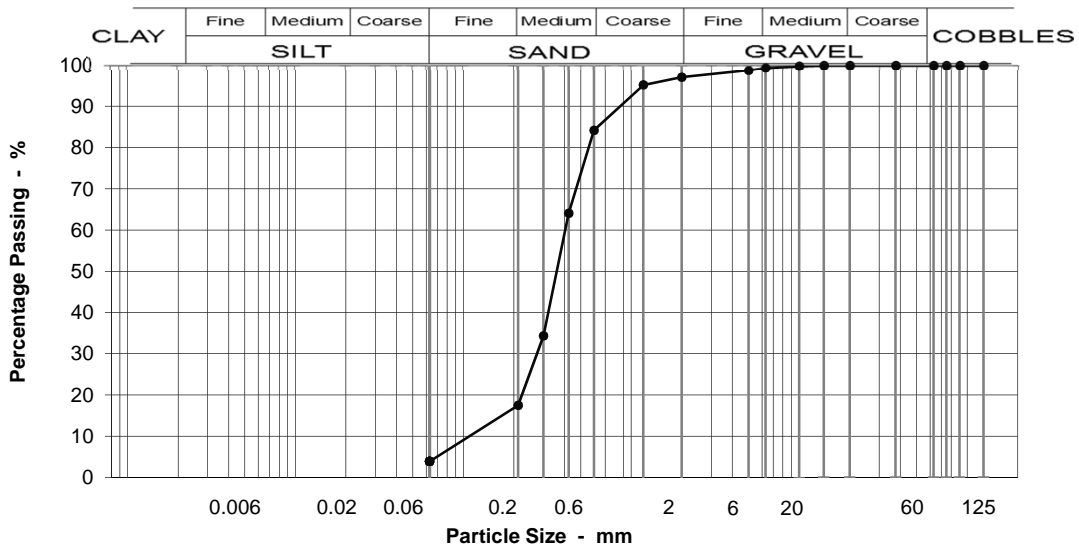
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH8 @ 6 - 6.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	99
5	99
2	97
1.18	95
0.600	84
0.425	64
0.300	34
0.212	18
0.063	4

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 18

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	1
Fine GRAVEL	2
Coarse SAND	13
Medium SAND	67
Fine SAND	14
Silt & Clay	4

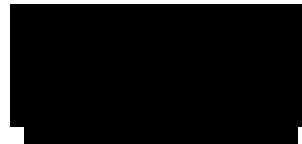
Grading Analysis	
D100	10
D60	0.41
D10	0.13
Uniformity Coefficient	3

Description	
Greyish brown medium SAND.	

Test Code = 610



Simon Holden (Project Technician)



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County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1180123034-610**
Our Project No. **PZ1522D1**
Your Sample Ref **34**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **1-Mar-18**

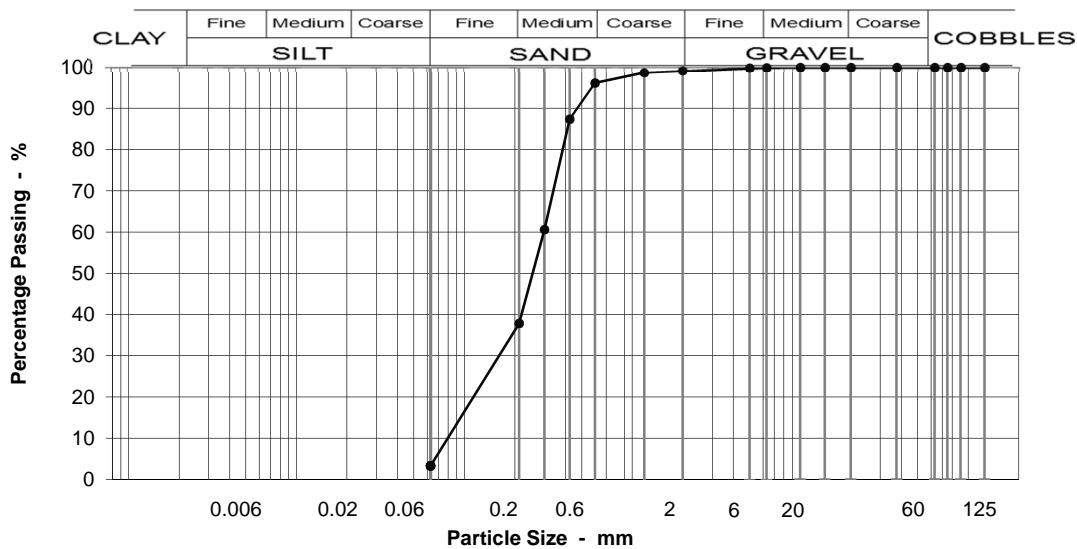
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH8 @ 8 - 8.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	99
0.600	96
0.425	87
0.300	61
0.212	38
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 21

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	3
Medium SAND	58
Fine SAND	34
Silt & Clay	3

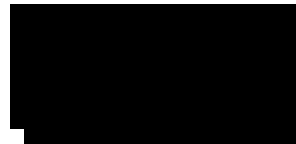
Grading Analysis	
D100	6
D60	0.30
D10	0.09
Uniformity Coefficient	3

Description
Brown fine to medium SAND with occasional shell fragments.

Test Code = 610



Simon Holden (Project Technician)



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County Hall
Martineau Lane
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Norfolk
NR1 2DH

Our reference No. **GTS1180124003-610**
Our Project No. **PZ1522D1**
Your Sample Ref **37**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **1-Mar-18**

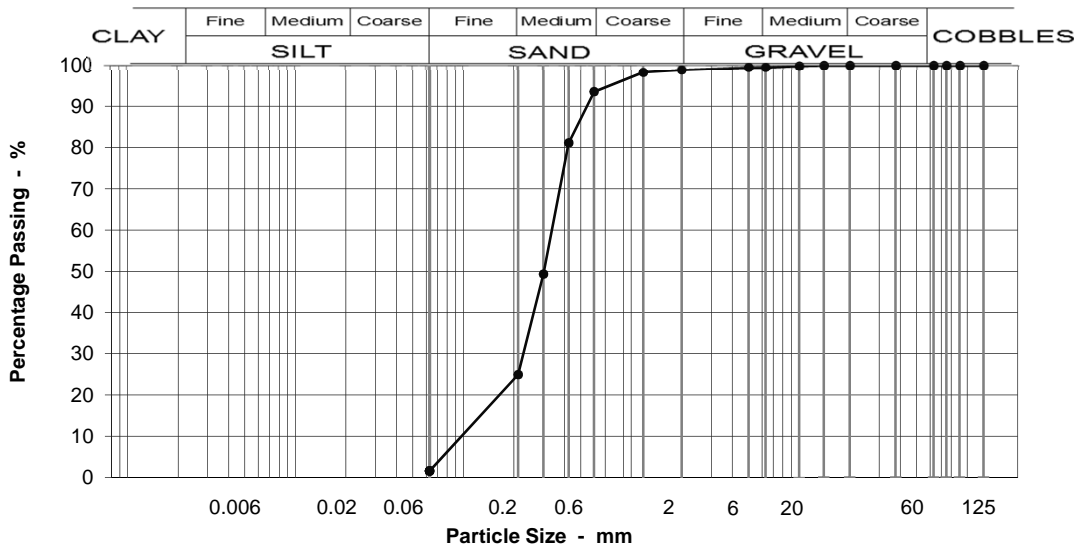
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH8 @ 9 - 9.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	99
5	99
2	99
1.18	98
0.600	94
0.425	81
0.300	49
0.212	25
0.063	2

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 16

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	1
Fine GRAVEL	1
Coarse SAND	5
Medium SAND	69
Fine SAND	23
Silt & Clay	2

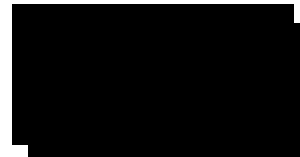
Grading Analysis	
D100	10
D60	0.34
D10	0.12
Uniformity Coefficient	3

Description	
Light brown medium SAND with occasional shell fragments	

Test Code = 610



Simon Holden (Project Technician)



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Norfolk
NR1 2DH

Our reference No. **GTS1180124006-610**
Our Project No. **PZ1522D1**
Your Sample Ref **40**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **1-Mar-18**

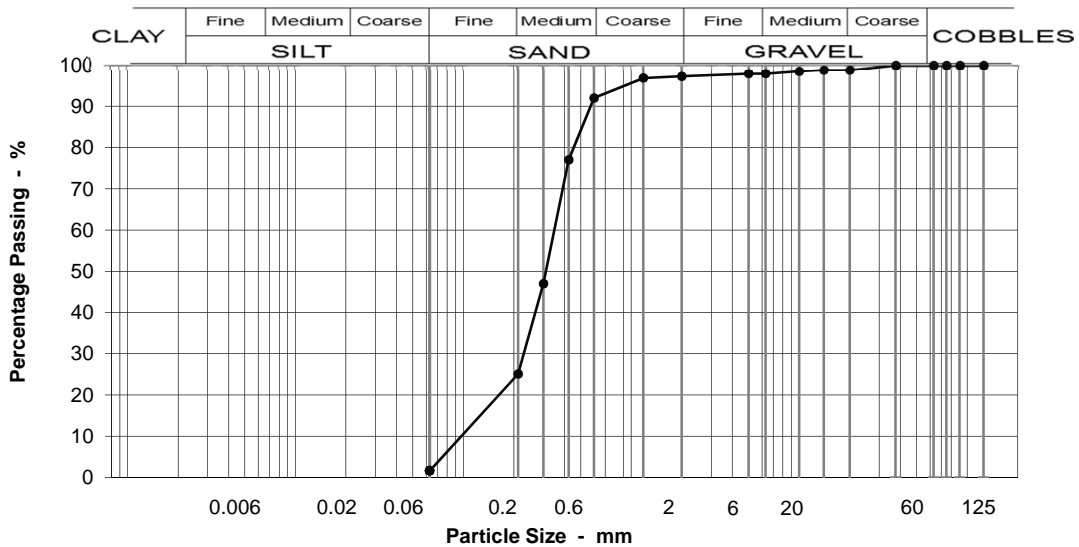
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH8 @ 10 - 10.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	99
14	99
10	99
6.3	98
5	98
2	97
1.18	97
0.600	92
0.425	77
0.300	47
0.212	25
0.063	2

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 18

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	1
Medium GRAVEL	1
Fine GRAVEL	1
Coarse SAND	5
Medium SAND	67
Fine SAND	23
Silt & Clay	2

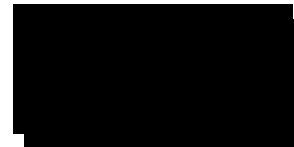
Grading Analysis	
D100	20
D60	0.35
D10	0.12
Uniformity Coefficient	3

Description	
Light brown medium SAND with occasional shell fragments	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
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Norfolk
NR1 2DH

Our reference No. **GTS1180125002-610**
Our Project No. PZ1522D1
Your Sample Ref. 47
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 1-Mar-18

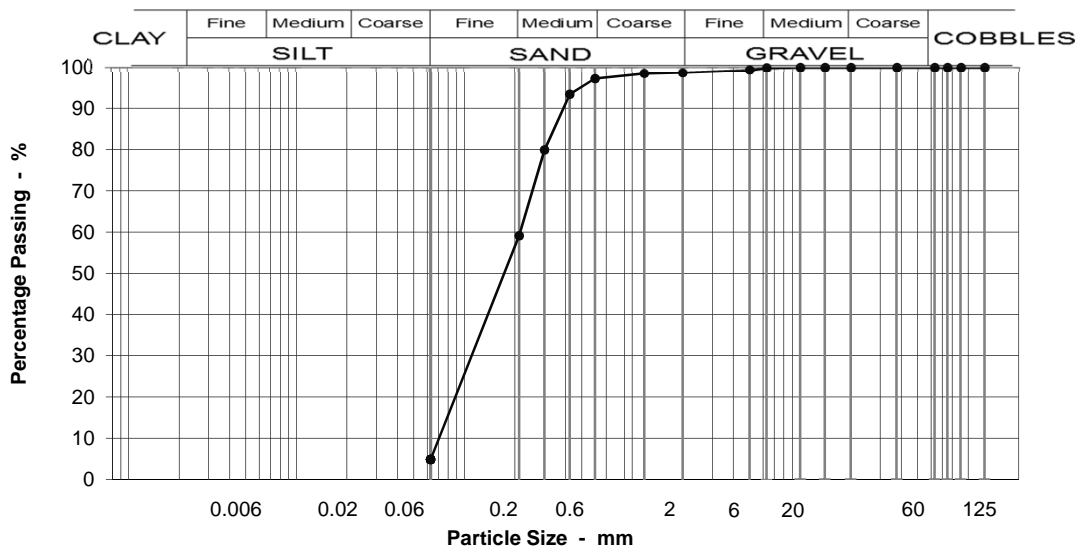
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH8 @ 13 - 13.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	99
2	99
1.18	98
0.600	97
0.425	93
0.300	80
0.212	59
0.063	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	2
Medium SAND	38
Fine SAND	54
Silt & Clay	5

Grading Analysis	
D100	6
D60	0.22
D10	0.08
Uniformity Coefficient	3

Description
Orange fine to medium SAND

Moisture content % 20

Test Code = 610



Simon Holden (Project Technician)



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Norfolk
NR1 2DH

Our reference No. **GTS1180126002-610**
Our Project No. **PZ1522D1**
Your Sample Ref. **54**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **1-Mar-18**

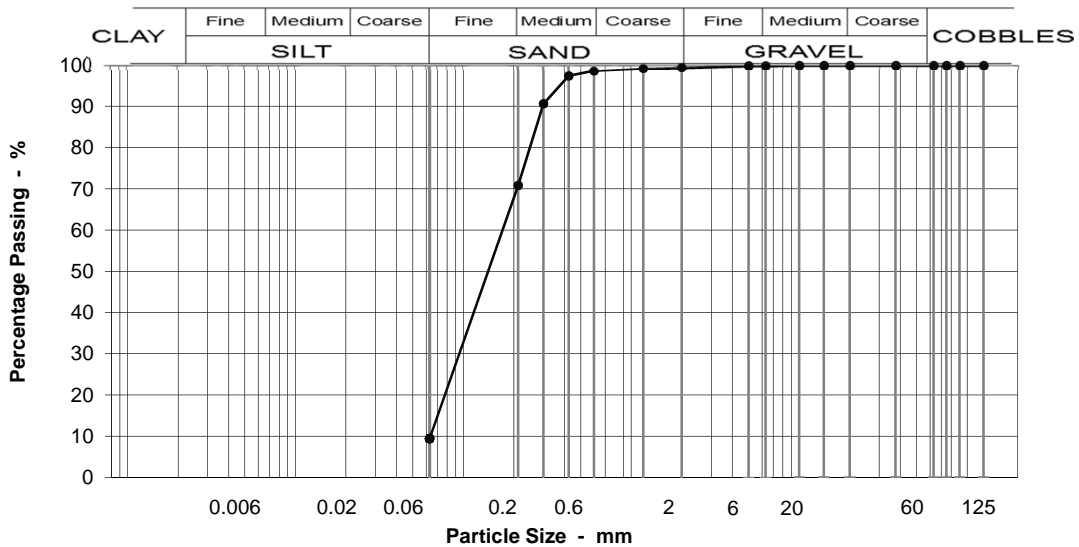
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH8 @ 16 - 16.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	99
0.600	99
0.425	97
0.300	91
0.212	71
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 25

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	1
Medium SAND	28
Fine SAND	61
Silt & Clay	9

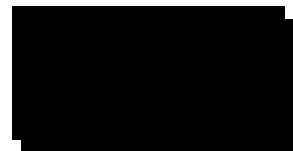
Grading Analysis	
D100	6
D60	0.19
D10	0.06
Uniformity Coefficient	3

Description	
Orangey brown fine SAND	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1180126007-610**
Our Project No. **PZ1522D1**
Your Sample Ref. **59**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **1-Mar-18**

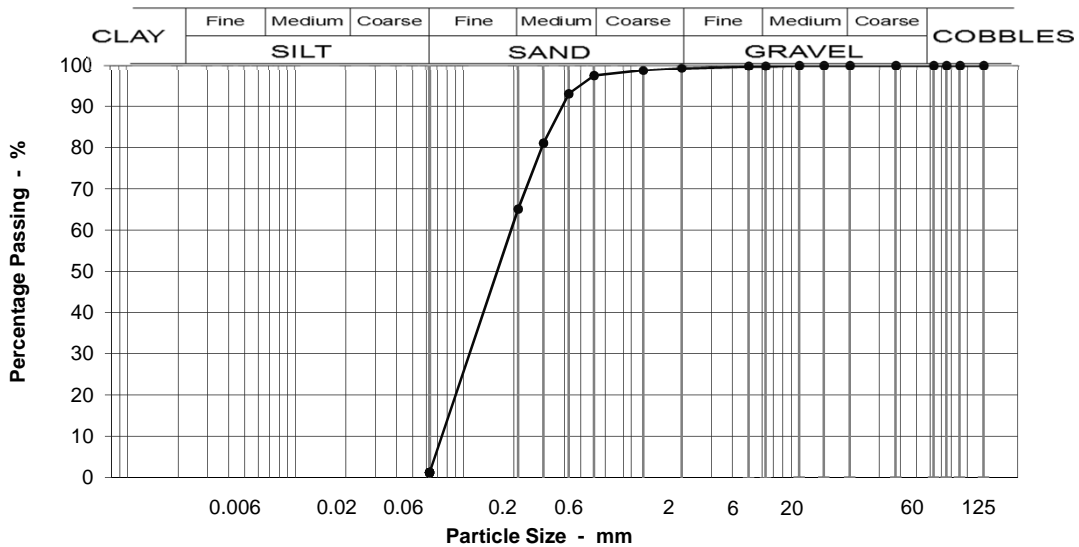
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH8 @ 18 - 18.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	99
0.600	97
0.425	93
0.300	81
0.212	65
0.063	1

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 22

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	2
Medium SAND	32
Fine SAND	64
Silt & Clay	1

Grading Analysis	
D100	6
D60	0.20
D10	0.08
Uniformity Coefficient	2

Description
Orangey brown fine SAND with some shell fragments.

Test Code = 610



Simon Holden (Project Technician)

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Martineau Lane
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NR1 2DH

Our reference No. **GTS1180126009-613**
Our Project No. **PZ1522D1**
Your Sample Ref **61**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **17-Apr-18**

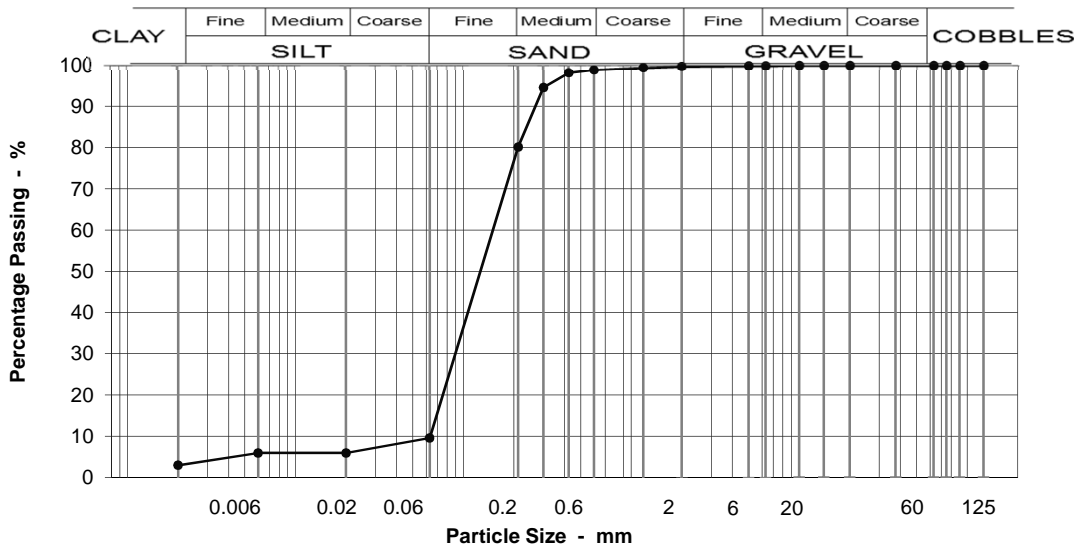
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH8 @ 19 - 19.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	99
0.600	99
0.425	98
0.300	95
0.212	80
0.063	10
0.020	6
0.006	6
0.002	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 26

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	1
Medium SAND	19
Fine SAND	71
Silt & Clay	10

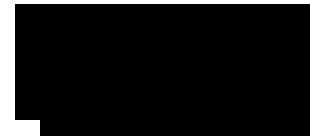
Grading Analysis	
D100	6
D60	0.17
D10	0.06
Uniformity Coefficient	3

Description
Orangey brown fine SAND with thin beds of soft grey silt and clay.

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
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Norfolk
NR1 2DH

Our reference No. **GTS1180126012-610**
Our Project No. **PZ1522D1**
Your Sample Ref **64**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **1-Mar-18**

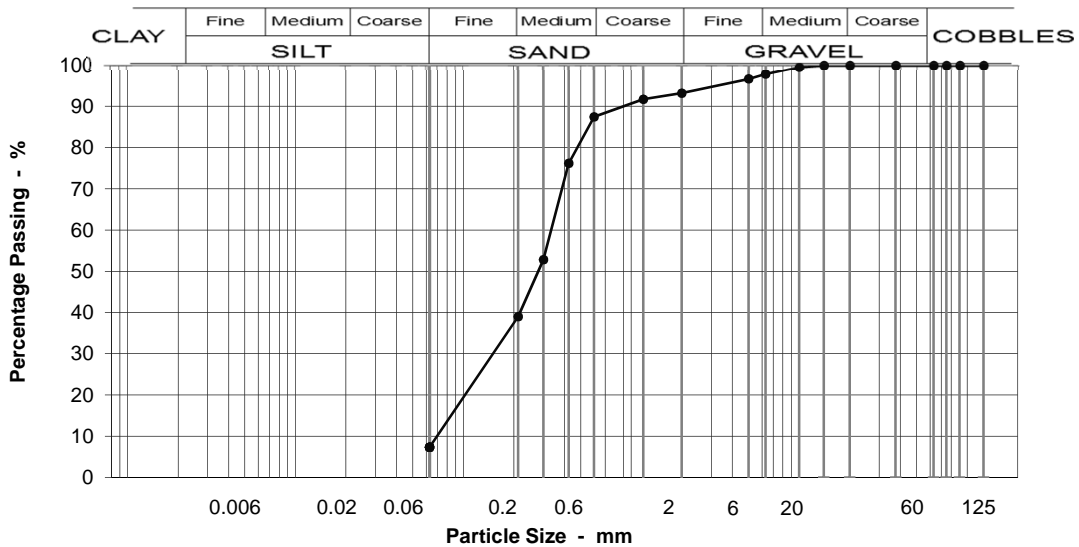
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH8 @ 20 - 20.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	98
5	97
2	93
1.18	92
0.600	87
0.425	76
0.300	53
0.212	39
0.063	7

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 21

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	2
Fine GRAVEL	5
Coarse SAND	6
Medium SAND	48
Fine SAND	32
Silt & Clay	7

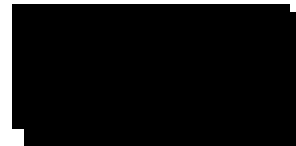
Grading Analysis	
D100	10
D60	0.34
D10	0.08
Uniformity Coefficient	4

Description	
Brownish grey slightly gravelly slightly silty fine to medium SAND with numerous shell fragments.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
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NR1 2DH

Our reference No. **GTS1180126015-613**
Our Project No. **PZ1522D1**
Your Sample Ref. **67**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **17-Apr-18**

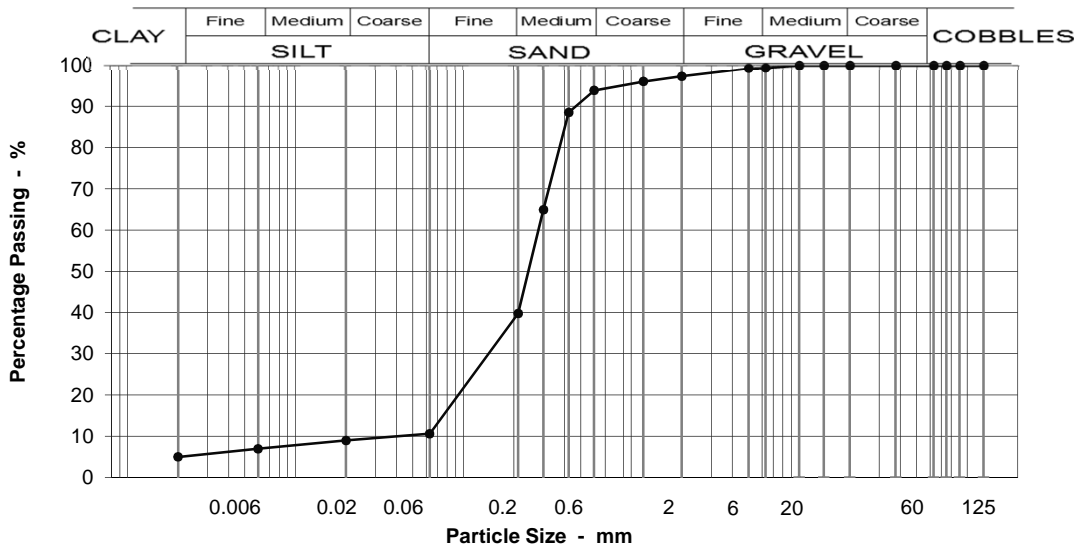
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH8 @ 22 - 22.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	99
5	99
2	97
1.18	96
0.600	94
0.425	89
0.300	65
0.212	40
0.063	11
0.020	9
0.006	7
0.002	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R.

Moisture content % 25

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	1
Fine GRAVEL	2
Coarse SAND	3
Medium SAND	54
Fine SAND	29
Silt & Clay	11

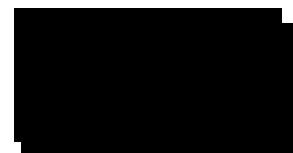
Grading Analysis	
D100	6
D60	0.28
D10	0.10
Uniformity Coefficient	3

Description
Brownish grey slightly silty, fine and medium SAND with numerous shell fragments and lenses of soft grey clay.

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
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Norfolk
NR1 2DH

Our reference No. **GTS1180126017-610**
Our Project No. **PZ1522D1**
Your Sample Ref. **68**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **1-Mar-18**

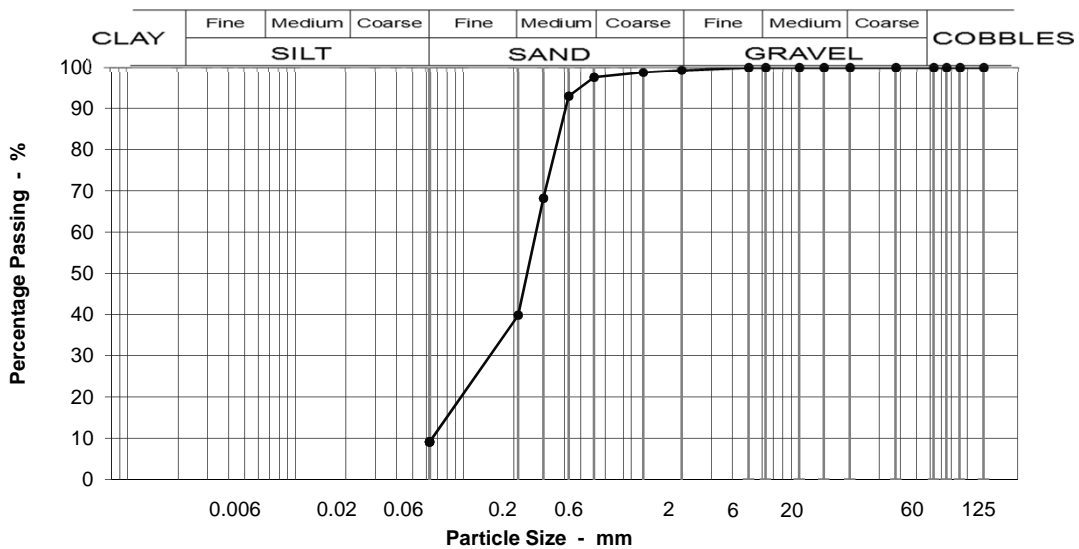
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH8 @ 23 - 23.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	99
0.600	97
0.425	93
0.300	68
0.212	40
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 24

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	2
Medium SAND	58
Fine SAND	31
Silt & Clay	9

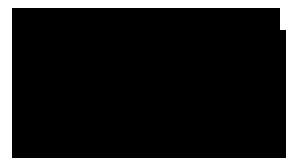
Grading Analysis	
D100	2
D60	0.27
D10	0.07
Uniformity Coefficient	4

Description
Brownish grey fine to medium SAND with numerous shell fragments.

Test Code = 610



Simon Holden (Project Technician)



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Norfolk
NR1 2DH

Our reference No. **GTS1180126019-613**
Our Project No. **PZ1522D1**
Your Sample Ref **70**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **17-Apr-18**

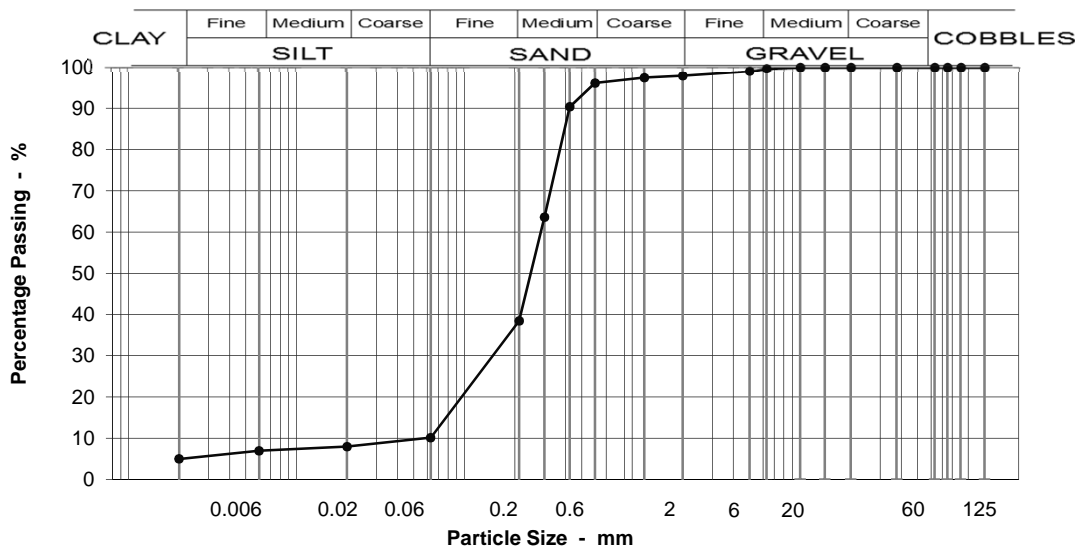
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH8 @ 24 - 24.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	2
20	100		Coarse SAND	2
14	100		Medium SAND	58
10	100		Fine SAND	28
6.3	100		Silt & Clay	10
5	99			
2	98			
1.18	97			
0.600	96			
0.425	90			
0.300	64			
0.212	38			
0.063	10			
0.020	8			
0.006	7			
0.002	5	Moisture content %	22	

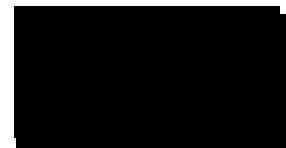
Grading Analysis	
D100	6
D60	0.29
D10	0.12
Uniformity Coefficient	2

Description	
Grey slightly clayey, silty medium SAND with some shell fragments.	

Test Code = 613



Simon Holden (Project Technician)



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Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1180126021-610**
Our Project No. **PZ1522D1**
Your Sample Ref **72**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **1-Mar-18**

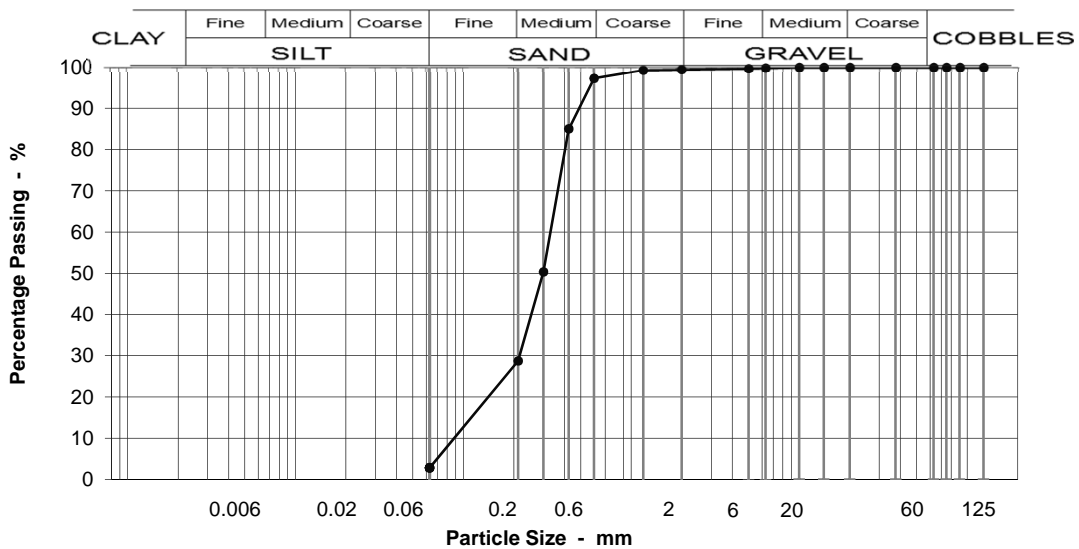
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH8 @ 25 - 25.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	99
0.600	97
0.425	85
0.300	50
0.212	29
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 18

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	2
Medium SAND	68
Fine SAND	26
Silt & Clay	3

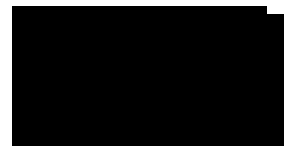
Grading Analysis	
D100	6
D60	0.33
D10	0.10
Uniformity Coefficient	3

Description
Grey medium SAND with some shell fragments.

Test Code = 610



Simon Holden (Project Technician)



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County Hall
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Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1180126026-610**
Our Project No. **PZ1522D1**
Your Sample Ref **77**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **1-Mar-18**

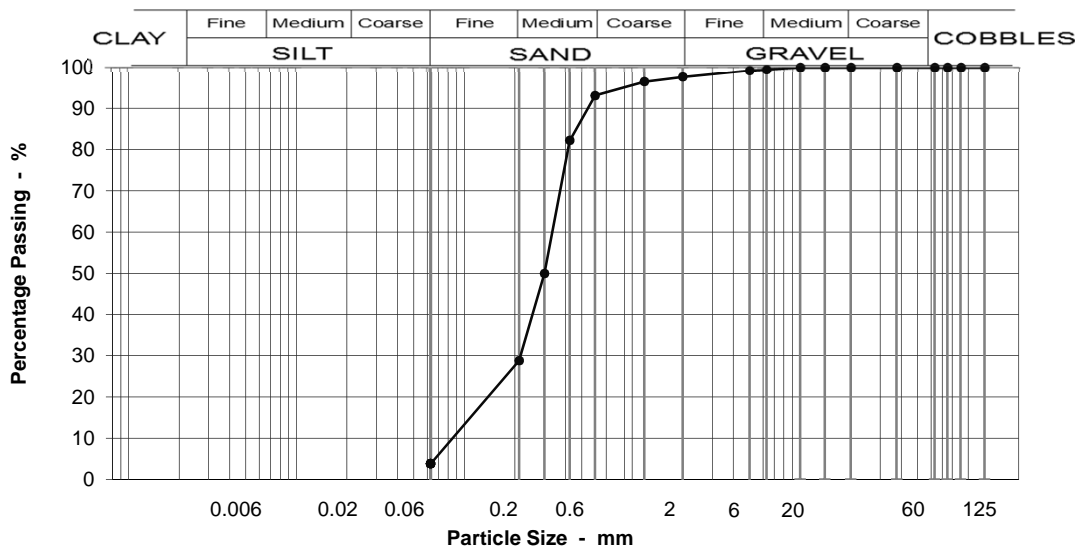
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH8 @ 27.7 - 28m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	99
5	99
2	98
1.18	96
0.600	93
0.425	82
0.300	50
0.212	29
0.063	4

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	1
Fine GRAVEL	2
Coarse SAND	5
Medium SAND	64
Fine SAND	25
Silt & Clay	4

Grading Analysis	
D100	6
D60	0.34
D10	0.10
Uniformity Coefficient	3

Description
Grey medium SAND with some shell fragments.

Moisture content % 21

Test Code = 610



Simon Holden (Project Technician)



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County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1180126024-613**
Our Project No. **PZ1522D1**
Your Sample Ref **75**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **17-Apr-18**

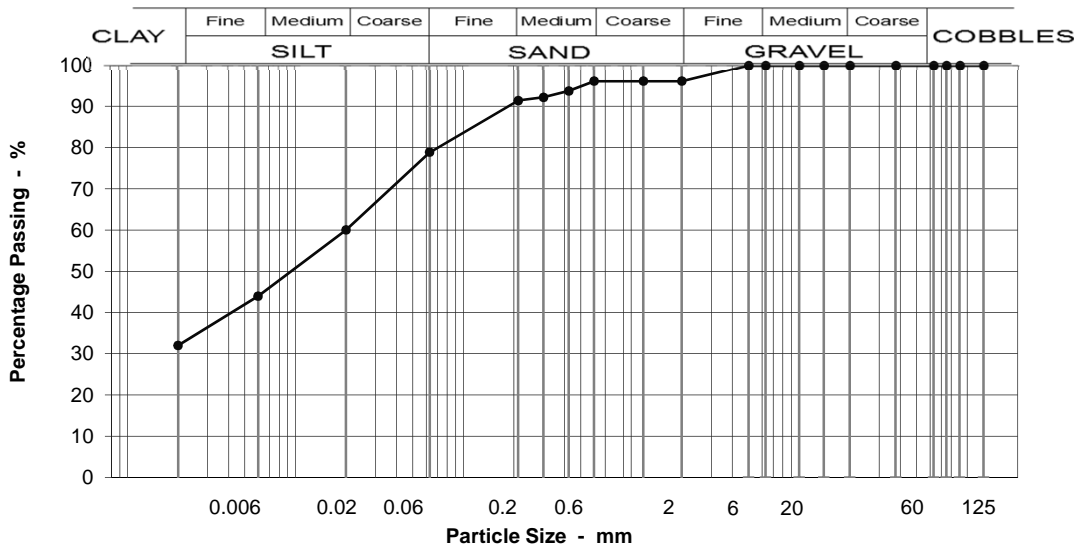
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH8 @ 27 - 27.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	96
1.18	96
0.600	96
0.425	94
0.300	92
0.212	91
0.063	79
0.020	60
0.006	44
0.002	32

Specification for Highway Works Classification
Table 6/2

Moisture content % 0

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	4
Coarse SAND	0
Medium SAND	5
Fine SAND	13
Silt & Clay	79

Grading Analysis	
D100	2
D60	0.02
D10	0.00
Uniformity Coefficient	>10*

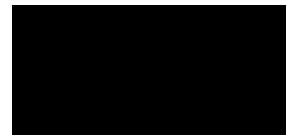
Description	
Very stiff laminated grey silty CLAY and dark grey sandy SILT with some shell fragments.	

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)



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Norfolk
NR1 2DH

Our reference No. **GTS1180126029-613**
Our Project No. **PZ1522D1**
Your Sample Ref **80**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **17-Apr-18**

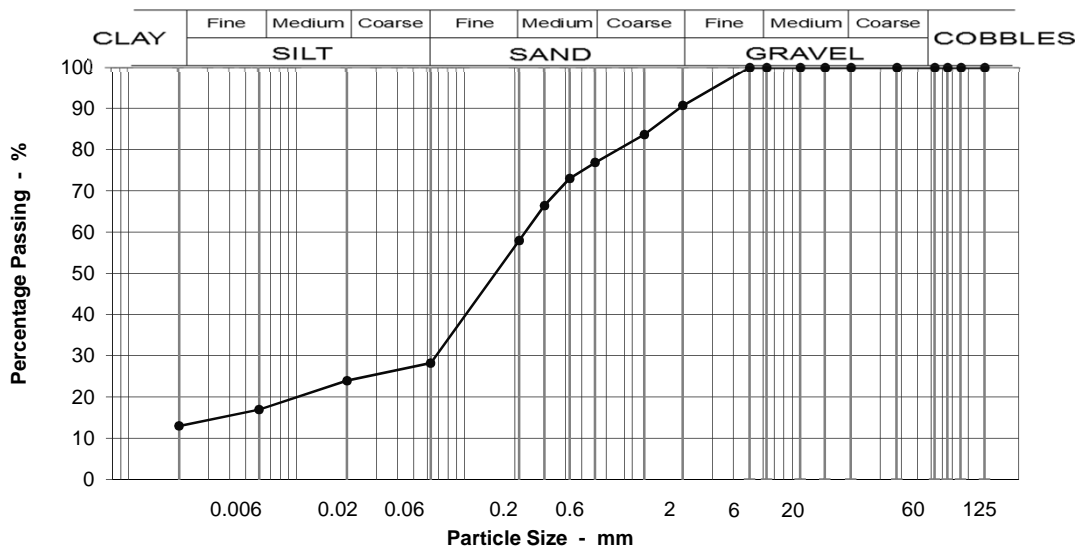
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH8 @ 29 - 29.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100		BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	9
20	100		Coarse SAND	14
14	100		Medium SAND	19
10	100		Fine SAND	30
6.3	100		Silt & Clay	28
5	100			
2	91			
1.18	84			
0.600	77			
0.425	73			
0.300	66			
0.212	58			
0.063	28			
0.020	24			
0.006	17			
0.002	13	Moisture content %	36	

Grading Analysis	
D100	2
D60	0.23
D10	0.00
Uniformity Coefficient	>10*

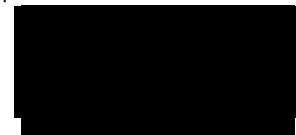
Description	
Laminated and thinly bedded grey silty fine SAND, slightly gravelly medium and coarse SAND and silty CLAY, Some shell fragments.	

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1180129003-613**
Our Project No. **PZ1522D1**
Your Sample Ref **86**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **17-Apr-18**

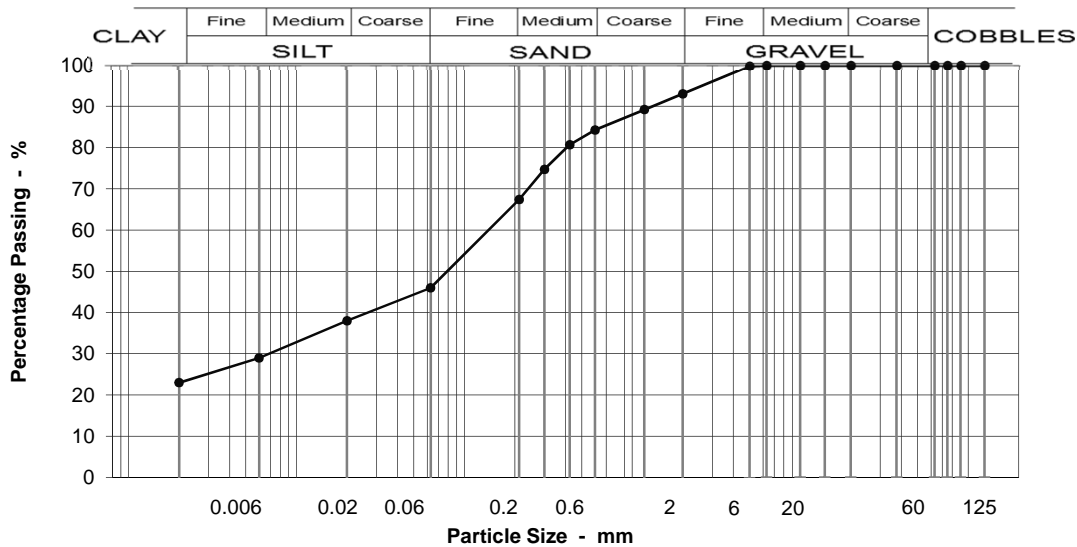
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH8 @ 31.3 - 31.8m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100		BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	7
20	100		Coarse SAND	9
14	100		Medium SAND	17
10	100		Fine SAND	21
6.3	100		Silt & Clay	46
5	100			
2	93			
1.18	89			
0.600	84			
0.425	81			
0.300	75			
0.212	67			
0.063	46			
0.020	38			
0.006	29			
0.002	23			
		Moisture content %	95	

Grading Analysis	
D100	5
D60	0.16
D10	0.00
Uniformity Coefficient	>10*

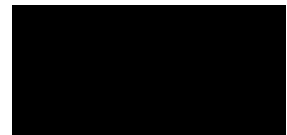
Description	
Laminated and thinly bedded dark grey silty fine to medium SAND and stiff grey CLAY with some shell fragments.	

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
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Martineau Lane
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Norfolk
NR1 2DH

Our reference No. **GTS1180129005-610**
Our Project No. **PZ1522D1**
Your Sample Ref. **88**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **17-Apr-18**

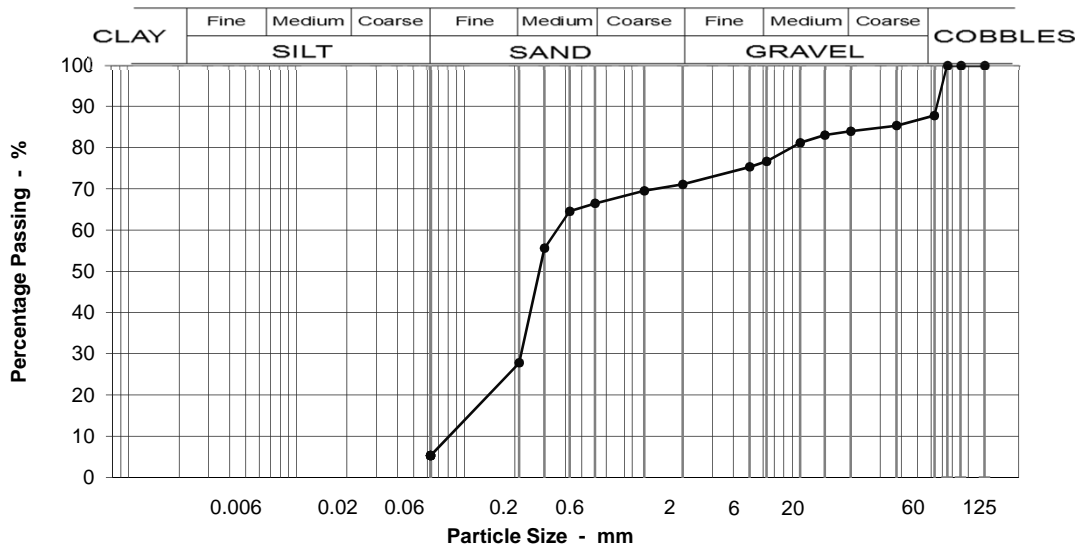
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH8 @ 32 - 32.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	88
37.5	85
20	84
14	83
10	81
6.3	77
5	75
2	71
1.18	70
0.600	66
0.425	65
0.300	56
0.212	28
0.063	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 16

Sample Proportions	
BOULDERS	0
COBBLES	12
Coarse GRAVEL	4
Medium GRAVEL	7
Fine GRAVEL	6
Coarse SAND	5
Medium SAND	39
Fine SAND	22
Silt & Clay	5

Grading Analysis	
D100	63
D60	0.36
D10	0.09
Uniformity Coefficient	4

Description	
Grey gravelly slightly silty fine and medium SAND. Numerous shell fragments.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1180129011-613**
Our Project No. **PZ1522D1**
Your Sample Ref **94**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **17-Apr-18**

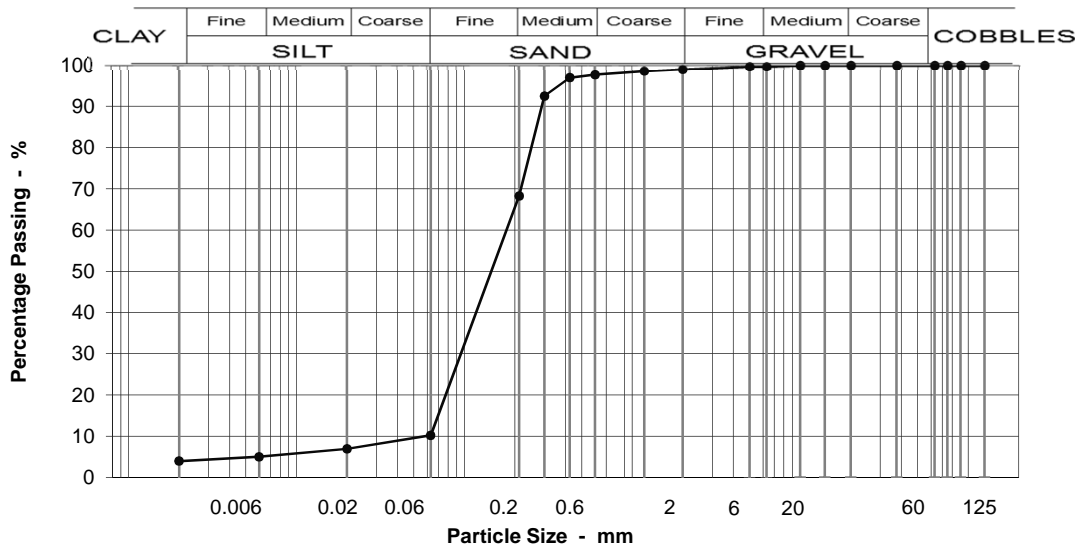
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH8 @ 36 - 36.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	1
20	100		Coarse SAND	1
14	100		Medium SAND	29
10	100		Fine SAND	58
6.3	100		Silt & Clay	10
5	100			
2	99			
1.18	99			
0.600	98			
0.425	97			
0.300	92			
0.212	68			
0.063	10			
0.020	7			
0.006	5			
0.002	4			
Moisture content %		24		

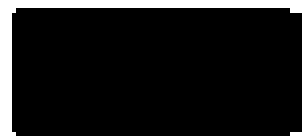
Grading Analysis	
D100	6
D60	0.19
D10	0.09
Uniformity Coefficient	2

Description	
Grey slightly silty fine SAND.	

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1180129014-610**
Our Project No. **PZ1522D1**
Your Sample Ref **97**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **1-Mar-18**

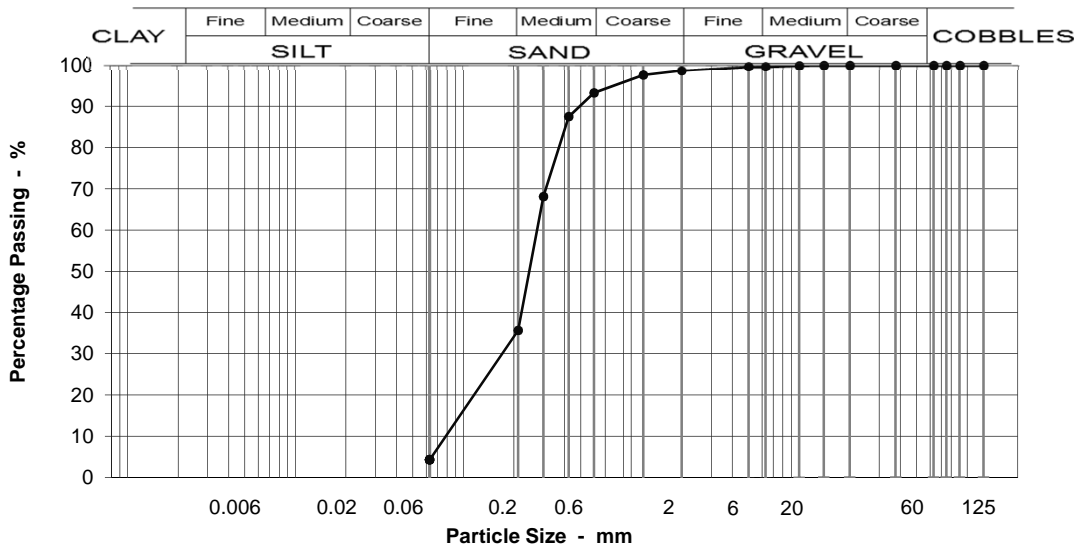
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH8 @ 38 - 38.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	98
0.600	93
0.425	87
0.300	68
0.212	36
0.063	4

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 20

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	5
Medium SAND	58
Fine SAND	31
Silt & Clay	4

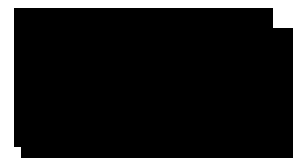
Grading Analysis	
D100	10
D60	0.28
D10	0.09
Uniformity Coefficient	3

Description	
Dark grey fine and medium SAND.	

Test Code = 610



Simon Holden (Project Technician)



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Norfolk
NR1 2DH

Our reference No. **GTS1180129015-610**
Our Project No. **PZ1522D1**
Your Sample Ref. **98**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **1-Mar-18**

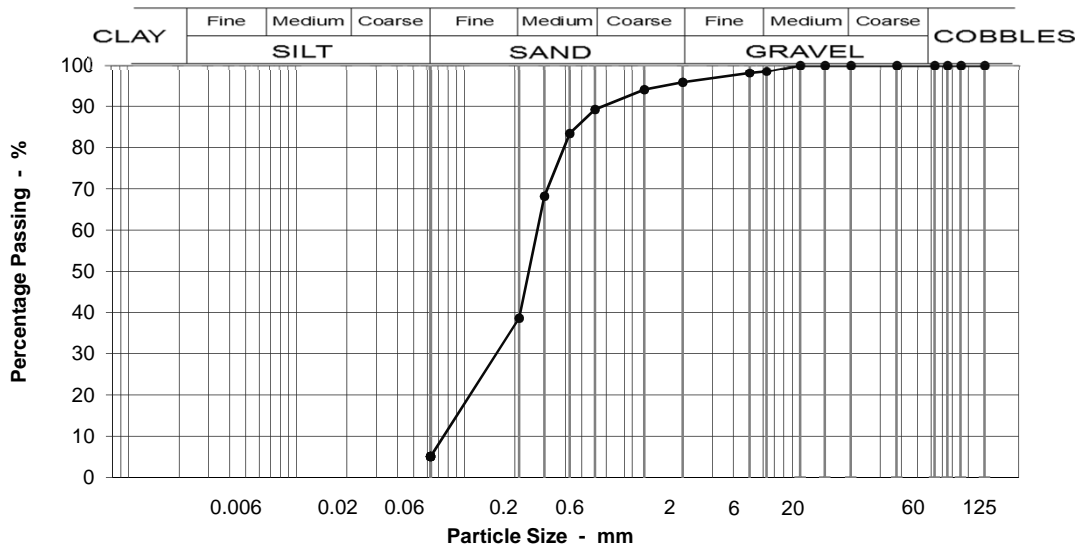
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH8 @ 39 - 39.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	98
5	98
2	96
1.18	94
0.600	89
0.425	83
0.300	68
0.212	39
0.063	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 22

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	2
Fine GRAVEL	3
Coarse SAND	7
Medium SAND	51
Fine SAND	34
Silt & Clay	5

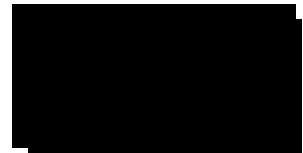
Grading Analysis	
D100	6
D60	0.28
D10	0.08
Uniformity Coefficient	3

Description	
Grey fine to medium SAND with some shell fragments	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS6180130001-610**
Our Project No. **PZ1522D1**
Your Sample Ref **1**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **4-Jul-18**

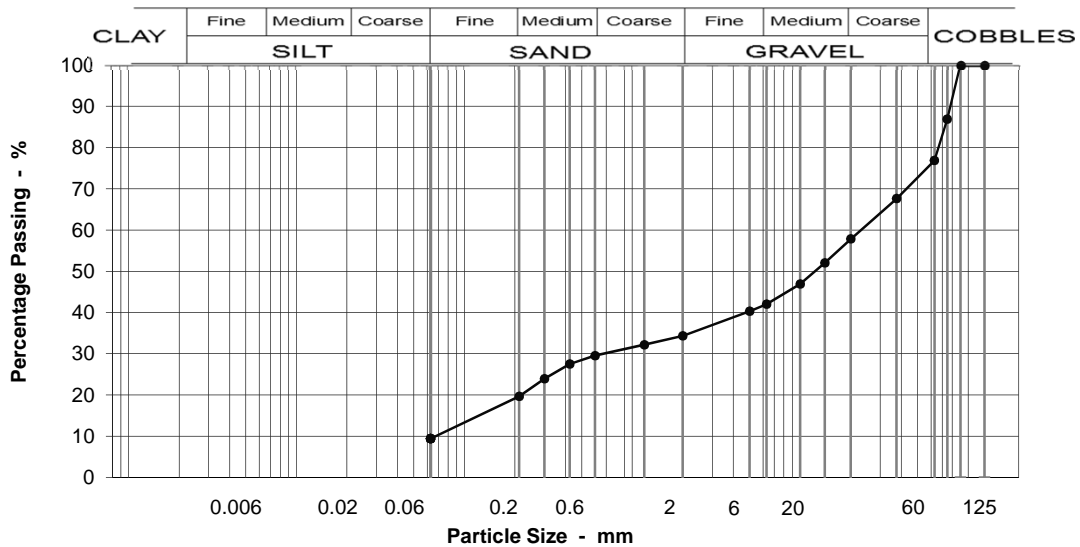
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH9 @ 0.4 - 0.6m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	87
63	77
37.5	68
20	58
14	52
10	47
6.3	42
5	40
2	34
1.18	32
0.600	30
0.425	28
0.300	24
0.212	20
0.063	9

Specification for Highway Works Classification
Table 6/2

Sample Proportions	
BOULDERS	0
COBBLES	23
Coarse GRAVEL	19
Medium GRAVEL	16
Fine GRAVEL	8
Coarse SAND	5
Medium SAND	10
Fine SAND	10
Silt & Clay	9

Grading Analysis	
D100	75
D60	23.89
D10	0.07
Uniformity Coefficient	336

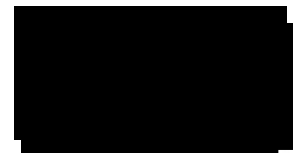
Description
MADE GROUND: comprising up to cobble sized angular to sub-angular asphalt, concrete, brick and flint in a matrix of grey clayey fine, medium and coarse sand.

Moisture content % 12

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS6180131002-**
Our Project No. PZ1522D1
Your Sample Ref 3
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 11-Jun-18

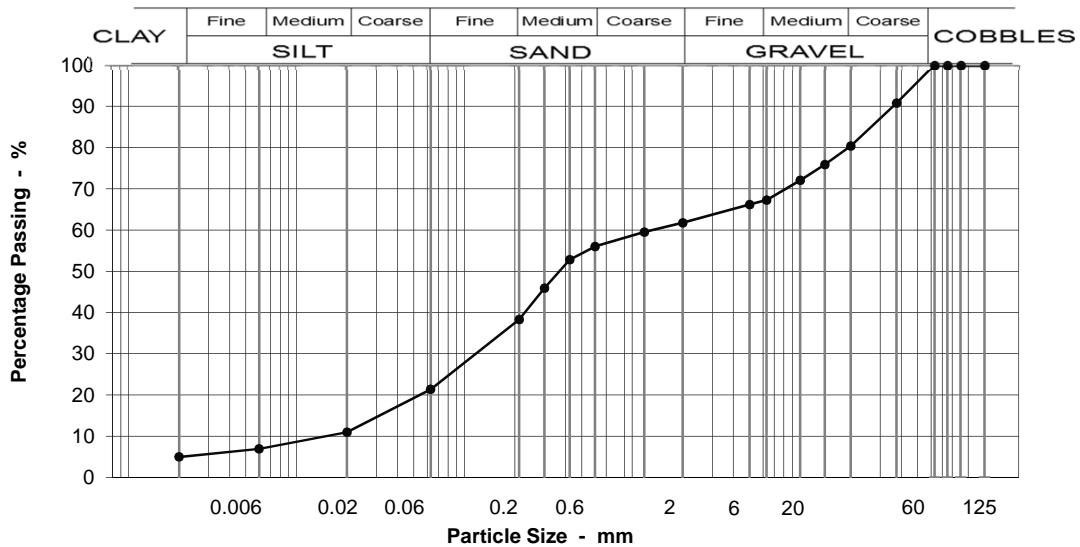
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH9 @ 0.7 - 1m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	91
20	80
14	76
10	72
6.3	67
5	66
2	62
1.18	60
0.600	56
0.425	53
0.300	46
0.212	38
0.063	21
0.020	11
0.006	7
0.002	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 2C.

Moisture content % 22

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	20
Medium GRAVEL	13
Fine GRAVEL	6
Coarse SAND	6
Medium SAND	18
Fine SAND	17
Silt & Clay	21

Grading Analysis	
D100	38
D60	1.36
D10	0.07
Uniformity Coefficient	21

Description
MADE GROUND - comprising medium to coarse angular to sub-angular brick, concrete, flint and ash in matrix of brown silty fine and medium SAND.

Test Code =



Simon Holden (Project Technician)

Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS6180131004-**
Our Project No. PZ1522D1
Your Sample Ref. 5
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 11-Jun-18

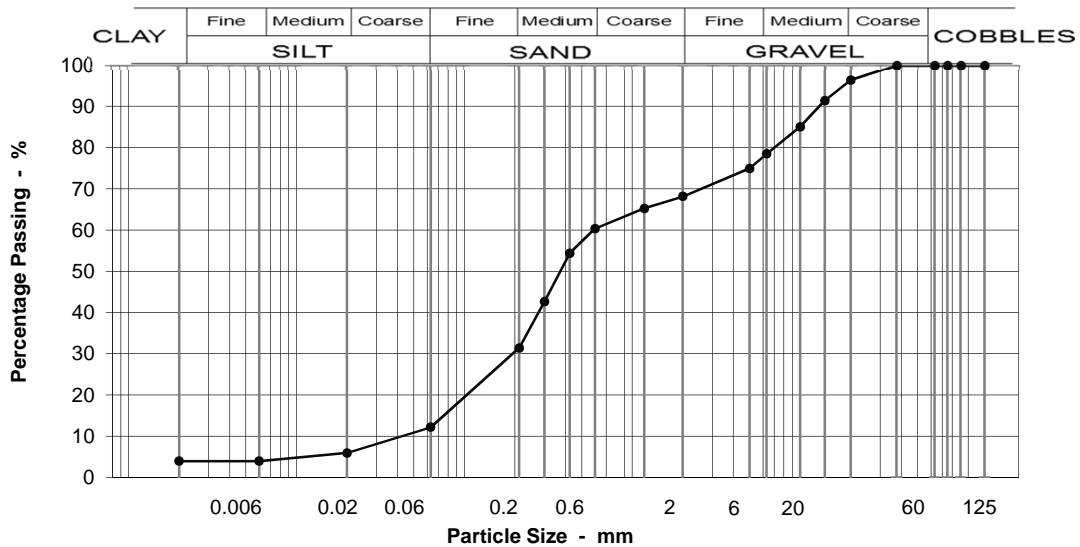
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH9 @ 1.1 - 1.2m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	96
14	91
10	85
6.3	78
5	75
2	68
1.18	65
0.600	60
0.425	54
0.300	43
0.212	31
0.063	12
0.020	6
0.006	4
0.002	4

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J.

Moisture content % 15

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	4
Medium GRAVEL	18
Fine GRAVEL	10
Coarse SAND	8
Medium SAND	29
Fine SAND	19
Silt & Clay	12

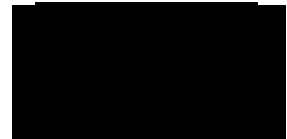
Grading Analysis	
D100	20
D60	0.59
D10	0.11
Uniformity Coefficient	5

Description	
Greyish brown slightly silty very sandy fine and medium angular to sub-rounded flint GRAVEL.	

Test Code =



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS6180131007-610**
Our Project No. PZ1522D1
Your Sample Ref. 8
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 22-May-18

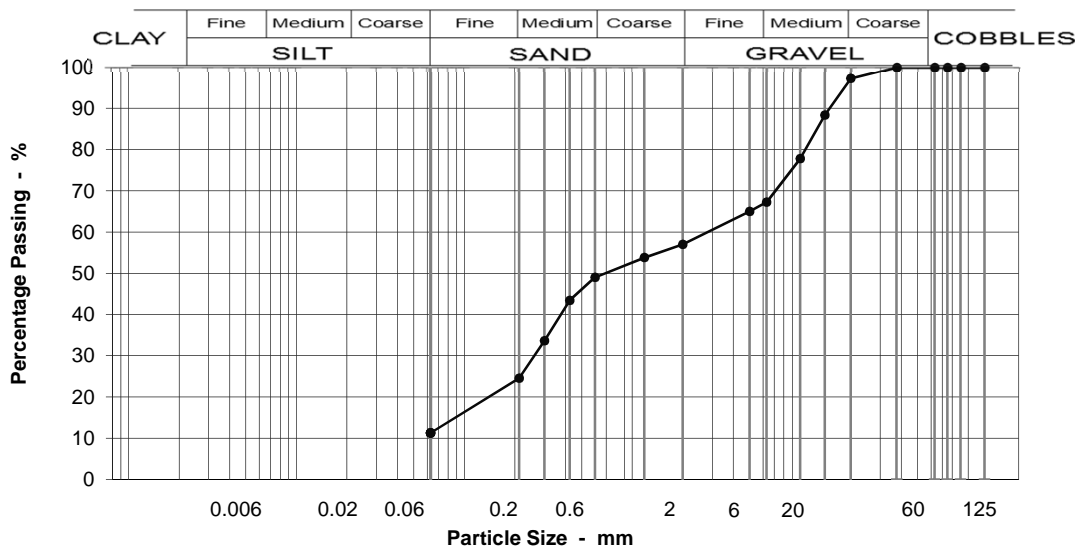
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH9 @ 1.2 - 1.7m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	97
14	88
10	78
6.3	67
5	65
2	57
1.18	54
0.600	49
0.425	43
0.300	34
0.212	25
0.063	11

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6E/6R, 6F1, 6I, 6N.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	3
Medium GRAVEL	30
Fine GRAVEL	10
Coarse SAND	8
Medium SAND	24
Fine SAND	13
Silt & Clay	11

Grading Analysis	
D100	20
D60	3.13
D10	0.08
Uniformity Coefficient	39

Description
Greyish brown silty, fine to coarse SAND, rounded to medium, angular to sub-rounded flint GRAVEL.

Moisture content % 16

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS6180131010-**
Our Project No. PZ1522D1
Your Sample Ref 11
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 11-Jun-18

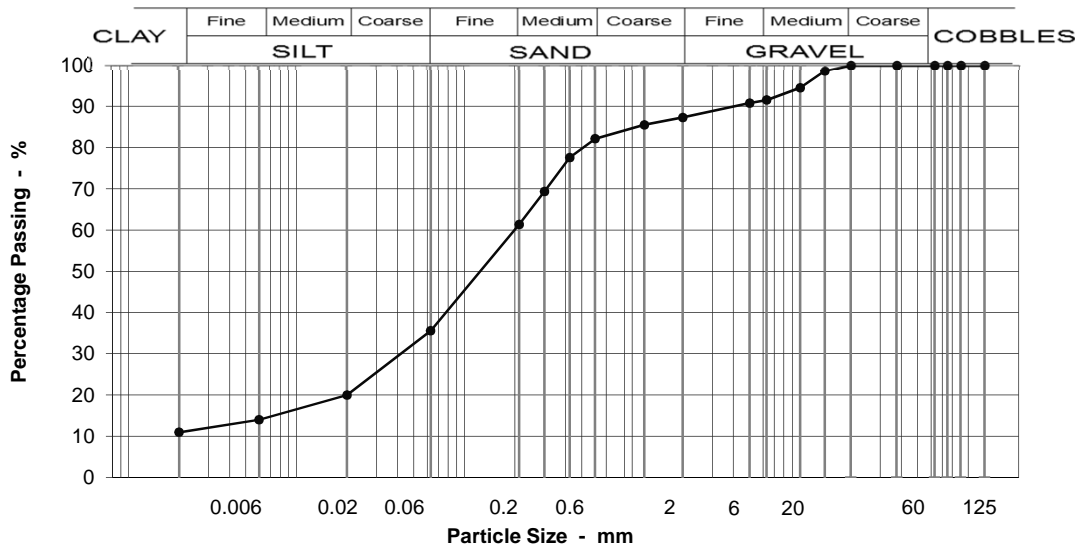
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH9 @ 2.6 - 2.7m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100		BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	9
37.5	100		Fine GRAVEL	4
20	100		Coarse SAND	5
14	99		Medium SAND	21
10	94		Fine SAND	26
6.3	91		Silt & Clay	36
5	91			
2	87			
1.18	86			
0.600	82			
0.425	78			
0.300	69			
0.212	61			
0.063	36			
0.020	20			
0.006	14			
0.002	11			
		Moisture content %	28	

Grading Analysis	
D100	14
D60	0.20
D10	0.00
Uniformity Coefficient	>10*

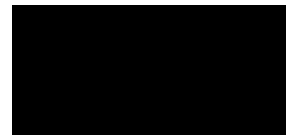
Description	
Very soft grey organic very sandy gravelly clayey SILT. Gravel is fine to medium angular flint.	

* Uniformity coefficient extrapolated

Test Code =



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS6180201002-**
Our Project No. PZ1522D1
Your Sample Ref. 36
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 11-Jun-18

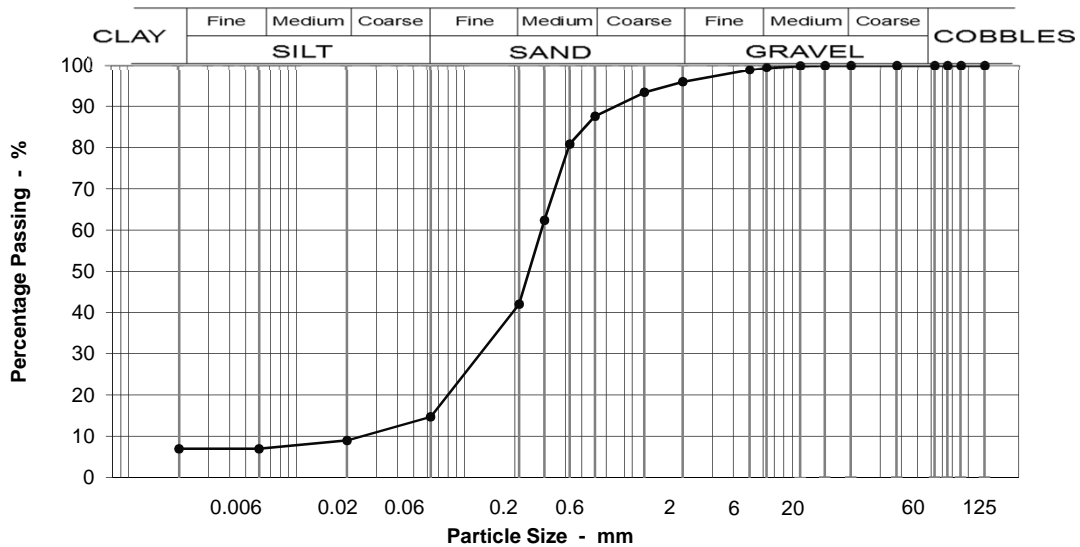
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH9 @ 11 - 11.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample

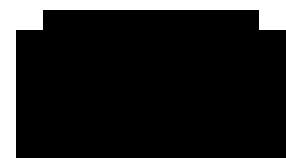


Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	1
37.5	100		Fine GRAVEL	3
20	100		Coarse SAND	8
14	100		Medium SAND	46
10	100		Fine SAND	27
6.3	99		Silt & Clay	15
5	99		Grading Analysis	
2	96		D100	10
1.18	93		D60	0.29
0.600	88		D10	0.08
0.425	81		Uniformity Coefficient	4
0.300	62		Description	
0.212	42	Greyish brown fine and medium SAND.		
0.063	15			
0.020	9			
0.006	7			
0.002	7	Moisture content %	20	

Test Code =



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS6180201012-**
Our Project No. **PZ1522D1**
Your Sample Ref **46**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

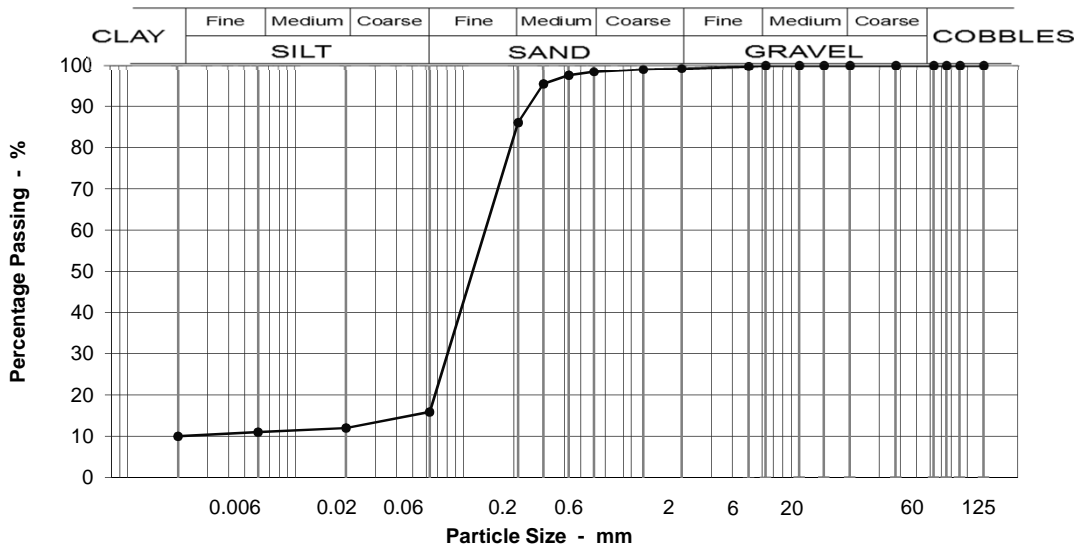
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH9 @ 15 - 15.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	99
0.600	98
0.425	97
0.300	95
0.212	86
0.063	16
0.020	12
0.006	11
0.002	10

Specification for Highway Works Classification
Table 6/2

Moisture content % 37

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	1
Medium SAND	12
Fine SAND	70
Silt & Clay	16

Grading Analysis	
D100	6
D60	0.16
D10	0.00
Uniformity Coefficient	>10*

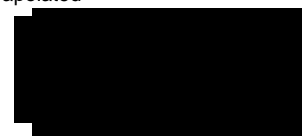
Description
Orange fine SAND with lenses and laminae of soft grey silty clay.

* Uniformity coefficient extrapolated

Test Code =



Simon Holden (Project Technician)



Community & Environmental Services
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Norwich
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NR1 2DH

Our reference No. **GTS6180202010-**
Our Project No **PZ1522D1**
Your Sample Ref **70**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

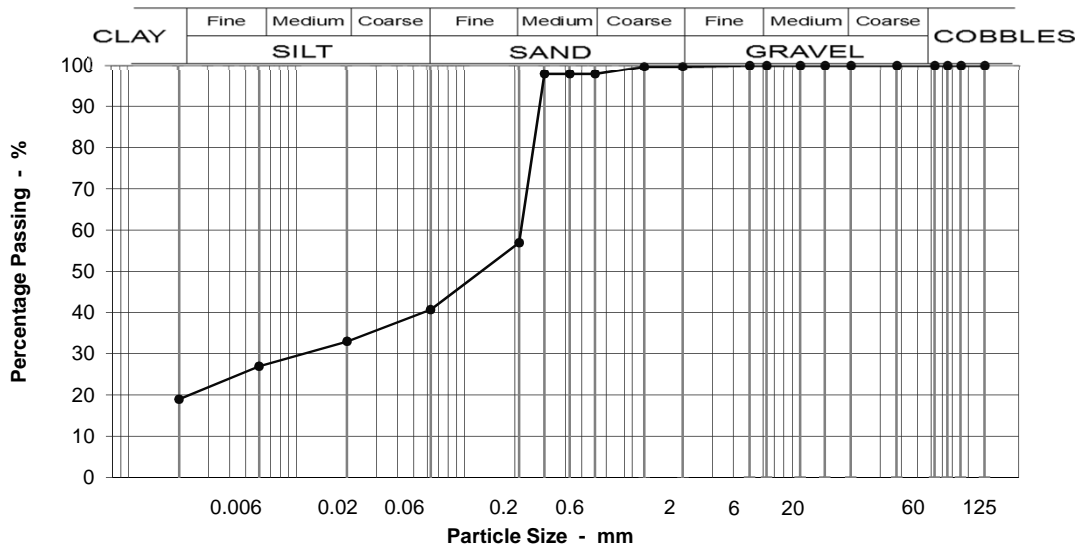
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH9 @ 27.1 - 27.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	100
0.600	98
0.425	98
0.300	98
0.212	57
0.063	41
0.020	33
0.006	27
0.002	19

Specification for Highway Works Classification
Table 6/2

Moisture content % 0

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	2
Medium SAND	41
Fine SAND	16
Silt & Clay	41

Grading Analysis	
D100	2
D60	0.22
D10	0.00
Uniformity Coefficient	>10*

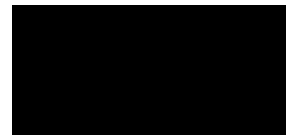
Description	
Thinly bedded greyish brown silty fine and medium SAND with shell fragments, dark grey clayey SILT and grey silty CLAY.	

* Uniformity coefficient extrapolated

Test Code =



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS6180202014-**
Our Project No **PZ1522D1**
Your Sample Ref **74**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

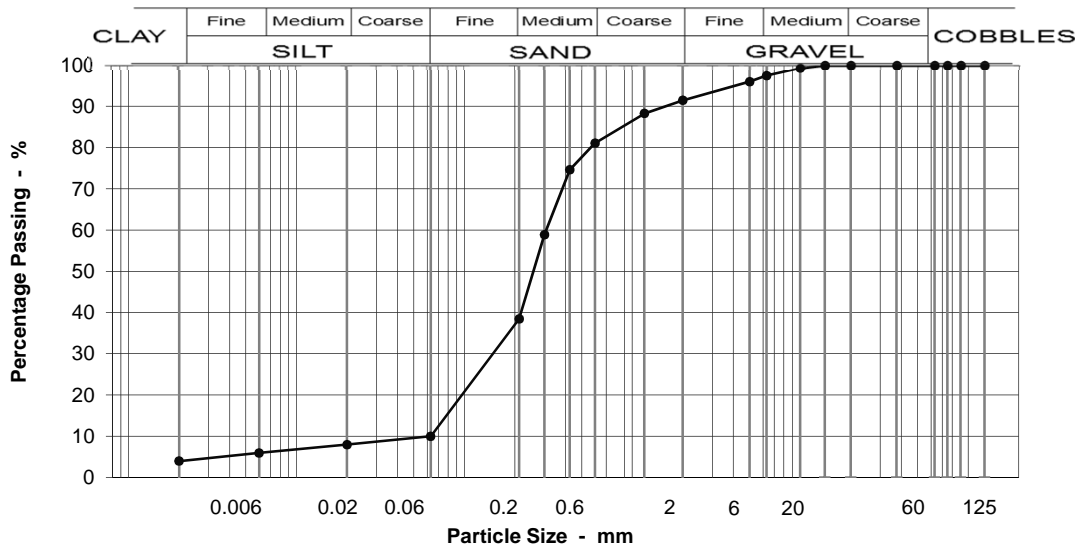
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH9 @ 28 - 28.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R, 6M.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	3
37.5	100		Fine GRAVEL	6
20	100		Coarse SAND	10
14	100		Medium SAND	43
10	99		Fine SAND	28
6.3	97		Silt & Clay	10
5	96			
2	91			
1.18	88			
0.600	81			
0.425	75			
0.300	59			
0.212	38			
0.063	10			
0.020	8			
0.006	6			
0.002	4			
		Moisture content %	19	

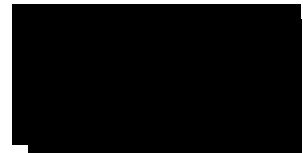
Grading Analysis	
D100	10
D60	0.31
D10	0.06
Uniformity Coefficient	5

Description	
Thinly bedded greyish brown silty fine and medium SAND.	

Test Code =



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS6180202017-**
Our Project No **PZ1522D1**
Your Sample Ref **77**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

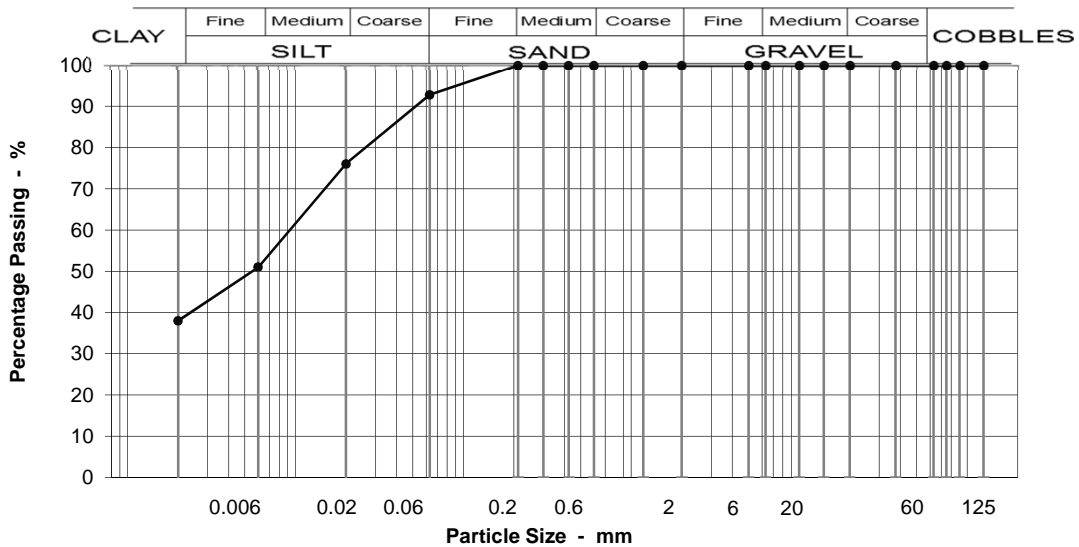
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH9 @ 30 - 30.45m Specimen: 1

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	100
0.600	100
0.425	100
0.300	100
0.212	100
0.063	93
0.020	76
0.006	51
0.002	38

Specification for Highway Works Classification
Table 6/2

Moisture content % 0

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	0
Medium SAND	0
Fine SAND	7
Silt & Clay	93

Grading Analysis	
D100	0
D60	0.01
D10	0.00
Uniformity Coefficient	>10*

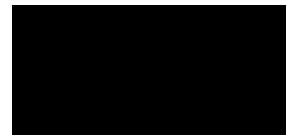
Description	
Stiff laminated grey SILT:CLAY	

* Uniformity coefficient extrapolated

Test Code =



Simon Holden (Project Technician)



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Norfolk
NR1 2DH

Our reference No. **GTS6180202019-**
Our Project No **PZ1522D1**
Your Sample Ref **79**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

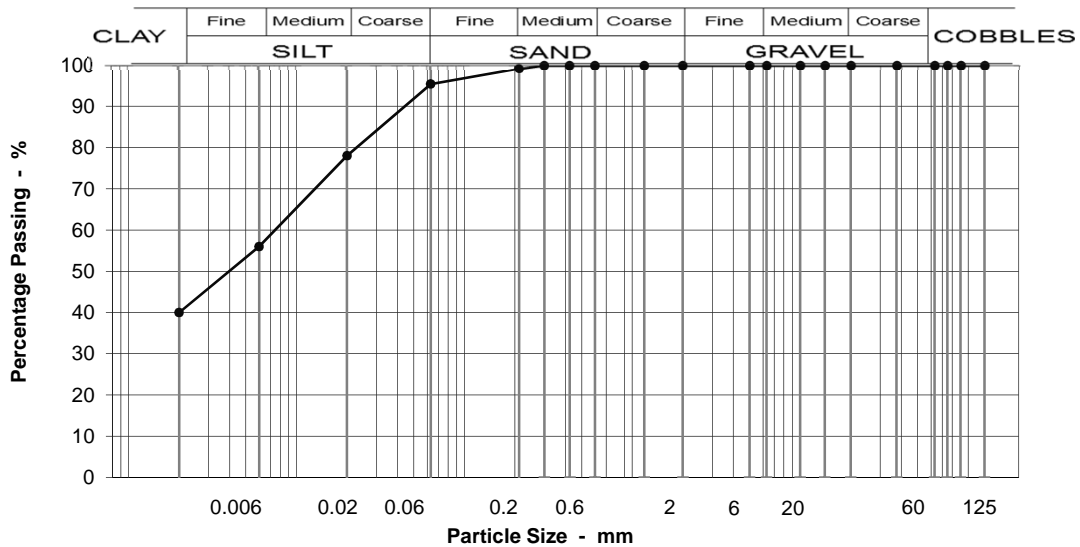
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH9 @ 31 - 31.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100		BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	0
14	100		Medium SAND	1
10	100		Fine SAND	4
6.3	100		Silt & Clay	95
5	100			
2	100			
1.18	100			
0.600	100			
0.425	100			
0.300	100			
0.212	99			
0.063	95			
0.020	78			
0.006	56			
0.002	40			
		Moisture content %		0

Grading Analysis	
D100	0
D60	0.01
D10	0.00
Uniformity Coefficient	>10*

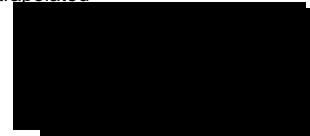
Description	
Stiff laminated grey SILT:CLAY	

* Uniformity coefficient extrapolated

Test Code =



Simon Holden (Project Technician)



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Norfolk
NR1 2DH

Our reference No. GTS6180131012-610
Our Project No PZ1522D1
Your Sample Ref 13
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 2-Mar-18

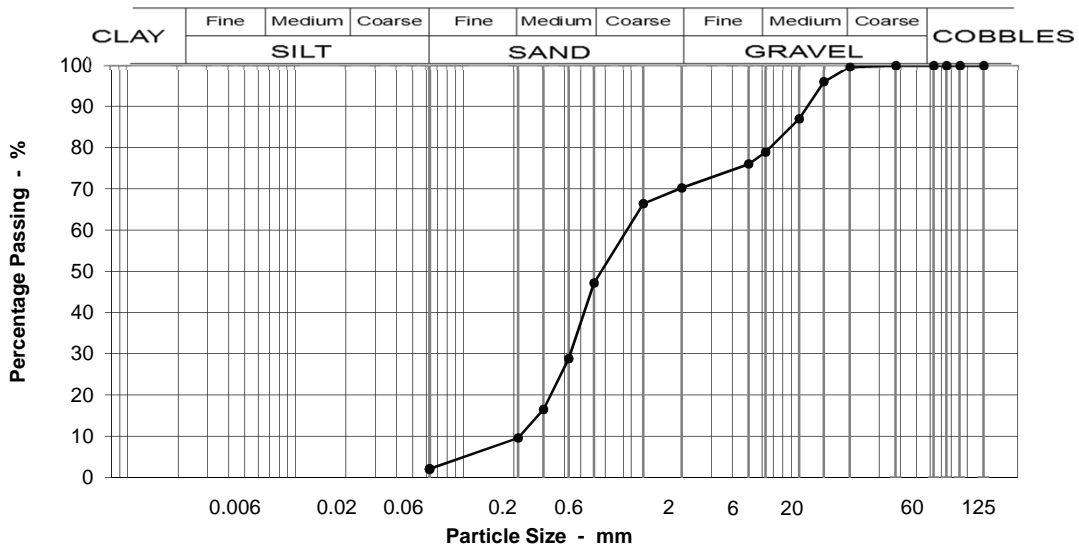
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH9 @ 2.8 - 3.5m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	96
10	87
6.3	79
5	76
2	70
1.18	66
0.600	47
0.425	29
0.300	16
0.212	10
0.063	2

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6F1, 6M.

Moisture content % 14

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	21
Fine GRAVEL	9
Coarse SAND	23
Medium SAND	38
Fine SAND	8
Silt & Clay	2

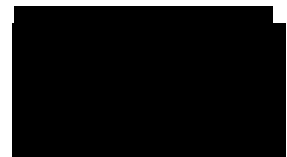
Grading Analysis	
D100	20
D60	0.99
D10	0.22
Uniformity Coefficient	5

Description
Greyish brown very gravelly medium and coarse SAND. Gravel is fine and medium angular to sub-angular flint and quartz.

Test Code = 610



Simon Holden (Project Technician)



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NR1 2DH

Our reference No. **GTS6180131015-610**
Our Project No. **PZ1522D1**
Your Sample Ref. **16**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **2-Mar-18**

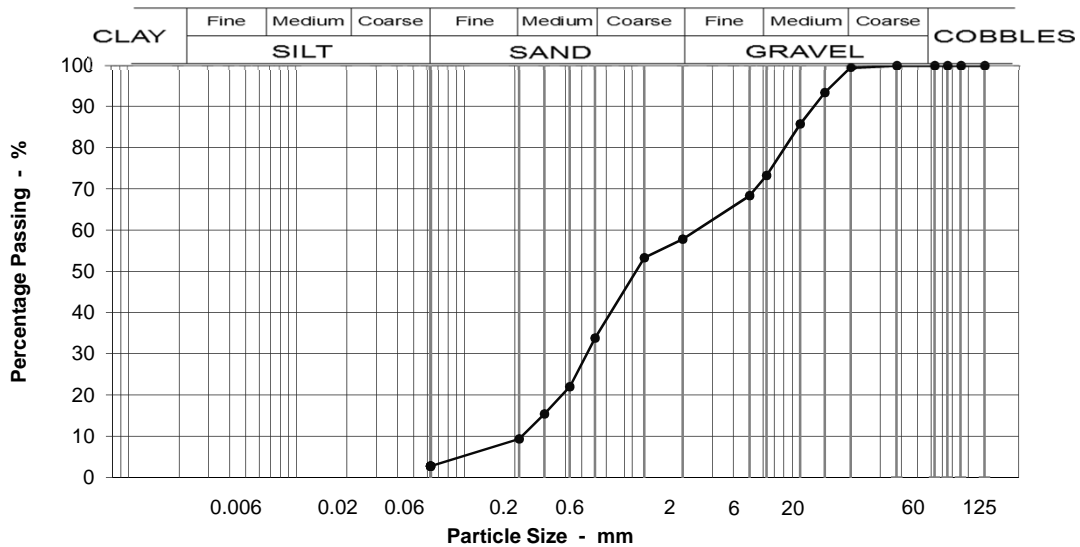
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH9 @ 4 - 4.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	99
14	93
10	86
6.3	73
5	68
2	58
1.18	53
0.600	34
0.425	22
0.300	15
0.212	9
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6A, 6E/6R, 6F1, 6I, 6M, 6N.

Moisture content % 13

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	1
Medium GRAVEL	26
Fine GRAVEL	15
Coarse SAND	24
Medium SAND	24
Fine SAND	7
Silt & Clay	3

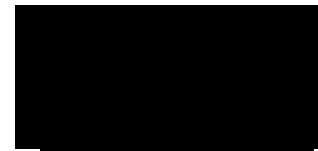
Grading Analysis	
D100	20
D60	2.62
D10	0.22
Uniformity Coefficient	12

Description	
Greyish brown very gravelly medium and coarse SAND. Gravel is fine and medium angular to sub-angular flint and quartz.	

Test Code = 610



Simon Holden (Project Technician)



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Our reference No. **GTS6180131022-610**
Our Project No. PZ1522D1
Your Sample Ref. 22
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 2-Mar-18

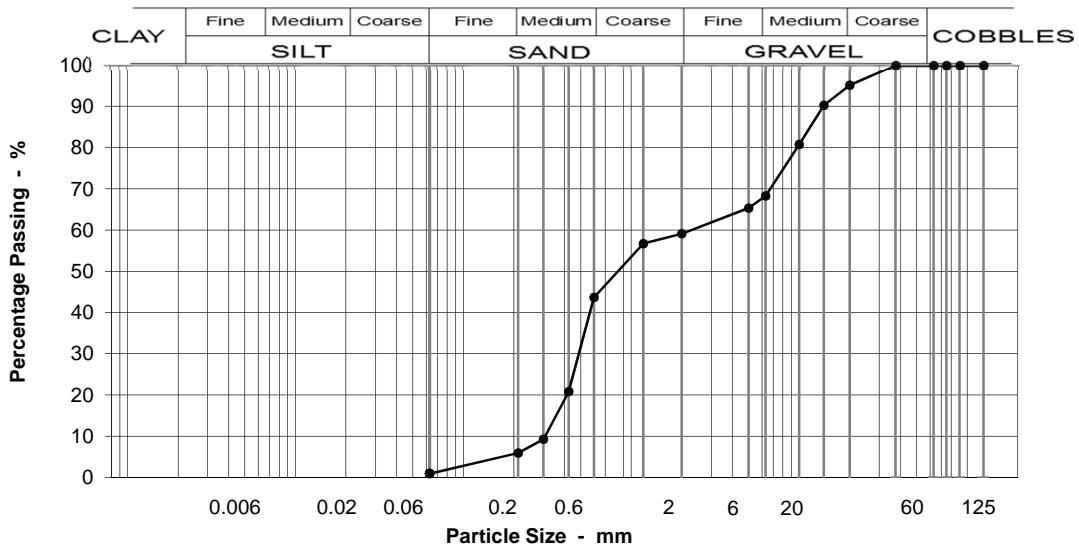
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH9 @ 6 - 6.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	95
14	90
10	81
6.3	68
5	65
2	59
1.18	57
0.600	44
0.425	21
0.300	9
0.212	6
0.063	1

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6F1, 6J, 6M.

Moisture content % 8

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	5
Medium GRAVEL	27
Fine GRAVEL	9
Coarse SAND	15
Medium SAND	38
Fine SAND	5
Silt & Clay	1

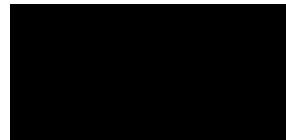
Grading Analysis	
D100	20
D60	2.44
D10	0.31
Uniformity Coefficient	8

Description	
Greyish brown medium and coarse SAND and medium angular to sub-angular flint GRAVEL.	

Test Code = 610



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Our reference No. **GTS6180131026-610**
Our Project No. PZ1522D1
Your Sample Ref. 25
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 17-Apr-18

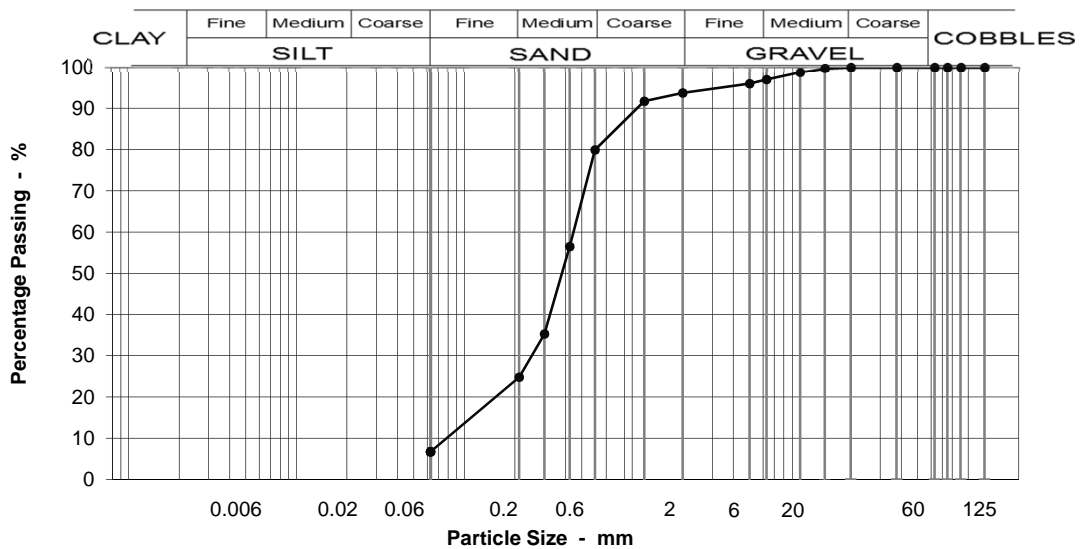
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH9 @ 7 - 7.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	99
6.3	97
5	96
2	94
1.18	92
0.600	80
0.425	56
0.300	35
0.212	25
0.063	7

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J, 6K, 6M.

Moisture content % 15

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	3
Fine GRAVEL	3
Coarse SAND	14
Medium SAND	55
Fine SAND	18
Silt & Clay	7

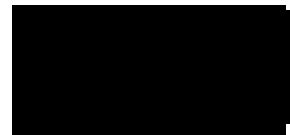
Grading Analysis	
D100	14
D60	0.45
D10	0.09
Uniformity Coefficient	5

Description
Yellowish brown slightly gravelly fine and medium SAND with lenses of soft grey clay. Gravel is fine and medium sub-angular to sub-rounded flint and quartz.

Test Code = 610



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Our reference No. **GTS6180131032-610**
Our Project No. **PZ1522D1**
Your Sample Ref **31**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **2-Mar-18**

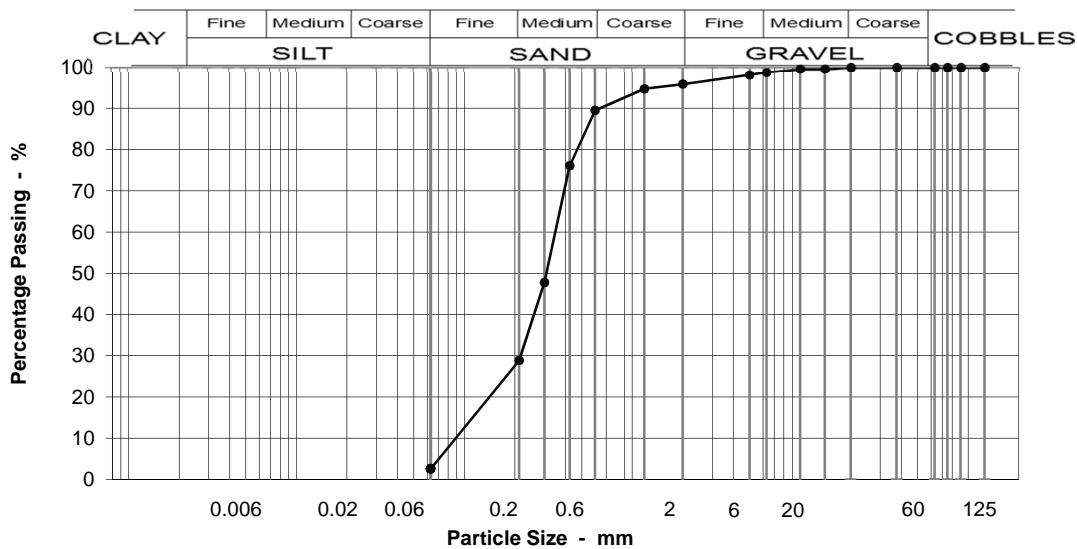
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH9 @ 9 - 9.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	99
5	98
2	96
1.18	95
0.600	89
0.425	76
0.300	48
0.212	29
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	1
Fine GRAVEL	3
Coarse SAND	6
Medium SAND	61
Fine SAND	26
Silt & Clay	3

Grading Analysis	
D100	14
D60	0.35
D10	0.10
Uniformity Coefficient	3

Description
Yellowish brown medium SAND

Moisture content % 19

Test Code = 610



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Our reference No. **GTS6180201010-610**
Our Project No. PZ1522D1
Your Sample Ref. 44
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 2-Mar-18

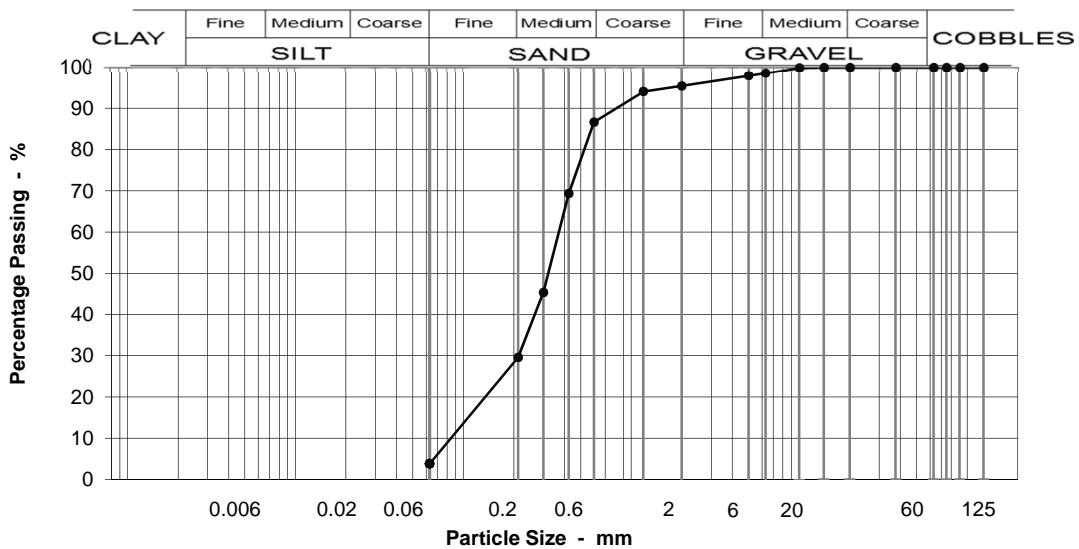
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH9 @ 14 - 14.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	99
5	98
2	95
1.18	94
0.600	87
0.425	69
0.300	45
0.212	30
0.063	4

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 19

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	1
Fine GRAVEL	3
Coarse SAND	9
Medium SAND	57
Fine SAND	26
Silt & Clay	4

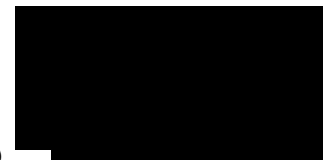
Grading Analysis	
D100	10
D60	0.38
D10	0.10
Uniformity Coefficient	4

Description	
Grey medium SAND.	

Test Code = 610



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Our reference No. **GTS6180201020-610**
Our Project No. PZ1522D1
Your Sample Ref. 54
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 2-Mar-18

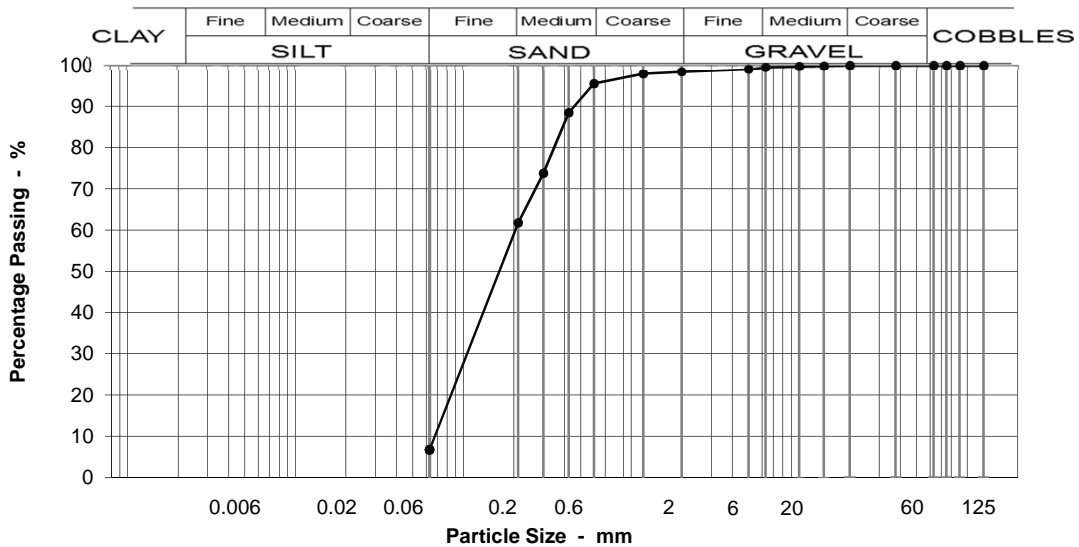
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH9 @ 18 - 18.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	99
2	98
1.18	98
0.600	95
0.425	88
0.300	74
0.212	62
0.063	7

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 26

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	3
Medium SAND	34
Fine SAND	55
Silt & Clay	7

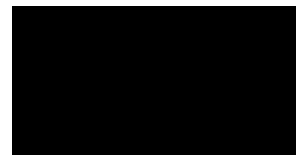
Grading Analysis	
D100	14
D60	0.21
D10	0.07
Uniformity Coefficient	3

Description	
Orangey brown fine and medium SAND.	

Test Code = 610



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Our reference No. **GTS6180201022-610**
Our Project No. **PZ1522D1**
Your Sample Ref. **56**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **2-Mar-18**

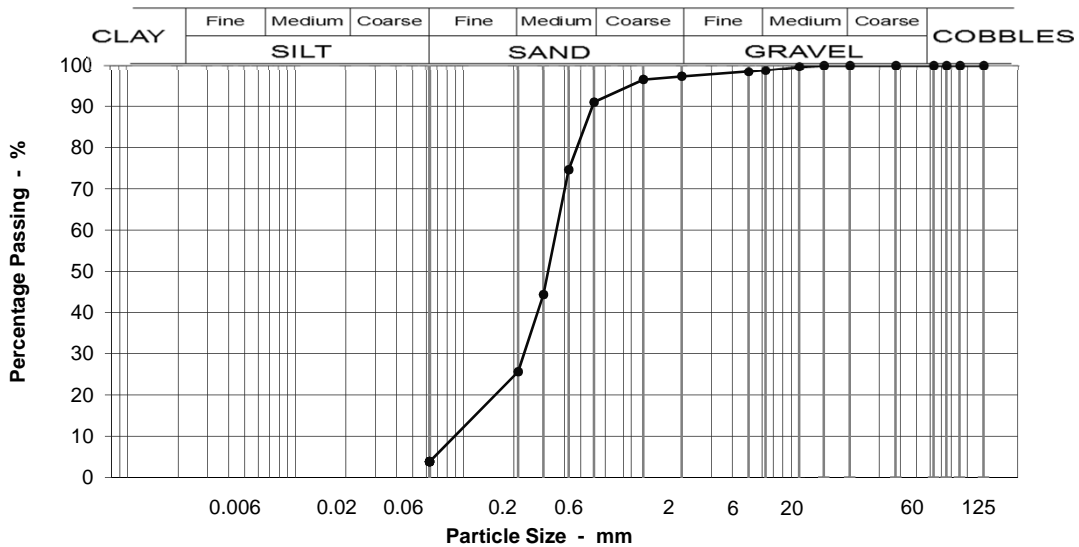
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH9 @ 19 - 19.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	99
5	98
2	97
1.18	96
0.600	91
0.425	75
0.300	44
0.212	26
0.063	4

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 18

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	1
Fine GRAVEL	2
Coarse SAND	6
Medium SAND	65
Fine SAND	22
Silt & Clay	4

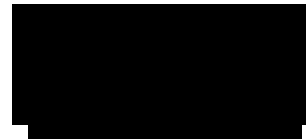
Grading Analysis	
D100	10
D60	0.36
D10	0.10
Uniformity Coefficient	3

Description	
Orangey brown medium SAND.	

Test Code = 610



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Norfolk
NR1 2DH

Our reference No. **GTS6180201026-610**
Our Project No. PZ1522D1
Your Sample Ref. 60
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 17-Apr-18

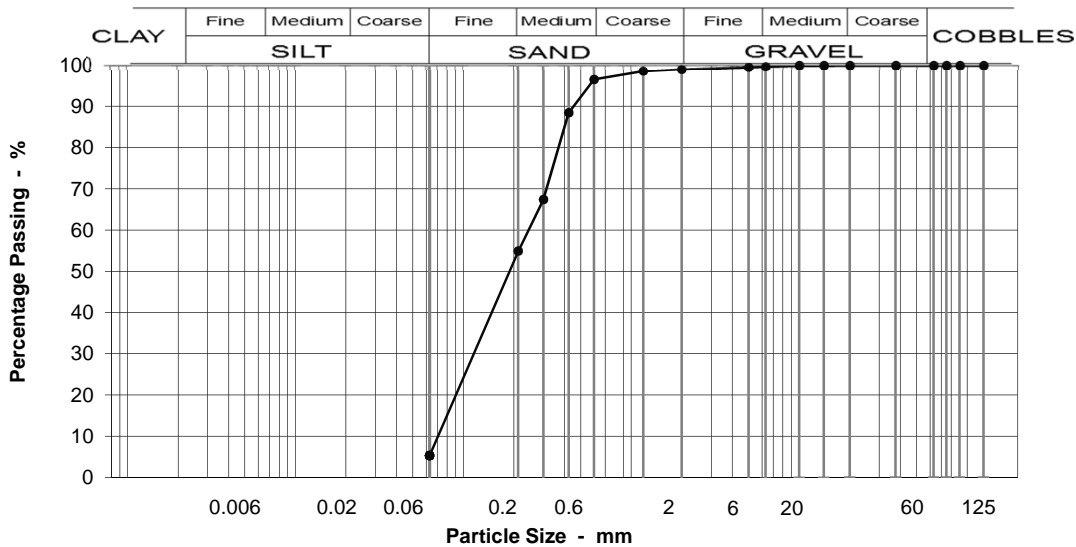
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH9 @ 21 - 21.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	99
0.600	97
0.425	88
0.300	67
0.212	55
0.063	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 20

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	2
Medium SAND	42
Fine SAND	50
Silt & Clay	5

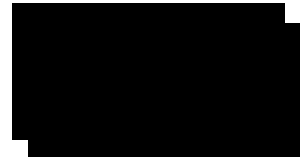
Grading Analysis	
D100	14
D60	0.25
D10	0.08
Uniformity Coefficient	3

Description	
Orangey brown fine and medium SAND.	

Test Code = 610



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Our reference No. **GTS6180202002-610**
Our Project No. PZ1522D1
Your Sample Ref. 62
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 17-Apr-18

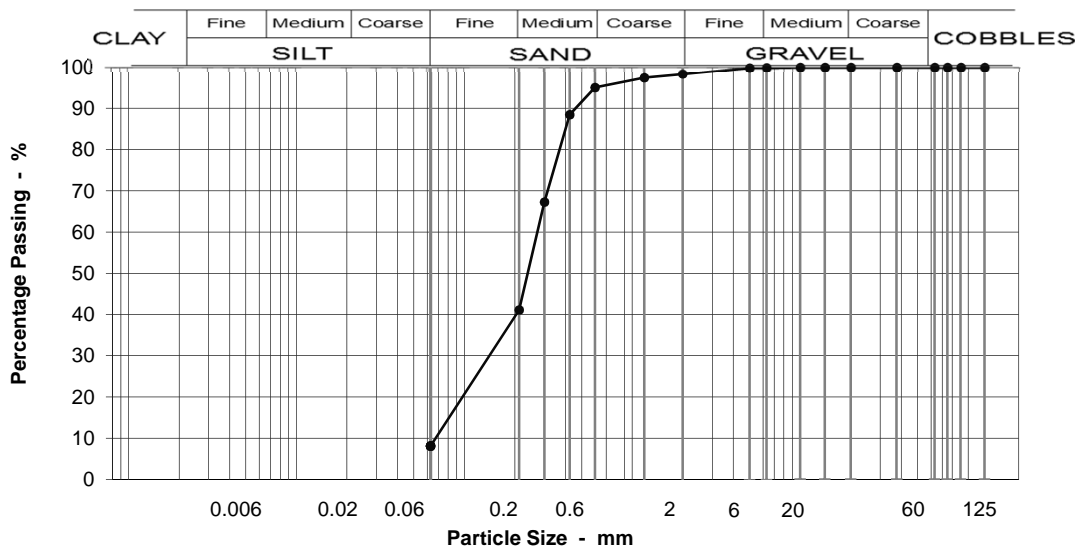
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH9 @ 22 - 22.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	98
1.18	97
0.600	95
0.425	88
0.300	67
0.212	41
0.063	8

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	2
Coarse SAND	3
Medium SAND	54
Fine SAND	33
Silt & Clay	8

Grading Analysis	
D100	6
D60	0.28
D10	0.07
Uniformity Coefficient	4

Description
Grey slightly silty fine and medium SAND.

Moisture content % 19

Test Code = 610



Simon Holden (Project Technician)



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NR1 2DH

Our reference No. **GTS6180202006-610**
Our Project No. PZ1522D1
Your Sample Ref. 66
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 17-Apr-18

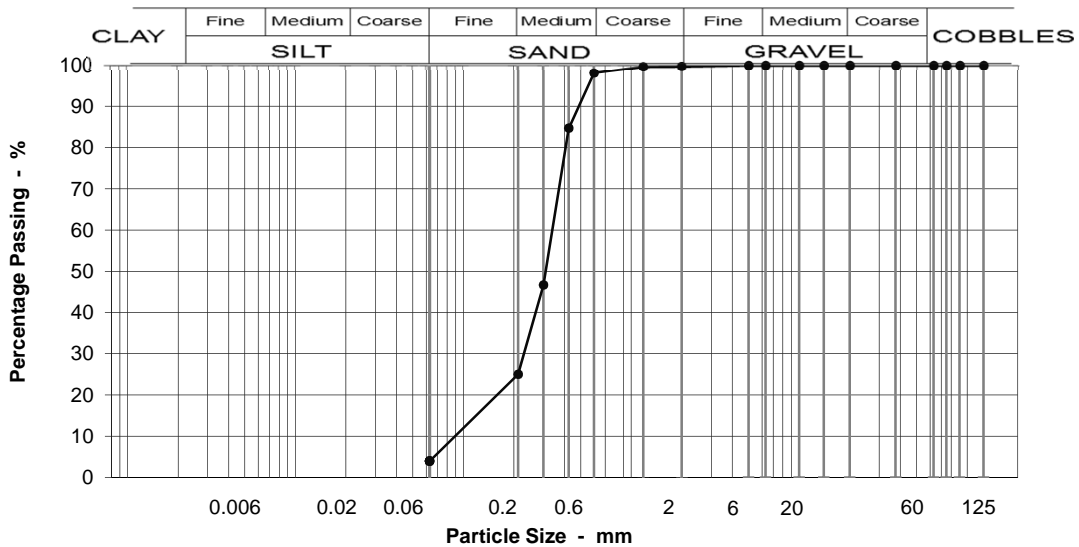
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH9 @ 25 - 25.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	100
0.600	98
0.425	85
0.300	47
0.212	25
0.063	4

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 17

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	2
Medium SAND	73
Fine SAND	21
Silt & Clay	4

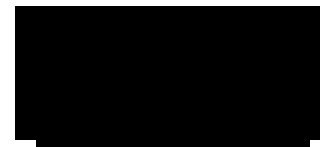
Grading Analysis	
D100	2
D60	0.34
D10	0.11
Uniformity Coefficient	3

Description	
Grey medium SAND.	

Test Code = 610



Simon Holden (Project Technician)



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Norfolk
NR1 2DH

Our reference No. **GTS6180202015-610**
Our Project No. PZ1522D1
Your Sample Ref. 75
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 17-Apr-18

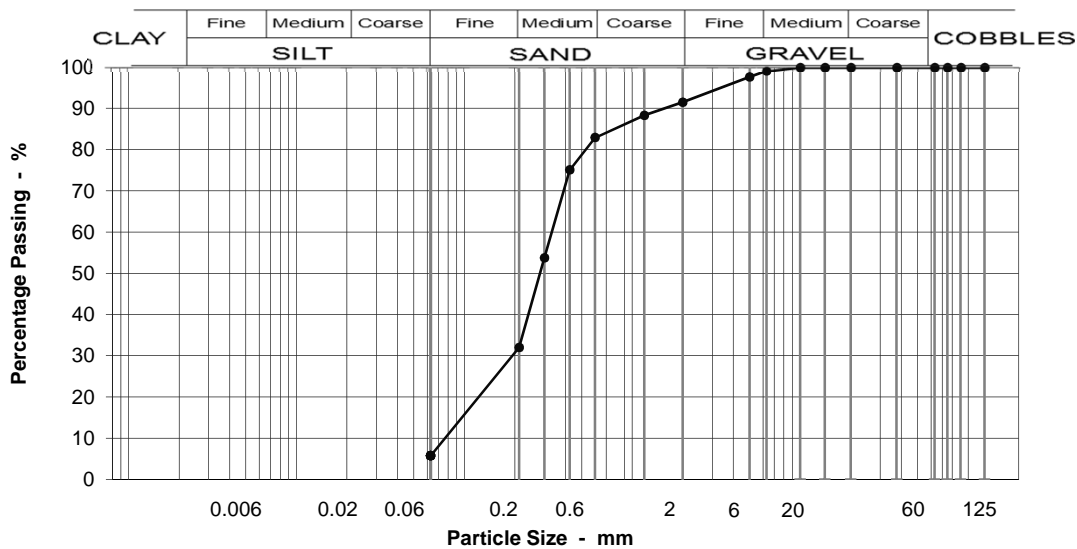
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH9 @ 29 - 29.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	99
5	98
2	91
1.18	88
0.600	83
0.425	75
0.300	54
0.212	32
0.063	6

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	1
Fine GRAVEL	8
Coarse SAND	9
Medium SAND	51
Fine SAND	26
Silt & Clay	6

Grading Analysis	
D100	6
D60	0.34
D10	0.09
Uniformity Coefficient	4

Description
Laminated grey medium SAND and fine and medium SAND.

Moisture content % 18

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
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NR1 2DH

Our reference No. **GTS6180205002-610**
Our Project No. PZ1522D1
Your Sample Ref. 82
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 17-Apr-18

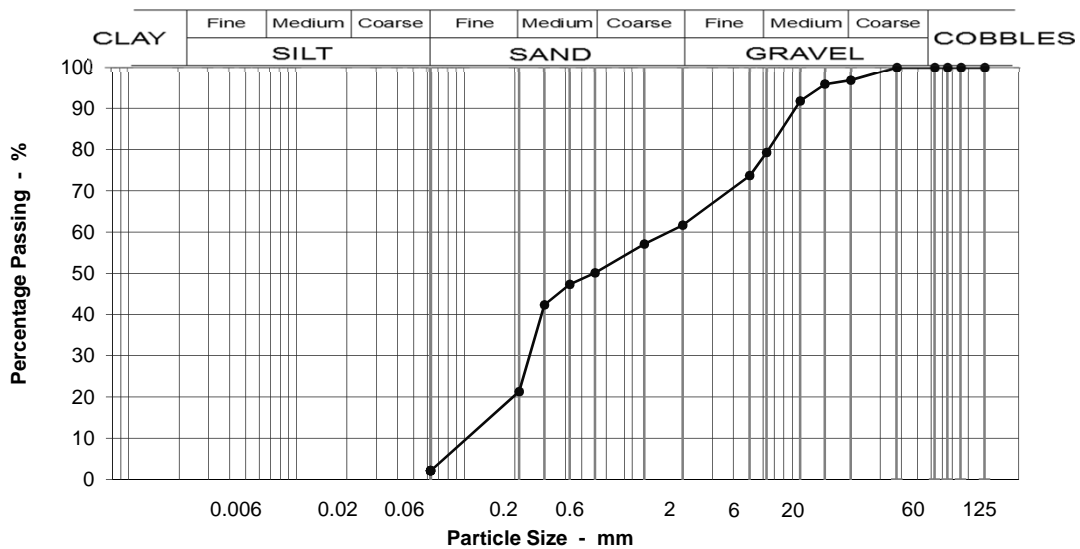
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH9 @ 32.5 - 33m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	97
14	96
10	92
6.3	79
5	74
2	62
1.18	57
0.600	50
0.425	47
0.300	42
0.212	21
0.063	2

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6E/6R, 6I, 6M, 6N.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	3
Medium GRAVEL	18
Fine GRAVEL	18
Coarse SAND	12
Medium SAND	29
Fine SAND	19
Silt & Clay	2

Grading Analysis	
D100	20
D60	1.70
D10	0.12
Uniformity Coefficient	14

Description
Grey very gravelly fine, medium and coarse SAND. Gravel is fine and medium angular to rounded flint and quartz.

Moisture content % 13

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS6180203001-610**
Our Project No. PZ1522D1
Your Sample Ref. 80
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 17-Apr-18

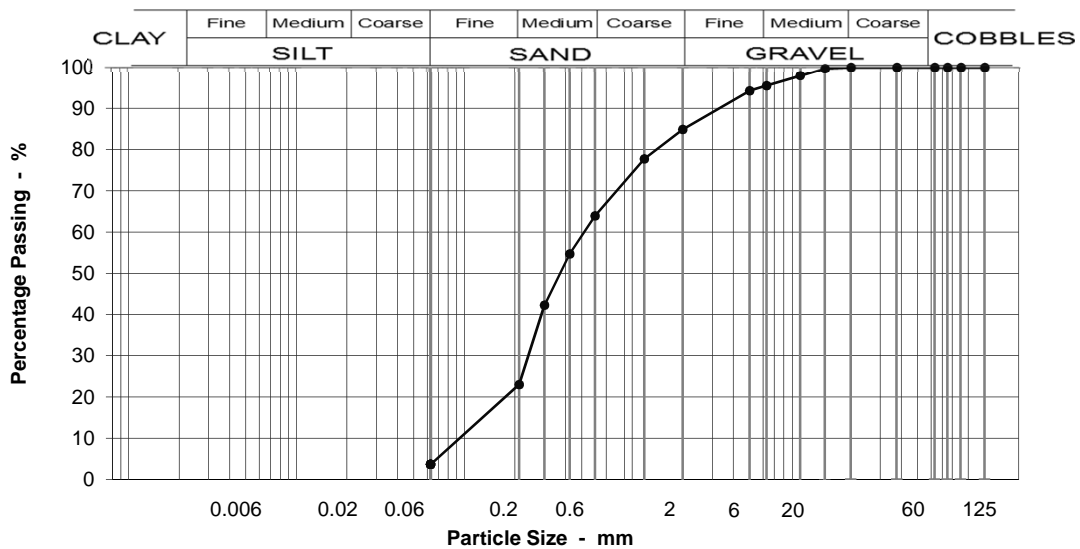
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH9 @ 32 - 32.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	98
6.3	95
5	94
2	85
1.18	78
0.600	64
0.425	55
0.300	42
0.212	23
0.063	4

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	5
Fine GRAVEL	11
Coarse SAND	21
Medium SAND	41
Fine SAND	19
Silt & Clay	4

Grading Analysis	
D100	14
D60	0.53
D10	0.11
Uniformity Coefficient	5

Description
Grey gravelly fine to coarse SAND. Gravel is rounded fine flint and quartz.

Moisture content % 19

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS6180205004-610**
Our Project No. **PZ1522D1**
Your Sample Ref **84**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **17-Apr-18**

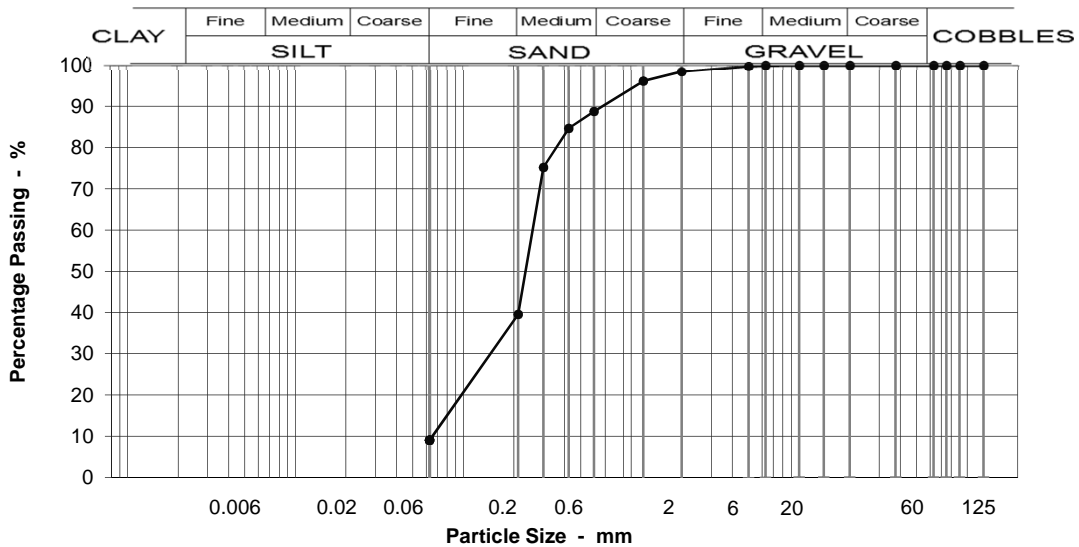
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH9 @ 34 - 34.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	98
1.18	96
0.600	89
0.425	85
0.300	75
0.212	40
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 21

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	2
Coarse SAND	10
Medium SAND	49
Fine SAND	30
Silt & Clay	9

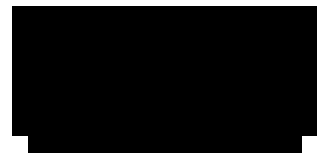
Grading Analysis	
D100	6
D60	0.26
D10	0.07
Uniformity Coefficient	4

Description	
Grey medium SAND with laminae of soft grey clay	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS6180205008-610**
Our Project No. PZ1522D1
Your Sample Ref. 88
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 17-Apr-18

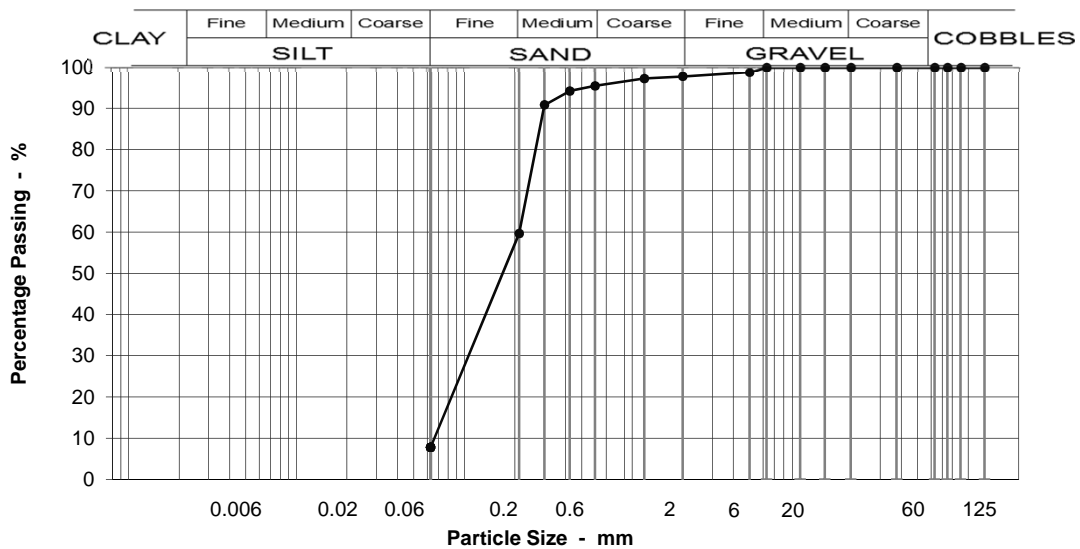
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH9 @ 37 - 37.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	99
2	98
1.18	97
0.600	95
0.425	94
0.300	91
0.212	60
0.063	8

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	2
Coarse SAND	2
Medium SAND	36
Fine SAND	52
Silt & Clay	8

Grading Analysis	
D100	5
D60	0.21
D10	0.07
Uniformity Coefficient	3

Description
Grey fine and medium SAND with laminae of soft grey clay.

Moisture content % 24

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
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Our reference No. **GTS6180205011-610**
Our Project No. PZ1522D1
Your Sample Ref. 91
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 17-Apr-18

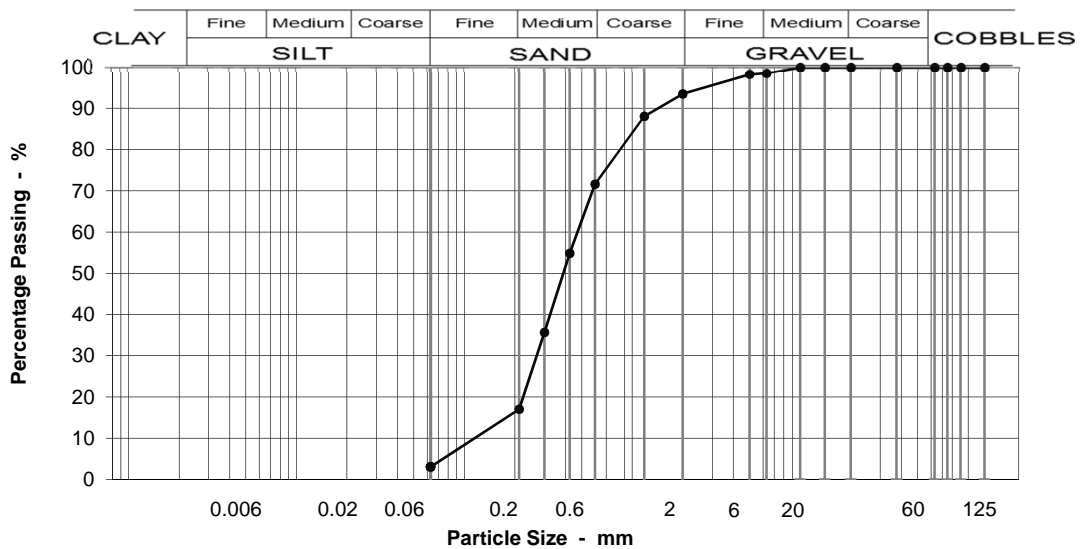
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH9 @ 39 - 39.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	99
5	98
2	93
1.18	88
0.600	72
0.425	55
0.300	36
0.212	17
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 22

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	1
Fine GRAVEL	5
Coarse SAND	22
Medium SAND	55
Fine SAND	14
Silt & Clay	3

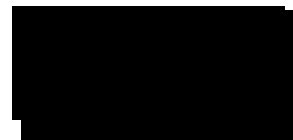
Grading Analysis	
D100	6
D60	0.48
D10	0.14
Uniformity Coefficient	4

Description
Grey slightly gravelly medium SAND with numerous shell fragments. Gravel is rounded to sub-angular flint and quartz.

Test Code = 610



Simon Holden (Project Technician)

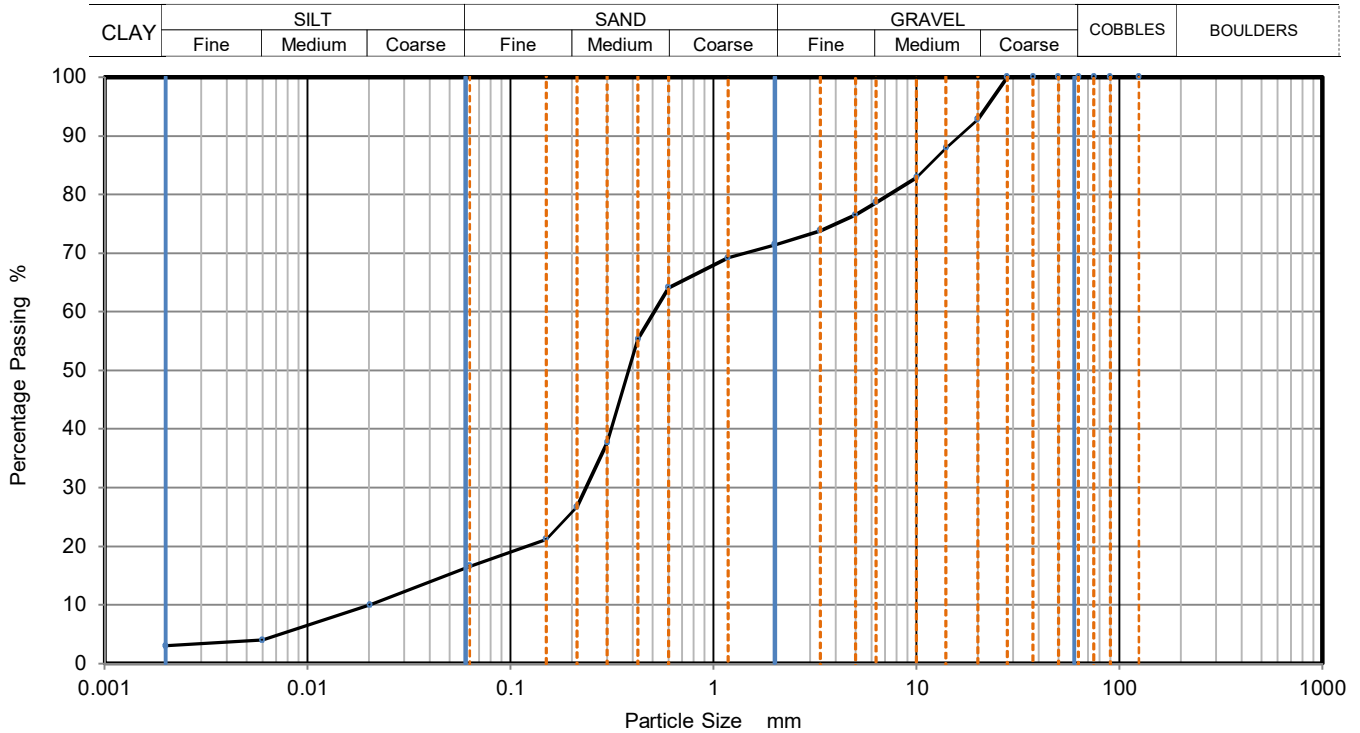




DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	MADE GROUND (Dark brown slightly clayey silty very gravelly SAND. Gravel is of flint, quartzite, shell and brick fragments)	Sample Depth (m)	0.50
		Sample Reference	B2



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	10
90	100	0.0060	4
75	100	0.0020	3
63	100		
50	100		
37.5	100		
28	100		
20	93		
14	88		
10	83		
6.3	79		
5	77		
3.35	74		
2	71		
1.18	69		
0.6	64		
0.425	55	Particle density (assumed) 2.65 Mg/m ³	
0.3	38		
0.212	27		
0.15	21		
0.063	17		

Sample Proportions	% dry mass
Very coarse	0
Gravel	29
Sand	55
Silt	13
Clay	3

Grading Analysis		
D100	mm	
D60	mm	0.511
D30	mm	0.235
D10	mm	0.019
Uniformity Coefficient		26
Curvature Coefficient		5.6

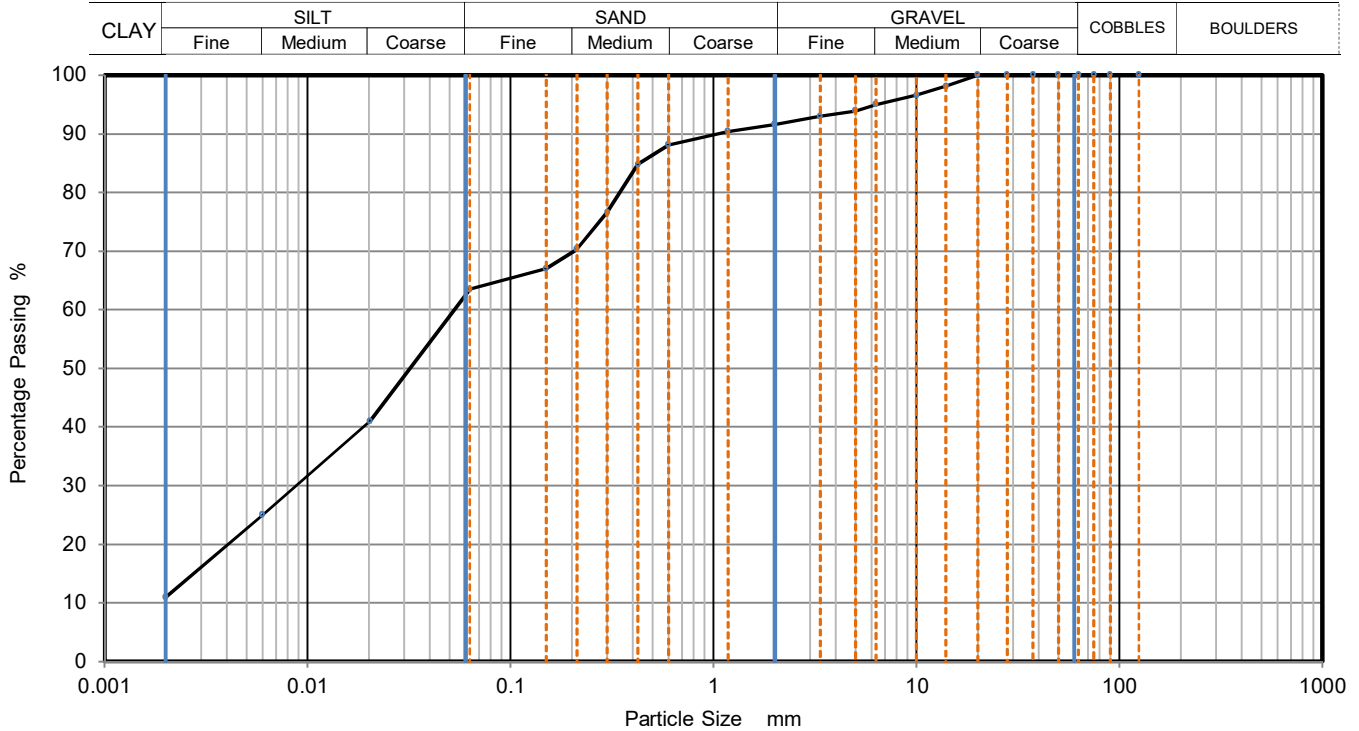
Remarks	Approved	Date	Sheet No.:
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Dark brown slightly gravelly slightly sandy clayey SILT . Gravel is of flint, quartz and shell fragments.	Sample Depth (m)	0.90
		Sample Reference	B3



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	41
90	100	0.0060	25
75	100	0.0020	11
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	98		
10	97		
6.3	95		
5	94		
3.35	93		
2	92		
1.18	90		
0.6	88		
0.425	85	Particle density (assumed) 2.65 Mg/m3	
0.3	77		
0.212	70		
0.15	67		
0.063	64		

Sample Proportions	% dry mass
Very coarse	0
Gravel	8
Sand	28
Silt	52
Clay	11

Grading Analysis		
D100	mm	
D60	mm	0.053
D30	mm	0.009
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

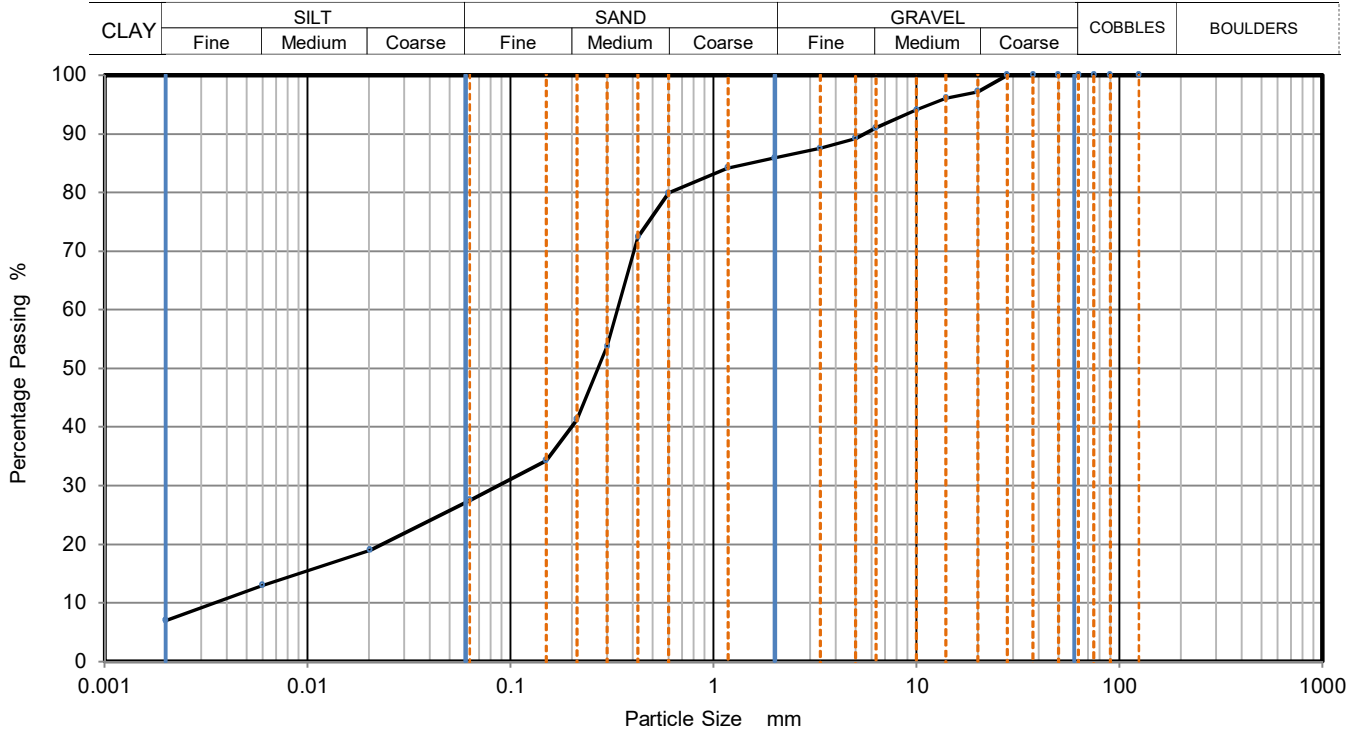
Remarks	Approved	Date	Sheet No.:
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	MADE GROUND (Dark brown clayey silty gravelly SAND. Gravel is of flint, quartz, shell fragments and brick fragments)	Sample Depth (m)	1.20
		Sample Reference	B6



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	19
90	100	0.0060	13
75	100	0.0020	7
63	100		
50	100		
37.5	100		
28	100		
20	97		
14	96		
10	94		
6.3	91		
5	89		
3.35	88		
2	86		
1.18	84		
0.6	80		
0.425	72	Particle density (assumed) 2.65 Mg/m ³	
0.3	54		
0.212	41		
0.15	34		
0.063	28		

Sample Proportions	% dry mass
Very coarse	0
Gravel	14
Sand	59
Silt	21
Clay	7

Grading Analysis		
D100	mm	
D60	mm	0.337
D30	mm	0.087
D10	mm	0.004
Uniformity Coefficient		92
Curvature Coefficient		6

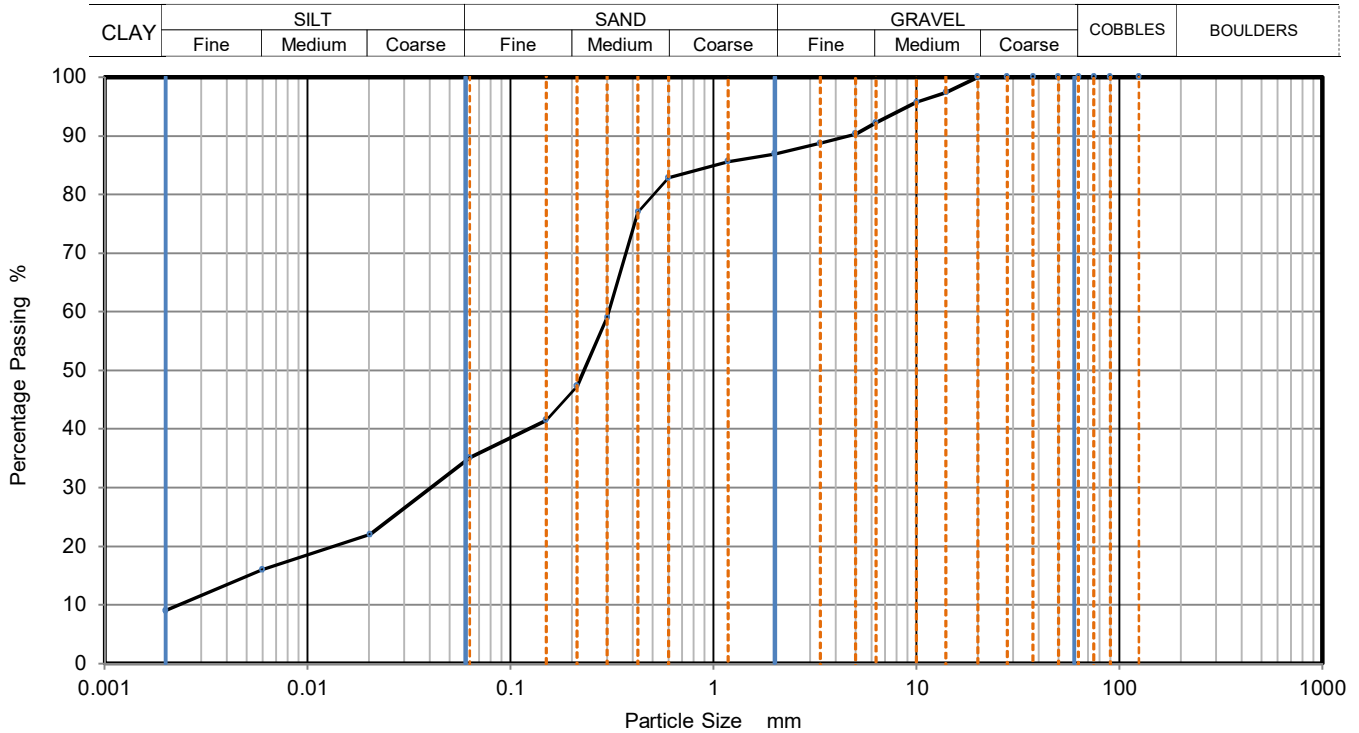
Remarks	Approved	Date	Sheet No.:
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Grey brown mottled dark grey clayey silty gravelly SAND. Gravel is of flint and shell fragments.	Sample Depth (m)	2.00
		Sample Reference	B9



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	22
90	100	0.0060	16
75	100	0.0020	9
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	97		
10	96		
6.3	92		
5	90		
3.35	89		
2	87		
1.18	86		
0.6	83		
0.425	77	Particle density (assumed) 2.65 Mg/m ³	
0.3	59		
0.212	47		
0.15	42		
0.063	35		

Sample Proportions	% dry mass
Very coarse	0
Gravel	13
Sand	52
Silt	26
Clay	9

Grading Analysis		
D100	mm	
D60	mm	0.306
D30	mm	0.041
D10	mm	0.002
Uniformity Coefficient		140
Curvature Coefficient		2.5

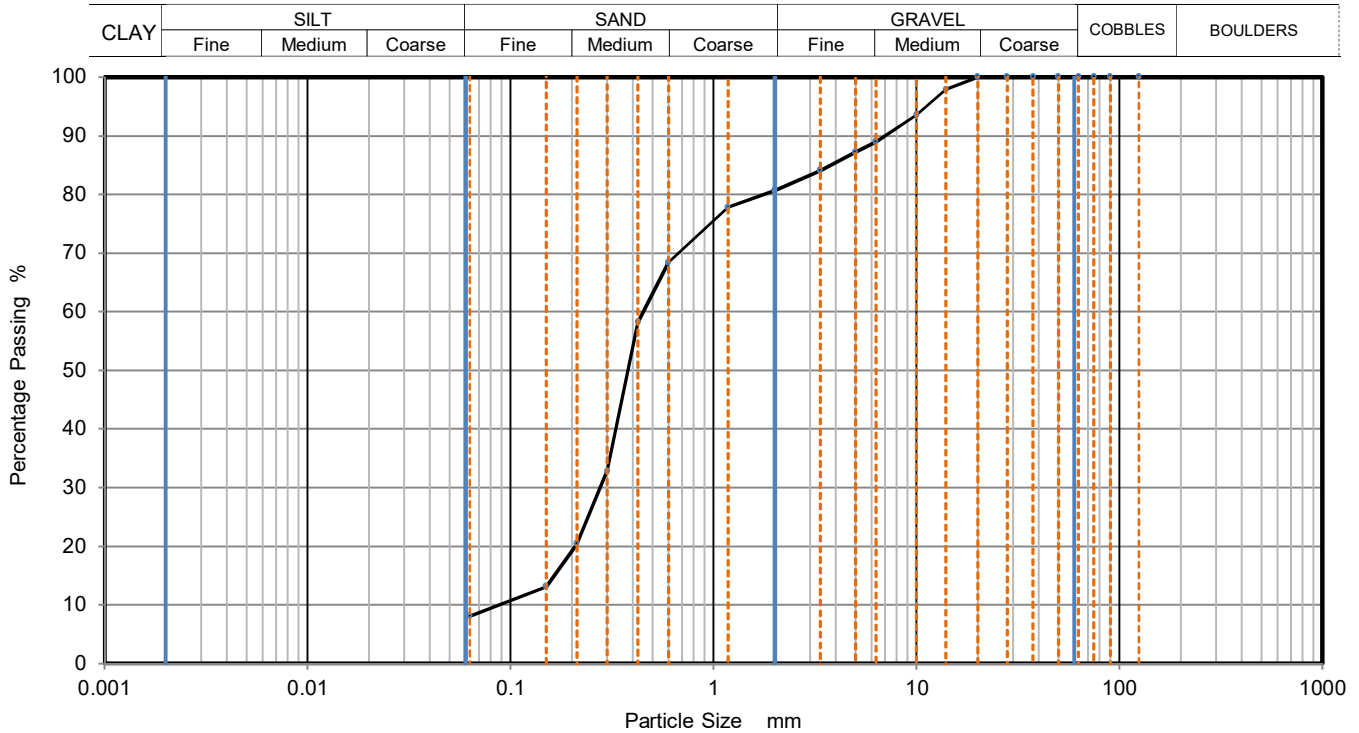
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Dark grey brown silty gravelly SAND. Gravel is of flint and quartzite.	Sample Depth (m)	3.50
		Sample Reference	B14



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	98		
10	94		
6.3	89		
5	87		
3.35	84		
2	81		
1.18	78		
0.6	68		
0.425	58		
0.3	33		
0.212	20		
0.15	13		
0.063	8		

Sample Proportions	% dry mass
Very coarse	0
Gravel	19
Sand	73
Fines <0.063mm	8

Grading Analysis		
D100	mm	
D60	mm	0.452
D30	mm	0.278
D10	mm	0.087
Uniformity Coefficient		5.2
Curvature Coefficient		2

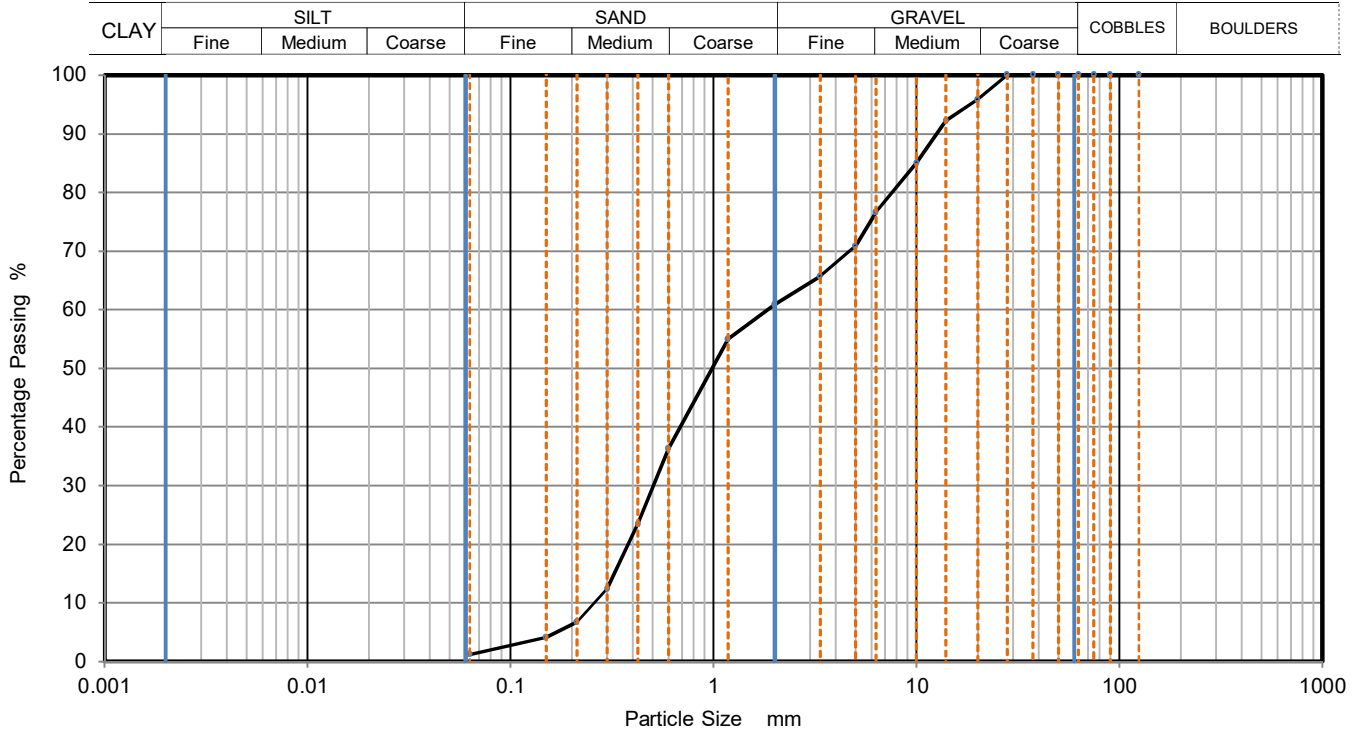
Remarks	Approved	Date	Sheet No.:
	MW	31/05/2018	1 of 1



DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Grey slightly silty very gravelly SAND. Gravel is of flint and quartzite	Sample Depth (m)	4.00
		Sample Reference	B16



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	96		
14	92		
10	85		
6.3	77		
5	71		
3.35	66		
2	61		
1.18	55		
0.6	36		
0.425	23		
0.3	12		
0.212	7		
0.15	4		
0.063	1		

Sample Proportions	% dry mass
Very coarse	0
Gravel	39
Sand	60
Fines <0.063mm	1

Grading Analysis		
D100	mm	
D60	mm	1.850
D30	mm	0.507
D10	mm	0.259
Uniformity Coefficient		7.1
Curvature Coefficient		0.53

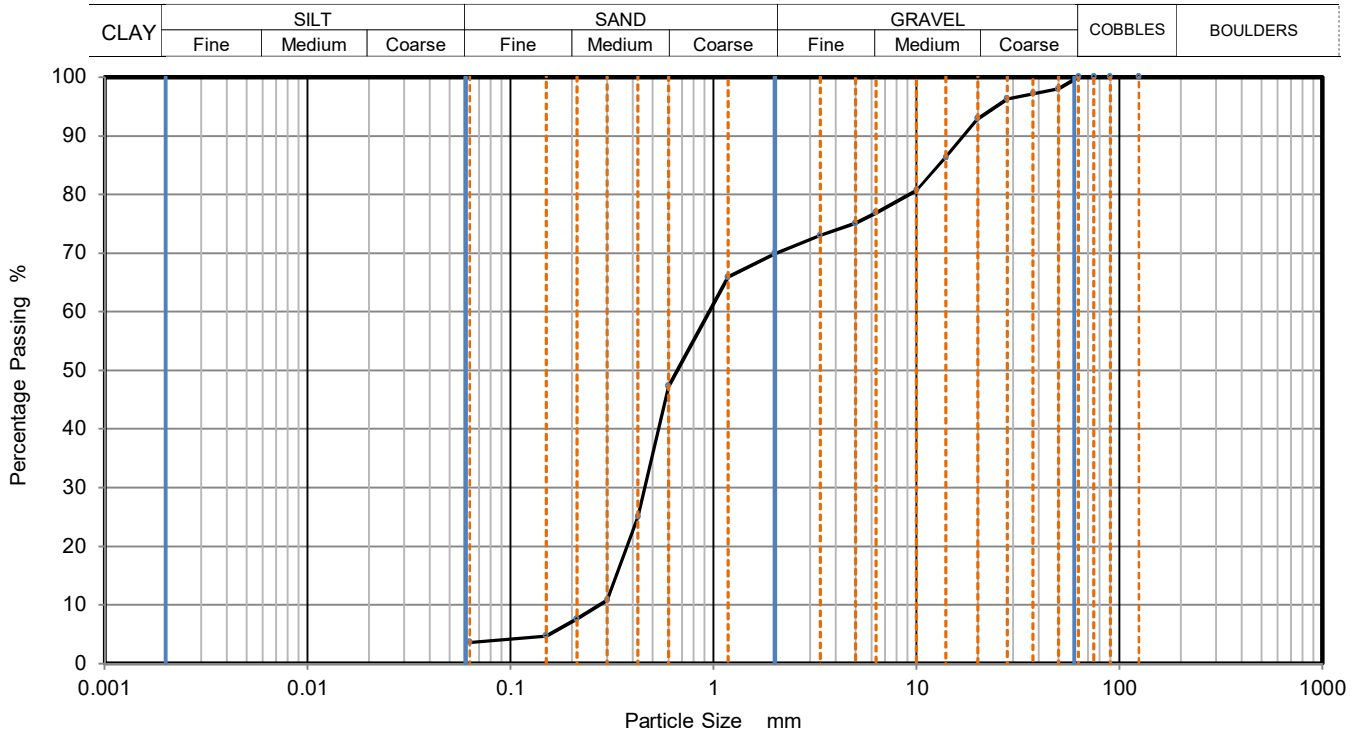
Remarks	Approved	Date	Sheet No.:
	MW	31/05/2018	1 of 1



DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Brown slightly silty very gravelly SAND. Gravel is of flint and quartzite.	Sample Depth (m)	5.00
		Sample Reference	B19



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	98		
37.5	97		
28	96		
20	93		
14	86		
10	81		
6.3	77		
5	75		
3.35	73		
2	70		
1.18	66		
0.6	47		
0.425	25		
0.3	11		
0.212	8		
0.15	5		
0.063	4		

Sample Proportions	% dry mass
Very coarse	0
Gravel	30
Sand	66
Fines <0.063mm	4

Grading Analysis		
D100	mm	
D60	mm	0.952
D30	mm	0.459
D10	mm	0.274
Uniformity Coefficient		3.5
Curvature Coefficient		0.81

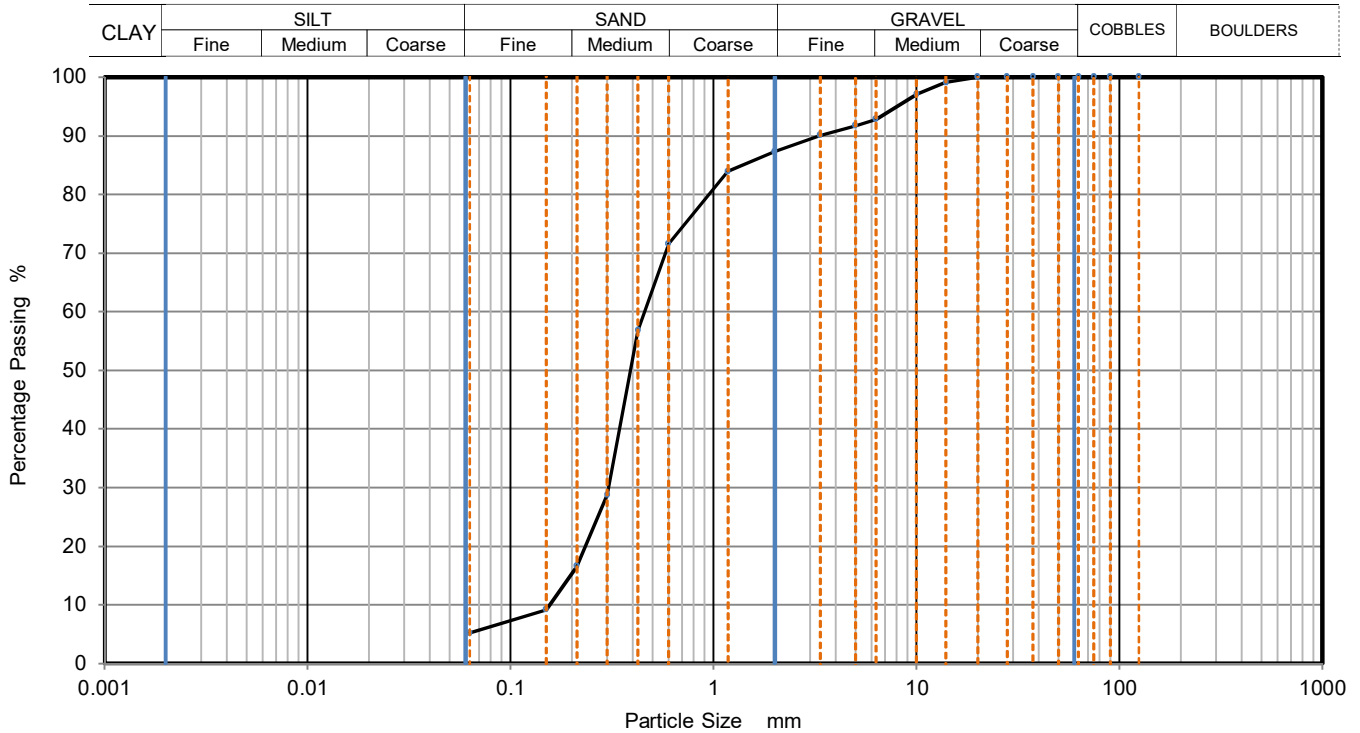
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Brown and grey brown slightly silty gravelly SAND. Gravel is of flint.	Sample Depth (m)	8.00
		Sample Reference	B28



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	99		
10	97		
6.3	93		
5	92		
3.35	90		
2	87		
1.18	84		
0.6	72		
0.425	57		
0.3	29		
0.212	17		
0.15	9		
0.063	5		

Sample Proportions	% dry mass
Very coarse	0
Gravel	13
Sand	82
Fines <0.063mm	5

Grading Analysis		
D100	mm	
D60	mm	0.458
D30	mm	0.305
D10	mm	0.155
Uniformity Coefficient		2.9
Curvature Coefficient		1.3

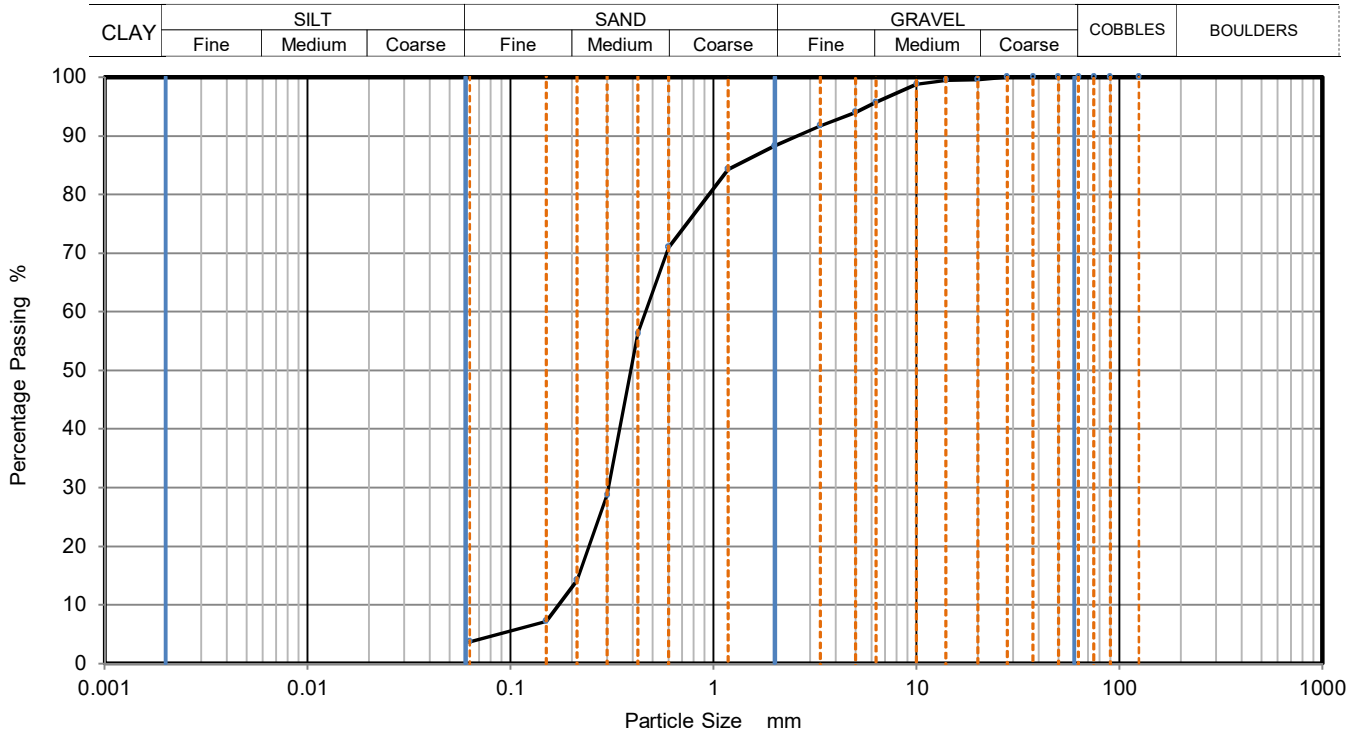
Remarks	Approved	Date	Sheet No.:
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Brown slightly silty gravelly SAND. Gravel is of flint and quartzite.	Sample Depth (m)	9.00
		Sample Reference	B31



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99		
6.3	96		
5	94		
3.35	92		
2	88		
1.18	84		
0.6	71		
0.425	56		
0.3	29		
0.212	14		
0.15	7		
0.063	4		

Sample Proportions	% dry mass
Very coarse	0
Gravel	12
Sand	85
Fines <0.063mm	4

Grading Analysis		
D100	mm	
D60	mm	0.464
D30	mm	0.305
D10	mm	0.172
Uniformity Coefficient		2.7
Curvature Coefficient		1.2

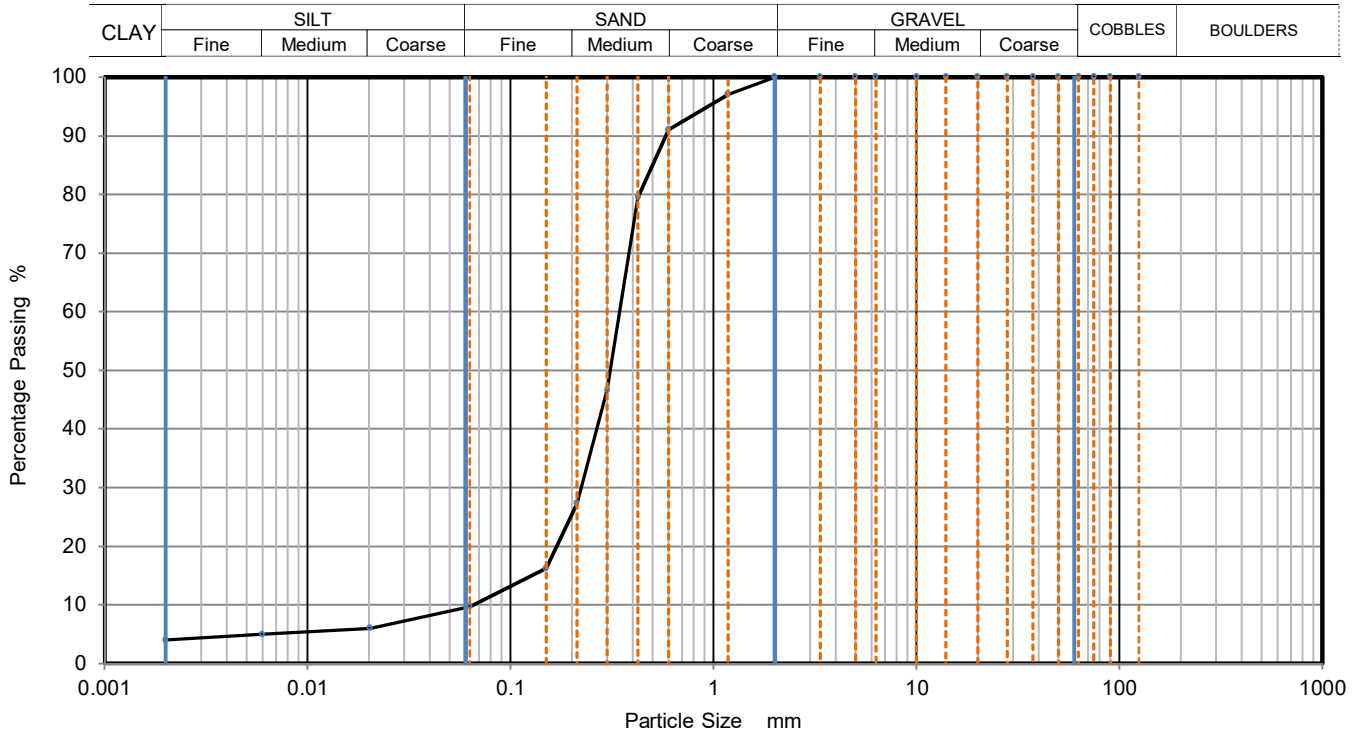
Remarks	Approved	Date	Sheet No.:
	MW	31/05/2018	1 of 1



DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Brown slightly clayey silty SAND.	Sample Depth (m)	10.00
		Sample Reference	B34



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	6
90	100	0.0060	5
75	100	0.0020	4
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	97		
0.6	91		
0.425	80	Particle density (assumed) 2.65 Mg/m3	
0.3	47		
0.212	27		
0.15	16		
0.063	10		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	90
Silt	6
Clay	4

Grading Analysis		
D100	mm	
D60	mm	0.345
D30	mm	0.222
D10	mm	0.066
Uniformity Coefficient		5.2
Curvature Coefficient		2.2

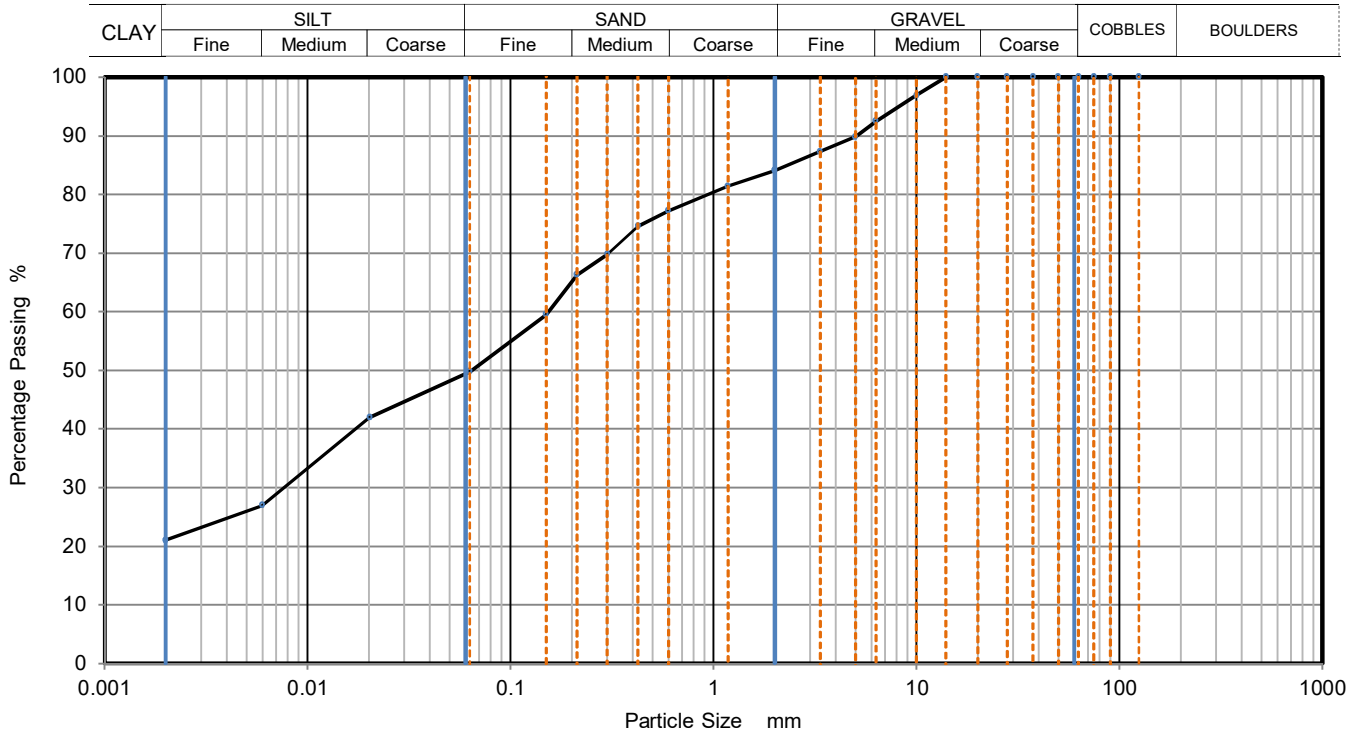
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Grey brown and orange brown slightly gravelly slightly sandy CLAY. Gravel is of sandstone.	Sample Depth (m)	11.20
		Sample Reference	B43



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	42
90	100	0.0060	27
75	100	0.0020	21
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	97		
6.3	93		
5	90		
3.35	87		
2	84		
1.18	81		
0.6	77		
0.425	75	Particle density (assumed) 2.65 Mg/m3	
0.3	70		
0.212	66		
0.15	60		
0.063	50		

Sample Proportions	% dry mass
Very coarse	0
Gravel	16
Sand	34
Silt	29
Clay	21

Grading Analysis		
D100	mm	
D60	mm	0.154
D30	mm	0.008
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

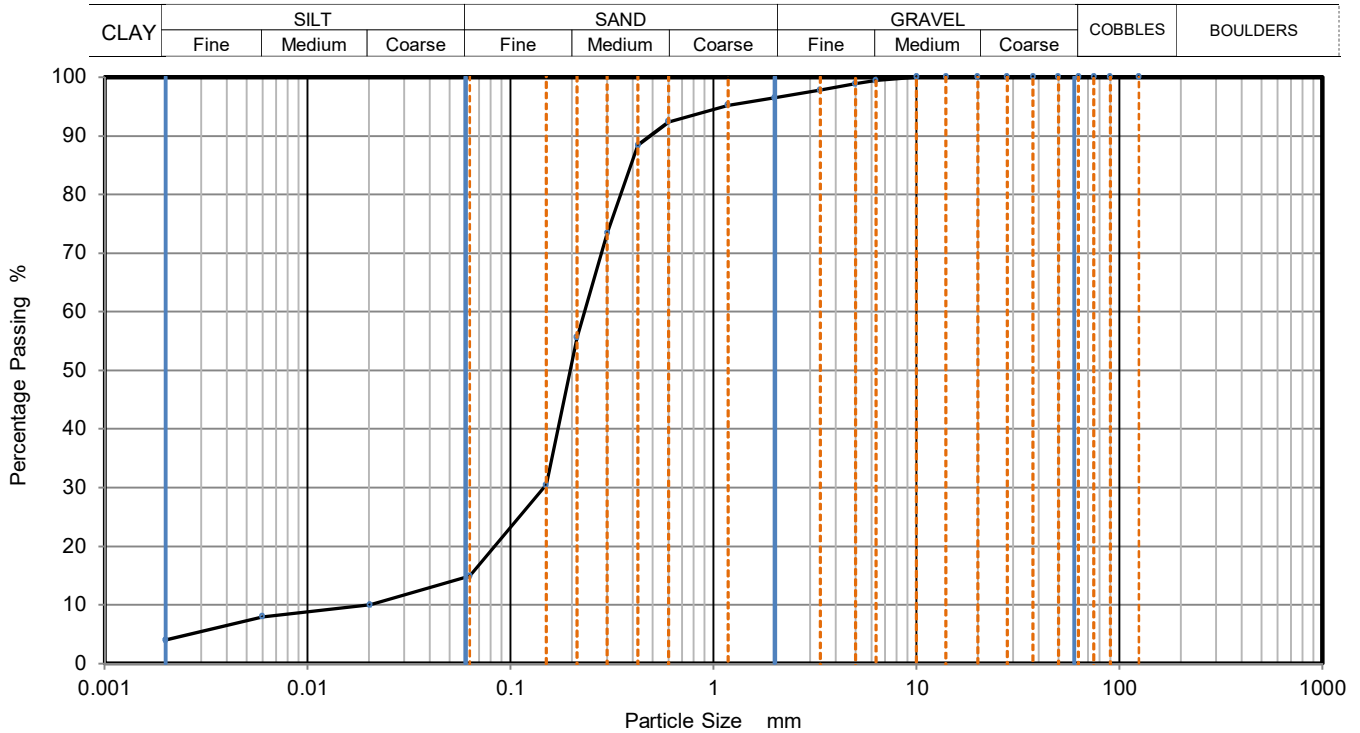
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Orange brown mottled grey slightly clayey silty slightly gravelly SAND. Gravel is of flint	Sample Depth (m)	12.00
		Sample Reference	B40



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	10
90	100	0.0060	8
75	100	0.0020	4
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5	99		
3.35	98		
2	97		
1.18	95		
0.6	92		
0.425	88	Particle density (assumed) 2.65 Mg/m ³	
0.3	73		
0.212	56		
0.15	30		
0.063	15		

Sample Proportions	% dry mass
Very coarse	0
Gravel	4
Sand	82
Silt	11
Clay	4

Grading Analysis		
D100	mm	
D60	mm	0.231
D30	mm	0.146
D10	mm	0.019
Uniformity Coefficient		12
Curvature Coefficient		5

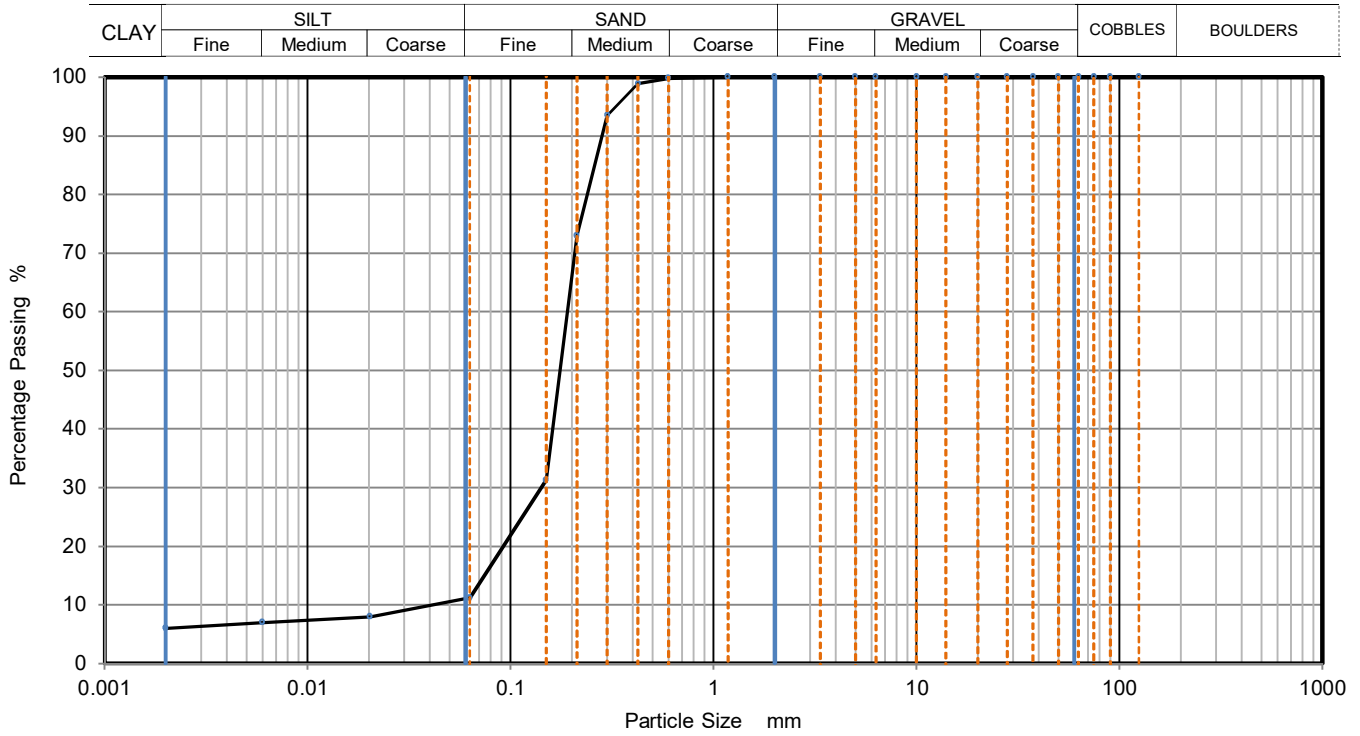
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Orange brown clayey slightly silty SAND.	Sample Depth (m)	14.00
		Sample Reference	B46



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	8
90	100	0.0060	7
75	100	0.0020	6
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	99	Particle density (assumed) 2.65 Mg/m ³	
0.3	94		
0.212	73		
0.15	31		
0.063	11		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	89
Silt	5
Clay	6

Grading Analysis		
D100	mm	
D60	mm	0.190
D30	mm	0.142
D10	mm	0.039
Uniformity Coefficient		4.8
Curvature Coefficient		2.7

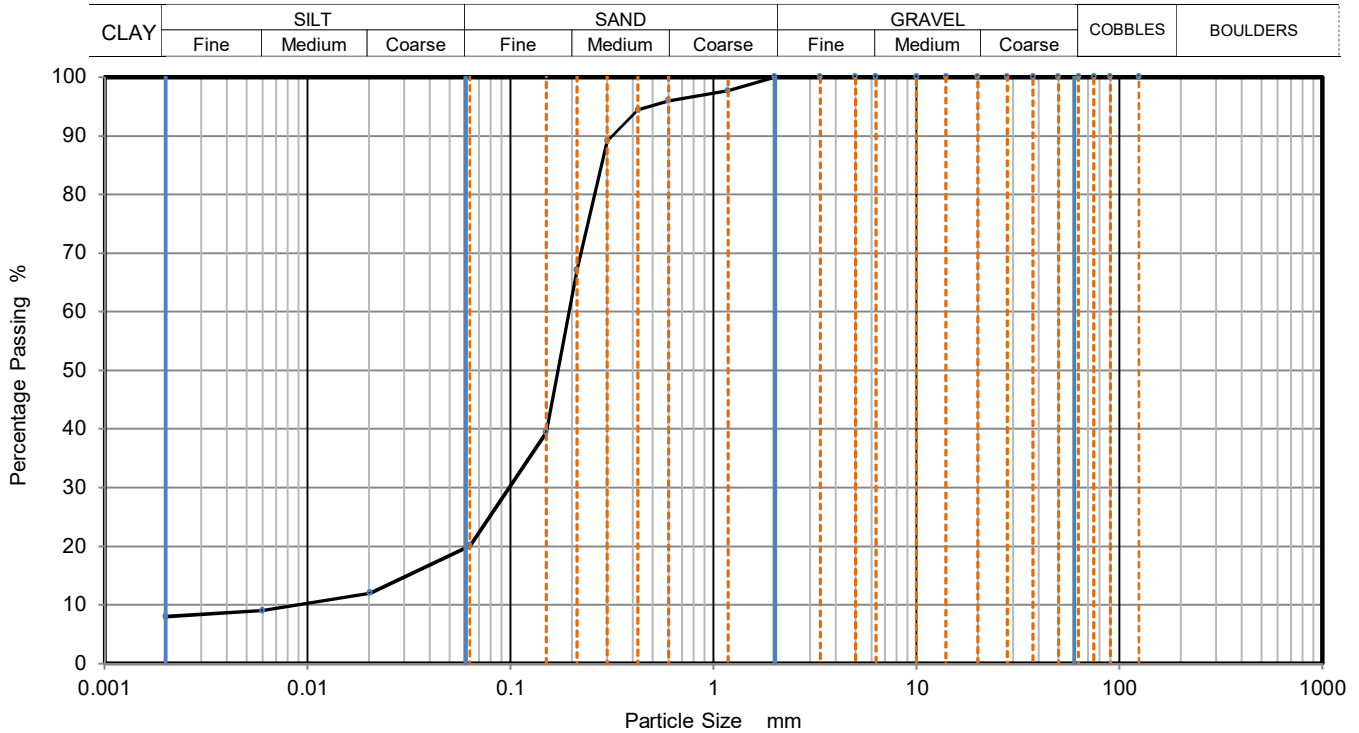
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Brown clayey silty SAND.	Sample Depth (m)	15.00
		Sample Reference	B49



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	12
90	100	0.0060	9
75	100	0.0020	8
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	98		
0.6	96		
0.425	94		
0.3	89		
0.212	67		
0.15	39		
0.063	20		
		Particle density (assumed) 2.65 Mg/m ³	

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	80
Silt	12
Clay	8

Grading Analysis		
D100	mm	
D60	mm	0.194
D30	mm	0.098
D10	mm	0.009
Uniformity Coefficient		22
Curvature Coefficient		5.5

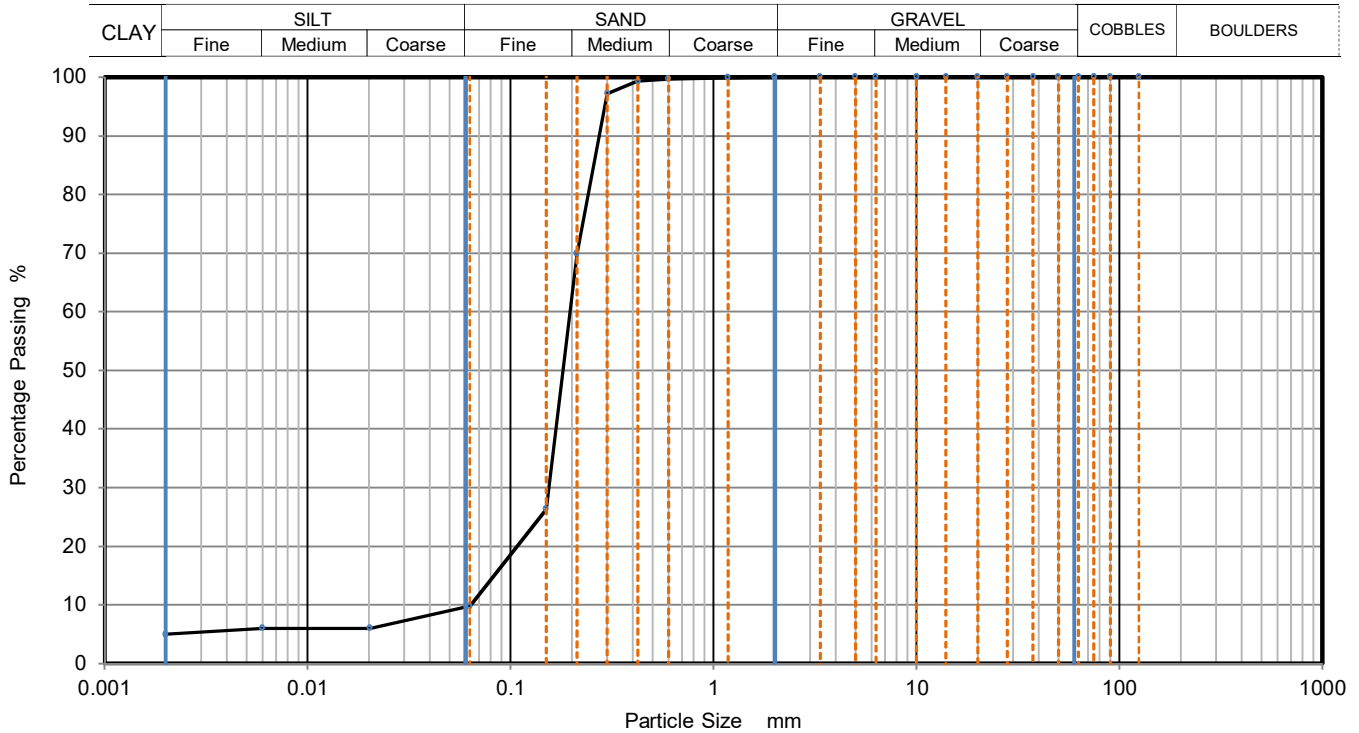
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Brown slightly clayey slightly silty SAND.	Sample Depth (m)	16.00
		Sample Reference	B51



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	6
90	100	0.0060	6
75	100	0.0020	5
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	99	Particle density (assumed) 2.65 Mg/m3	
0.3	97		
0.212	70		
0.15	26		
0.063	10		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	90
Silt	5
Clay	5

Grading Analysis		
D100	mm	
D60	mm	0.196
D30	mm	0.154
D10	mm	0.064
Uniformity Coefficient		3.1
Curvature Coefficient		1.9

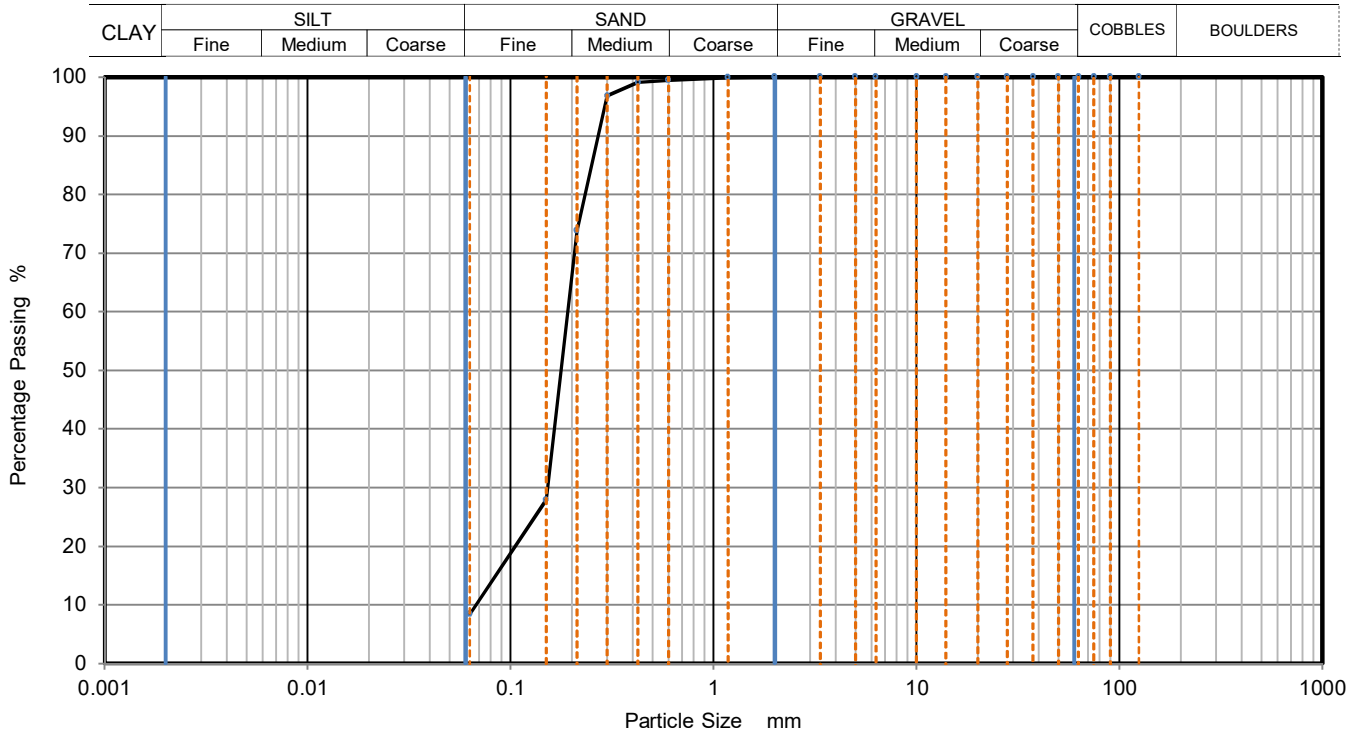
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Brown silty SAND.	Sample Depth (m)	17.00
		Sample Reference	B53



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	99		
0.3	97		
0.212	74		
0.15	28		
0.063	8		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	92
Fines <0.063mm	8

Grading Analysis		
D100	mm	
D60	mm	0.191
D30	mm	0.152
D10	mm	0.068
Uniformity Coefficient		2.8
Curvature Coefficient		1.8

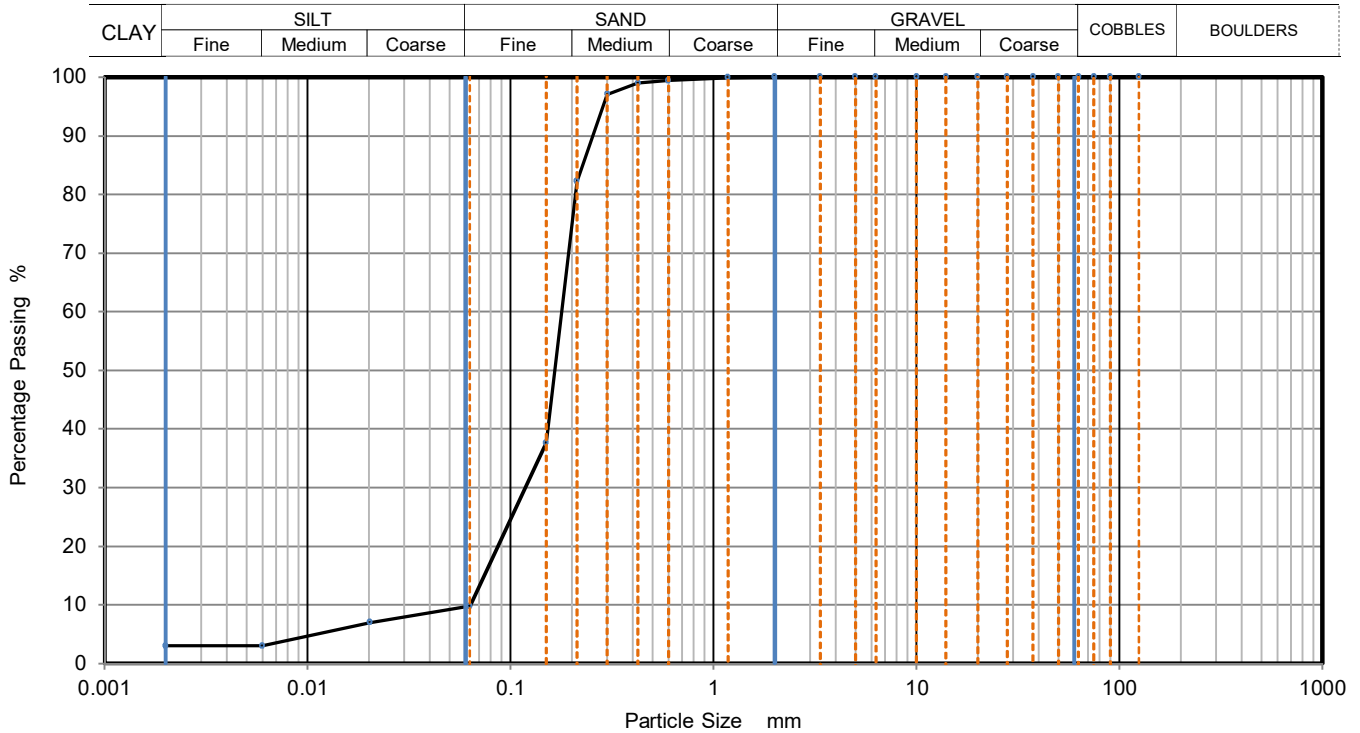
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Brown slightly clayey silty SAND.	Sample Depth (m)	19.00
		Sample Reference	B58



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	7
90	100	0.0060	3
75	100	0.0020	3
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	97		
0.212	82		
0.15	38		
0.063	10		
		Particle density (assumed) 2.65 Mg/m ³	

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	90
Silt	7
Clay	3

Grading Analysis		
D100	mm	
D60	mm	0.178
D30	mm	0.118
D10	mm	0.064
Uniformity Coefficient		2.8
Curvature Coefficient		1.2

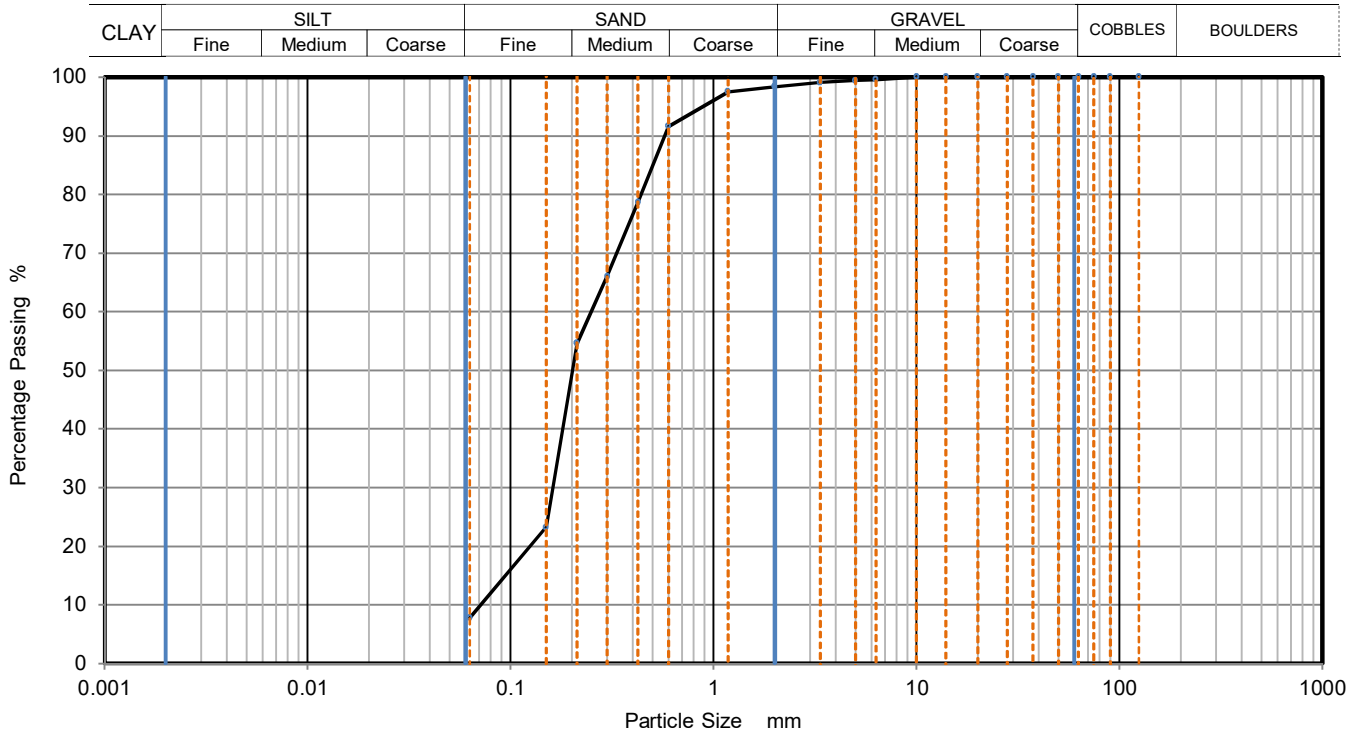
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Brown silty slightly gravelly SAND. Gravel is of chalk and shell fragments.	Sample Depth (m)	20.00
		Sample Reference	B60



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	99		
3.35	99		
2	98		
1.18	98		
0.6	92		
0.425	79		
0.3	66		
0.212	55		
0.15	23		
0.063	8		

Sample Proportions	% dry mass
Very coarse	0
Gravel	2
Sand	91
Fines <0.063mm	8

Grading Analysis		
D100	mm	
D60	mm	0.250
D30	mm	0.162
D10	mm	0.072
Uniformity Coefficient		3.5
Curvature Coefficient		1.5

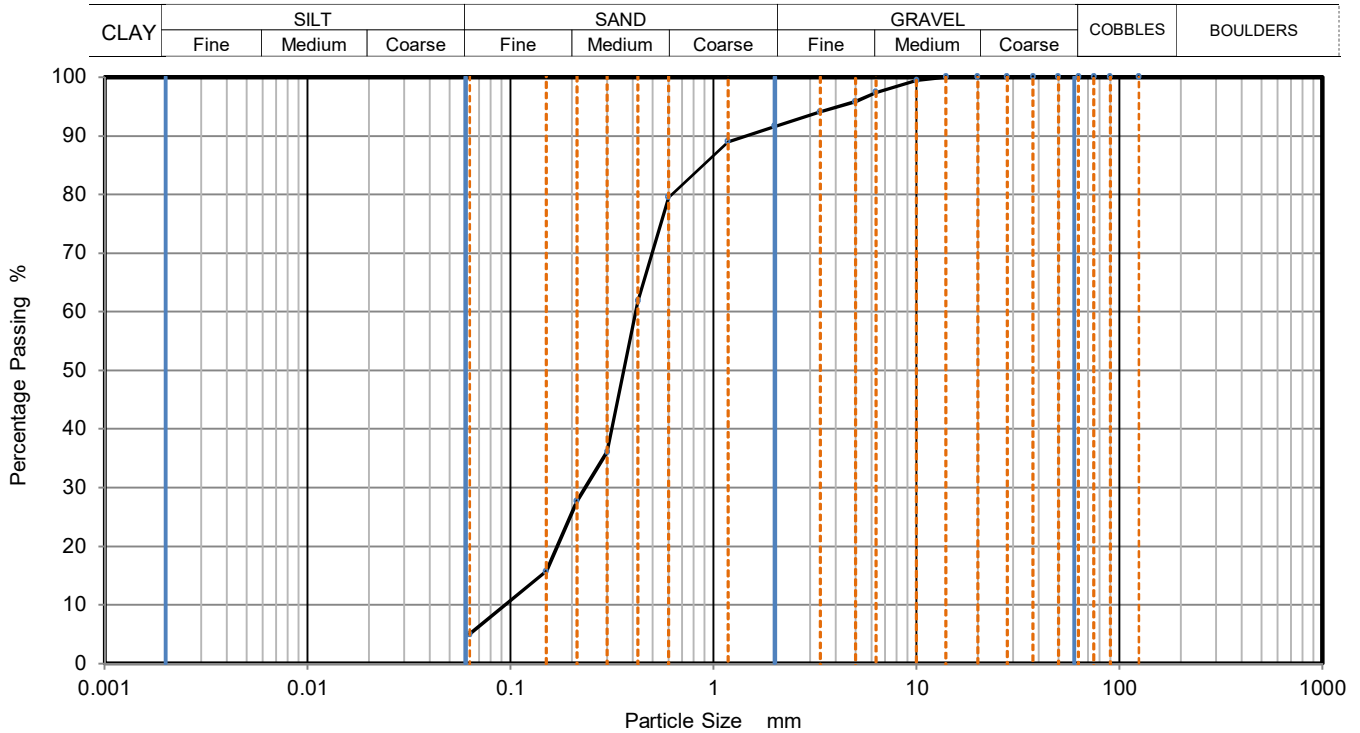
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Grey brown slightly silty gravelly SAND. Gravel is of chalk and shell fragments.	Sample Depth (m)	21.00
		Sample Reference	B61



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99		
6.3	97		
5	96		
3.35	94		
2	92		
1.18	89		
0.6	80		
0.425	62		
0.3	36		
0.212	28		
0.15	16		
0.063	5		

Sample Proportions	% dry mass
Very coarse	0
Gravel	8
Sand	87
Fines <0.063mm	5

Grading Analysis		
D100	mm	
D60	mm	0.415
D30	mm	0.233
D10	mm	0.094
Uniformity Coefficient		4.4
Curvature Coefficient		1.4

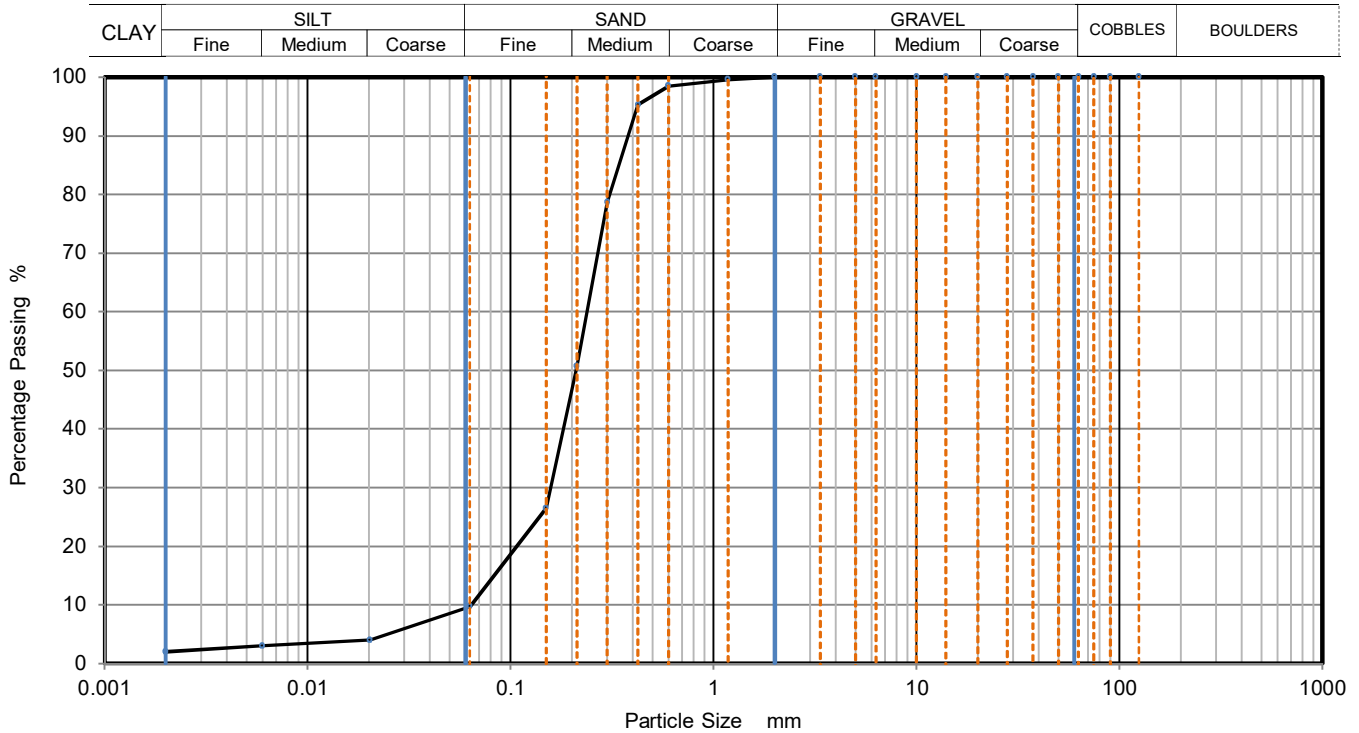
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Grey slightly clayey silty SAND.	Sample Depth (m)	23.00
		Sample Reference	B64



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	4
90	100	0.0060	3
75	100	0.0020	2
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99	Particle density (assumed)	
0.425	95	2.65	Mg/m3
0.3	79		
0.212	51		
0.15	27		
0.063	10		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	90
Silt	7
Clay	2

Grading Analysis		
D100	mm	
D60	mm	0.238
D30	mm	0.158
D10	mm	0.064
Uniformity Coefficient		3.7
Curvature Coefficient		1.6

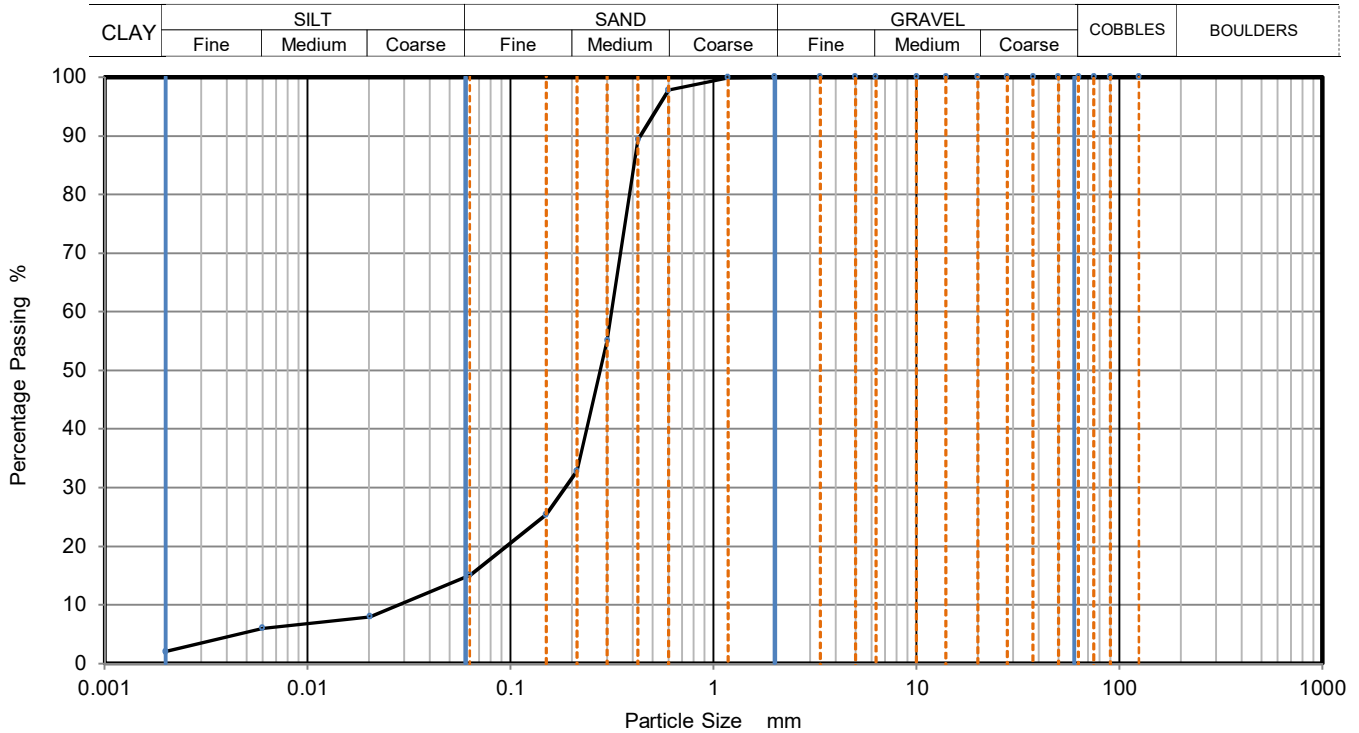
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Grey slightly clayey silty SAND.	Sample Depth (m)	27.00
		Sample Reference	B71



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	8
90	100	0.0060	6
75	100	0.0020	2
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	98	Particle density (assumed)	
0.425	89	2.65	Mg/m3
0.3	55		
0.212	33		
0.15	25		
0.063	15		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	85
Silt	13
Clay	2

Grading Analysis		
D100	mm	
D60	mm	0.315
D30	mm	0.186
D10	mm	0.029
Uniformity Coefficient		11
Curvature Coefficient		3.8

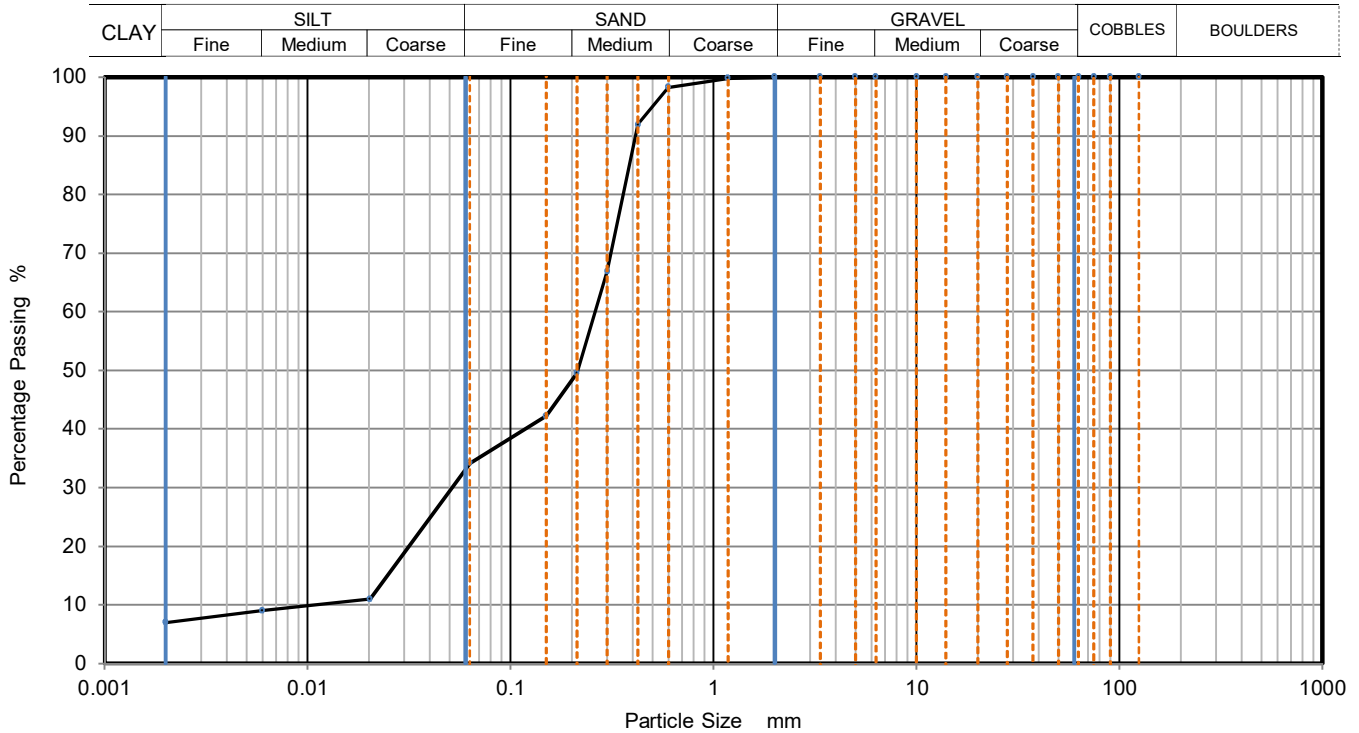
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Grey and blue grey clayey very silty SAND	Sample Depth (m)	28.00
		Sample Reference	B73



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	11
90	100	0.0060	9
75	100	0.0020	7
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	98		
0.425	92		
0.3	67		
0.212	50		
0.15	42		
0.063	34		
		Particle density (assumed) 2.65 Mg/m ³	

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	66
Silt	27
Clay	7

Grading Analysis		
D100	mm	
D60	mm	0.261
D30	mm	0.051
D10	mm	0.013
Uniformity Coefficient		20
Curvature Coefficient		0.77

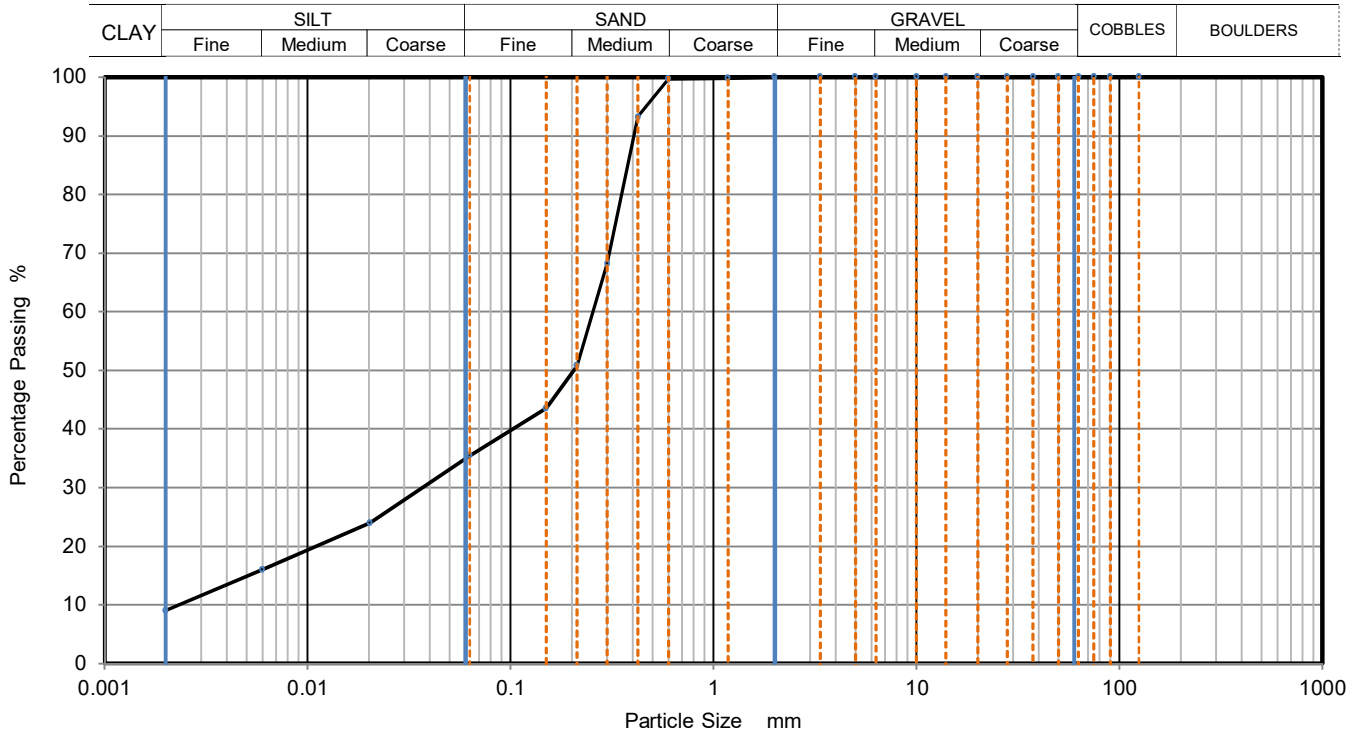
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Dark grey sandy clayey SILT	Sample Depth (m)	30.00
		Sample Reference	D75



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	24
90	100	0.0060	16
75	100	0.0020	9
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	93	Particle density (assumed) 2.65 Mg/m ³	
0.3	68		
0.212	51		
0.15	44		
0.063	36		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	65
Silt	27
Clay	9

Grading Analysis		
D100	mm	
D60	mm	0.255
D30	mm	0.036
D10	mm	0.002
Uniformity Coefficient		100
Curvature Coefficient		2

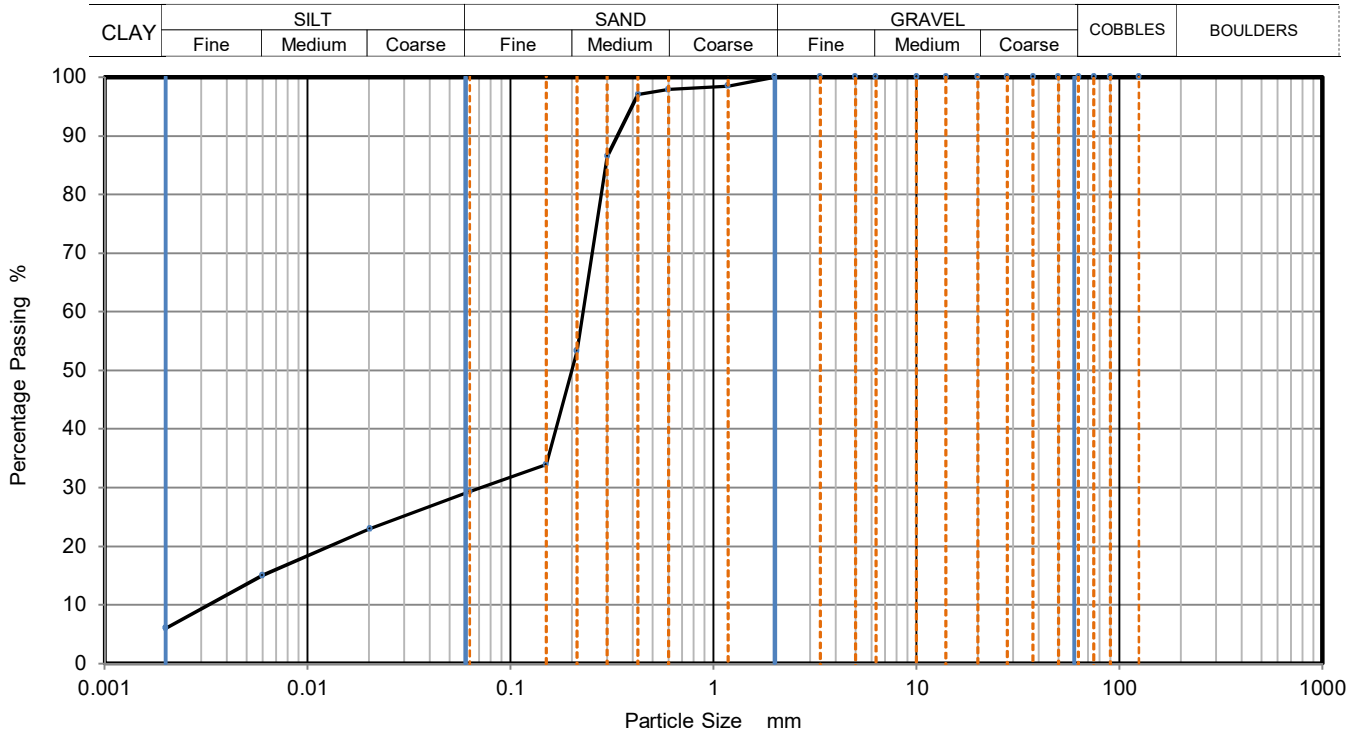
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Grey clayey very silty SAND	Sample Depth (m)	32.00
		Sample Reference	B80



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	23
90	100	0.0060	15
75	100	0.0020	6
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	98		
0.425	97	Particle density (assumed) 2.65 Mg/m ³	
0.3	87		
0.212	53		
0.15	34		
0.063	29		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	71
Silt	23
Clay	6

Grading Analysis		
D100	mm	
D60	mm	0.227
D30	mm	0.072
D10	mm	0.003
Uniformity Coefficient		72
Curvature Coefficient		7.1

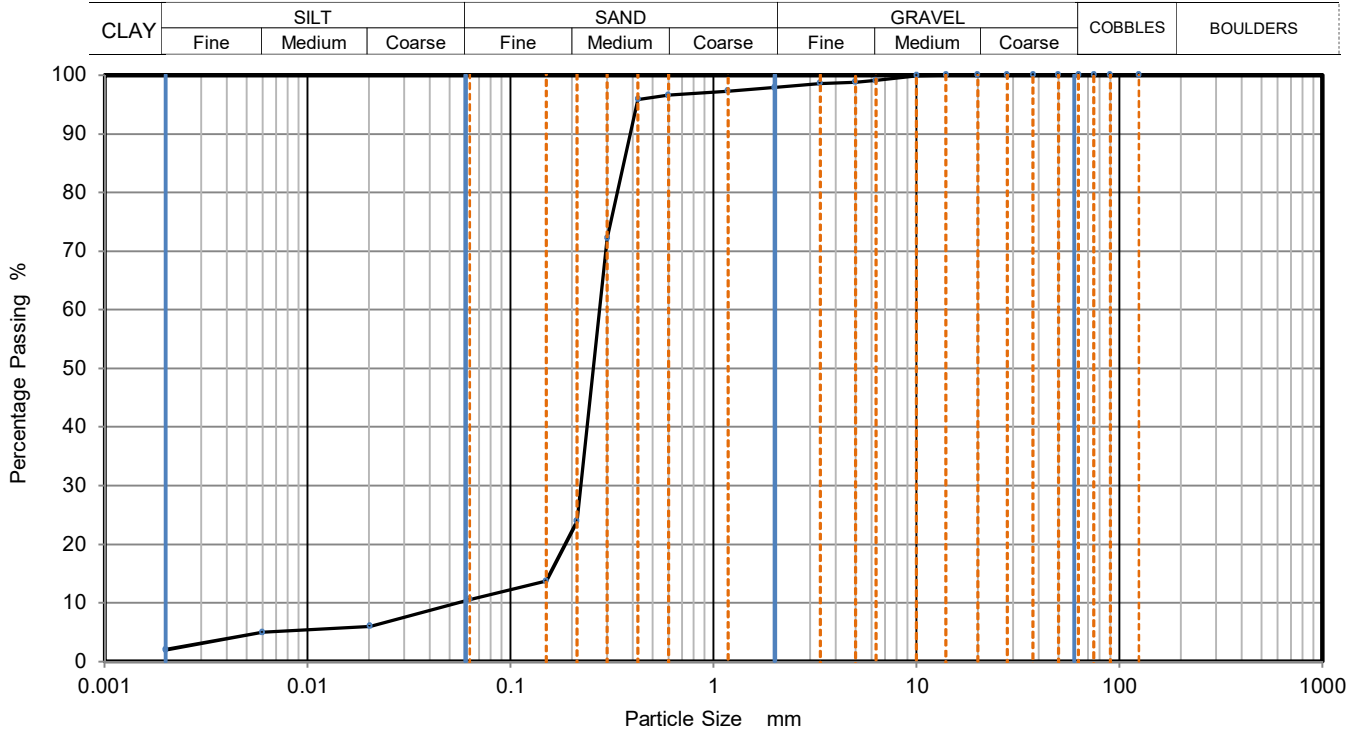
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Grey slightly clayey silty slightly gravelly SAND. Gravel is of shell fragments	Sample Depth (m)	33.00
		Sample Reference	B81



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	6
90	100	0.0060	5
75	100	0.0020	2
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5	99		
3.35	99		
2	98		
1.18	97		
0.6	97		
0.425	96	Particle density (assumed) 2.65 Mg/m3	
0.3	72		
0.212	24		
0.15	14		
0.063	11		

Sample Proportions	% dry mass
Very coarse	0
Gravel	2
Sand	87
Silt	9
Clay	2

Grading Analysis		
D100	mm	
D60	mm	0.275
D30	mm	0.222
D10	mm	0.055
Uniformity Coefficient		5
Curvature Coefficient		3.3

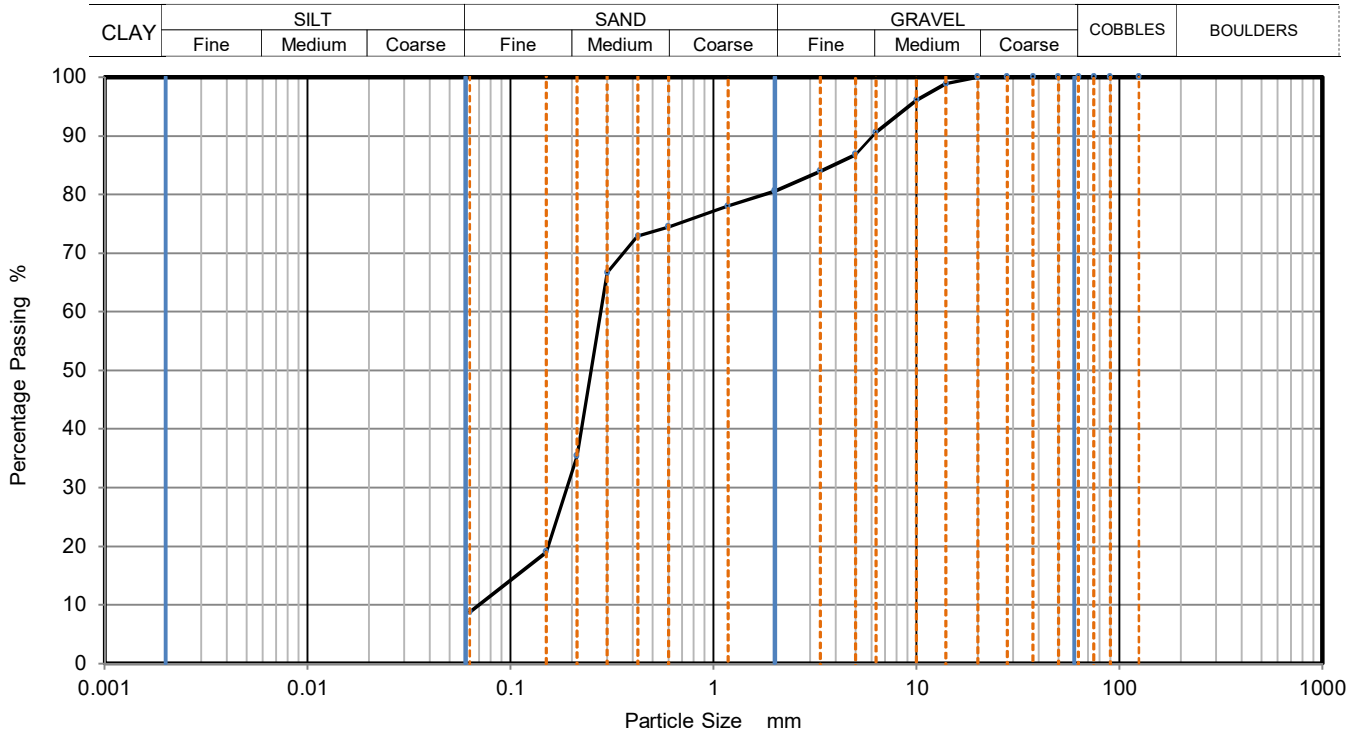
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Grey silty gravelly SAND. Gravel is of shell fragments.	Sample Depth (m)	35.00
		Sample Reference	B85



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	99		
10	96		
6.3	91		
5	87		
3.35	84		
2	81		
1.18	78		
0.6	75		
0.425	73		
0.3	67		
0.212	35		
0.15	19		
0.063	9		

Sample Proportions	% dry mass
Very coarse	0
Gravel	19
Sand	72
Fines <0.063mm	9

Grading Analysis		
D100	mm	
D60	mm	0.279
D30	mm	0.189
D10	mm	0.070
Uniformity Coefficient		4
Curvature Coefficient		1.8

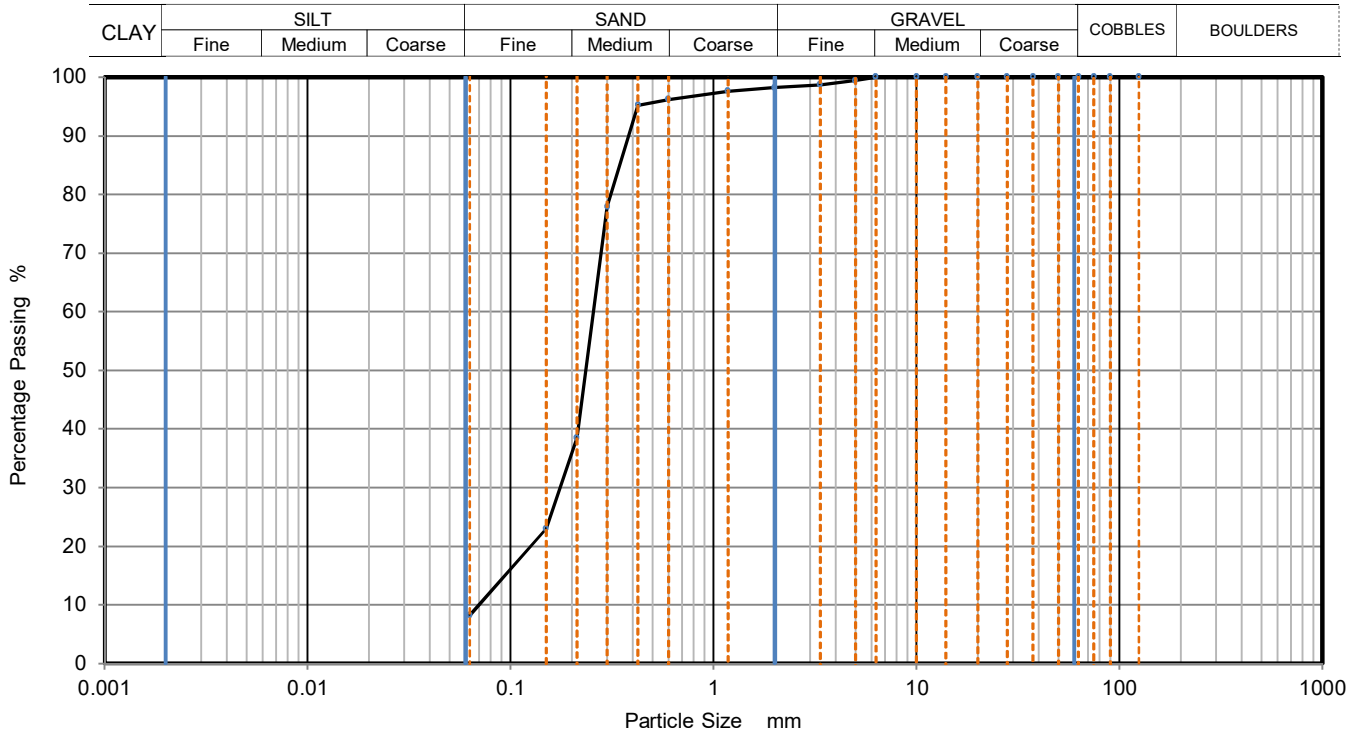
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Dark grey silty slightly gravelly SAND. Gravel is of shell fragments	Sample Depth (m)	37.00
		Sample Reference	B88



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	99		
3.35	99		
2	98		
1.18	98		
0.6	96		
0.425	95		
0.3	78		
0.212	39		
0.15	23		
0.063	8		

Sample Proportions	% dry mass
Very coarse	0
Gravel	2
Sand	90
Fines <0.063mm	8

Grading Analysis		
D100	mm	
D60	mm	0.256
D30	mm	0.175
D10	mm	0.070
Uniformity Coefficient		3.7
Curvature Coefficient		1.7

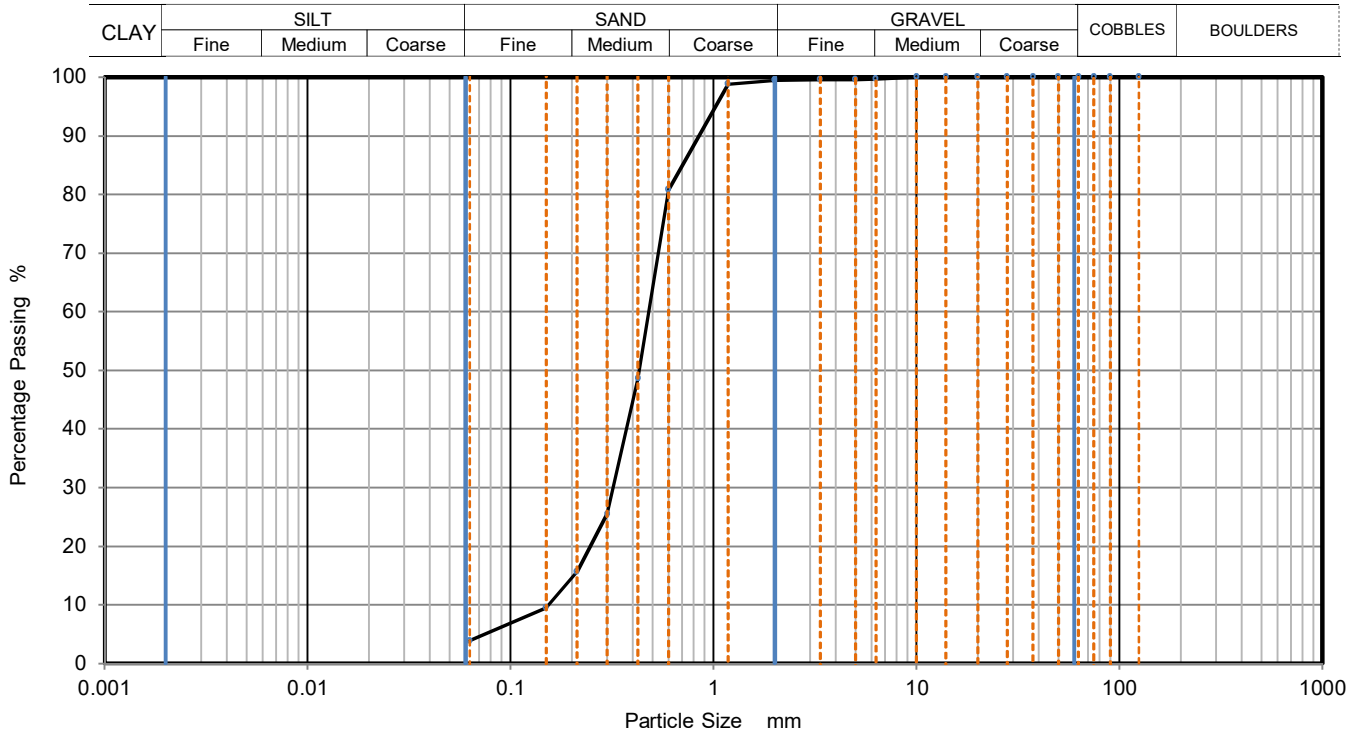
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Dark grey slightly silty slightly gravelly SAND. Gravel is of shell fragments.	Sample Depth (m)	41.00
		Sample Reference	B94



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	81		
0.425	49		
0.3	26		
0.212	16		
0.15	10		
0.063	4		

Sample Proportions	% dry mass
Very coarse	0
Gravel	1
Sand	96
Fines <0.063mm	4

Grading Analysis		
D100	mm	
D60	mm	0.480
D30	mm	0.321
D10	mm	0.154
Uniformity Coefficient		3.1
Curvature Coefficient		1.4

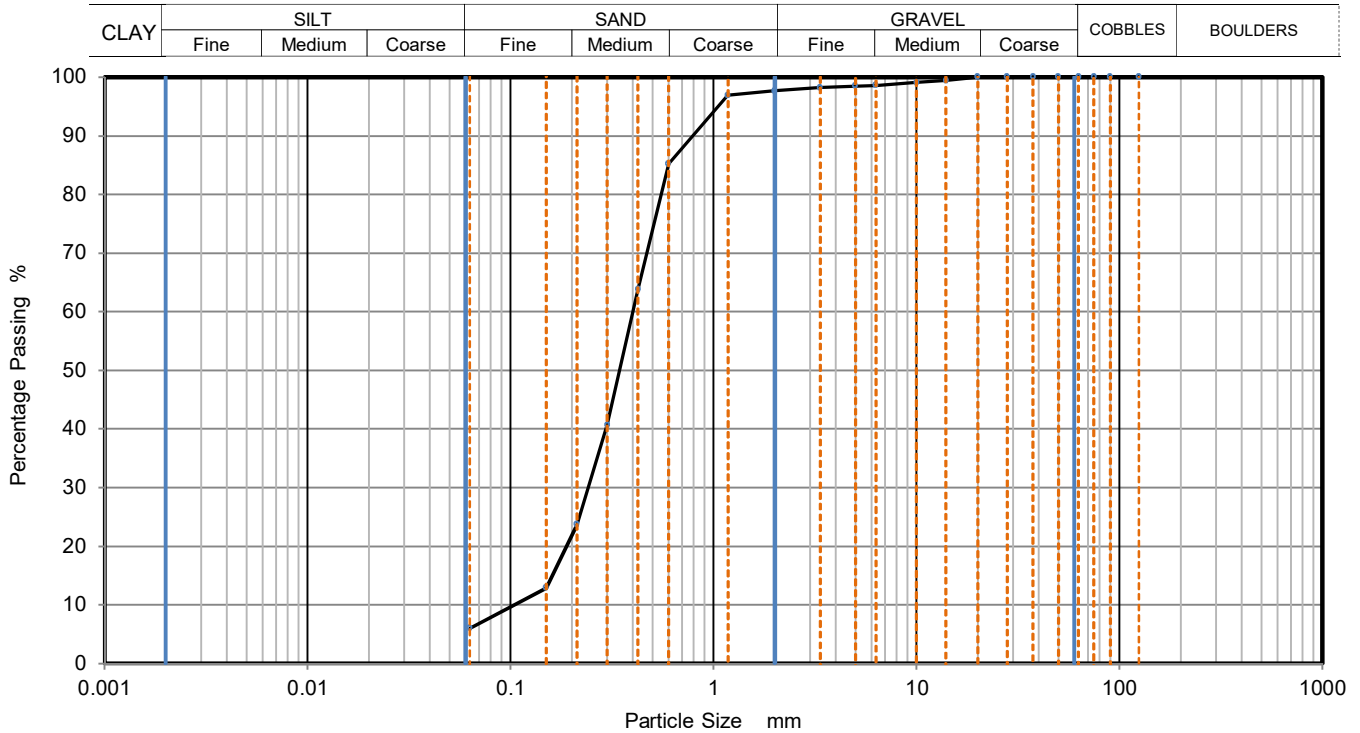
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Dark grey slightly silty slightly gravelly SAND. Gravel is of quartzite and shell fragments.	Sample Depth (m)	44.00
		Sample Reference	B99



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	99		
10	99		
6.3	99		
5	99		
3.35	98		
2	98		
1.18	97		
0.6	85		
0.425	64		
0.3	41		
0.212	24		
0.15	13		
0.063	6		

Sample Proportions	% dry mass
Very coarse	0
Gravel	2
Sand	92
Fines <0.063mm	6

Grading Analysis		
D100	mm	
D60	mm	0.401
D30	mm	0.241
D10	mm	0.104
Uniformity Coefficient		3.9
Curvature Coefficient		1.4

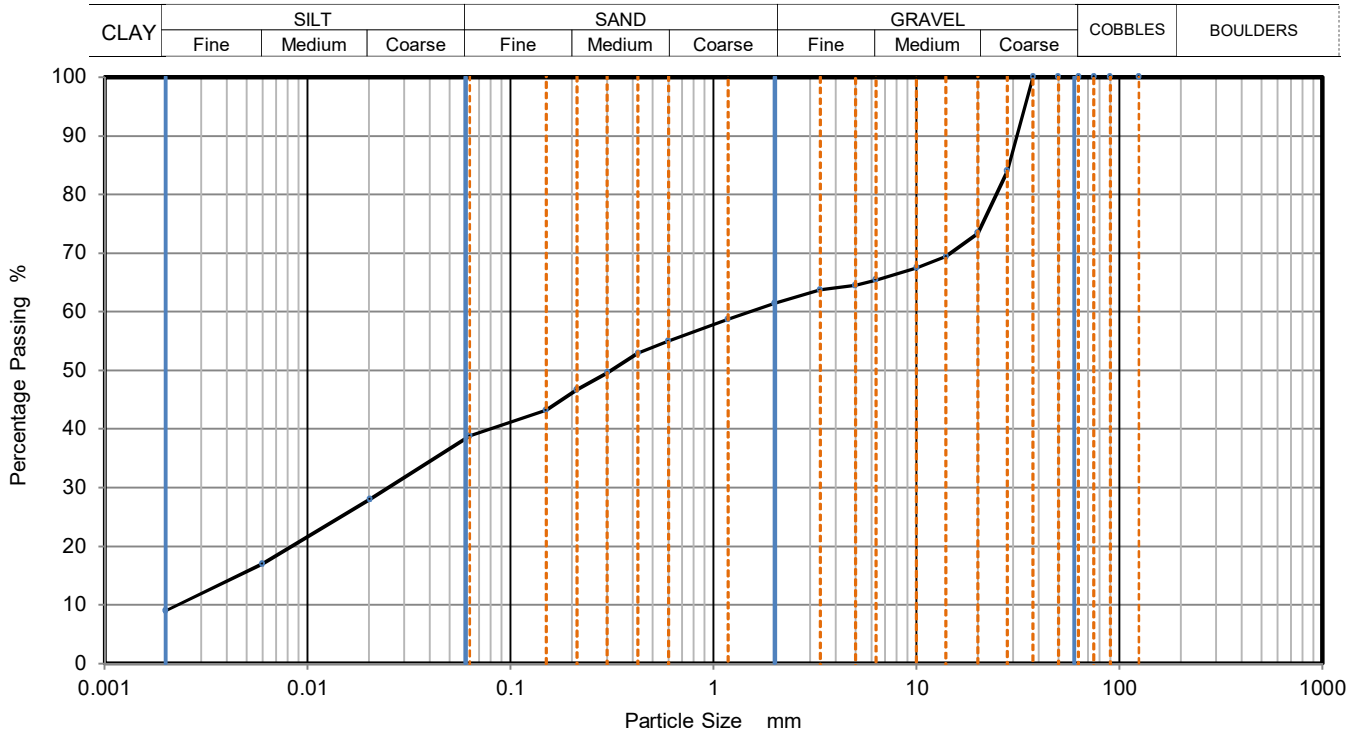
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Grey gravelly slightly sandy clayey SILT. Gravel is of flint	Sample Depth (m)	45.60
		Sample Reference	B100



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	28
90	100	0.0060	17
75	100	0.0020	9
63	100		
50	100		
37.5	100		
28	84		
20	73		
14	69		
10	68		
6.3	65		
5	65		
3.35	64		
2	61		
1.18	59		
0.6	55		
0.425	53	Particle density (assumed) 2.65 Mg/m3	
0.3	50		
0.212	47		
0.15	43		
0.063	39		

Sample Proportions	% dry mass
Very coarse	0
Gravel	39
Sand	23
Silt	30
Clay	9

Grading Analysis		
D100	mm	
D60	mm	1.530
D30	mm	0.025
D10	mm	0.002
Uniformity Coefficient		680
Curvature Coefficient		0.18

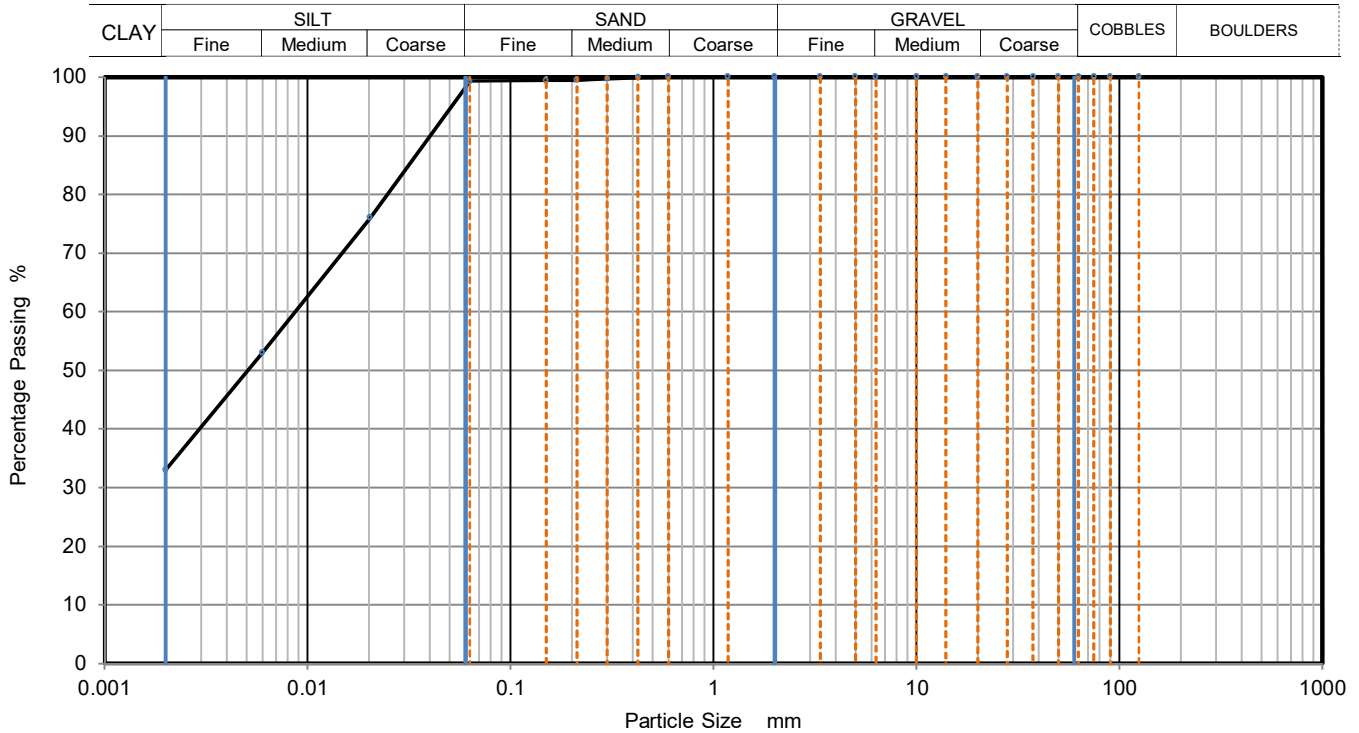
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Grey brown slightly sandy very silty CLAY	Sample Depth (m)	47.45
		Sample Reference	D104



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	76
90	100	0.0060	53
75	100	0.0020	33
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100	Particle density (assumed) 2.65 Mg/m3	
0.3	100		
0.212	100		
0.15	99		
0.063	99		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	1
Silt	67
Clay	33

Grading Analysis		
D100	mm	
D60	mm	0.009
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

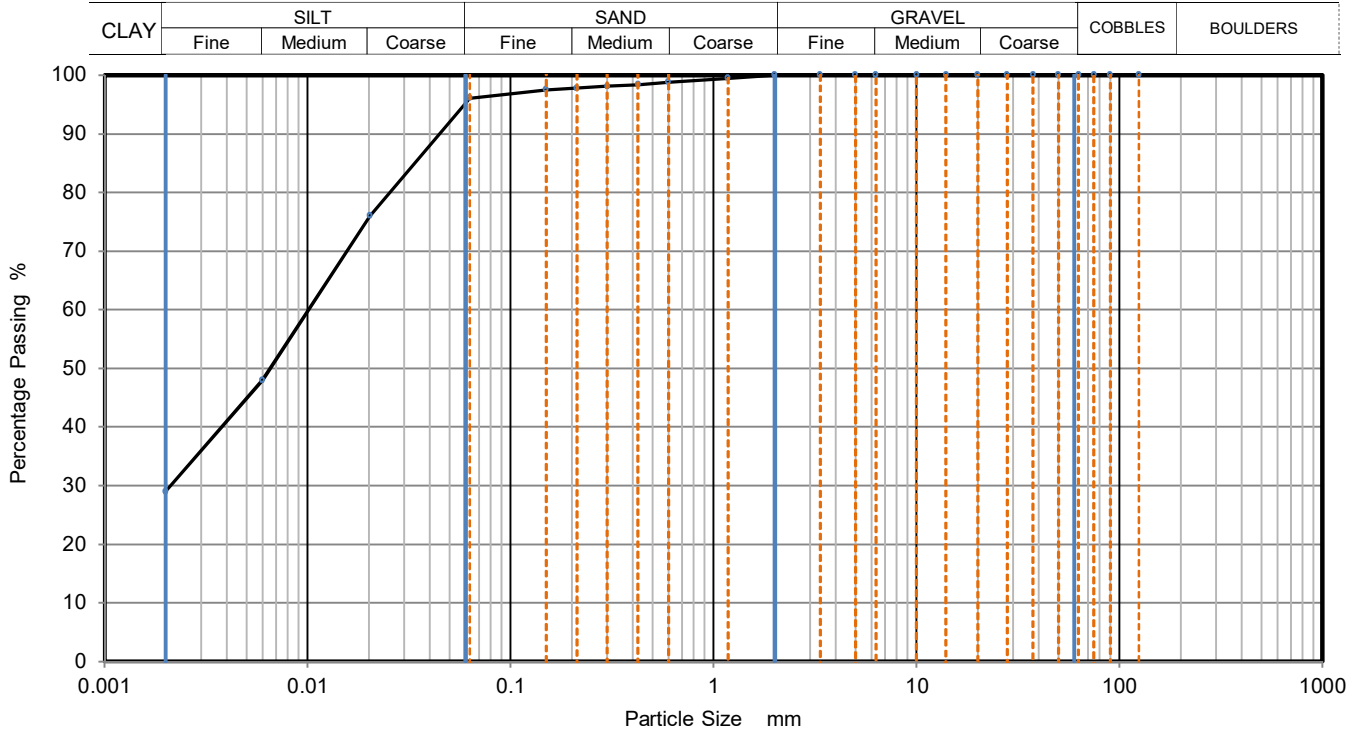
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Dark brown slightly sandy very silty CLAY.	Sample Depth (m)	50.00
		Sample Reference	D109



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	76
90	100	0.0060	48
75	100	0.0020	29
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	98		
0.3	98		
0.212	98		
0.15	98		
0.063	96		
		Particle density (assumed) 2.65 Mg/m ³	

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	4
Silt	67
Clay	29

Grading Analysis		
D100	mm	
D60	mm	0.010
D30	mm	0.002
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

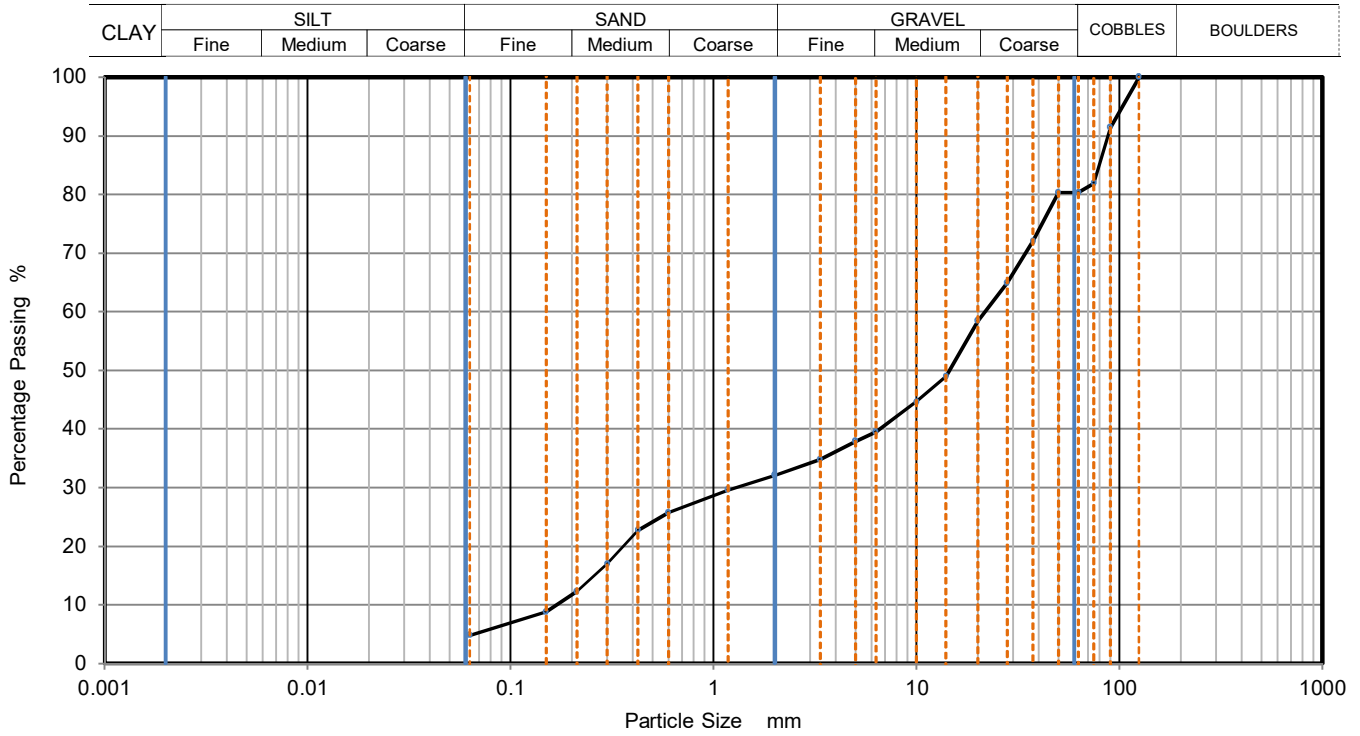
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	MADE GROUND (Dark brown slightly silty very sandy GRAVEL with high cobble content. Cobbles are of concrete fragments. Gravel is of flint, concrete and brick fragments)	Sample Depth (m)	0.50
		Sample Reference	B3



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	91		
75	82		
63	80		
50	80		
37.5	72		
28	65		
20	58		
14	49		
10	45		
6.3	40		
5	38		
3.35	35		
2	32		
1.18	30		
0.6	26		
0.425	23		
0.3	17		
0.212	12		
0.15	9		
0.063	5		

Sample Proportions	% dry mass
Very coarse	20
Gravel	48
Sand	27
Fines <0.063mm	5

Grading Analysis		
D100	mm	125.000
D60	mm	21.800
D30	mm	1.270
D10	mm	0.168
Uniformity Coefficient		130
Curvature Coefficient		0.44

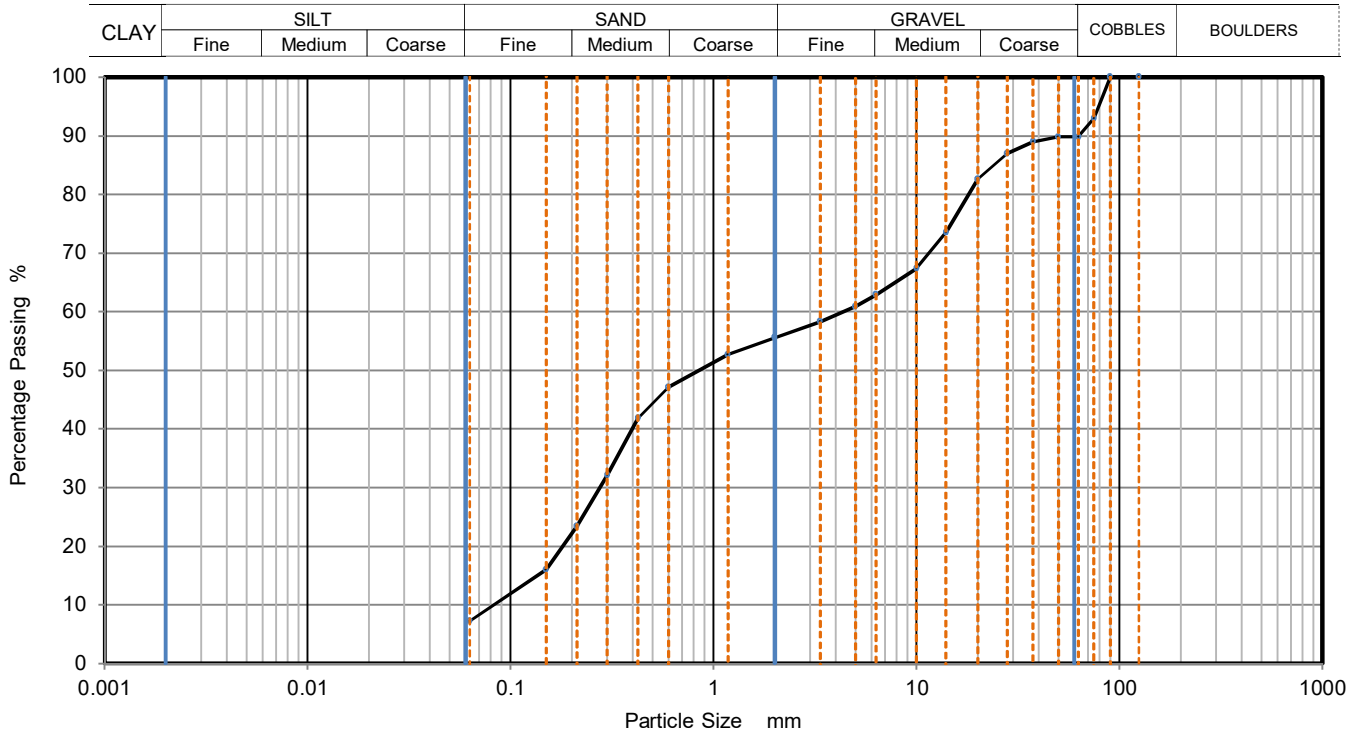
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	MADE GROUND (Brown silty very gravelly SAND with medium cobble content. Cobbles are of concrete fragments. Gravel is of flint, concrete, brick and slag fragments)	Sample Depth (m)	0.80
		Sample Reference	B6



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	93		
63	90		
50	90		
37.5	89		
28	87		
20	83		
14	74		
10	67		
6.3	63		
5	61		
3.35	58		
2	56		
1.18	53		
0.6	47		
0.425	42		
0.3	32		
0.212	23		
0.15	16		
0.063	7		

Sample Proportions	% dry mass
Very coarse	10
Gravel	34
Sand	49
Fines <0.063mm	7

Grading Analysis		
D100	mm	
D60	mm	4.380
D30	mm	0.276
D10	mm	0.083
Uniformity Coefficient		53
Curvature Coefficient		0.21

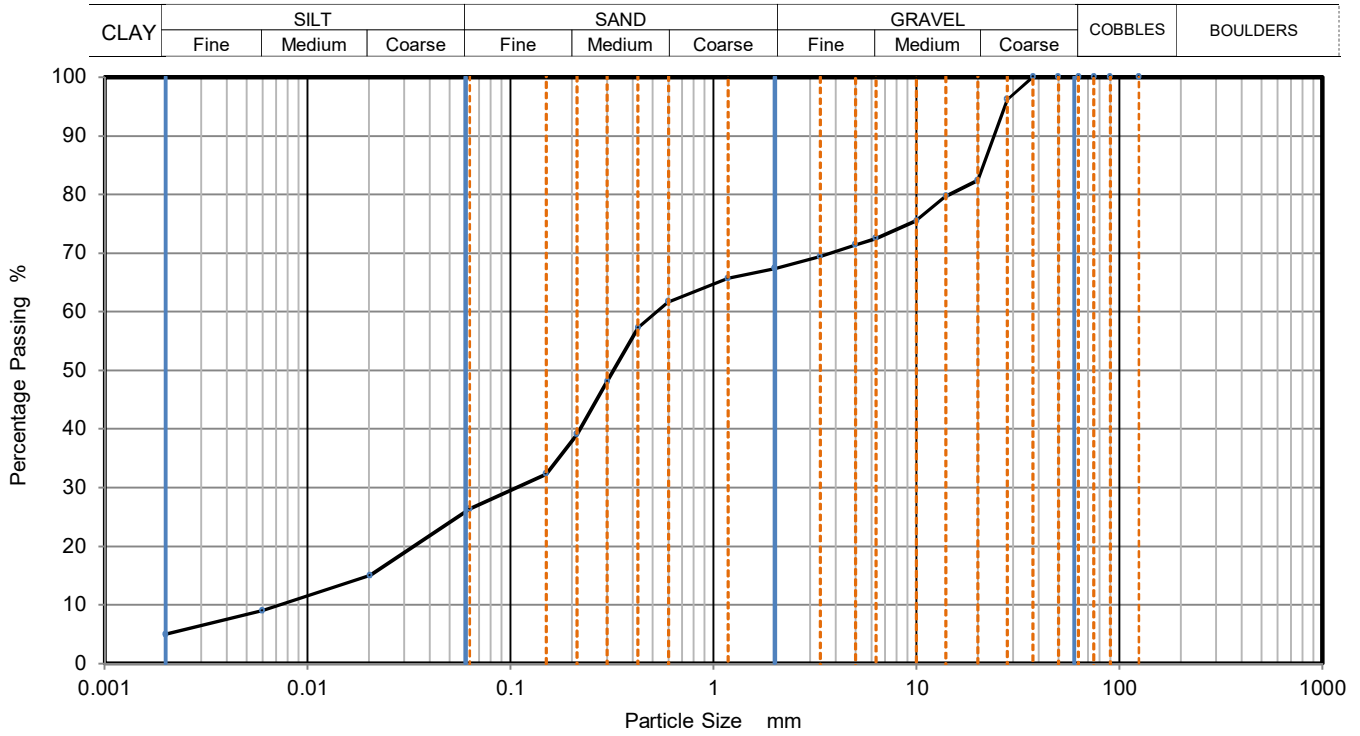
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	MADE GROUND (Brown and grey slightly clayey very silty very gravelly SAND. Gravel is of flint, chalk, shell, brick and concrete fragments)	Sample Depth (m)	1.00
		Sample Reference	B9



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	15
90	100	0.0060	9
75	100	0.0020	5
63	100		
50	100		
37.5	100		
28	96		
20	82		
14	80		
10	76		
6.3	73		
5	71		
3.35	69		
2	67		
1.18	66		
0.6	62		
0.425	57	Particle density (assumed) 2.65 Mg/m ³	
0.3	48		
0.212	39		
0.15	32		
0.063	26		

Sample Proportions	% dry mass
Very coarse	0
Gravel	33
Sand	41
Silt	22
Clay	5

Grading Analysis		
D100	mm	
D60	mm	0.527
D30	mm	0.106
D10	mm	0.007
Uniformity Coefficient		73
Curvature Coefficient		3

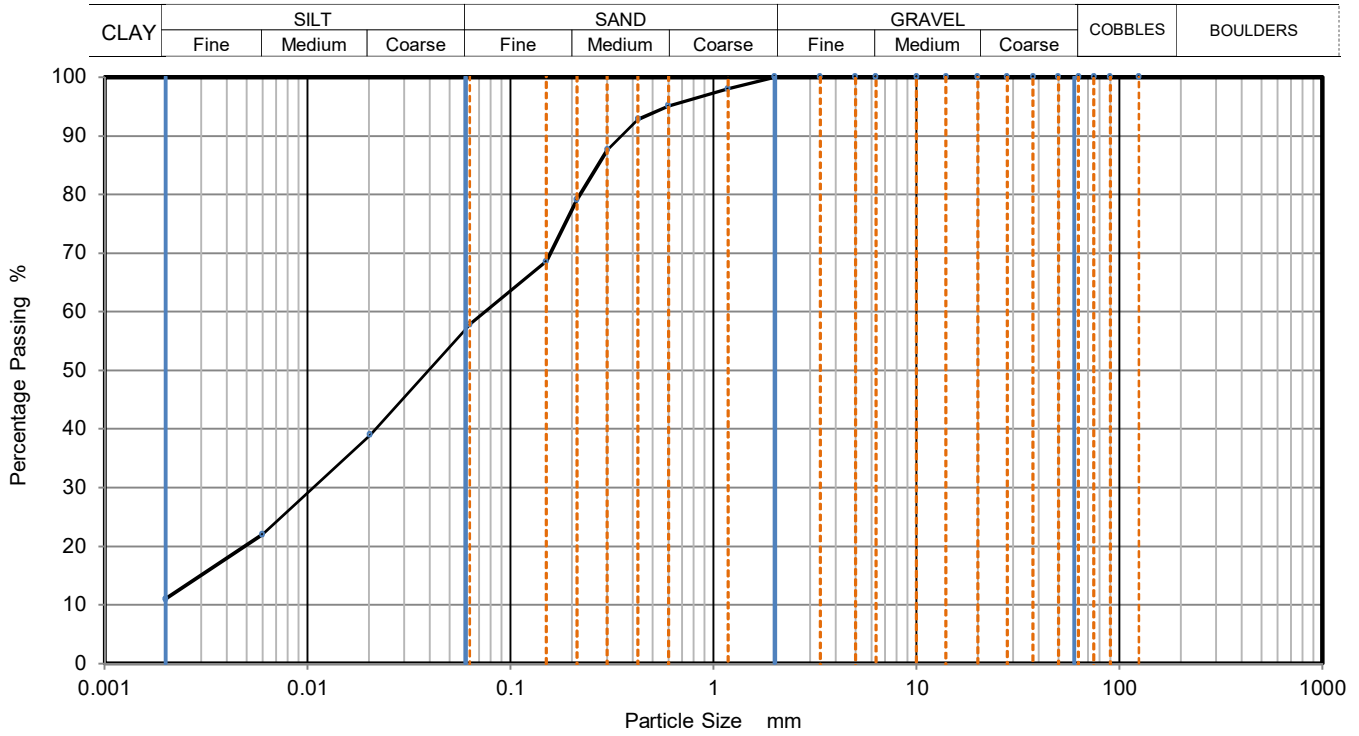
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Dark grey and brown sandy clayey SILT	Sample Depth (m)	1.00
		Sample Reference	D8



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	39
90	100	0.0060	22
75	100	0.0020	11
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	98		
0.6	95		
0.425	93		
0.3	88		
0.212	79		
0.15	69		
0.063	58		
		Particle density (assumed) 2.65 Mg/m ³	

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	42
Silt	47
Clay	11

Grading Analysis		
D100	mm	
D60	mm	0.075
D30	mm	0.011
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

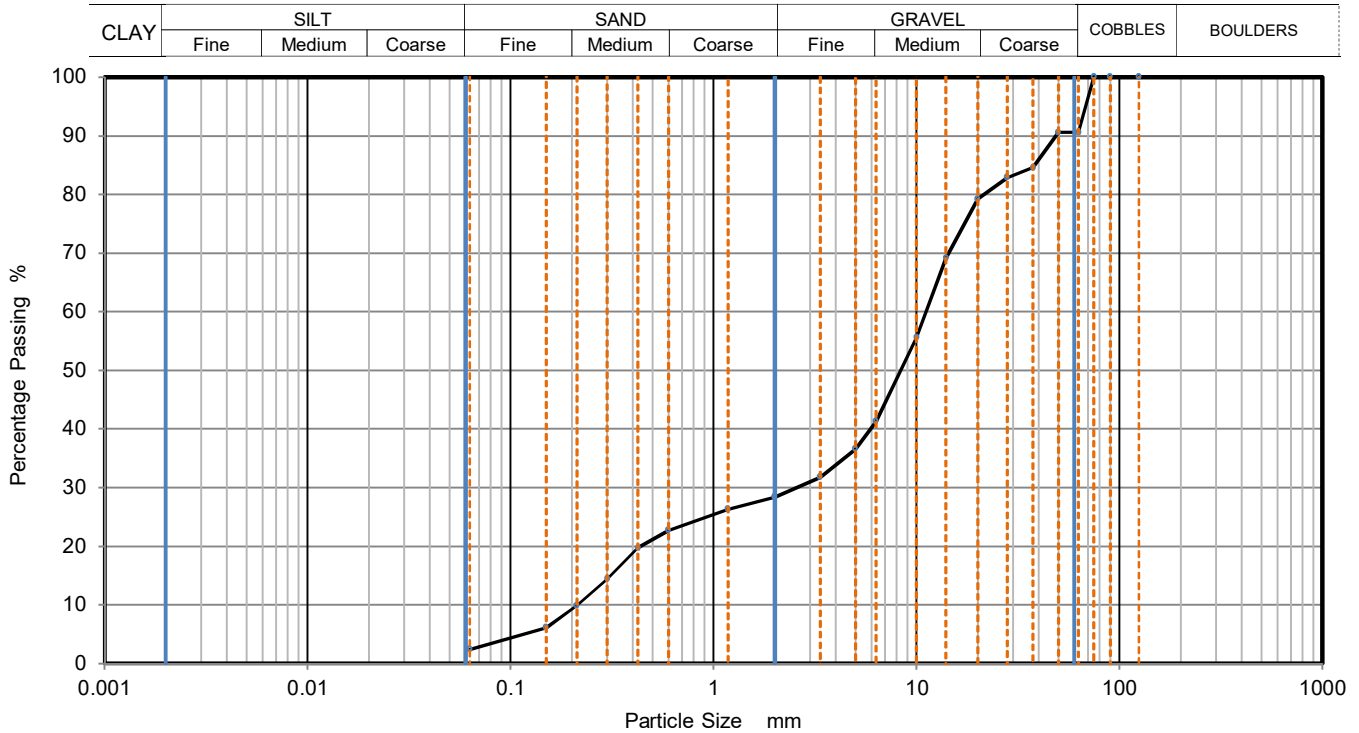
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	MADE GROUND (Dark brown slightly silty very sandy GRAVEL with medium cobble content. Cobbles are of concrete fragments. Gravel is of flint, quartz, concrete and asphalt fragments)	Sample Depth (m)	1.30
		Sample Reference	B11



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	91		
50	91		
37.5	85		
28	83		
20	79		
14	69		
10	56		
6.3	41		
5	37		
3.35	32		
2	28		
1.18	26		
0.6	23		
0.425	20		
0.3	14		
0.212	10		
0.15	6		
0.063	2		

Sample Proportions	% dry mass
Very coarse	9
Gravel	62
Sand	26
Fines <0.063mm	2

Grading Analysis		
D100	mm	
D60	mm	11.200
D30	mm	2.540
D10	mm	0.214
Uniformity Coefficient		52
Curvature Coefficient		2.7

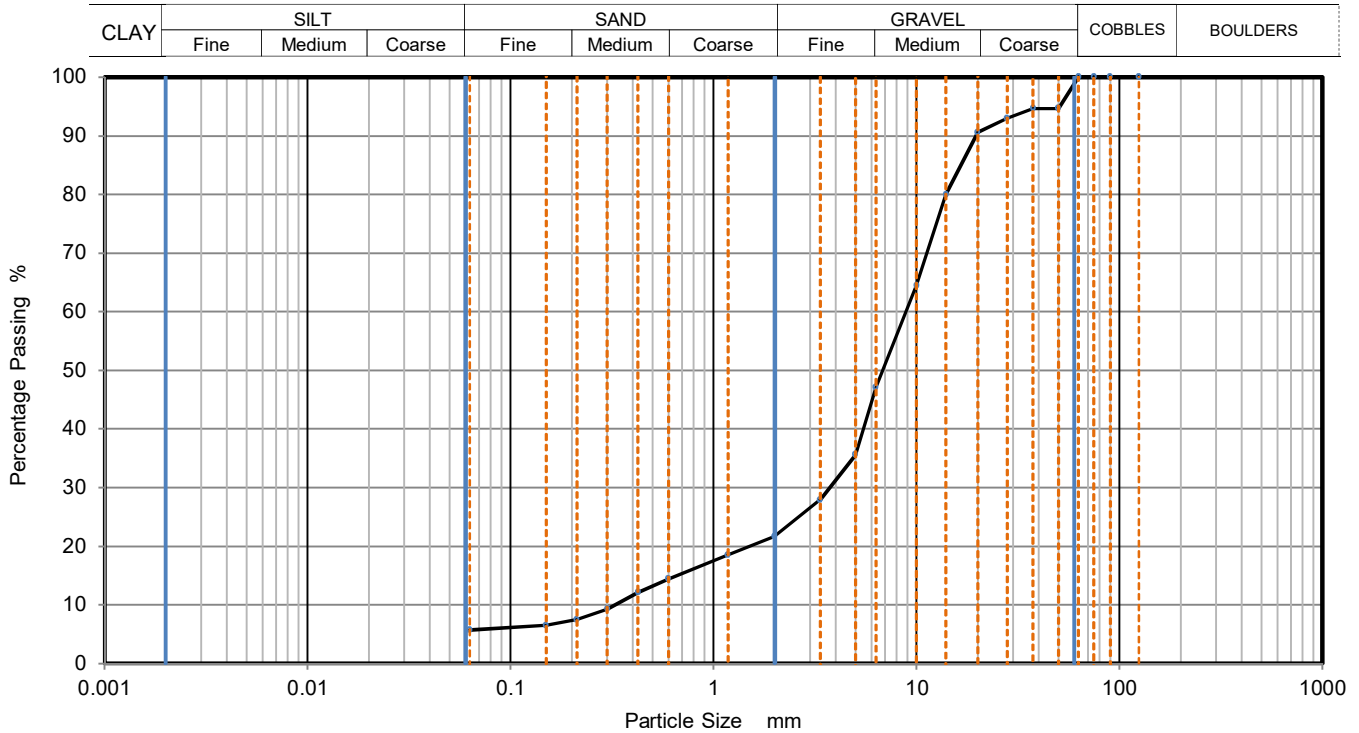
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	MADE GROUND (Dark brown slightly silty sandy GRAVEL. Gravel is of flint, quartz and brick fragments)	Sample Depth (m)	2.00
		Sample Reference	B14



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	95		
37.5	95		
28	93		
20	91		
14	80		
10	65		
6.3	47		
5	36		
3.35	28		
2	22		
1.18	19		
0.6	14		
0.425	12		
0.3	9		
0.212	8		
0.15	7		
0.063	6		

Sample Proportions	% dry mass
Very coarse	0
Gravel	78
Sand	16
Fines <0.063mm	6

Grading Analysis		
D100	mm	
D60	mm	8.880
D30	mm	3.730
D10	mm	0.328
Uniformity Coefficient		27
Curvature Coefficient		4.8

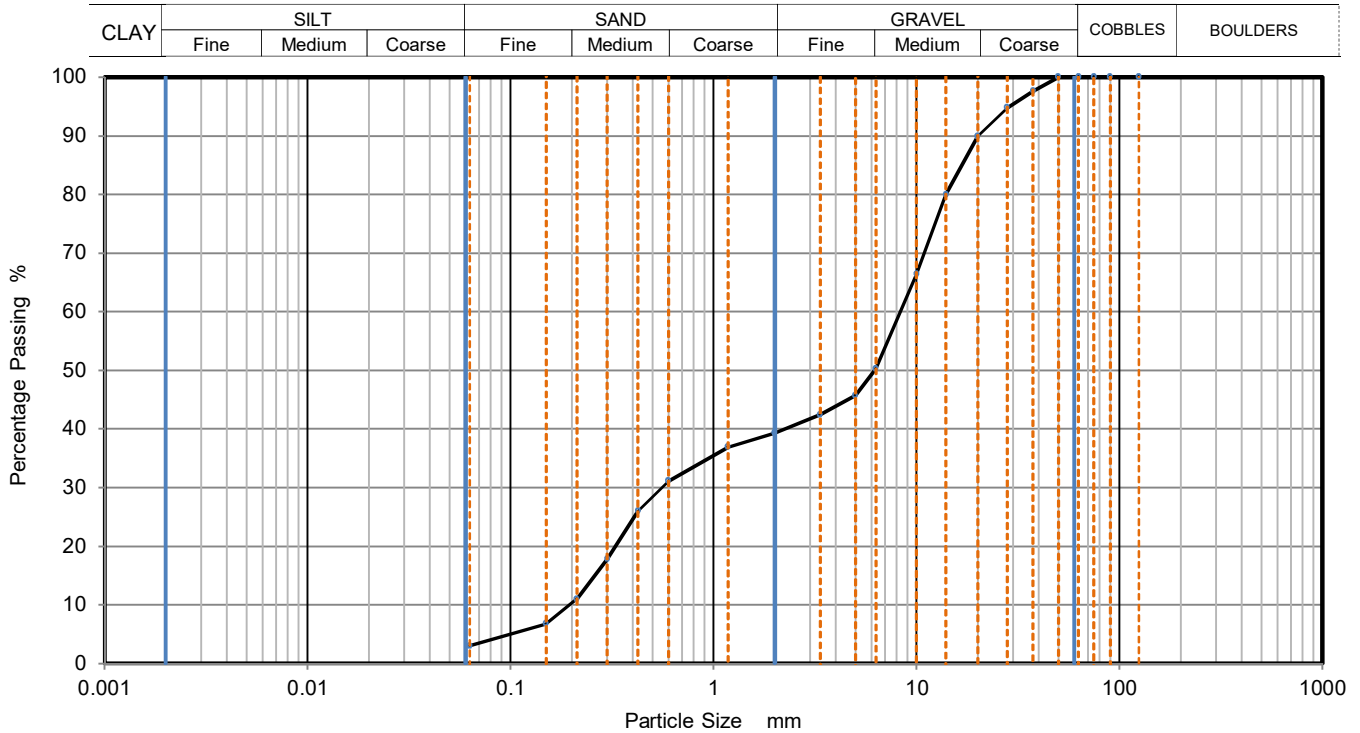
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Dark brown slightly silty very sandy GRAVEL. Gravel is of flint, quartz, shell and wood fragments.	Sample Depth (m)	3.00
		Sample Reference	B17



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	98		
28	95		
20	90		
14	80		
10	66		
6.3	50		
5	46		
3.35	42		
2	39		
1.18	37		
0.6	31		
0.425	26		
0.3	18		
0.212	11		
0.15	7		
0.063	3		

Sample Proportions	% dry mass
Very coarse	0
Gravel	61
Sand	36
Fines <0.063mm	3

Grading Analysis		
D100	mm	
D60	mm	8.320
D30	mm	0.557
D10	mm	0.195
Uniformity Coefficient		43
Curvature Coefficient		0.19

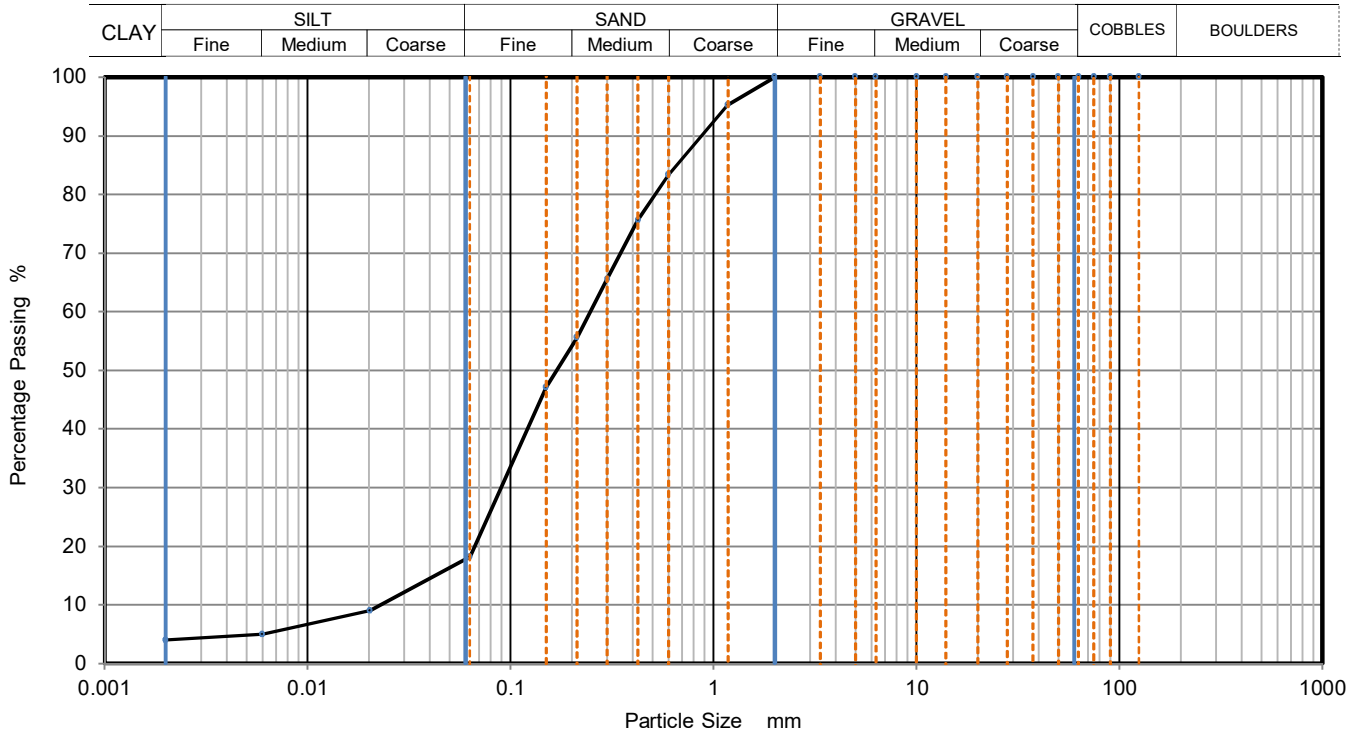
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Grey brown slightly clayey silty SAND	Sample Depth (m)	4.00
		Sample Reference	D19



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	9
90	100	0.0060	5
75	100	0.0020	4
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	95		
0.6	83		
0.425	76	Particle density (assumed) 2.65 Mg/m3	
0.3	66		
0.212	56		
0.15	47		
0.063	18		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	82
Silt	14
Clay	4

Grading Analysis		
D100	mm	
D60	mm	0.247
D30	mm	0.090
D10	mm	0.024
Uniformity Coefficient		10
Curvature Coefficient		1.4

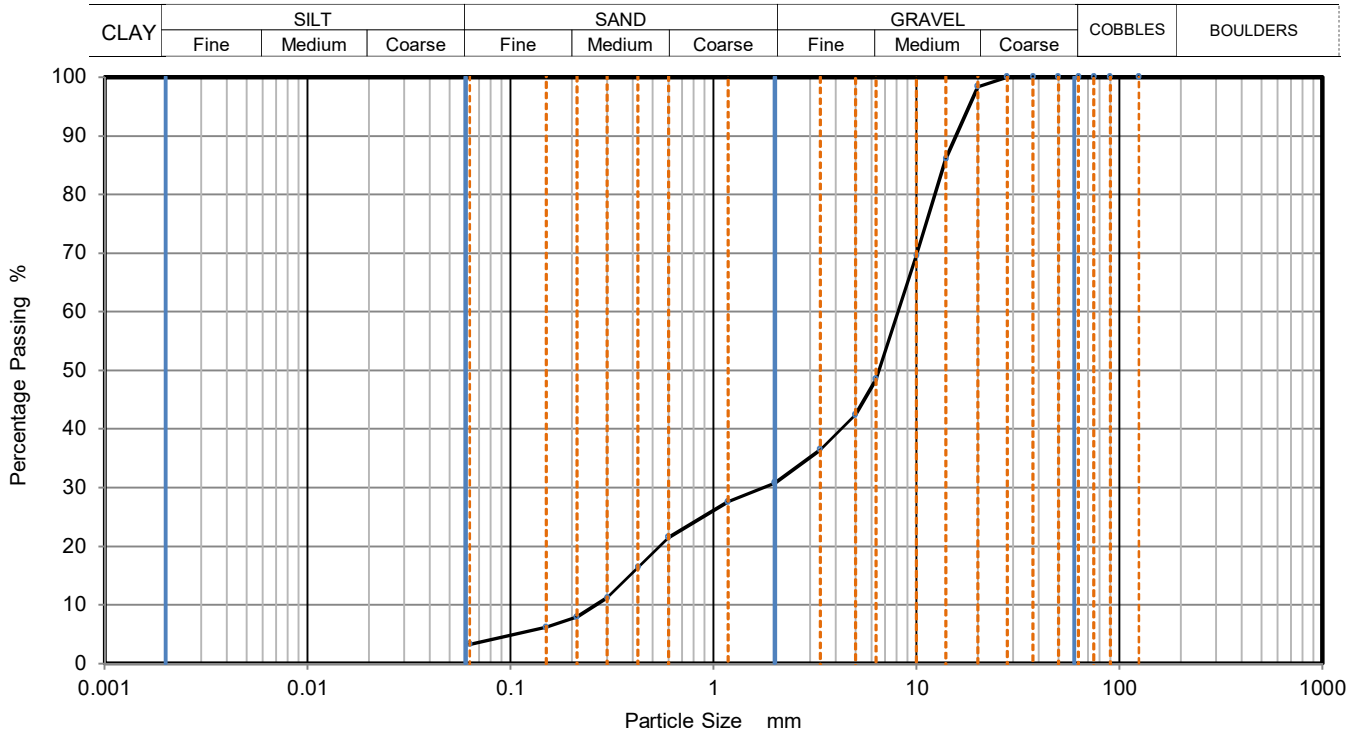
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Dark brown slightly silty very sandy GRAVEL. Gravel is of flint, quartz and shell fragments.	Sample Depth (m)	4.30
		Sample Reference	B21



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	98		
14	86		
10	70		
6.3	49		
5	42		
3.35	37		
2	31		
1.18	28		
0.6	22		
0.425	16		
0.3	11		
0.212	8		
0.15	6		
0.063	3		

Sample Proportions	% dry mass
Very coarse	0
Gravel	69
Sand	28
Fines <0.063mm	3

Grading Analysis		
D100	mm	
D60	mm	8.110
D30	mm	1.760
D10	mm	0.265
Uniformity Coefficient		31
Curvature Coefficient		1.4

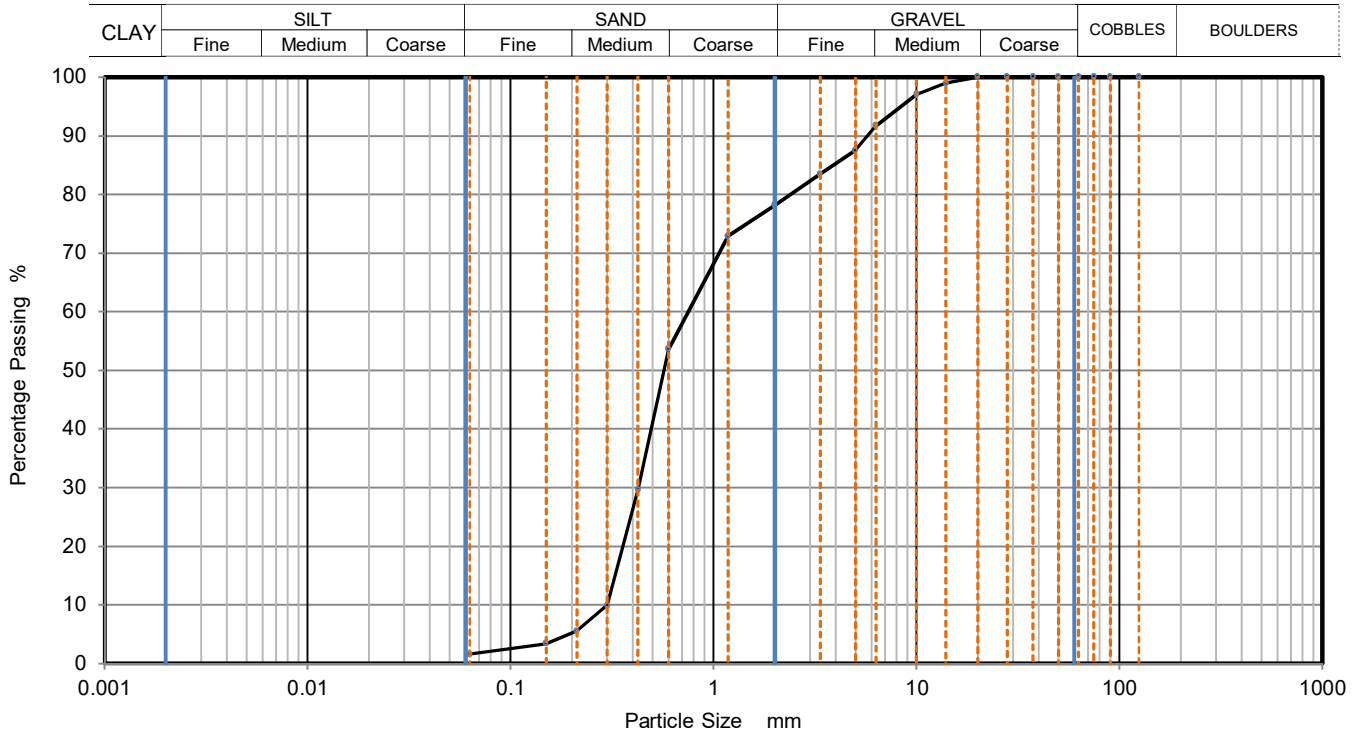
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Brown and dark grey slightly silty very gravelly SAND. Gravel is of flint and quartz.	Sample Depth (m)	6.00
		Sample Reference	B27



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	99		
10	97		
6.3	92		
5	88		
3.35	84		
2	78		
1.18	73		
0.6	54		
0.425	30		
0.3	10		
0.212	6		
0.15	3		
0.063	2		

Sample Proportions	% dry mass
Very coarse	0
Gravel	22
Sand	77
Fines <0.063mm	2

Grading Analysis		
D100	mm	
D60	mm	0.750
D30	mm	0.427
D10	mm	0.300
Uniformity Coefficient		2.5
Curvature Coefficient		0.81

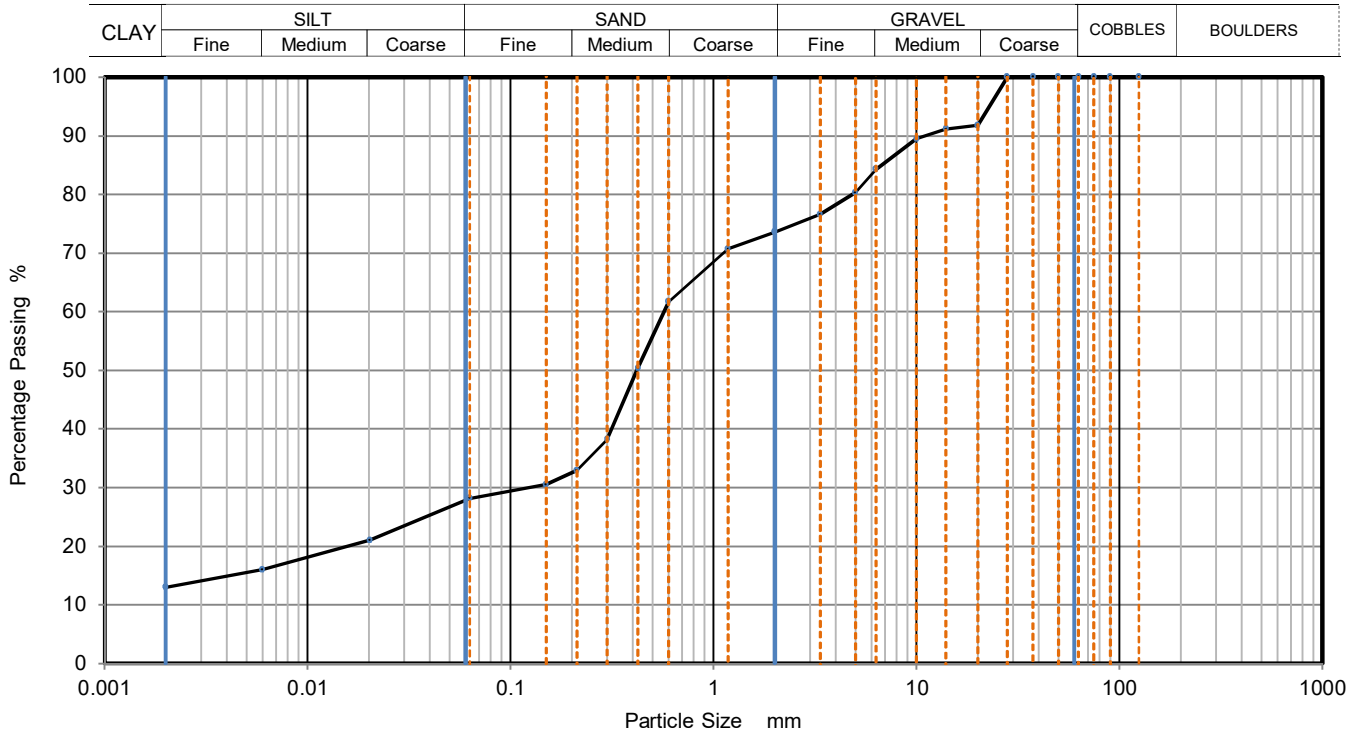
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Brown and grey clayey silty very gravelly SAND. Gravel is of flint and shell fragments.	Sample Depth (m)	7.00
		Sample Reference	B30



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	21
90	100	0.0060	16
75	100	0.0020	13
63	100		
50	100		
37.5	100		
28	100		
20	92		
14	91		
10	90		
6.3	84		
5	80		
3.35	77		
2	74		
1.18	71		
0.6	62		
0.425	50	Particle density (assumed) 2.65 Mg/m ³	
0.3	38		
0.212	33		
0.15	31		
0.063	28		

Sample Proportions	% dry mass
Very coarse	0
Gravel	26
Sand	45
Silt	16
Clay	13

Grading Analysis		
D100	mm	
D60	mm	0.569
D30	mm	0.123
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

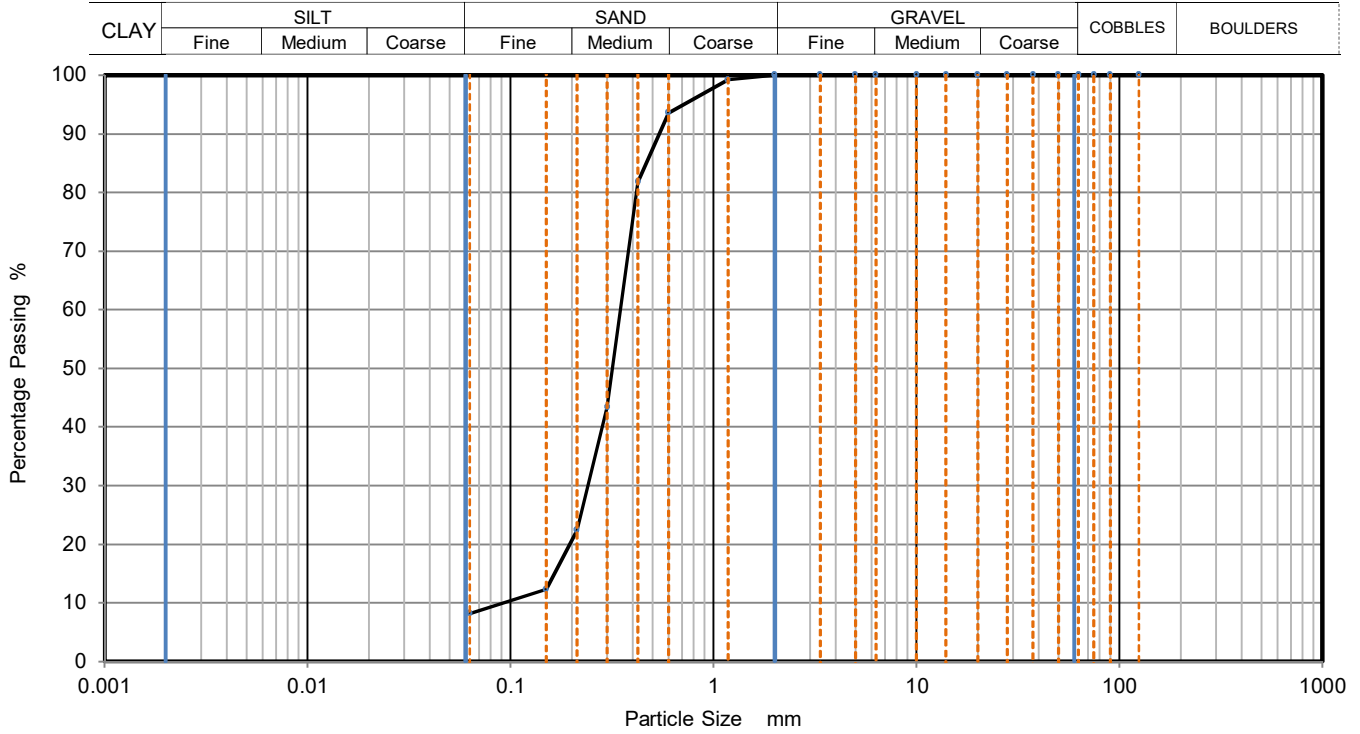
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Dark grey brown silty SAND	Sample Depth (m)	8.00
		Sample Reference	B35



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	94		
0.425	82		
0.3	43		
0.212	22		
0.15	12		
0.063	8		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	92
Fines <0.063mm	8

Grading Analysis		
D100	mm	
D60	mm	0.349
D30	mm	0.240
D10	mm	0.092
Uniformity Coefficient		3.8
Curvature Coefficient		1.8

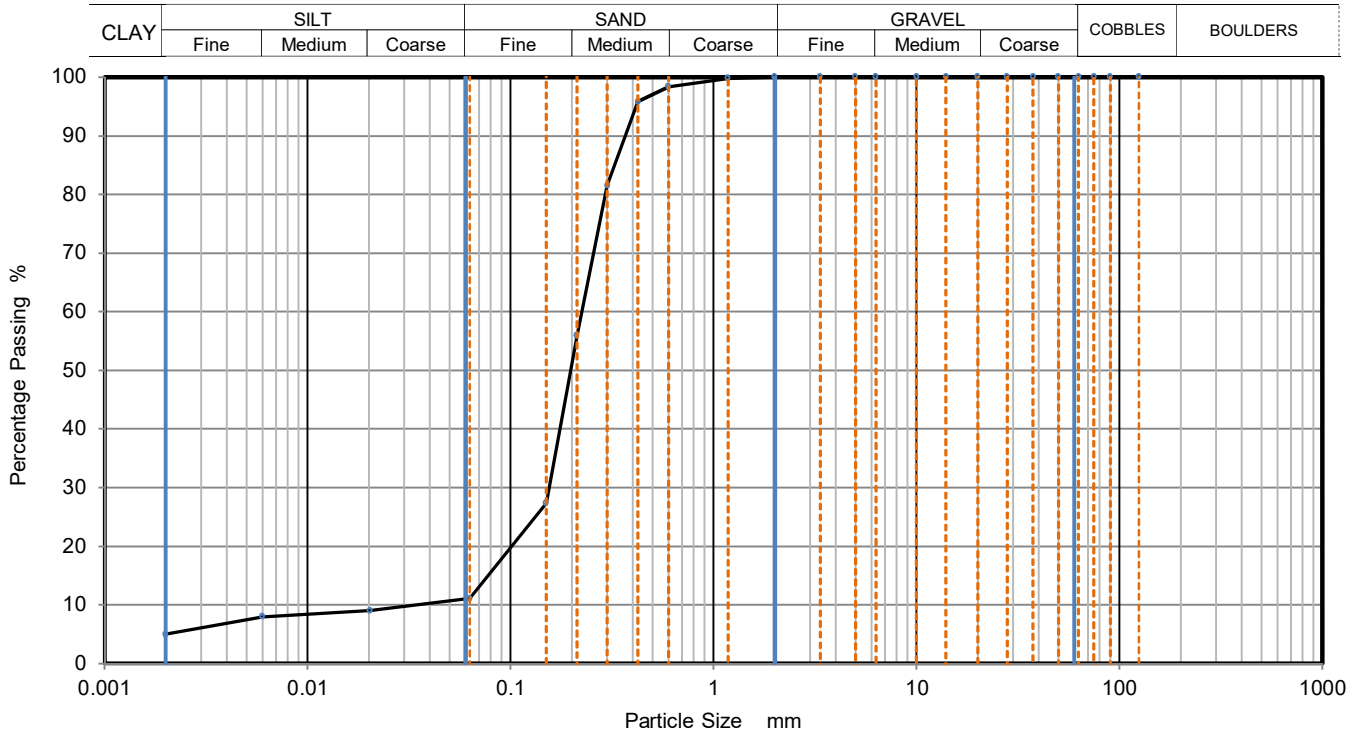
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Dark grey and brown slightly clayey silty SAND.	Sample Depth (m)	10.00
		Sample Reference	B41



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	9
90	100	0.0060	8
75	100	0.0020	5
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	98	Particle density (assumed)	
0.425	96	2.65	Mg/m3
0.3	82		
0.212	56		
0.15	27		
0.063	11		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	89
Silt	6
Clay	5

Grading Analysis		
D100	mm	
D60	mm	0.224
D30	mm	0.155
D10	mm	0.037
Uniformity Coefficient		6
Curvature Coefficient		2.9

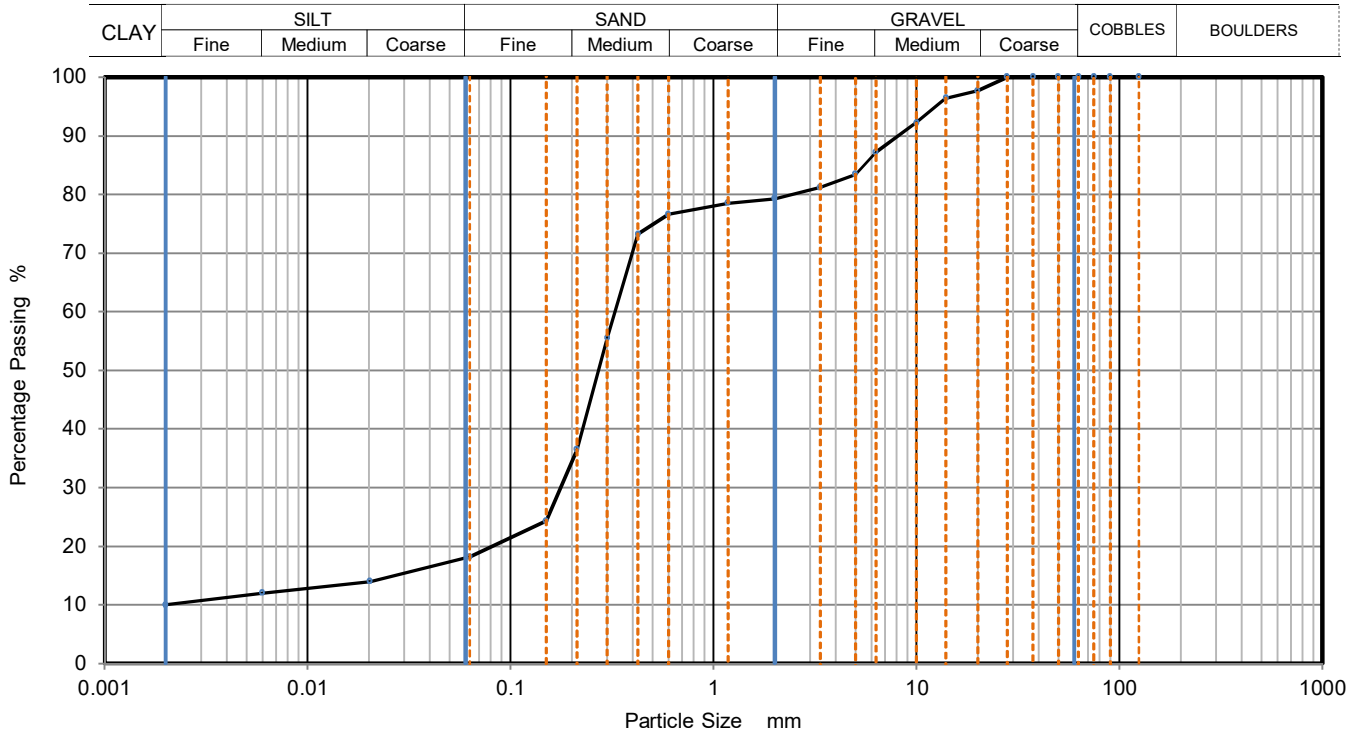
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Brown mottled dark grey clayey silty very gravelly SAND. Gravel is of flint and siltstone.	Sample Depth (m)	12.00
		Sample Reference	B46



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	14
90	100	0.0060	12
75	100	0.0020	10
63	100		
50	100		
37.5	100		
28	100		
20	98		
14	96		
10	92		
6.3	87		
5	83		
3.35	81		
2	79		
1.18	79		
0.6	77		
0.425	73	Particle density (assumed) 2.65 Mg/m ³	
0.3	56		
0.212	37		
0.15	24		
0.063	18		

Sample Proportions	% dry mass
Very coarse	0
Gravel	21
Sand	61
Silt	9
Clay	10

Grading Analysis		
D100	mm	
D60	mm	0.328
D30	mm	0.176
D10	mm	0.002
Uniformity Coefficient		140
Curvature Coefficient		40

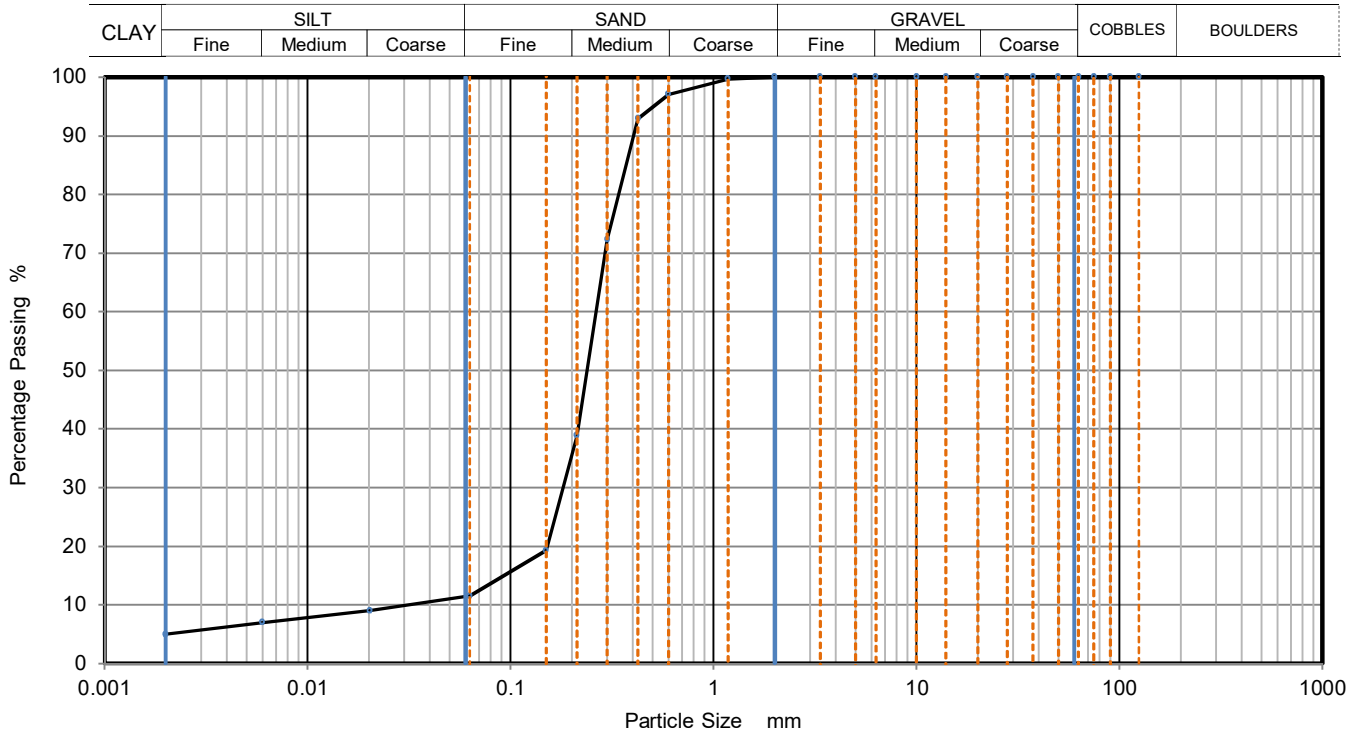
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Orange brown clayey silty SAND.	Sample Depth (m)	15.00
		Sample Reference	B53



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	9
90	100	0.0060	7
75	100	0.0020	5
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	97	Particle density (assumed)	
0.425	93	2.65	Mg/m3
0.3	72		
0.212	39		
0.15	19		
0.063	12		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	89
Silt	6
Clay	6

Grading Analysis		
D100	mm	
D60	mm	0.264
D30	mm	0.181
D10	mm	0.030
Uniformity Coefficient		8.8
Curvature Coefficient		4.1

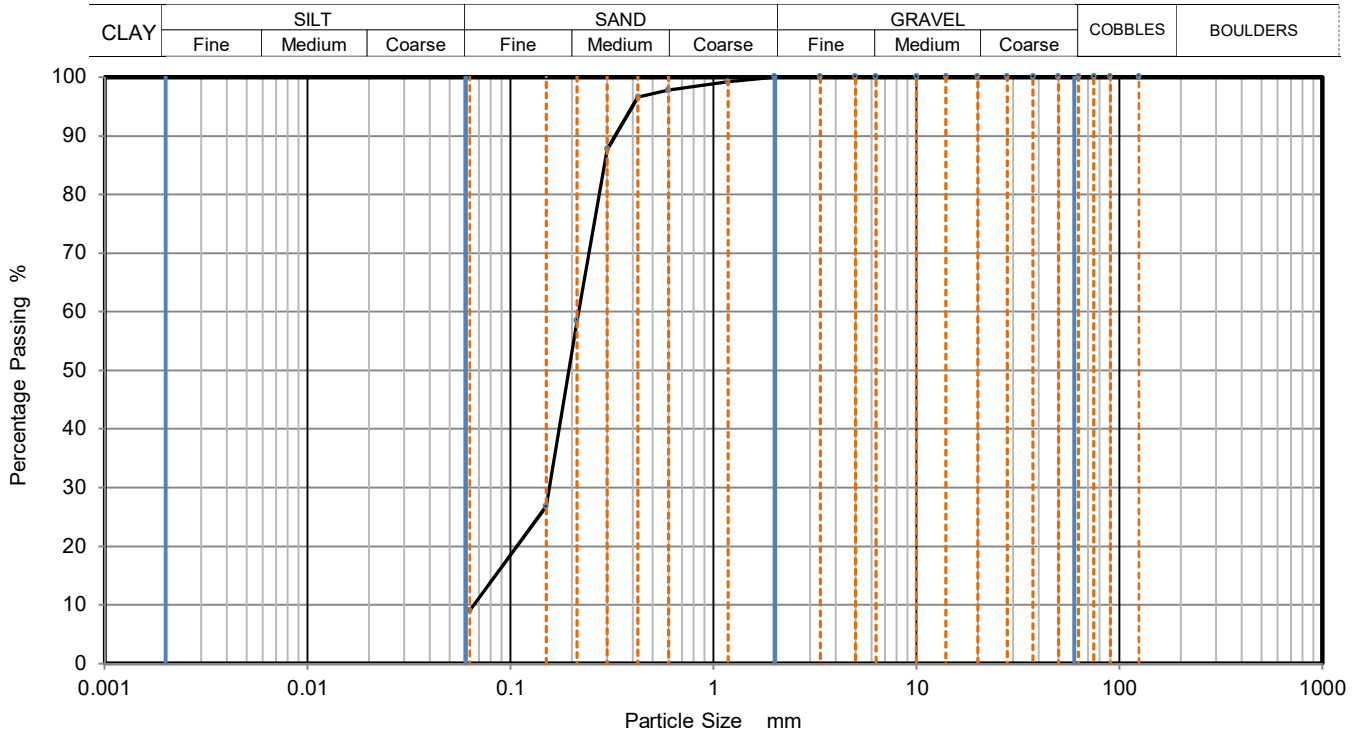
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Grey brown silty SAND.	Sample Depth (m)	17.00
		Sample Reference	B57



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	98		
0.425	97		
0.3	88		
0.212	58		
0.15	27		
0.063	9		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	91
Fines <0.063mm	9

Grading Analysis		
D100	mm	
D60	mm	0.216
D30	mm	0.155
D10	mm	0.066
Uniformity Coefficient		3.3
Curvature Coefficient		1.7

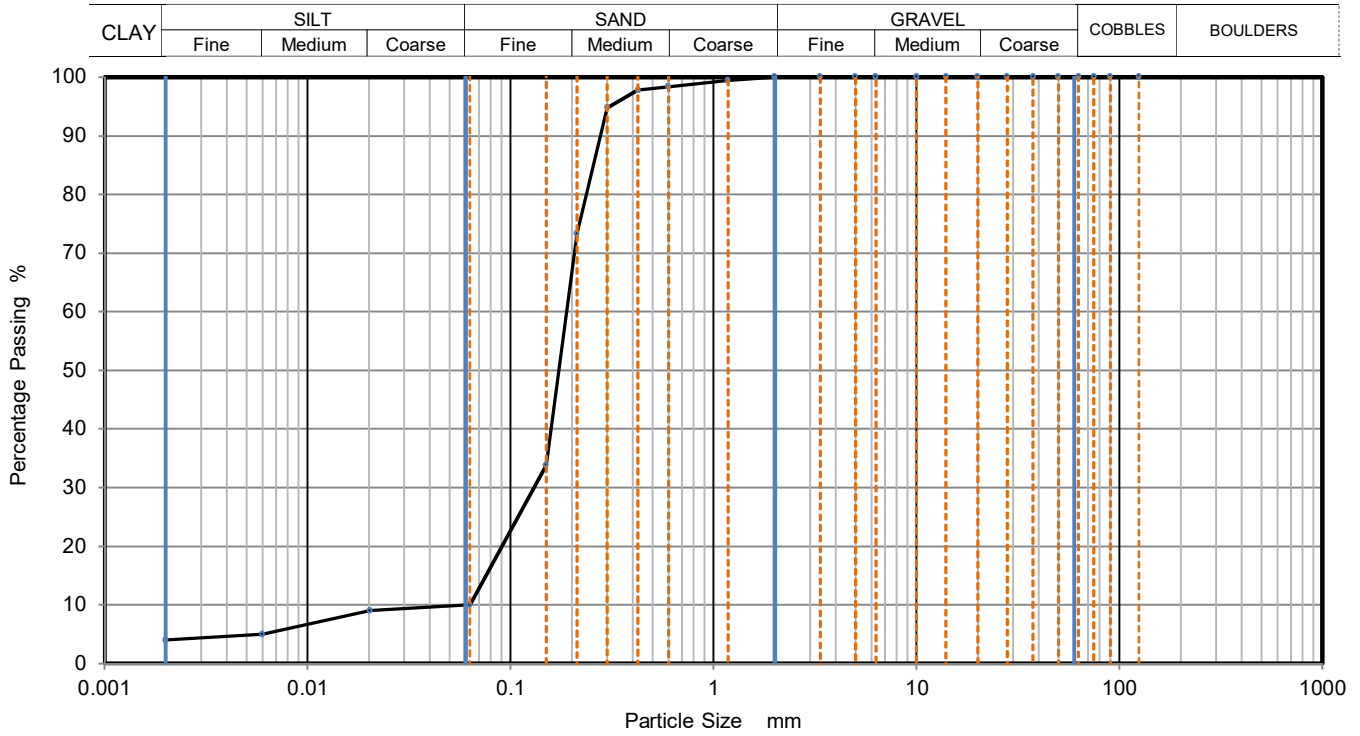
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Grey brown slightly clayey silty SAND.	Sample Depth (m)	20.00
		Sample Reference	B64



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	9
90	100	0.0060	5
75	100	0.0020	4
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	98		
0.425	98	Particle density (assumed) 2.65 Mg/m ³	
0.3	95		
0.212	73		
0.15	34		
0.063	10		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	90
Silt	6
Clay	4

Grading Analysis		
D100	mm	
D60	mm	0.189
D30	mm	0.131
D10	mm	0.062
Uniformity Coefficient		3
Curvature Coefficient		1.5

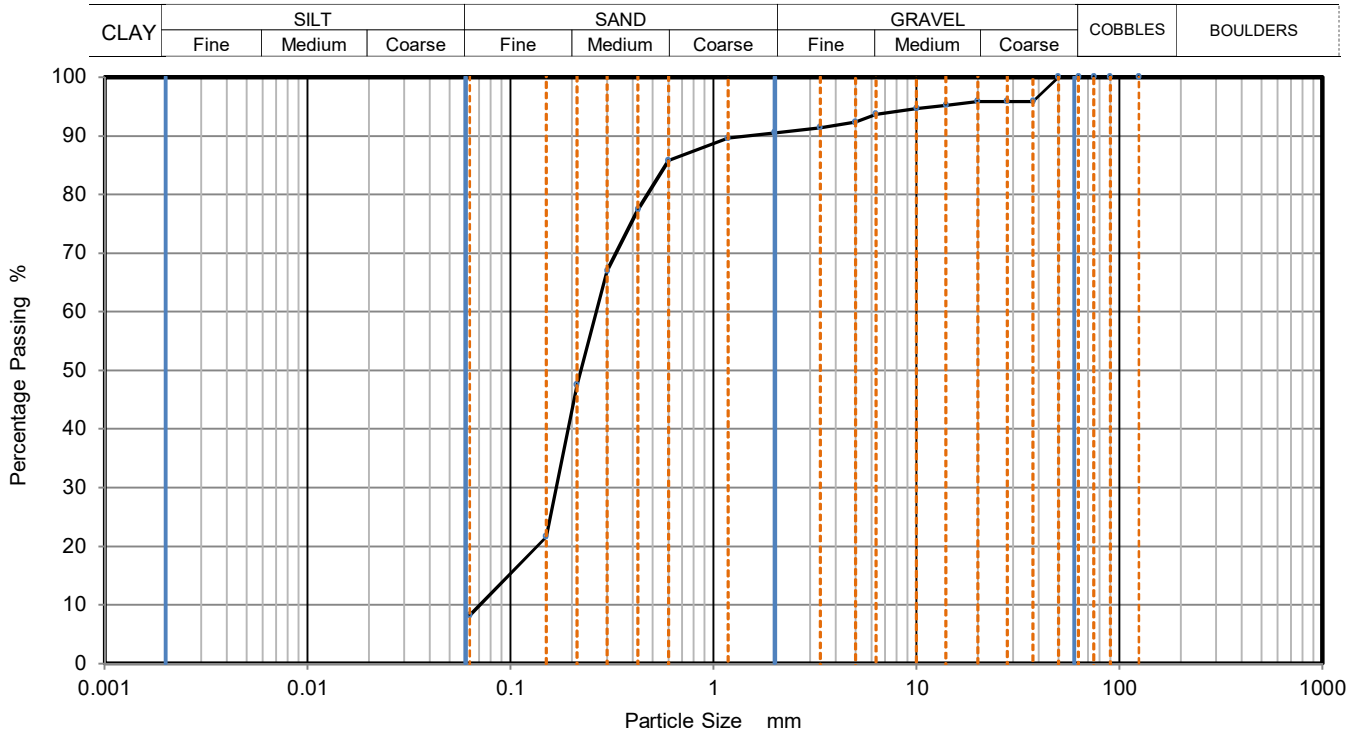
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Orange brown and grey brown silty gravelly SAND. Gravel is of flint, sandstone and shell fragments.	Sample Depth (m)	21.00
		Sample Reference	B65



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	96		
28	96		
20	96		
14	95		
10	95		
6.3	94		
5	92		
3.35	91		
2	91		
1.18	90		
0.6	86		
0.425	77		
0.3	67		
0.212	48		
0.15	22		
0.063	8		

Sample Proportions	% dry mass
Very coarse	0
Gravel	10
Sand	82
Fines <0.063mm	8

Grading Analysis		
D100	mm	
D60	mm	0.265
D30	mm	0.168
D10	mm	0.071
Uniformity Coefficient		3.7
Curvature Coefficient		1.5

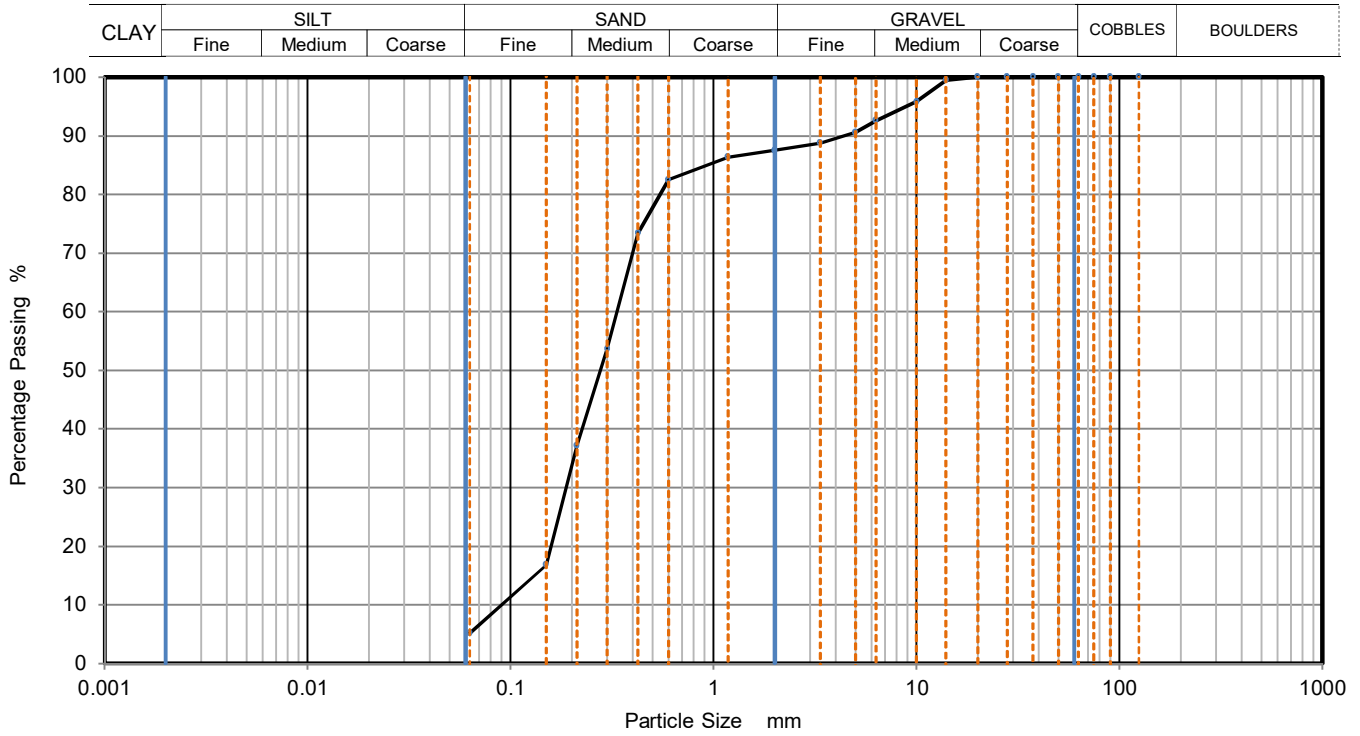
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Grey brown slightly silty gravelly SAND. Gravel is of flint, sandstone and shell fragments.	Sample Depth (m)	22.00
		Sample Reference	B67



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	96		
6.3	93		
5	91		
3.35	89		
2	88		
1.18	86		
0.6	83		
0.425	73		
0.3	54		
0.212	37		
0.15	17		
0.063	5		

Sample Proportions	% dry mass
Very coarse	0
Gravel	13
Sand	82
Fines <0.063mm	5

Grading Analysis		
D100	mm	
D60	mm	0.336
D30	mm	0.187
D10	mm	0.090
Uniformity Coefficient		3.7
Curvature Coefficient		1.2

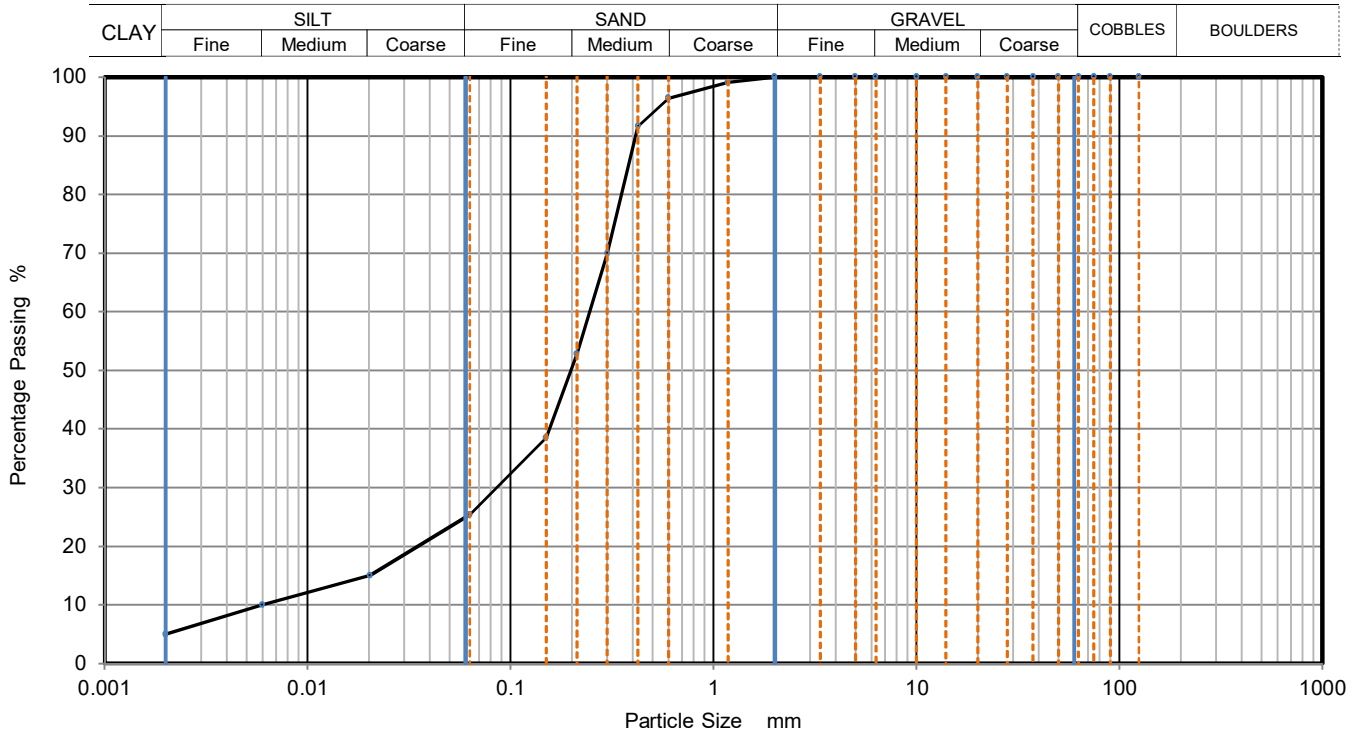
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Grey slightly clayey very silty SAND.	Sample Depth (m)	23.00
		Sample Reference	B69



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	15
90	100	0.0060	10
75	100	0.0020	5
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	96		
0.425	92	Particle density (assumed) 2.65 Mg/m ³	
0.3	70		
0.212	53		
0.15	39		
0.063	25		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	75
Silt	21
Clay	5

Grading Analysis		
D100	mm	
D60	mm	0.246
D30	mm	0.086
D10	mm	0.006
Uniformity Coefficient		41
Curvature Coefficient		5

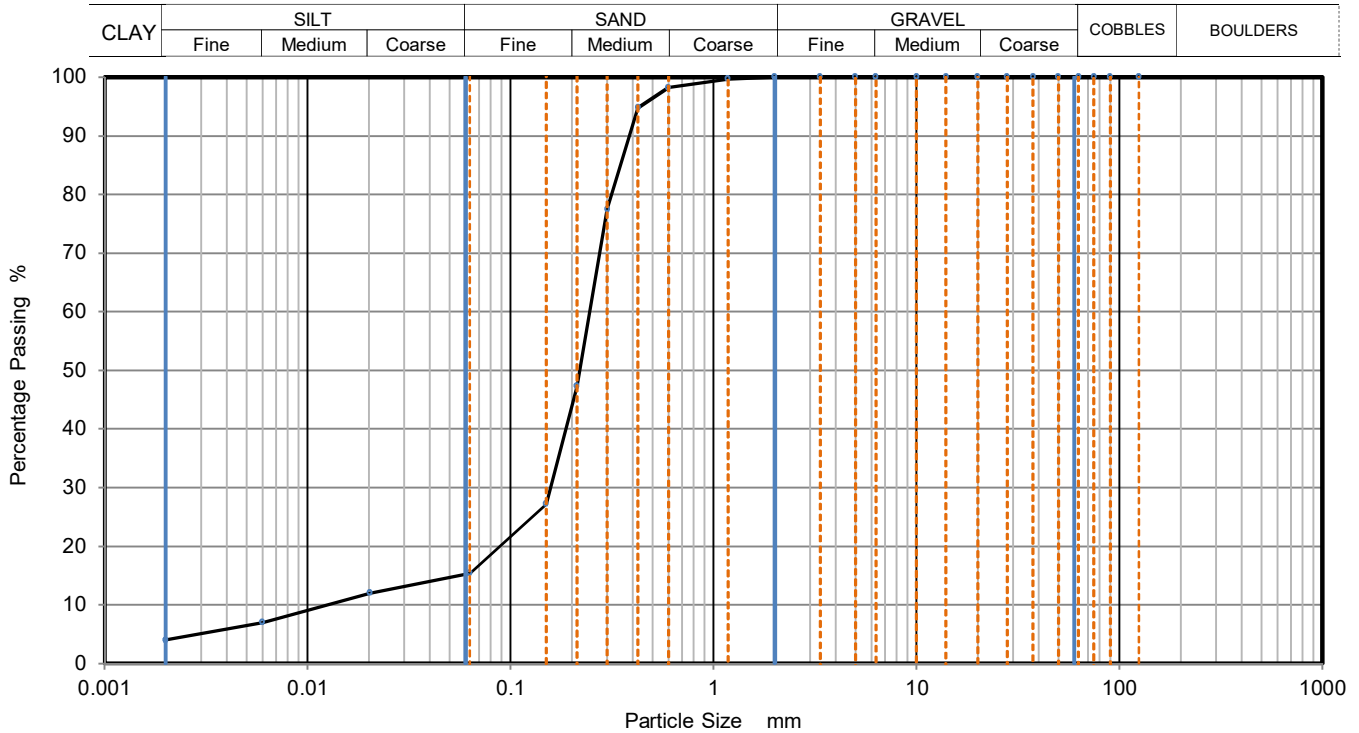
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Grey slightly clayey silty SAND.	Sample Depth (m)	27.00
		Sample Reference	B75



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	12
90	100	0.0060	7
75	100	0.0020	4
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	98		
0.425	95	Particle density (assumed) 2.65 Mg/m ³	
0.3	78		
0.212	47		
0.15	27		
0.063	15		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	85
Silt	12
Clay	4

Grading Analysis		
D100	mm	
D60	mm	0.245
D30	mm	0.157
D10	mm	0.012
Uniformity Coefficient		21
Curvature Coefficient		8.6

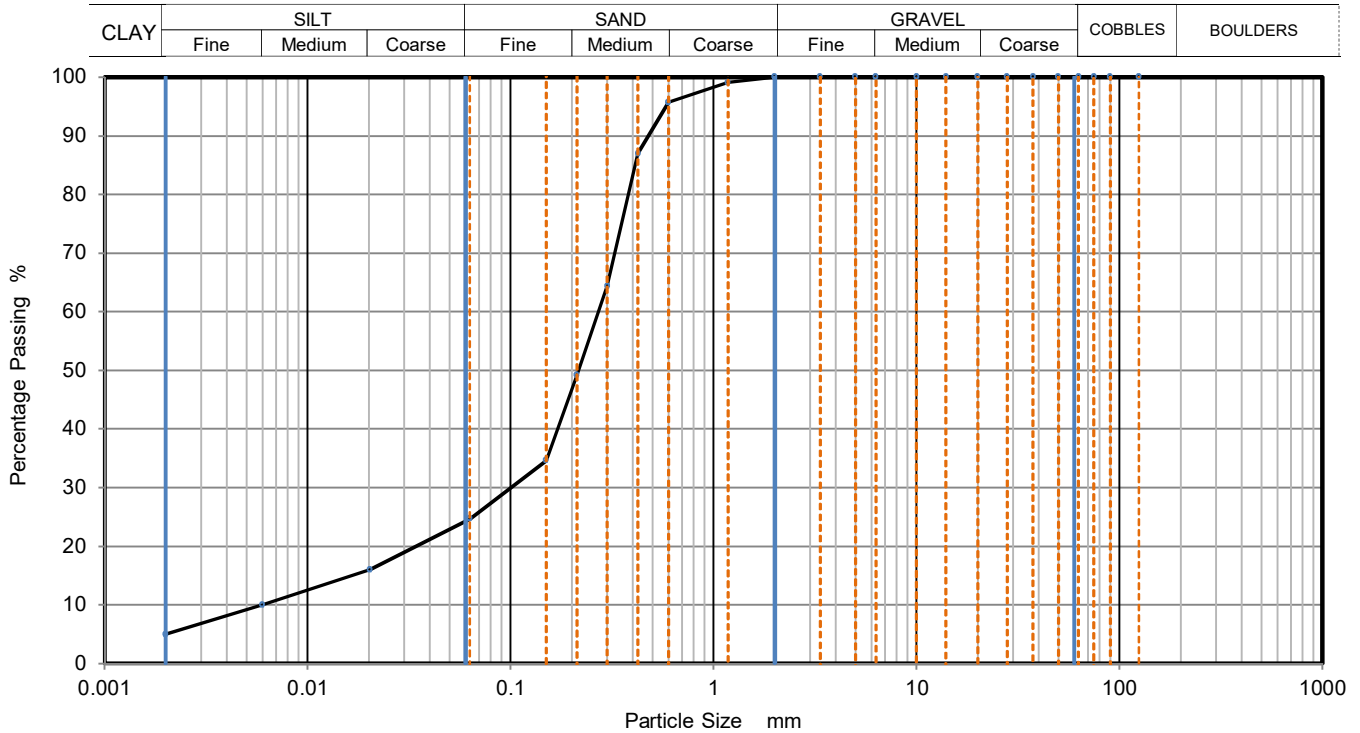
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Grey slightly clayey silty SAND.	Sample Depth (m)	28.00
		Sample Reference	B77



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	16
90	100	0.0060	10
75	100	0.0020	5
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	96		
0.425	87	Particle density (assumed) 2.65 Mg/m ³	
0.3	64		
0.212	49		
0.15	35		
0.063	25		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	75
Silt	20
Clay	5

Grading Analysis		
D100	mm	
D60	mm	0.271
D30	mm	0.100
D10	mm	0.007
Uniformity Coefficient		41
Curvature Coefficient		5.6

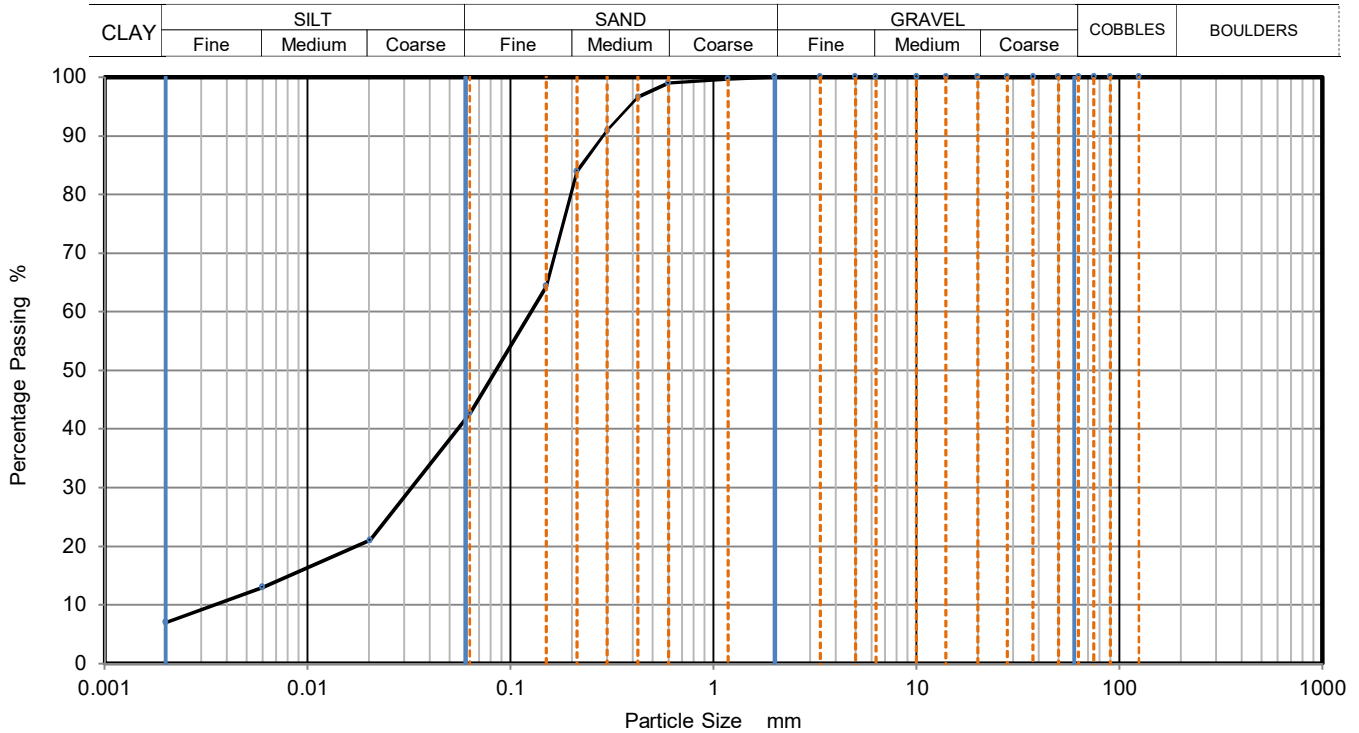
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Dark grey sandy clayey SILT	Sample Depth (m)	30.00
		Sample Reference	D79



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	21
90	100	0.0060	13
75	100	0.0020	7
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99	Particle density (assumed)	
0.425	97	2.65	Mg/m3
0.3	91		
0.212	84		
0.15	64		
0.063	43		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	57
Silt	35
Clay	7

Grading Analysis		
D100	mm	
D60	mm	0.126
D30	mm	0.032
D10	mm	0.003
Uniformity Coefficient		36
Curvature Coefficient		2.4

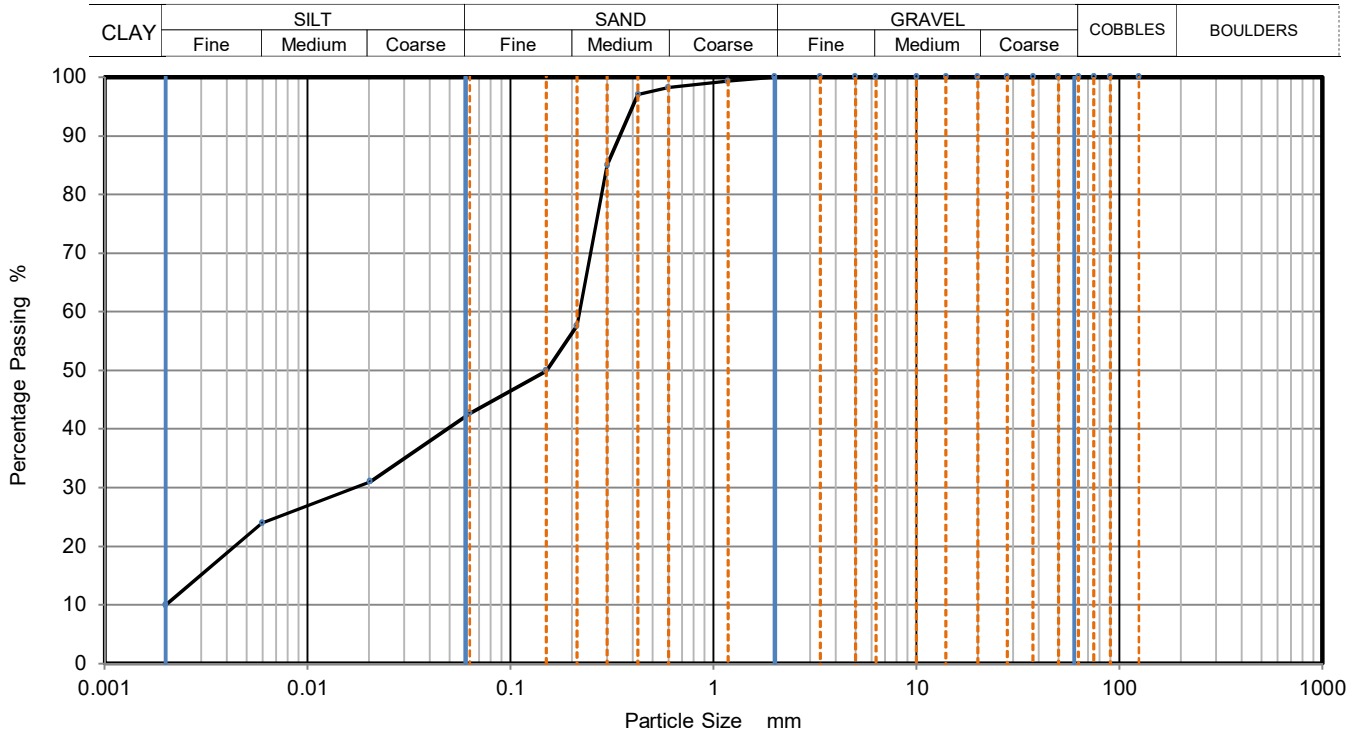
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Grey sandy clayey SILT	Sample Depth (m)	32.00
		Sample Reference	B84



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	31
90	100	0.0060	24
75	100	0.0020	10
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	98		
0.425	97	Particle density (assumed) 2.65 Mg/m3	
0.3	85		
0.212	58		
0.15	50		
0.063	43		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	57
Silt	32
Clay	10

Grading Analysis		
D100	mm	
D60	mm	0.219
D30	mm	0.018
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

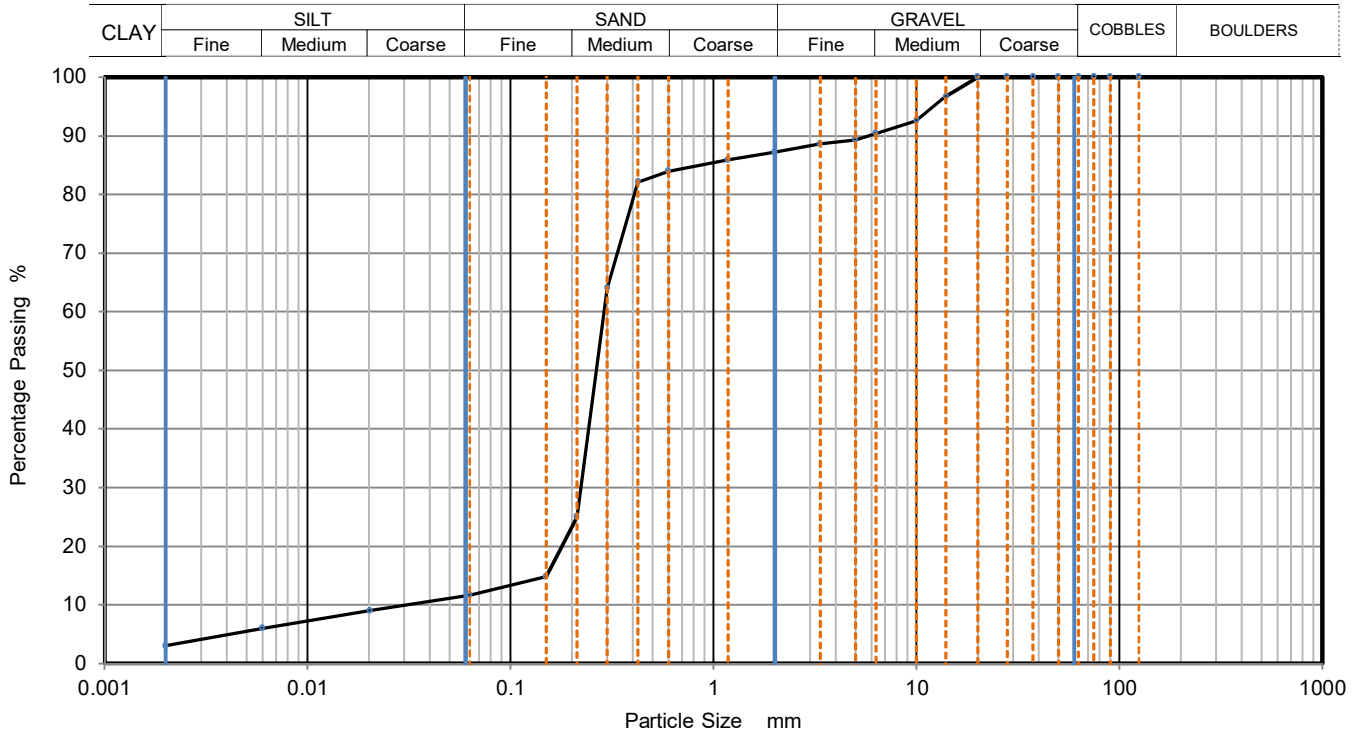
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Grey slightly clayey silty gravelly SAND. Gravel is of chalk and shell fragments.	Sample Depth (m)	33.00
		Sample Reference	B85



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	9
90	100	0.0060	6
75	100	0.0020	3
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	97		
10	93		
6.3	90		
5	89		
3.35	89		
2	87		
1.18	86		
0.6	84		
0.425	82	Particle density (assumed) 2.65 Mg/m ³	
0.3	64		
0.212	25		
0.15	15		
0.063	12		

Sample Proportions	% dry mass
Very coarse	0
Gravel	13
Sand	76
Silt	9
Clay	3

Grading Analysis		
D100	mm	
D60	mm	0.290
D30	mm	0.222
D10	mm	0.031
Uniformity Coefficient		9.4
Curvature Coefficient		5.5

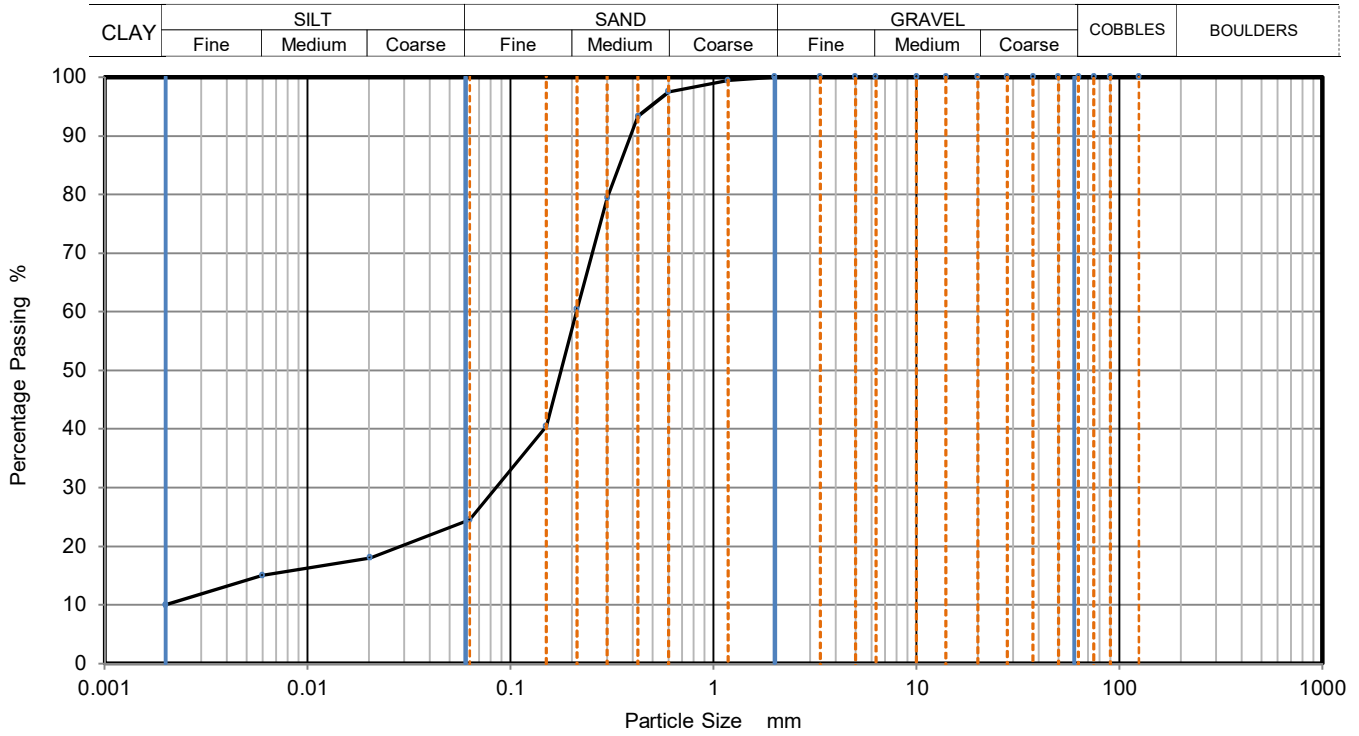
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Grey clayey silty SAND	Sample Depth (m)	35.00
		Sample Reference	B88



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	18
90	100	0.0060	15
75	100	0.0020	10
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	98		
0.425	93	Particle density (assumed) 2.65 Mg/m ³	
0.3	79		
0.212	60		
0.15	40		
0.063	25		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	76
Silt	14
Clay	10

Grading Analysis		
D100	mm	
D60	mm	0.210
D30	mm	0.085
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

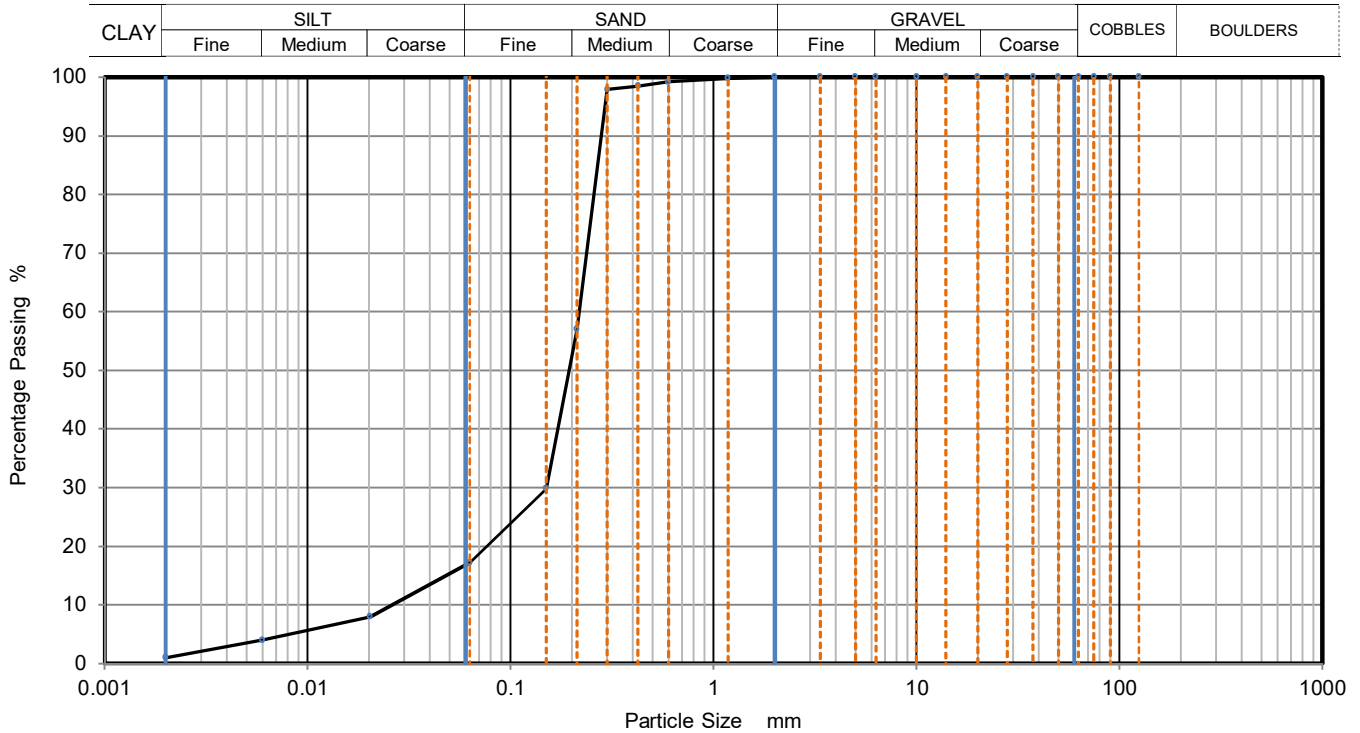
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Grey slightly clayey silty SAND	Sample Depth (m)	37.00
		Sample Reference	B91



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	8
90	100	0.0060	4
75	100	0.0020	1
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99	Particle density (assumed)	
0.425	99	2.65	Mg/m3
0.3	98		
0.212	57		
0.15	30		
0.063	17		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	83
Silt	16
Clay	1

Grading Analysis		
D100	mm	
D60	mm	0.217
D30	mm	0.150
D10	mm	0.027
Uniformity Coefficient		8.2
Curvature Coefficient		3.9

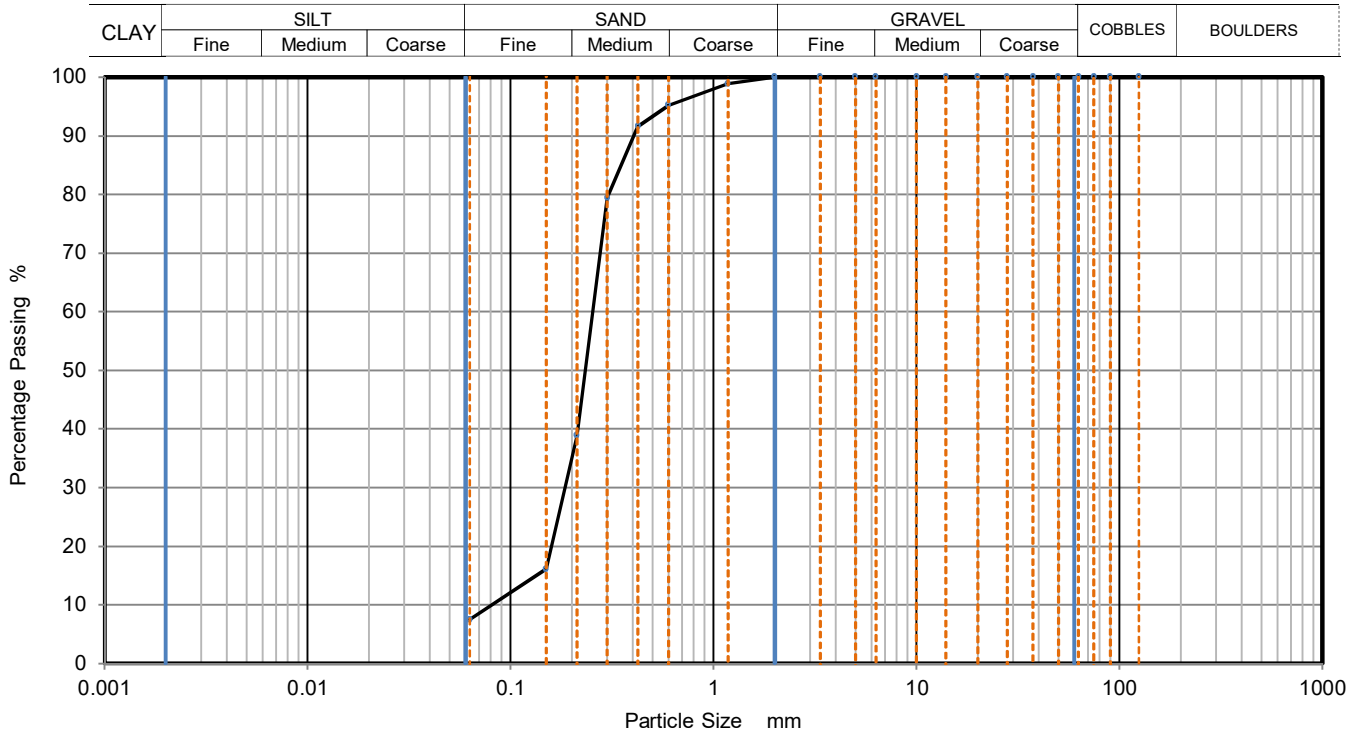
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Grey silty SAND	Sample Depth (m)	39.00
		Sample Reference	B94



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	95		
0.425	92		
0.3	79		
0.212	39		
0.15	16		
0.063	8		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	93
Fines <0.063mm	8

Grading Analysis		
D100	mm	
D60	mm	0.254
D30	mm	0.185
D10	mm	0.081
Uniformity Coefficient		3.1
Curvature Coefficient		1.7

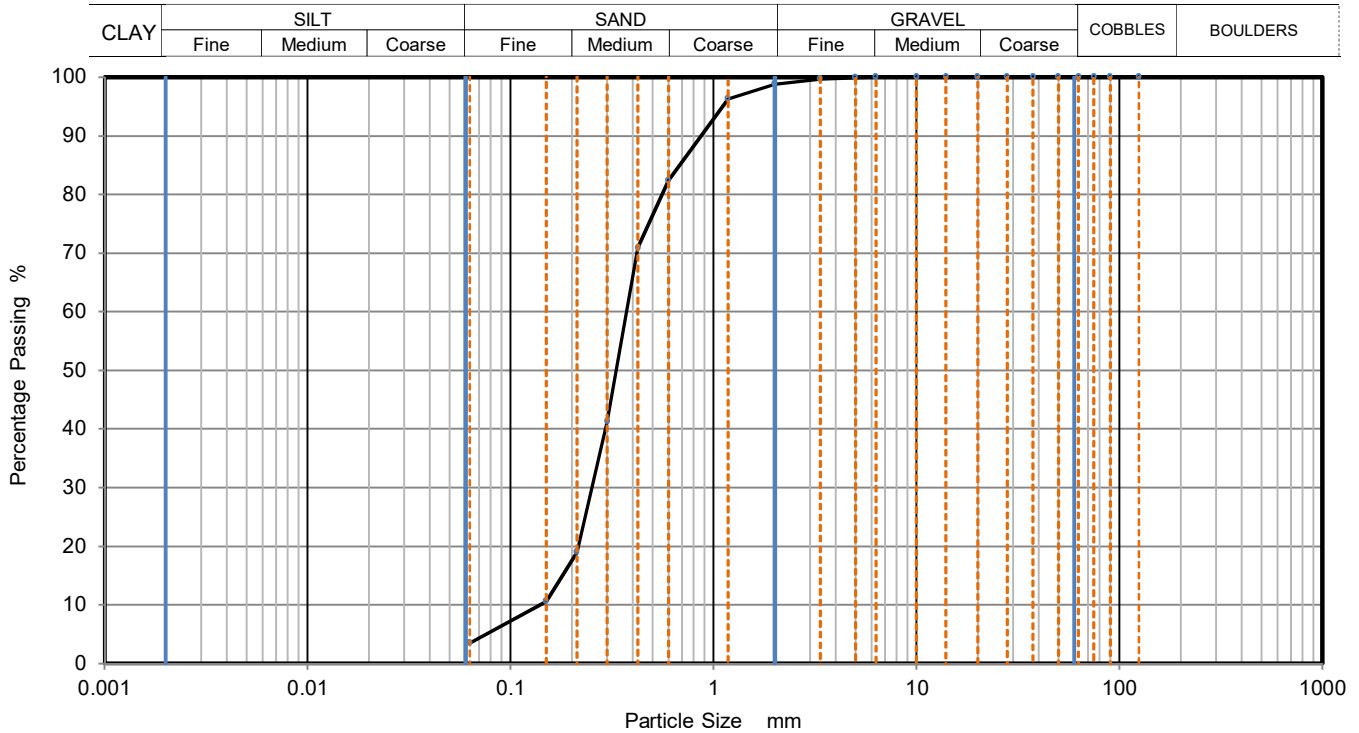
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Grey slightly silty slightly gravelly SAND. Gravel is of shell fragments	Sample Depth (m)	42.00
		Sample Reference	B99



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	99		
1.18	96		
0.6	82		
0.425	71		
0.3	41		
0.212	19		
0.15	11		
0.063	4		

Sample Proportions	% dry mass
Very coarse	0
Gravel	1
Sand	95
Fines <0.063mm	4

Grading Analysis		
D100	mm	
D60	mm	0.374
D30	mm	0.252
D10	mm	0.139
Uniformity Coefficient		2.7
Curvature Coefficient		1.2

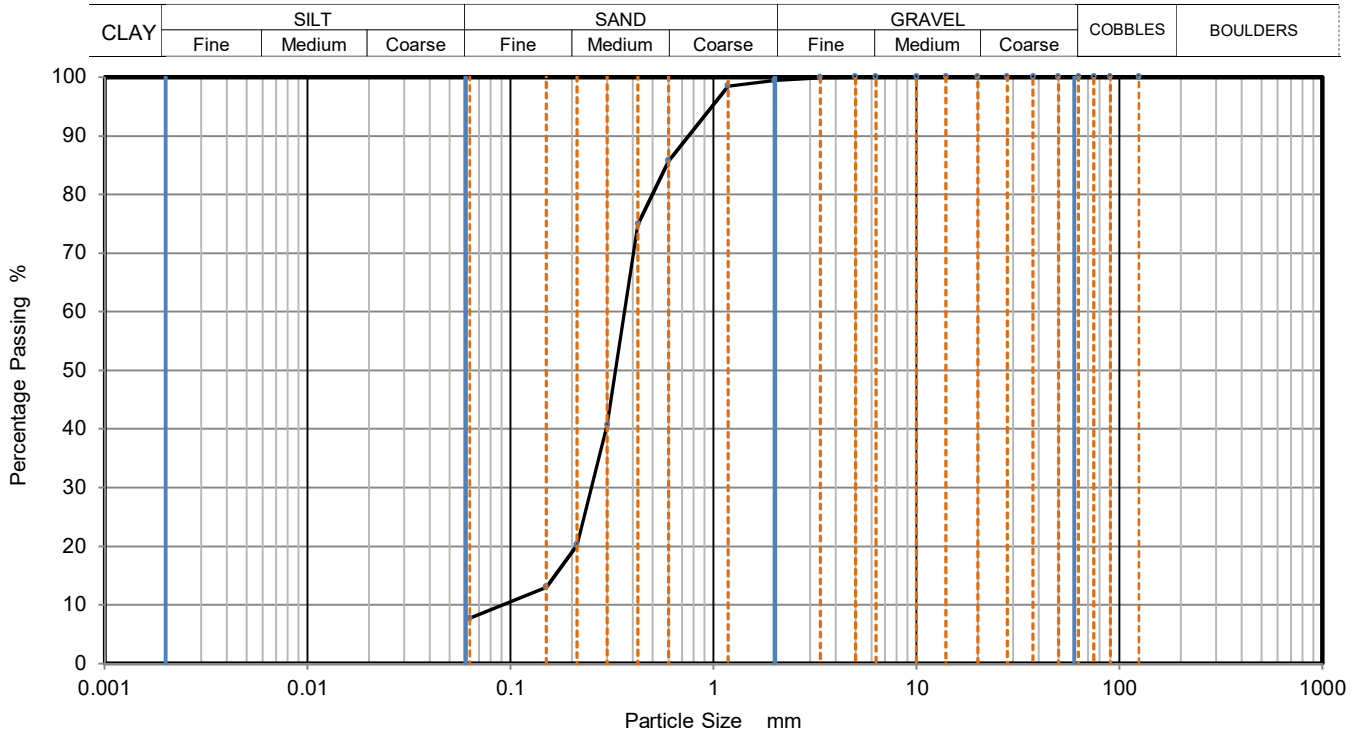
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Grey silty slightly gravelly SAND. Gravel is of shell fragments	Sample Depth (m)	44.00
		Sample Reference	B102



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	99		
1.18	99		
0.6	86		
0.425	75		
0.3	41		
0.212	20		
0.15	13		
0.063	8		

Sample Proportions	% dry mass
Very coarse	0
Gravel	1
Sand	92
Fines <0.063mm	8

Grading Analysis		
D100	mm	
D60	mm	0.365
D30	mm	0.250
D10	mm	0.092
Uniformity Coefficient		4
Curvature Coefficient		1.9

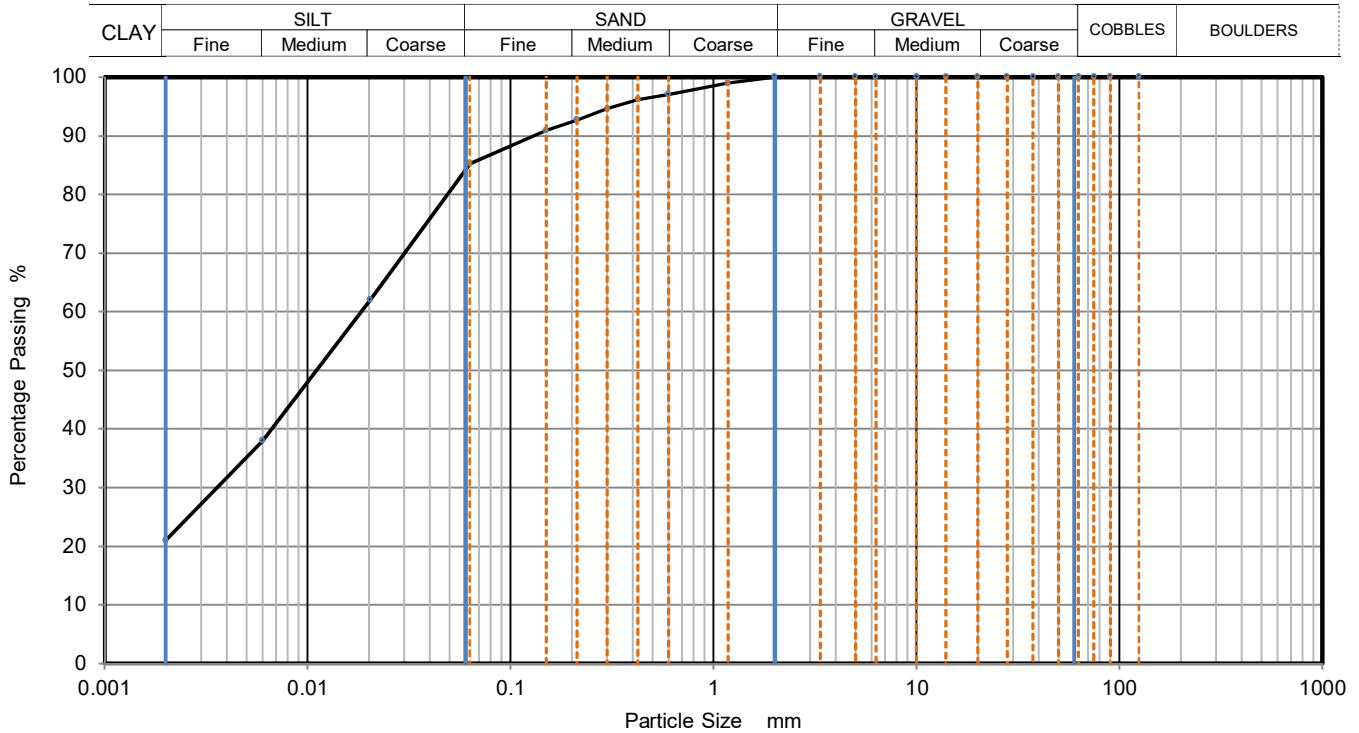
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Dark grey slightly sandy very silty CLAY	Sample Depth (m)	45.60
		Sample Reference	B104



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	62
90	100	0.0060	38
75	100	0.0020	21
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	97		
0.425	96	Particle density (assumed) 2.65 Mg/m3	
0.3	95		
0.212	93		
0.15	91		
0.063	85		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	15
Silt	64
Clay	21

Grading Analysis		
D100	mm	
D60	mm	0.019
D30	mm	0.004
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

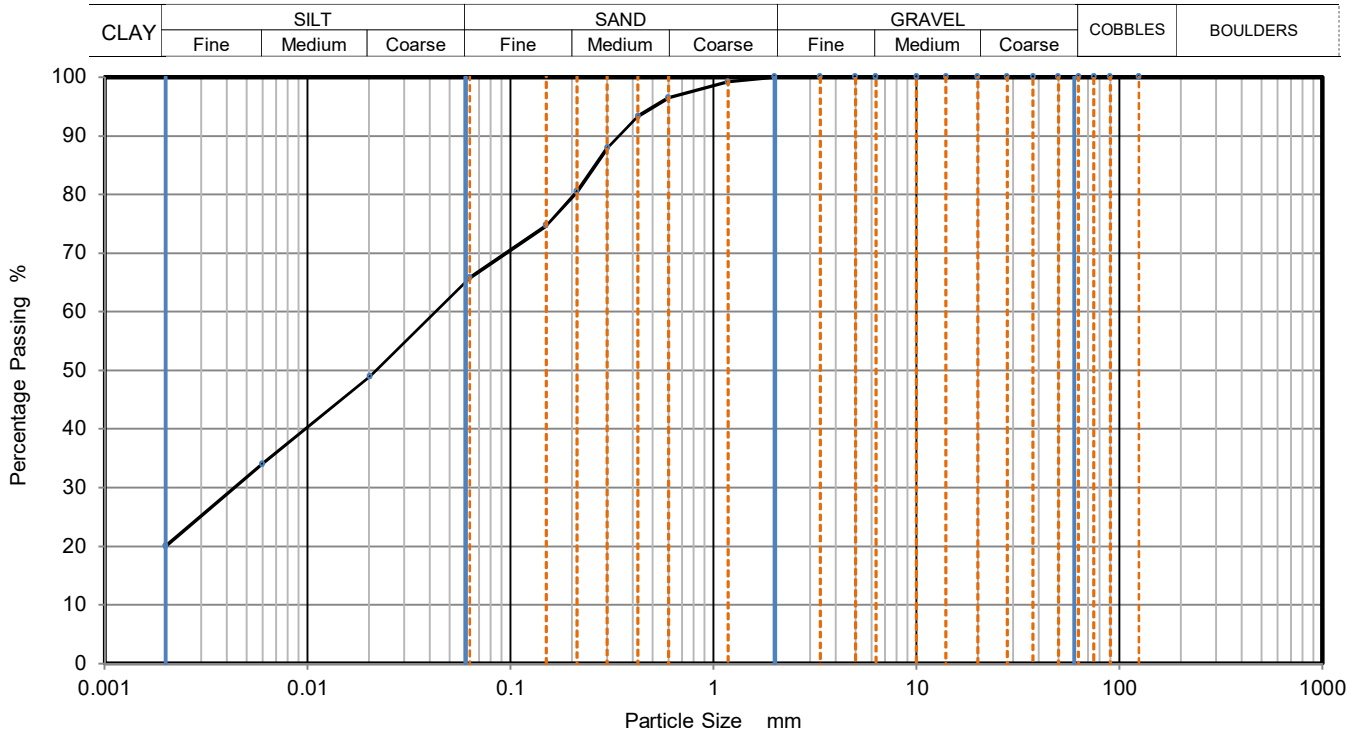
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Dark grey slightly sandy silty CLAY	Sample Depth (m)	46.00
		Sample Reference	D105



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	49
90	100	0.0060	34
75	100	0.0020	20
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	97		
0.425	93	Particle density (assumed) 2.65 Mg/m3	
0.3	88		
0.212	81		
0.15	75		
0.063	66		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	34
Silt	46
Clay	20

Grading Analysis		
D100	mm	
D60	mm	0.042
D30	mm	0.004
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

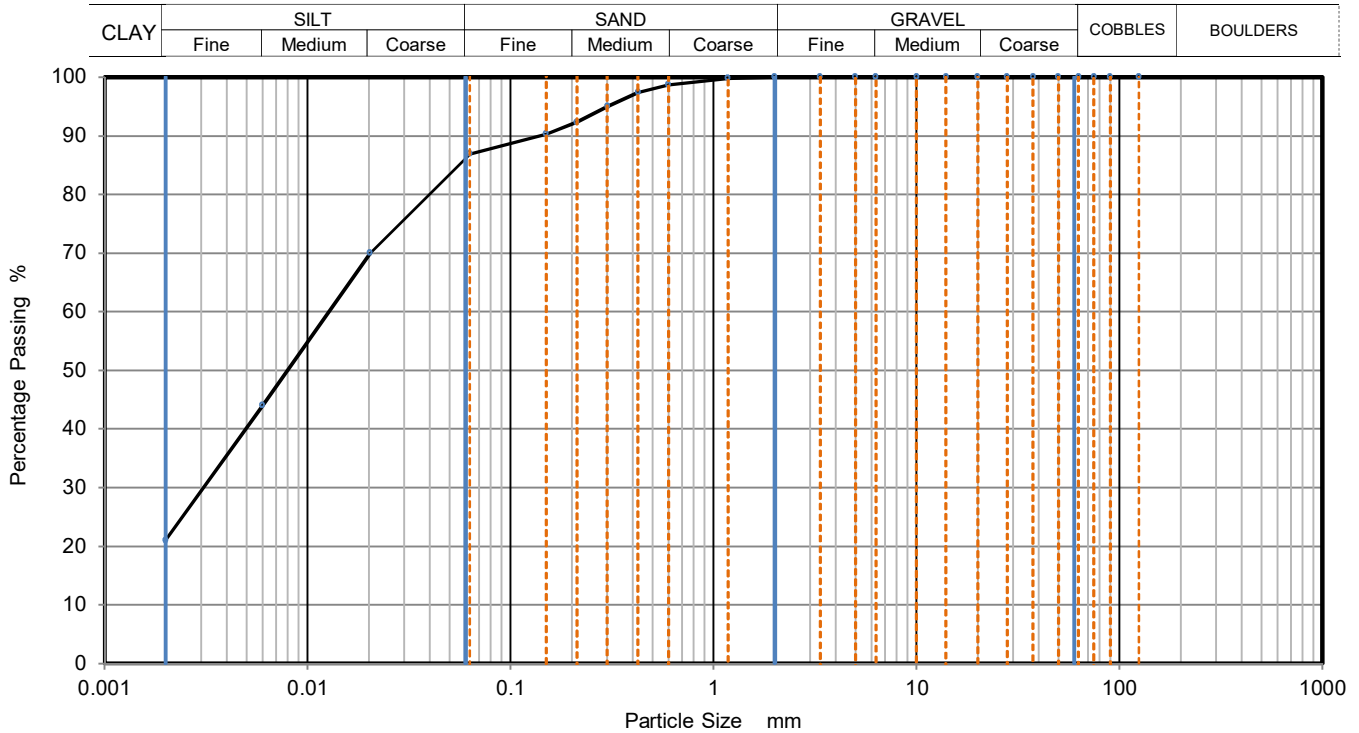
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Dark grey slightly sandy very silty CLAY	Sample Depth (m)	48.00
		Sample Reference	B110



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	70
90	100	0.0060	44
75	100	0.0020	21
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	97		
0.3	95		
0.212	92		
0.15	90		
0.063	87		
		Particle density (assumed) 2.65 Mg/m ³	

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	13
Silt	66
Clay	21

Grading Analysis		
D100	mm	
D60	mm	0.013
D30	mm	0.003
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

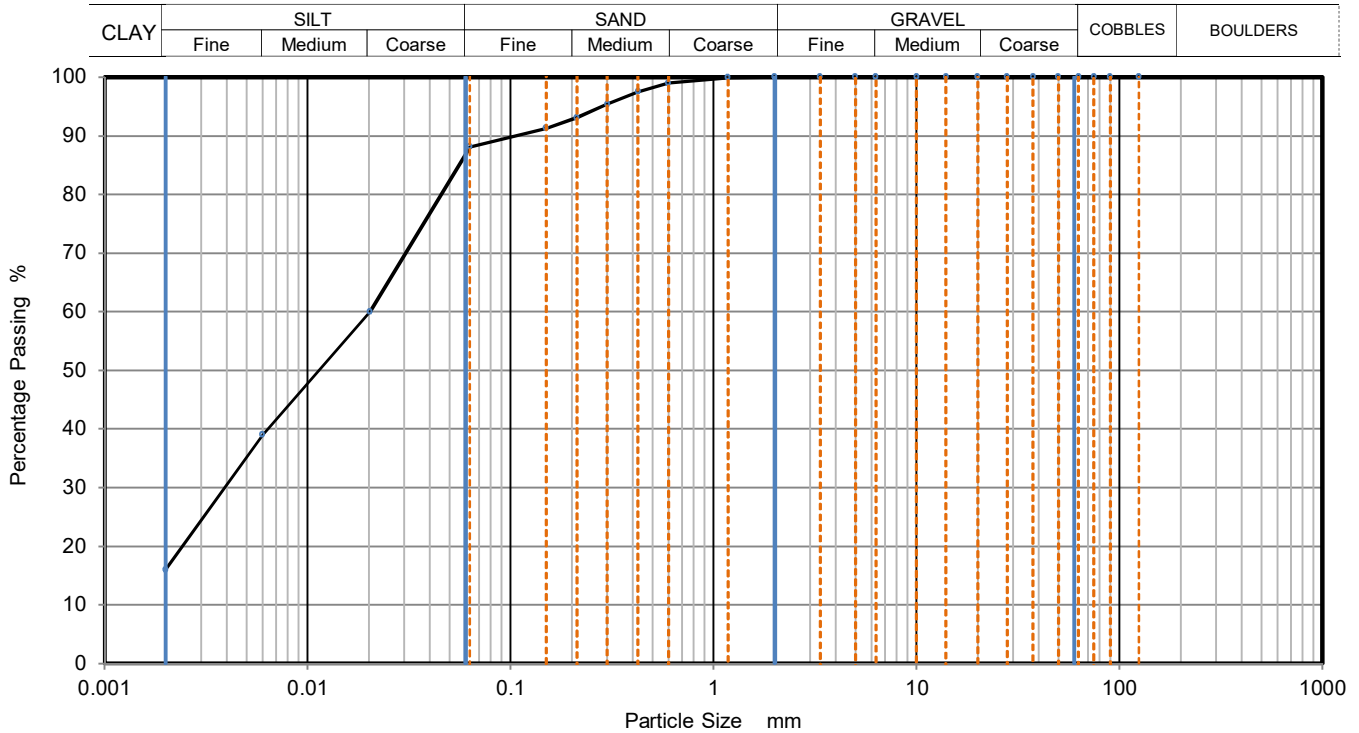
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10A
Sample Description:	Dark grey slightly sandy very silty CLAY	Sample Depth (m)	49.50
		Sample Reference	D113



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	60
90	100	0.0060	39
75	100	0.0020	16
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	98		
0.3	95		
0.212	93		
0.15	91		
0.063	88		
		Particle density (assumed) 2.65 Mg/m ³	

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	12
Silt	72
Clay	16

Grading Analysis		
D100	mm	
D60	mm	0.020
D30	mm	0.004
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

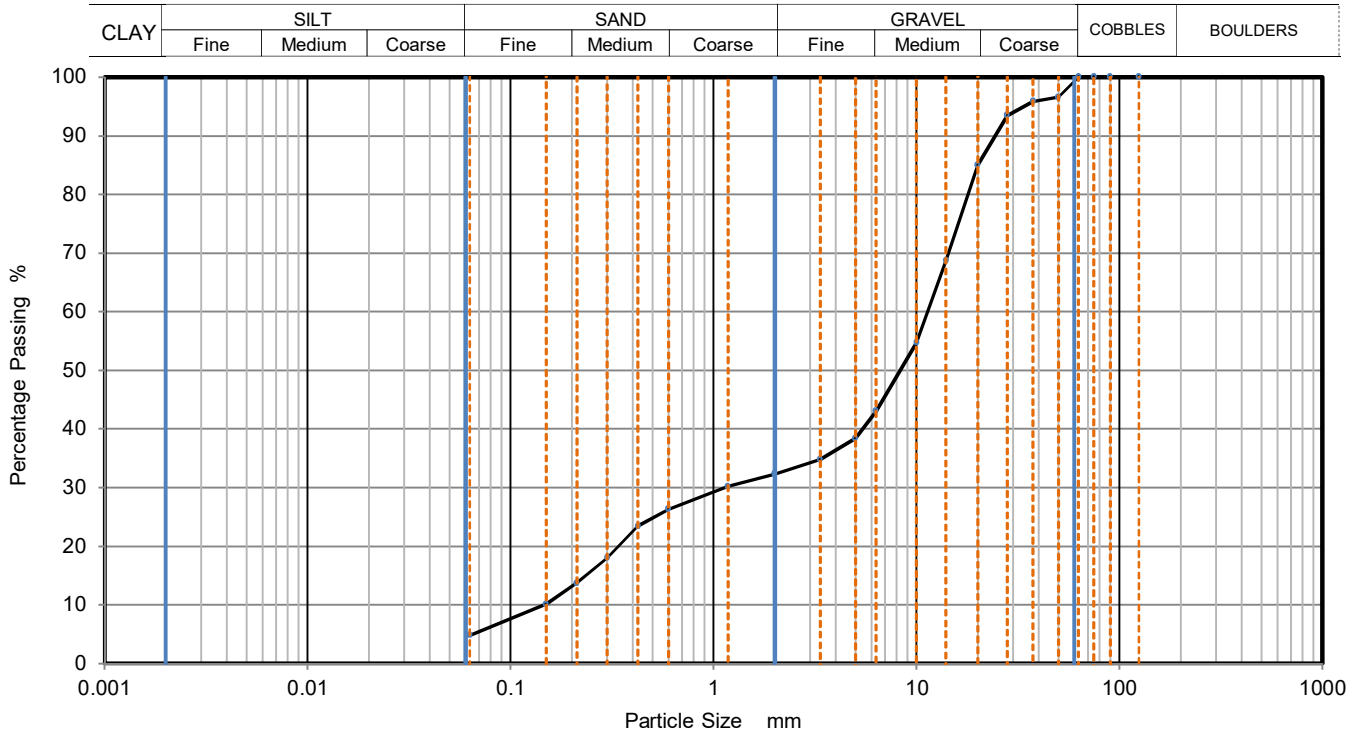
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	MADE GROUND (Dark brown slightly silty very sandy GRAVEL. Gravel is of flint, quartz, brick, concrete and asphalt fragments)	Sample Depth (m)	0.65
		Sample Reference	B1



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	97		
37.5	96		
28	94		
20	85		
14	69		
10	55		
6.3	43		
5	38		
3.35	35		
2	32		
1.18	30		
0.6	26		
0.425	23		
0.3	18		
0.212	14		
0.15	10		
0.063	5		

Sample Proportions	% dry mass
Very coarse	0
Gravel	68
Sand	28
Fines <0.063mm	5

Grading Analysis		
D100	mm	
D60	mm	11.400
D30	mm	1.140
D10	mm	0.148
Uniformity Coefficient		77
Curvature Coefficient		0.78

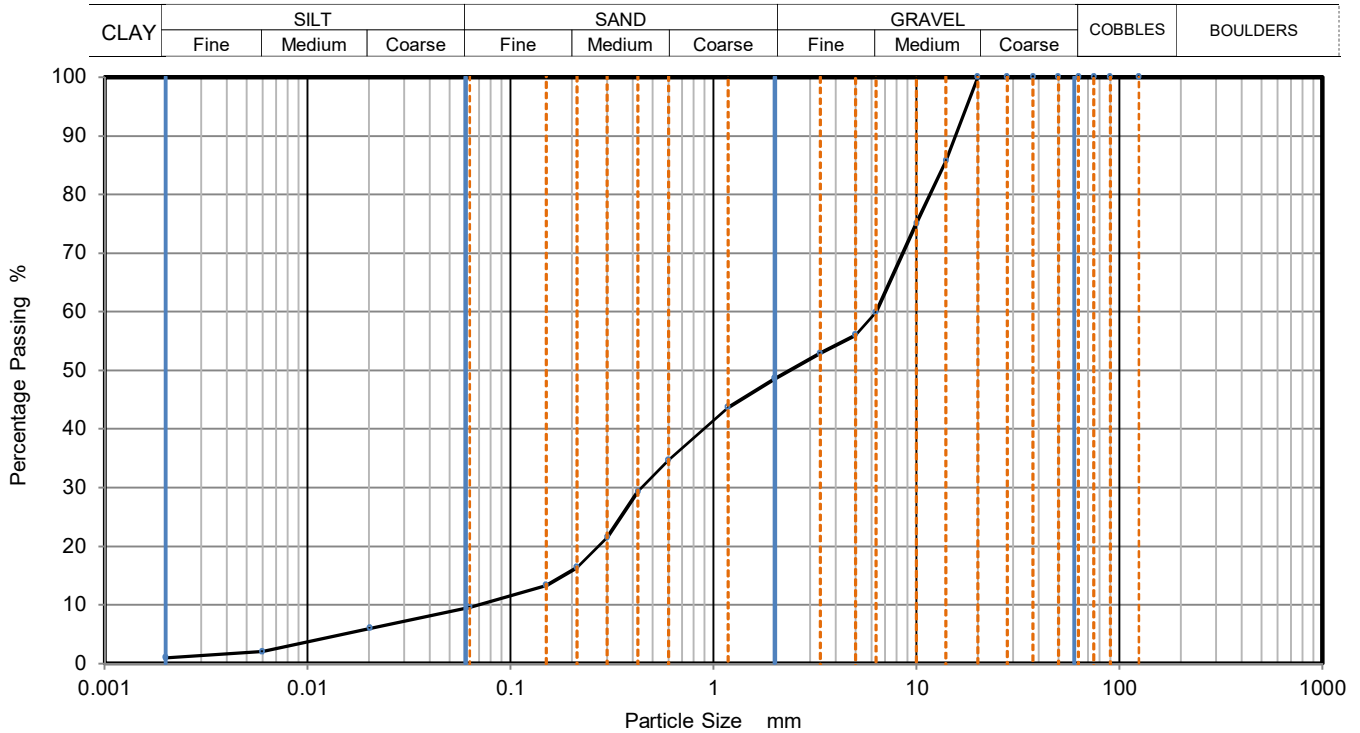
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	MADE GROUND (Dark grey slightly clayey silty very sandy GRAVEL. Gravel is of flint and asphalt fragments)	Sample Depth (m)	0.90
		Sample Reference	B3



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	6
90	100	0.0060	2
75	100	0.0020	1
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	86		
10	75		
6.3	60		
5	56		
3.35	53		
2	49		
1.18	44		
0.6	35		
0.425	29	Particle density (assumed) 2.65 Mg/m ³	
0.3	22		
0.212	16		
0.15	13		
0.063	10		

Sample Proportions	% dry mass
Very coarse	0
Gravel	51
Sand	39
Silt	8
Clay	1

Grading Analysis		
D100	mm	
D60	mm	6.320
D30	mm	0.444
D10	mm	0.070
Uniformity Coefficient		90
Curvature Coefficient		0.45

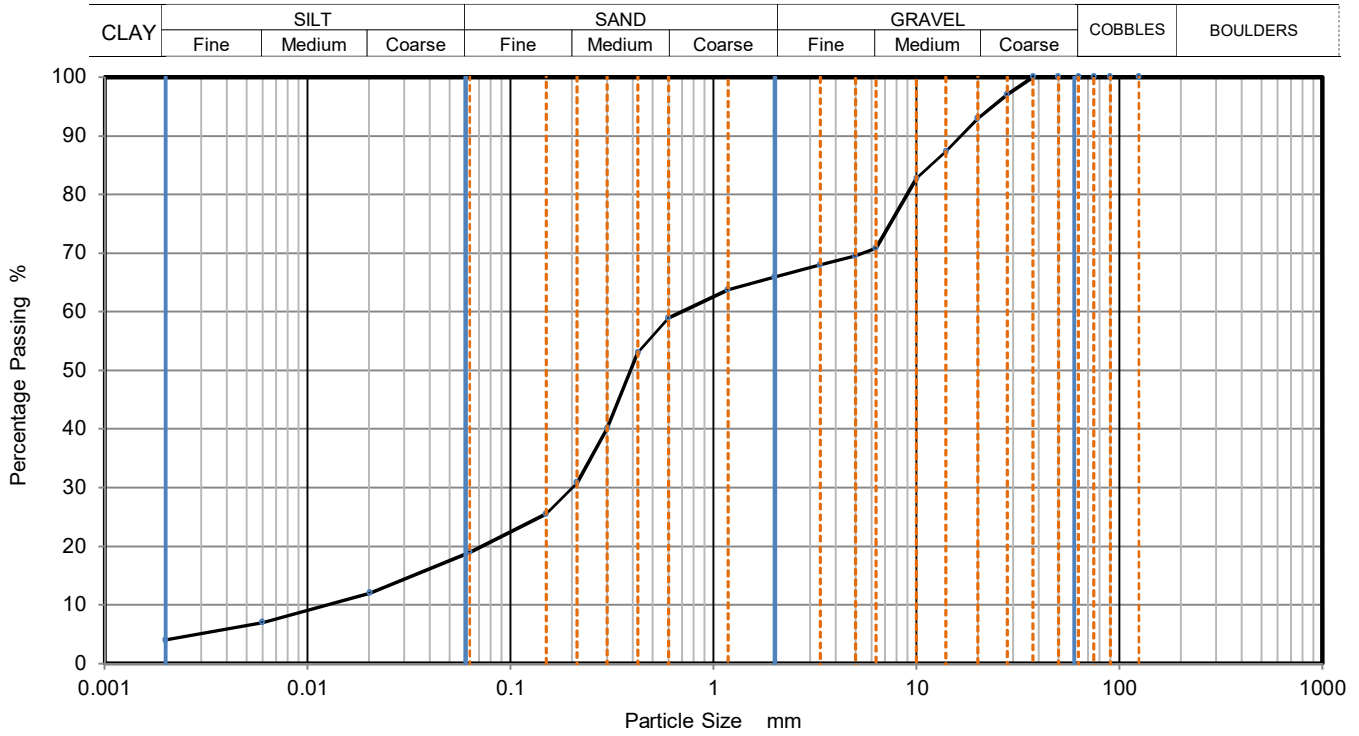
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	MADE GROUND (Dark grey brown slightly clayey silty very gravelly SAND. Gravel is of flint quartz, brick, wood and concrete fragments)	Sample Depth (m)	1.20
		Sample Reference	B5



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	12
90	100	0.0060	7
75	100	0.0020	4
63	100		
50	100		
37.5	100		
28	97		
20	93		
14	87		
10	83		
6.3	71		
5	70		
3.35	68		
2	66		
1.18	64		
0.6	59		
0.425	53	Particle density (assumed) 2.65 Mg/m ³	
0.3	40		
0.212	31		
0.15	26		
0.063	19		

Sample Proportions	% dry mass
Very coarse	0
Gravel	34
Sand	47
Silt	15
Clay	4

Grading Analysis		
D100	mm	
D60	mm	0.704
D30	mm	0.201
D10	mm	0.012
Uniformity Coefficient		60
Curvature Coefficient		4.9

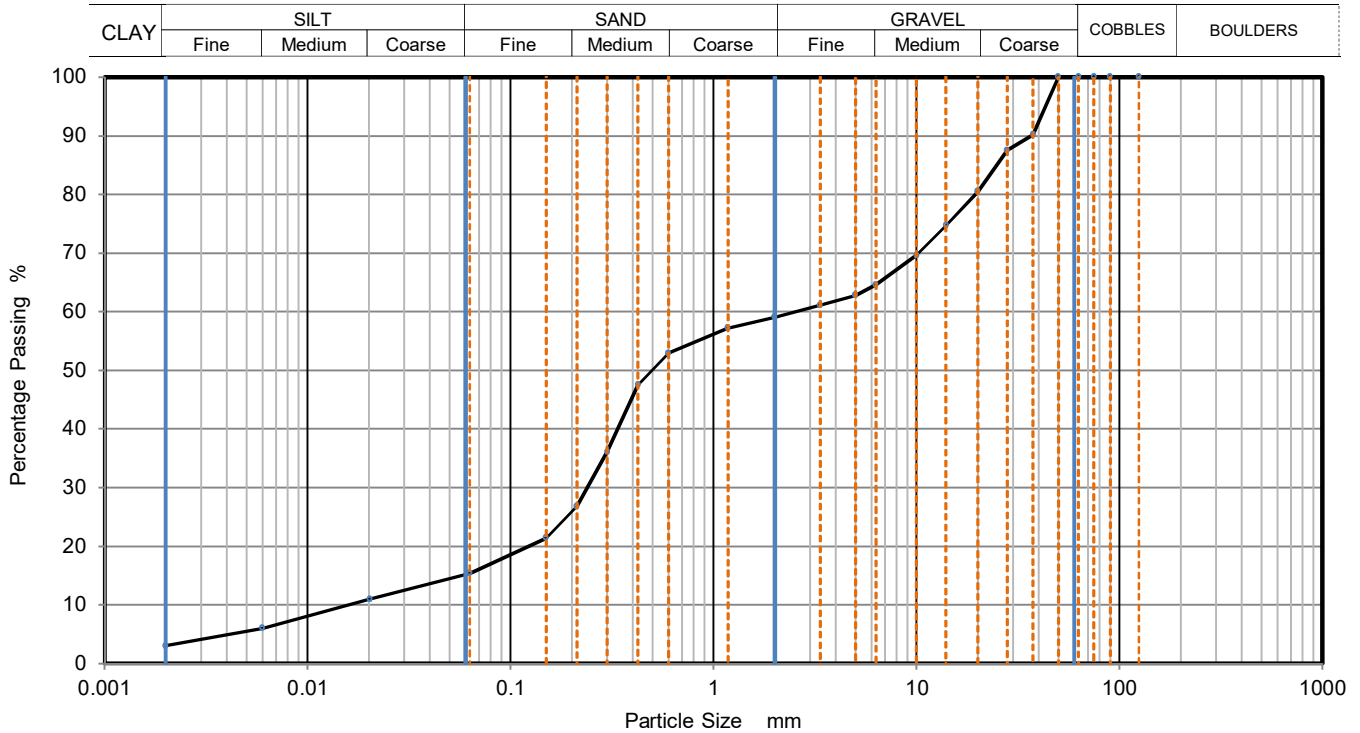
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	MADE GROUND (Dark grey brown slightly clayey silty SAND / GRAVEL. Gravel is of flint, brick wood, metal and concrete fragments.	Sample Depth (m)	1.50
		Sample Reference	B8



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	11
90	100	0.0060	6
75	100	0.0020	3
63	100		
50	100		
37.5	90		
28	88		
20	81		
14	75		
10	70		
6.3	65		
5	63		
3.35	61		
2	59		
1.18	57		
0.6	53		
0.425	48	Particle density (assumed) 2.65 Mg/m3	
0.3	36		
0.212	27		
0.15	21		
0.063	15		

Sample Proportions	% dry mass
Very coarse	0
Gravel	41
Sand	44
Silt	12
Clay	3

Grading Analysis		
D100	mm	
D60	mm	2.540
D30	mm	0.239
D10	mm	0.017
Uniformity Coefficient		150
Curvature Coefficient		1.3

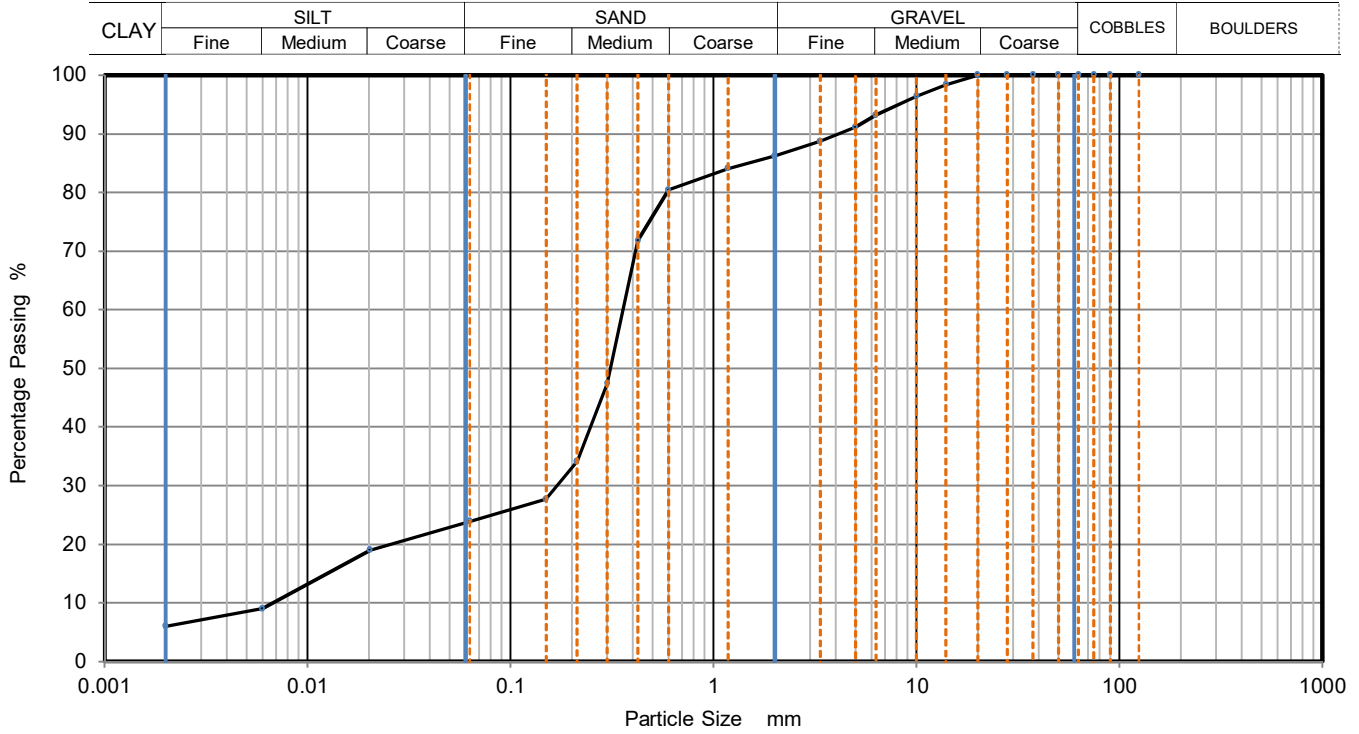
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	MADE GROUND (Dark grey clayey silty gravelly SAND. Gravel is of flint, shell and brick fragments)	Sample Depth (m)	2.80
		Sample Reference	B12



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	19
90	100	0.0060	9
75	100	0.0020	6
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	98		
10	96		
6.3	93		
5	91		
3.35	89		
2	86		
1.18	84		
0.6	80		
0.425	72	Particle density (assumed)	
0.3	47	2.65	Mg/m3
0.212	34		
0.15	28		
0.063	24		

Sample Proportions	% dry mass
Very coarse	0
Gravel	14
Sand	62
Silt	18
Clay	6

Grading Analysis		
D100	mm	
D60	mm	0.359
D30	mm	0.170
D10	mm	0.006
Uniformity Coefficient		55
Curvature Coefficient		12

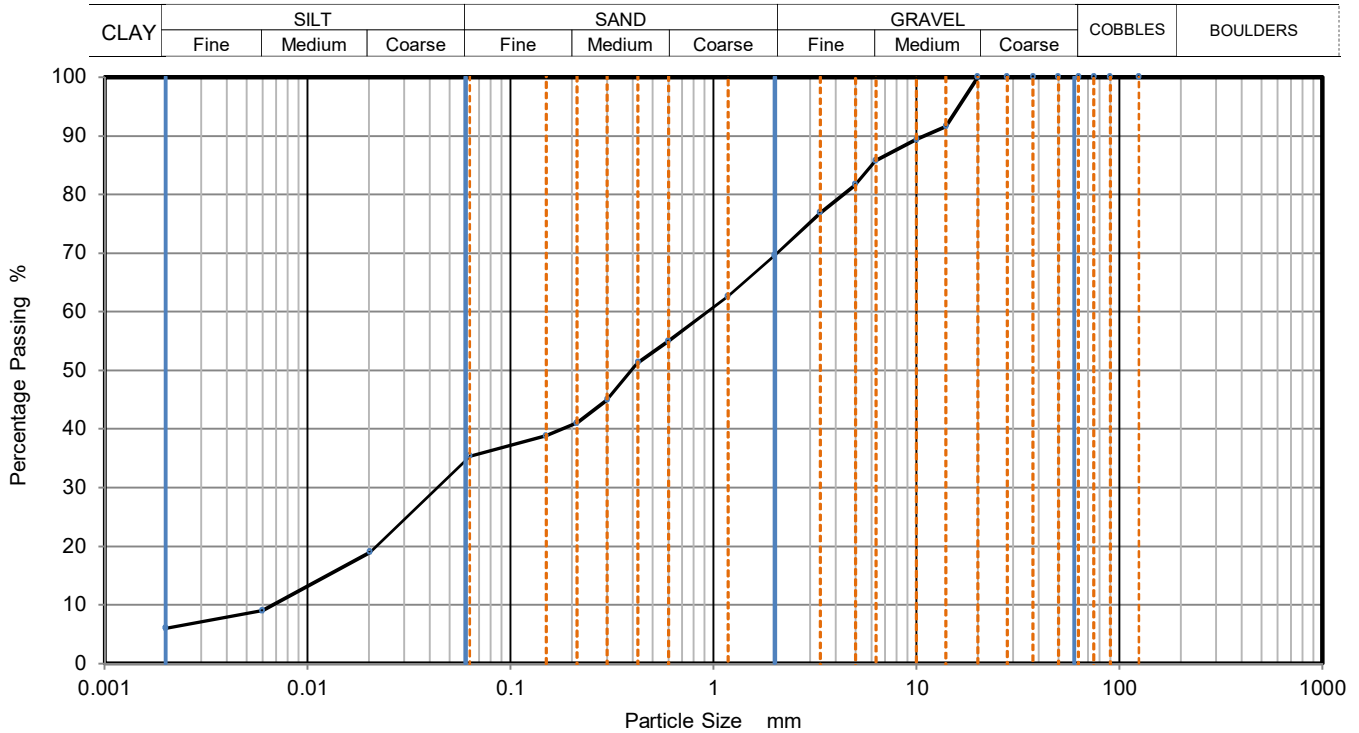
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Dark grey and grey clayey very silty SAND / GRAVEL. Gravel is of flint and shell fragments.	Sample Depth (m)	3.50
		Sample Reference	B15



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	19
90	100	0.0060	9
75	100	0.0020	6
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	92		
10	89		
6.3	86		
5	82		
3.35	77		
2	70		
1.18	63		
0.6	55		
0.425	51	Particle density (assumed) 2.65 Mg/m ³	
0.3	45		
0.212	41		
0.15	39		
0.063	35		

Sample Proportions	% dry mass
Very coarse	0
Gravel	30
Sand	34
Silt	30
Clay	6

Grading Analysis		
D100	mm	
D60	mm	0.936
D30	mm	0.044
D10	mm	0.006
Uniformity Coefficient		150
Curvature Coefficient		0.32

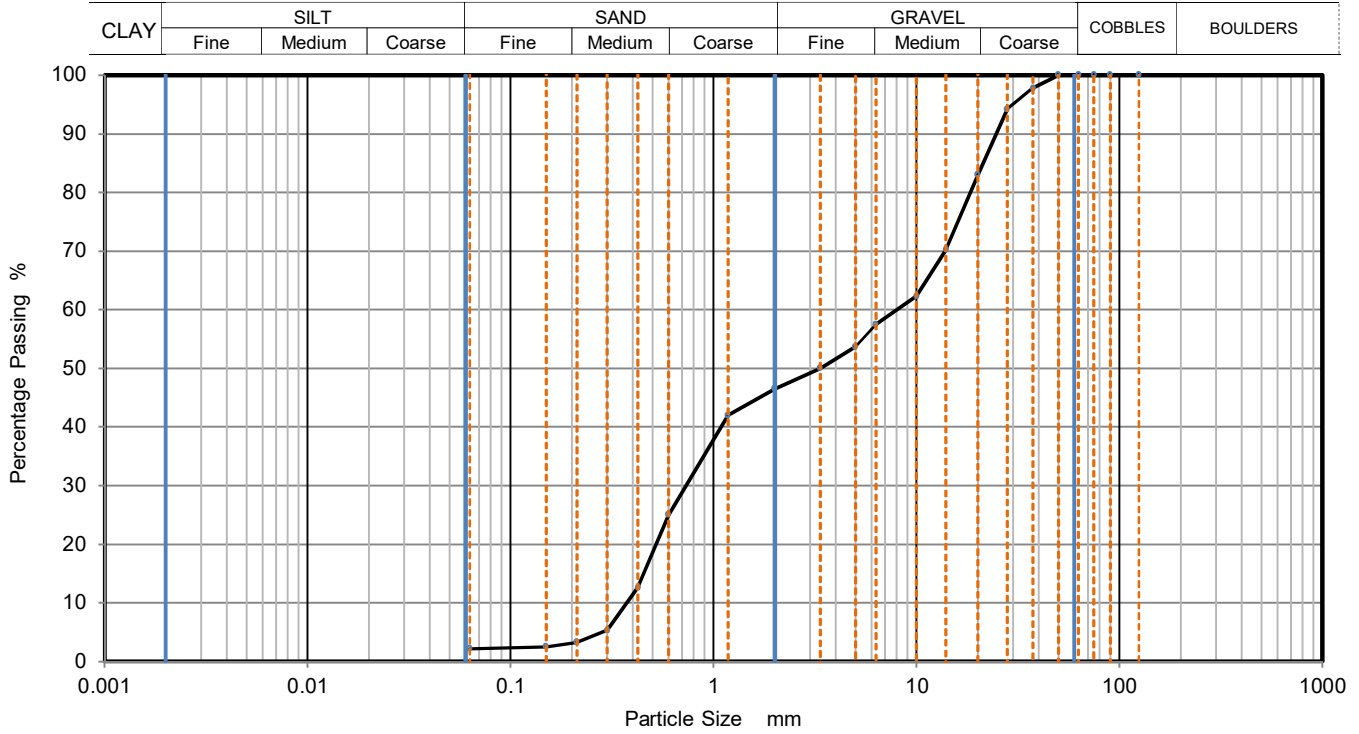
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Brown slightly silty very sandy GRAVEL. Gravel is of flint and quartz	Sample Depth (m)	4.50
		Sample Reference	B17



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	98		
28	94		
20	83		
14	70		
10	62		
6.3	58		
5	54		
3.35	50		
2	47		
1.18	42		
0.6	25		
0.425	13		
0.3	5		
0.212	3		
0.15	3		
0.063	2		

Sample Proportions	% dry mass
Very coarse	0
Gravel	54
Sand	44
Fines <0.063mm	2

Grading Analysis		
D100	mm	
D60	mm	7.990
D30	mm	0.732
D10	mm	0.375
Uniformity Coefficient		21
Curvature Coefficient		0.18

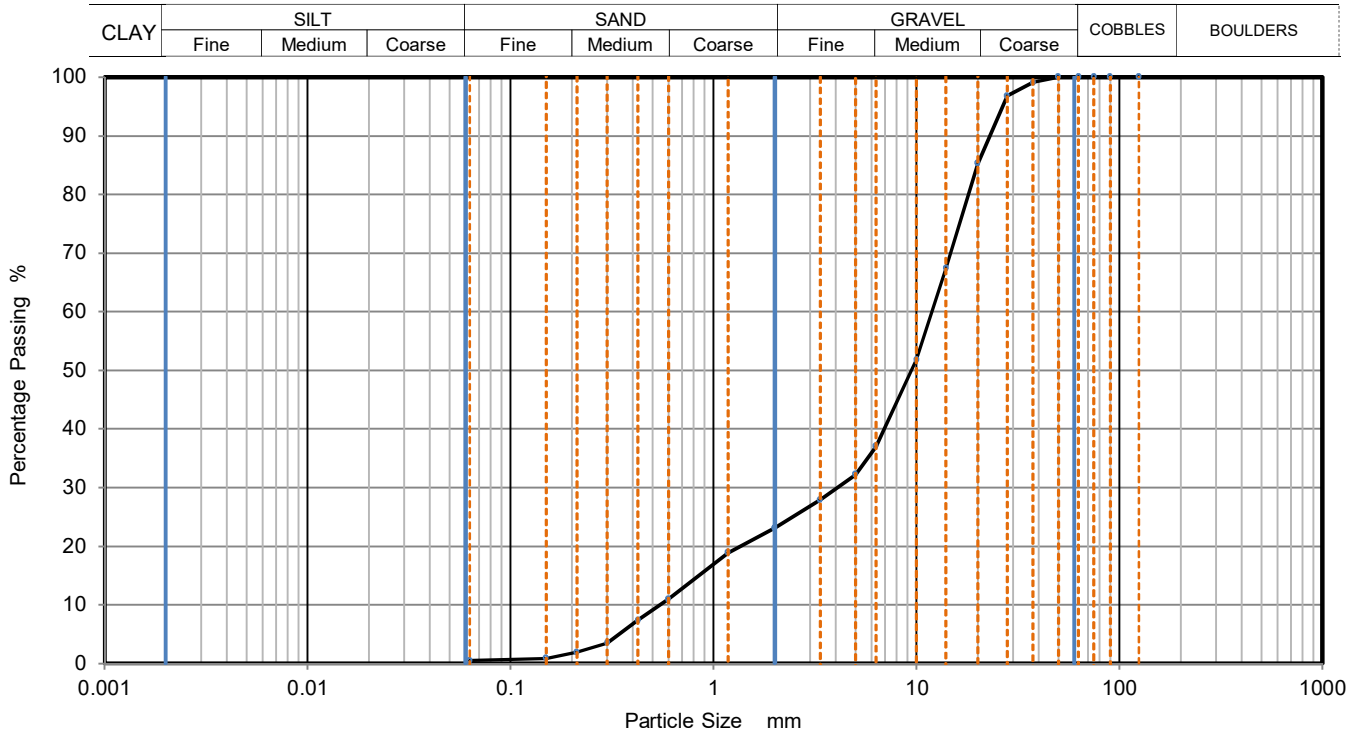
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Brown slightly silty very sandy GRAVEL. Gravel is of flint and quartz	Sample Depth (m)	6.30
		Sample Reference	B22



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	99		
28	97		
20	85		
14	67		
10	52		
6.3	37		
5	32		
3.35	28		
2	23		
1.18	19		
0.6	11		
0.425	7		
0.3	4		
0.212	2		
0.15	1		
0.063	1		

Sample Proportions	% dry mass
Very coarse	0
Gravel	77
Sand	23
Fines <0.063mm	1

Grading Analysis		
D100	mm	
D60	mm	11.900
D30	mm	4.080
D10	mm	0.545
Uniformity Coefficient		22
Curvature Coefficient		2.6

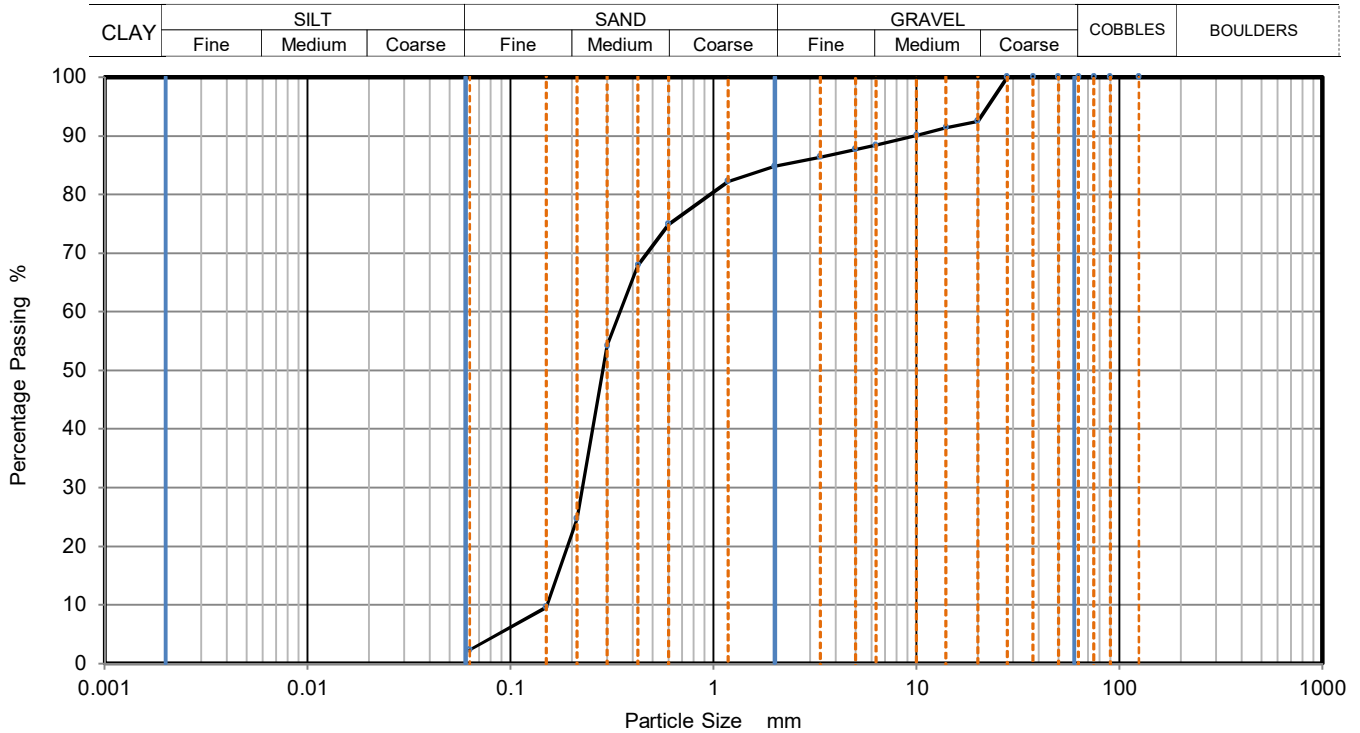
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Brown slightly silty gravelly SAND. Gravel is of flint and quartz	Sample Depth (m)	6.80
		Sample Reference	B24



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	93		
14	91		
10	90		
6.3	88		
5	88		
3.35	86		
2	85		
1.18	82		
0.6	75		
0.425	68		
0.3	54		
0.212	25		
0.15	10		
0.063	2		

Sample Proportions	% dry mass
Very coarse	0
Gravel	15
Sand	83
Fines <0.063mm	2

Grading Analysis		
D100	mm	
D60	mm	0.347
D30	mm	0.226
D10	mm	0.152
Uniformity Coefficient		2.3
Curvature Coefficient		0.97

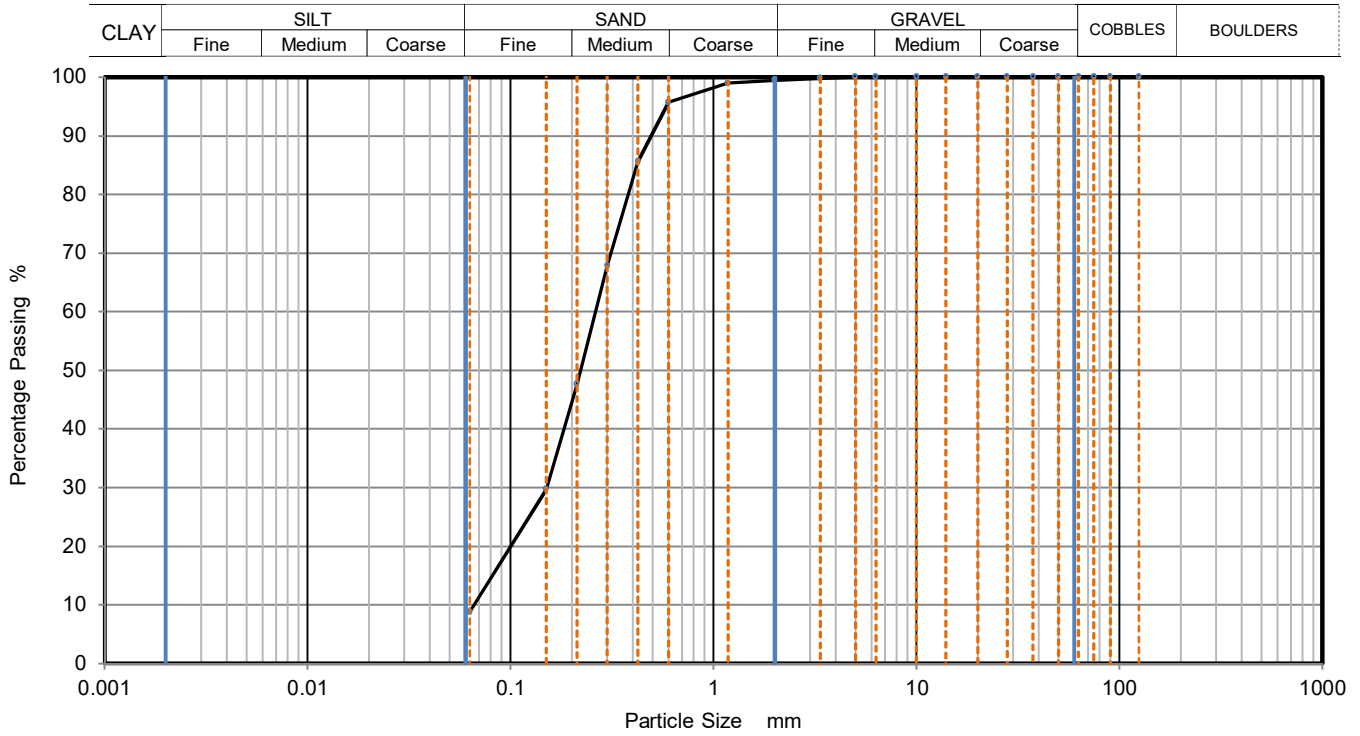
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Brown silty SAND	Sample Depth (m)	7.50
		Sample Reference	B28



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	96		
0.425	86		
0.3	68		
0.212	48		
0.15	30		
0.063	9		

Sample Proportions	% dry mass
Very coarse	0
Gravel	1
Sand	91
Fines <0.063mm	9

Grading Analysis		
D100	mm	
D60	mm	0.262
D30	mm	0.151
D10	mm	0.066
Uniformity Coefficient		4
Curvature Coefficient		1.3

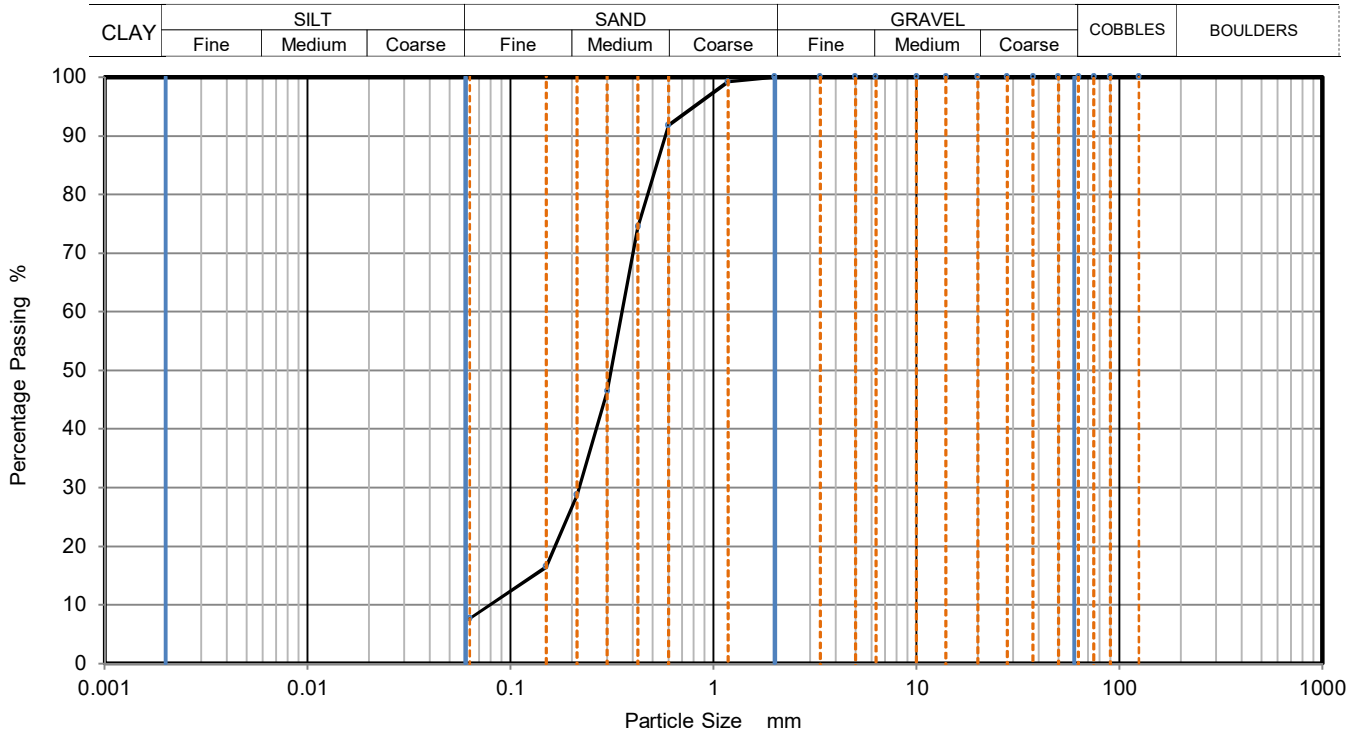
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Grey brown silty SAND.	Sample Depth (m)	10.50
		Sample Reference	B37



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	92		
0.425	75		
0.3	46		
0.212	29		
0.15	17		
0.063	8		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	92
Fines <0.063mm	8

Grading Analysis		
D100	mm	
D60	mm	0.355
D30	mm	0.218
D10	mm	0.079
Uniformity Coefficient		4.5
Curvature Coefficient		1.7

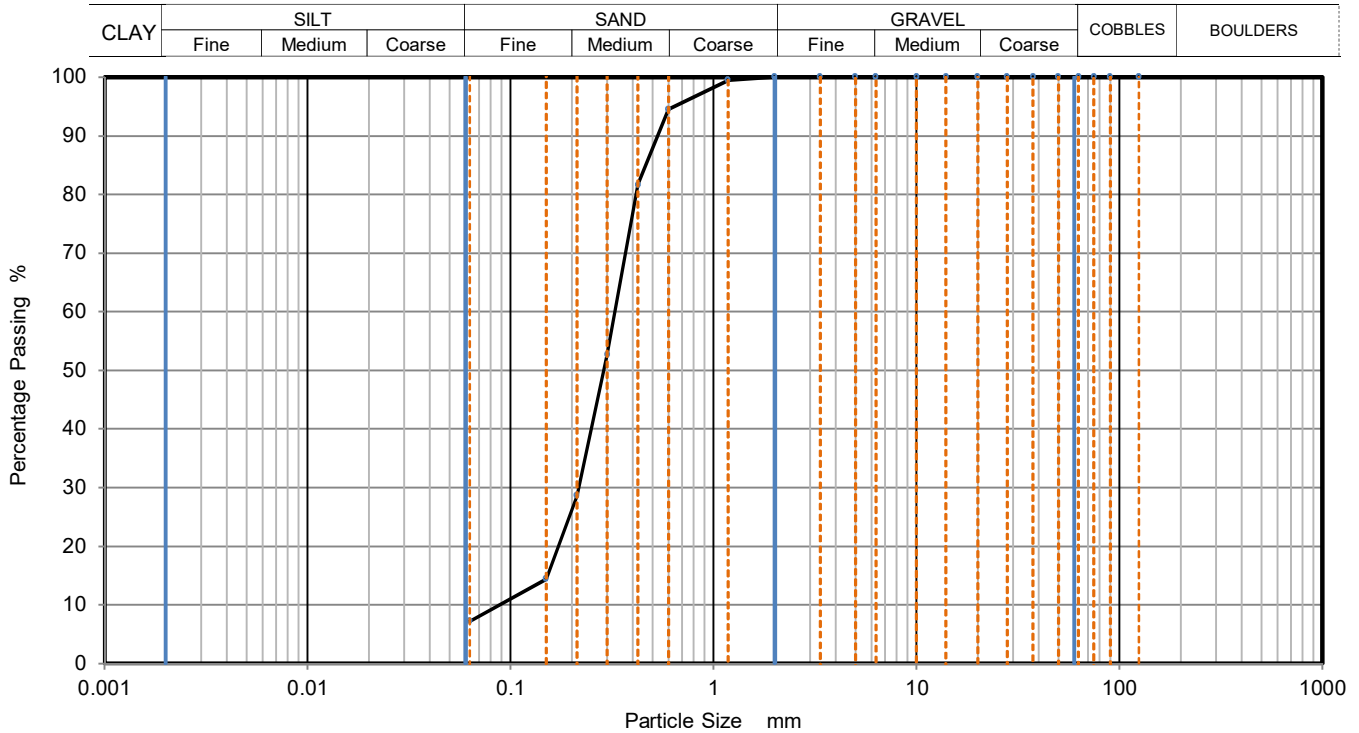
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Grey brown silty SAND.	Sample Depth (m)	12.50
		Sample Reference	B43



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	95		
0.425	82		
0.3	53		
0.212	29		
0.15	14		
0.063	7		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	93
Fines <0.063mm	7

Grading Analysis		
D100	mm	
D60	mm	0.328
D30	mm	0.216
D10	mm	0.088
Uniformity Coefficient		3.7
Curvature Coefficient		1.6

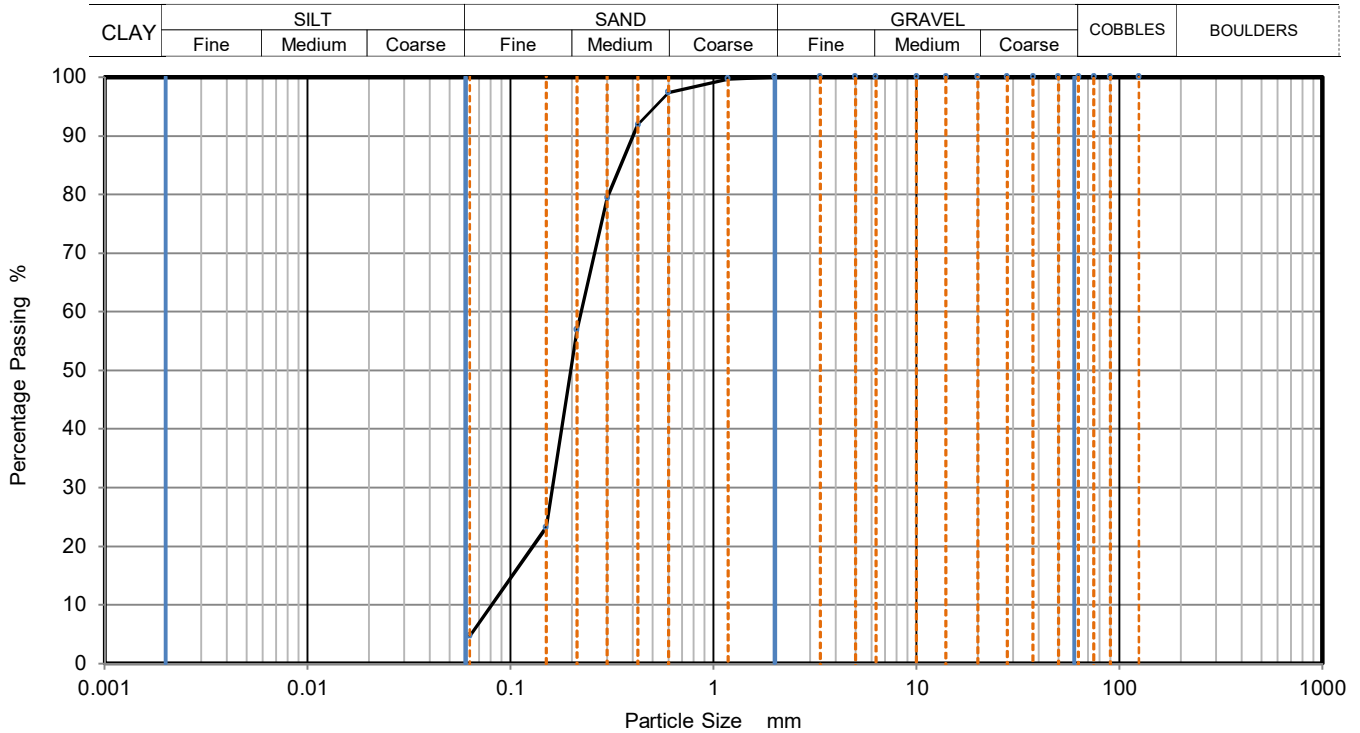
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Grey brown slightly silty SAND.	Sample Depth (m)	13.50
		Sample Reference	B46



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	97		
0.425	92		
0.3	79		
0.212	57		
0.15	23		
0.063	5		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	95
Fines <0.063mm	5

Grading Analysis		
D100	mm	
D60	mm	0.222
D30	mm	0.161
D10	mm	0.081
Uniformity Coefficient		2.8
Curvature Coefficient		1.4

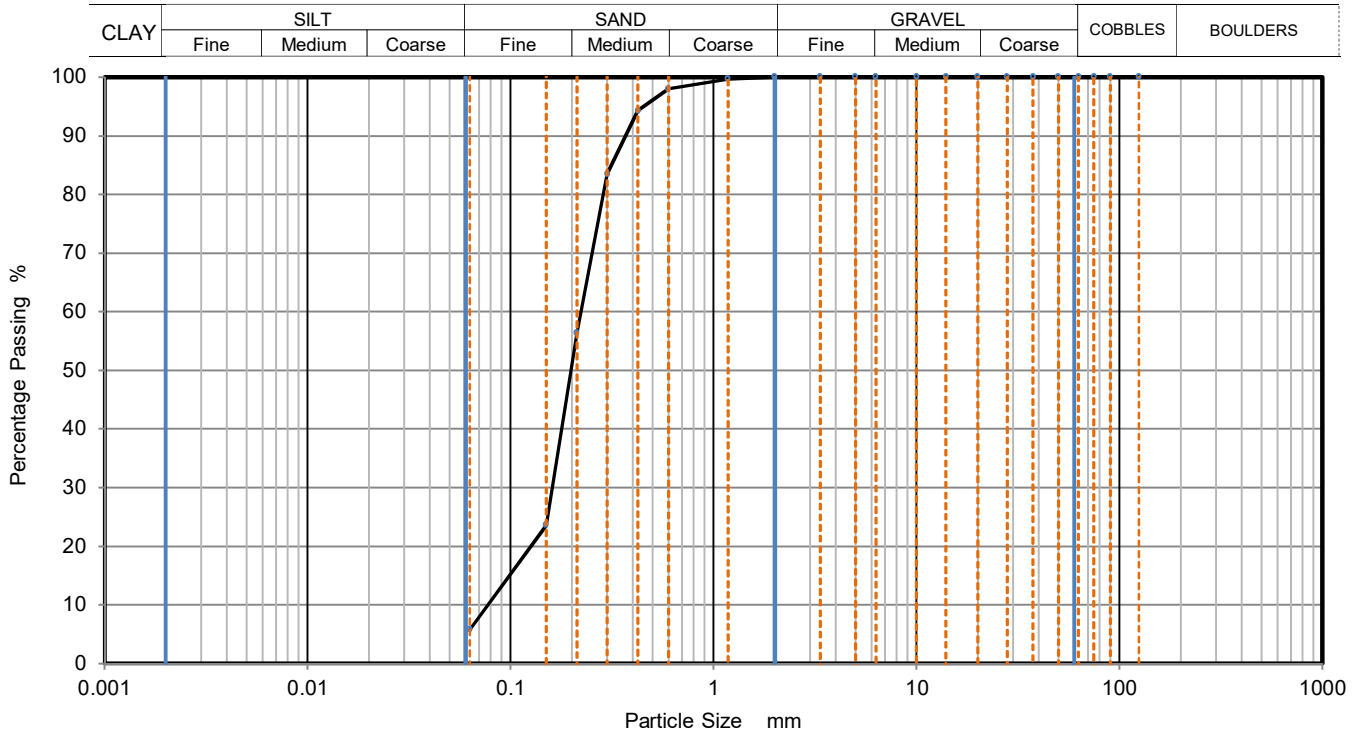
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Grey brown silty SAND.	Sample Depth (m)	15.50
		Sample Reference	B52



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	98		
0.425	94		
0.3	84		
0.212	56		
0.15	24		
0.063	6		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	94
Fines <0.063mm	6

Grading Analysis		
D100	mm	
D60	mm	0.222
D30	mm	0.160
D10	mm	0.077
Uniformity Coefficient		2.9
Curvature Coefficient		1.5

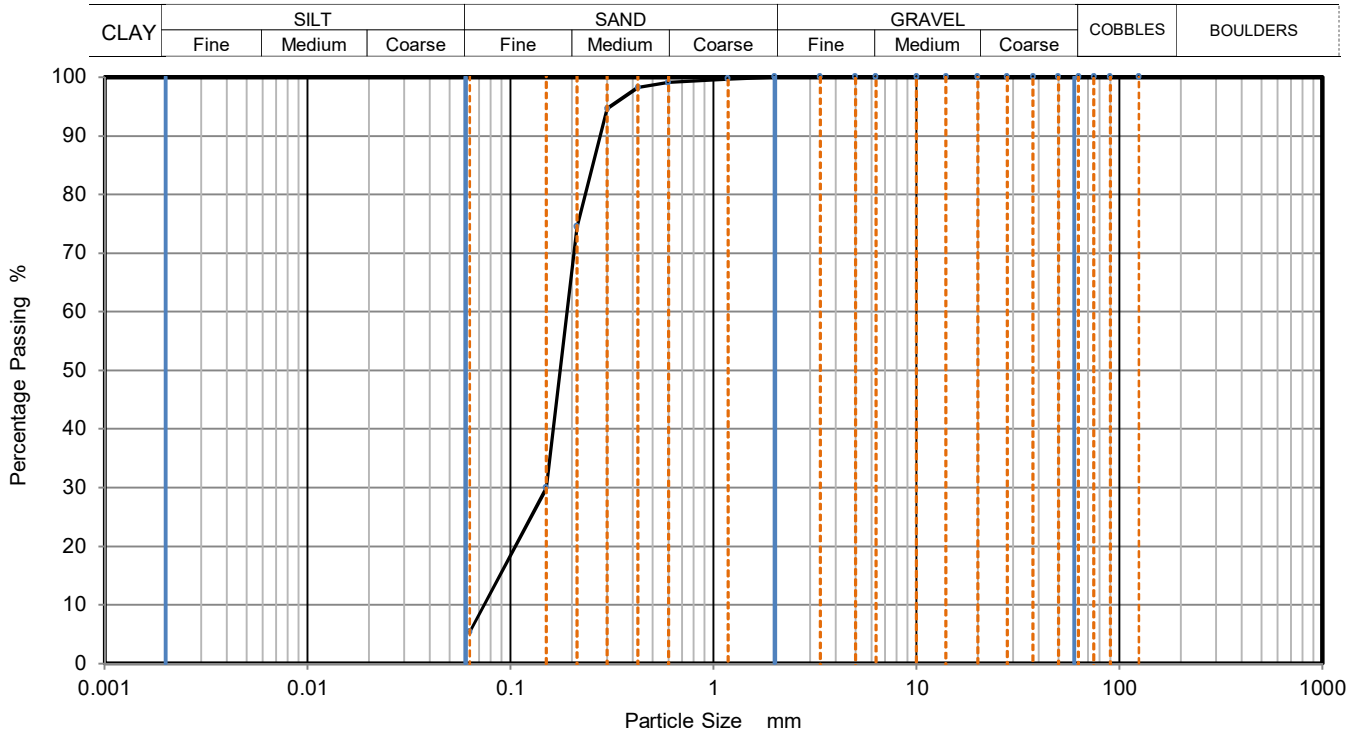
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Grey brown slightly silty SAND.	Sample Depth (m)	18.50
		Sample Reference	B58



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	98		
0.3	95		
0.212	75		
0.15	30		
0.063	5		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	95
Fines <0.063mm	5

Grading Analysis		
D100	mm	
D60	mm	0.189
D30	mm	0.150
D10	mm	0.074
Uniformity Coefficient		2.6
Curvature Coefficient		1.6

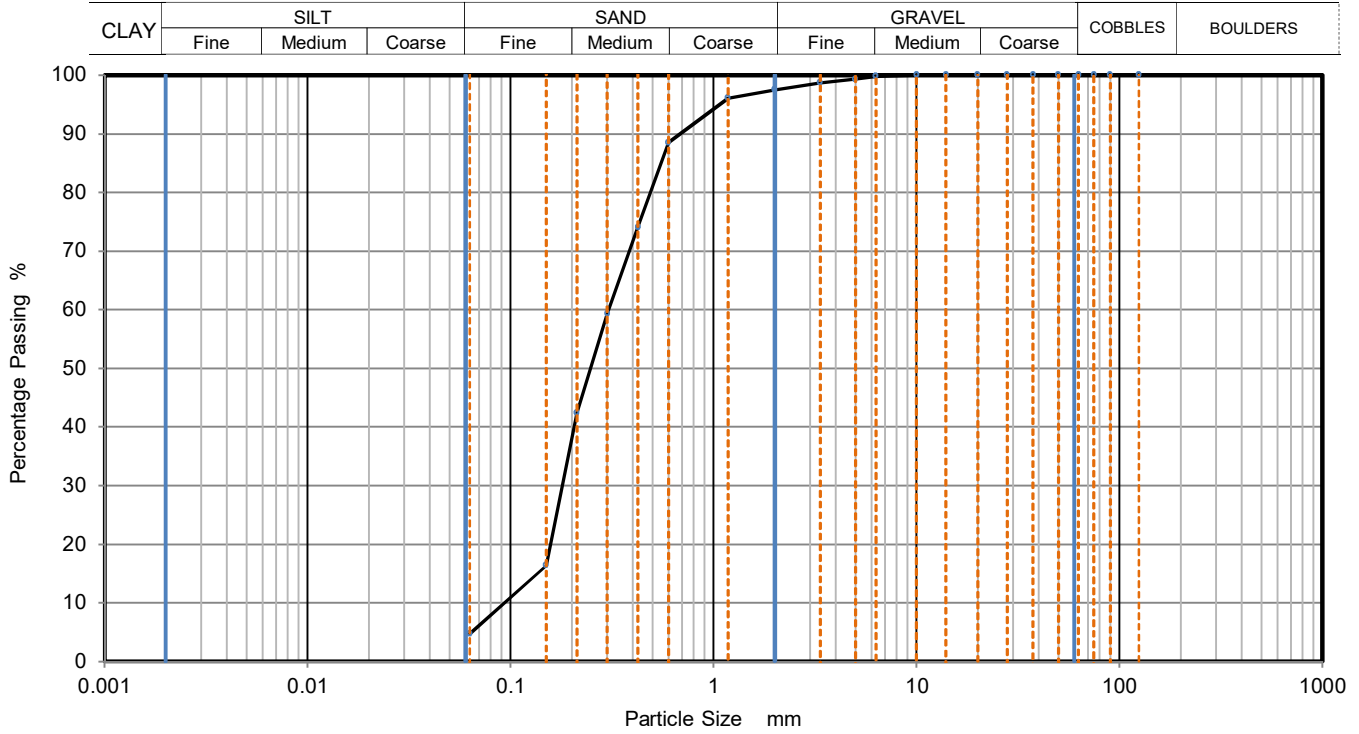
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Orange brown slightly silty slightly gravelly SAND. Gravel is of flint and quartz.	Sample Depth (m)	20.80
		Sample Reference	B63



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	99		
3.35	99		
2	98		
1.18	96		
0.6	89		
0.425	74		
0.3	59		
0.212	42		
0.15	16		
0.063	5		

Sample Proportions	% dry mass
Very coarse	0
Gravel	3
Sand	93
Fines <0.063mm	5

Grading Analysis		
D100	mm	
D60	mm	0.305
D30	mm	0.180
D10	mm	0.093
Uniformity Coefficient		3.3
Curvature Coefficient		1.1

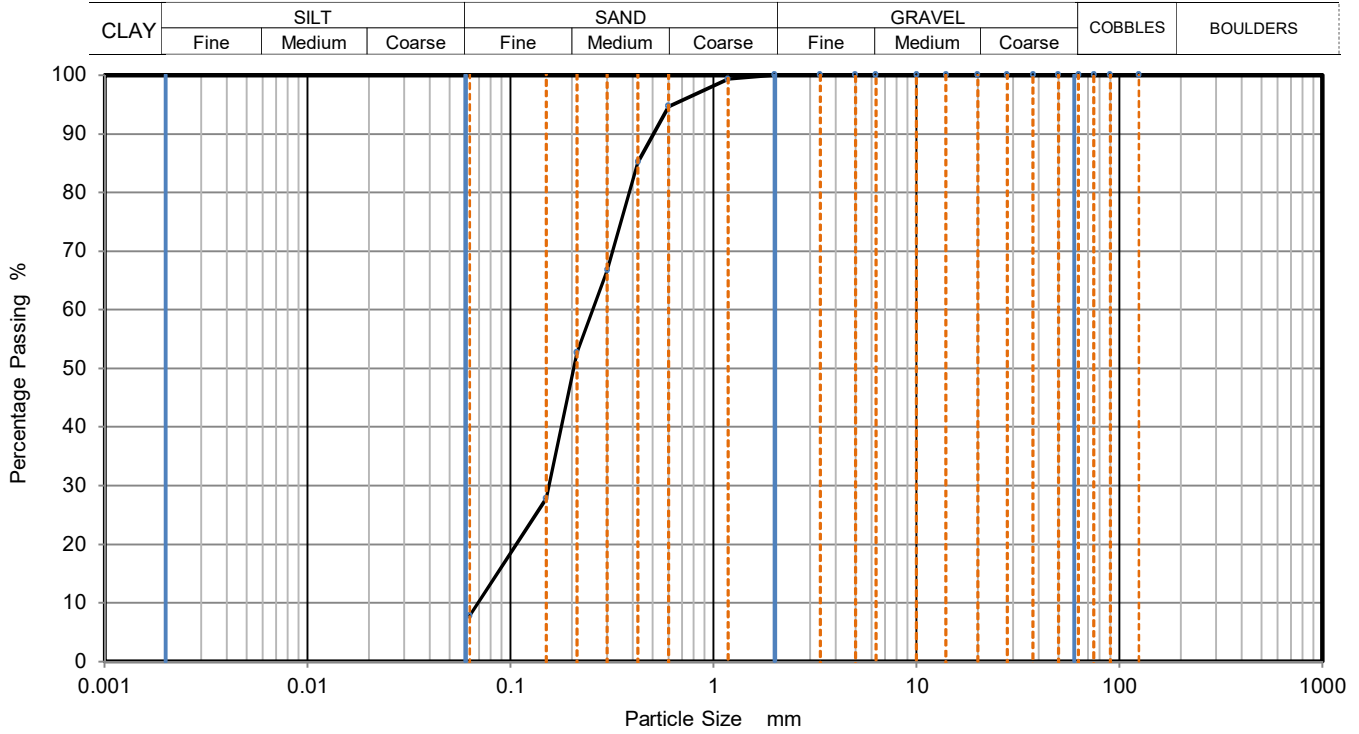
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BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Grey brown and dark grey silty SAND	Sample Depth (m)	22.00
		Sample Reference	B64



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	95		
0.425	85		
0.3	67		
0.212	53		
0.15	28		
0.063	8		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	92
Fines <0.063mm	8

Grading Analysis		
D100	mm	
D60	mm	0.254
D30	mm	0.155
D10	mm	0.069
Uniformity Coefficient		3.7
Curvature Coefficient		1.4

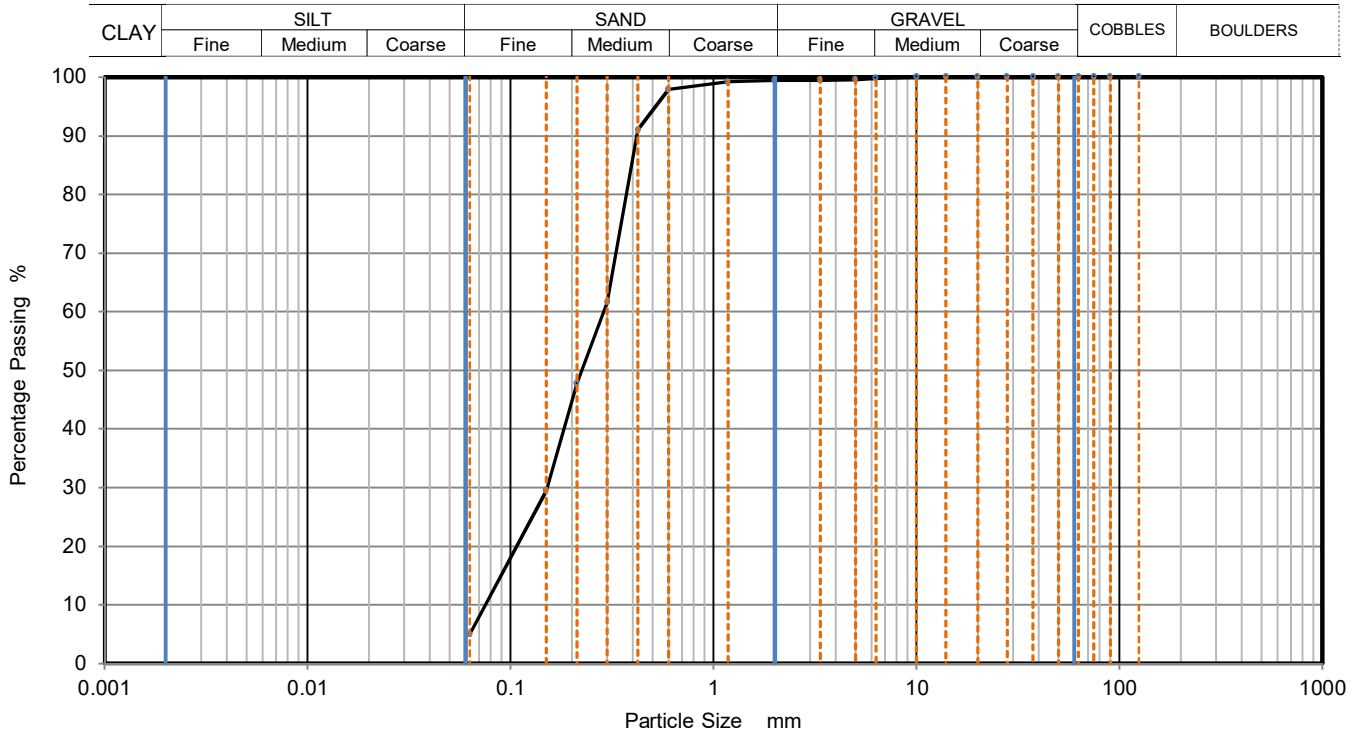
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Grey brown slightly silty slightly gravelly SAND. Gravel is of shell fragments	Sample Depth (m)	24.00
		Sample Reference	B68



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	99		
1.18	99		
0.6	98		
0.425	91		
0.3	62		
0.212	48		
0.15	30		
0.063	5		

Sample Proportions	% dry mass
Very coarse	0
Gravel	1
Sand	94
Fines <0.063mm	5

Grading Analysis		
D100	mm	
D60	mm	0.288
D30	mm	0.151
D10	mm	0.075
Uniformity Coefficient		3.8
Curvature Coefficient		1.1

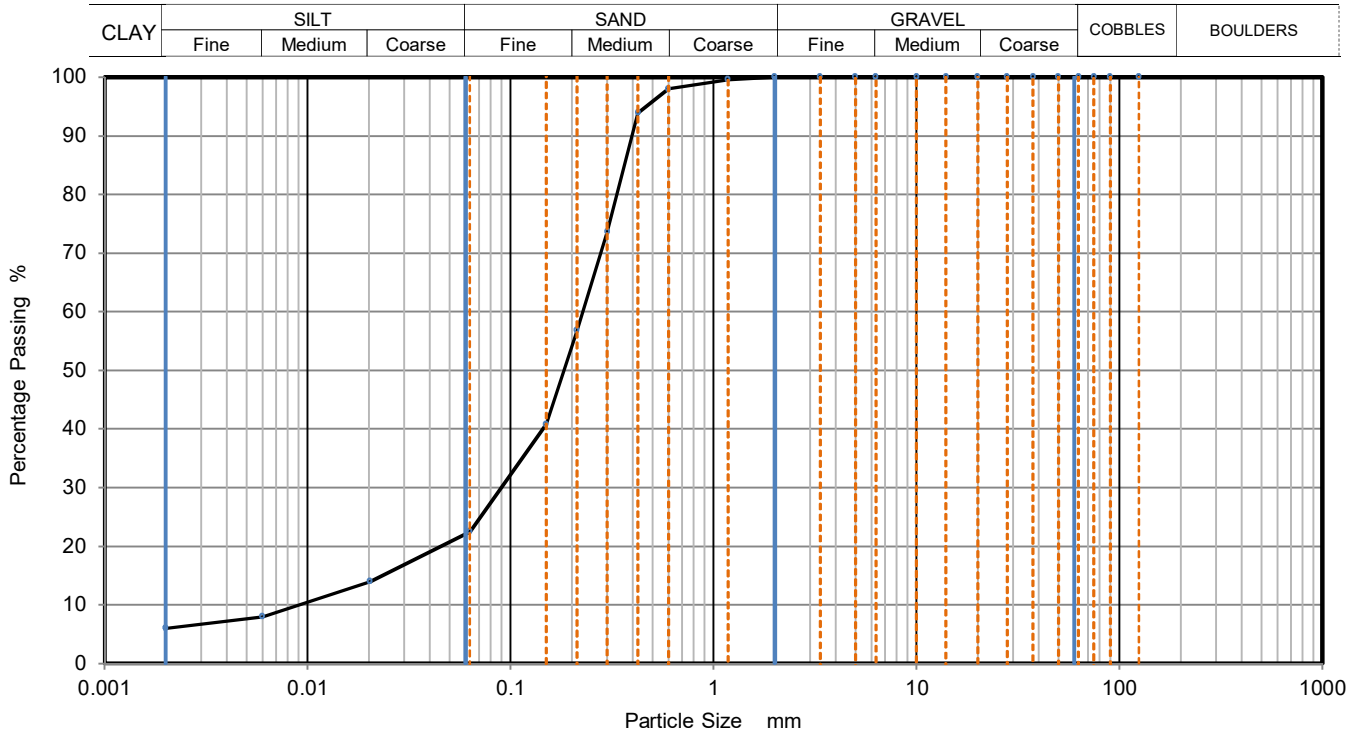
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Dark grey clayey silty SAND	Sample Depth (m)	27.00
		Sample Reference	B74



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	14
90	100	0.0060	8
75	100	0.0020	6
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	98	Particle density (assumed)	
0.425	94	2.65	Mg/m3
0.3	74		
0.212	57		
0.15	41		
0.063	23		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	78
Silt	17
Clay	6

Grading Analysis		
D100	mm	
D60	mm	0.227
D30	mm	0.090
D10	mm	0.009
Uniformity Coefficient		26
Curvature Coefficient		4

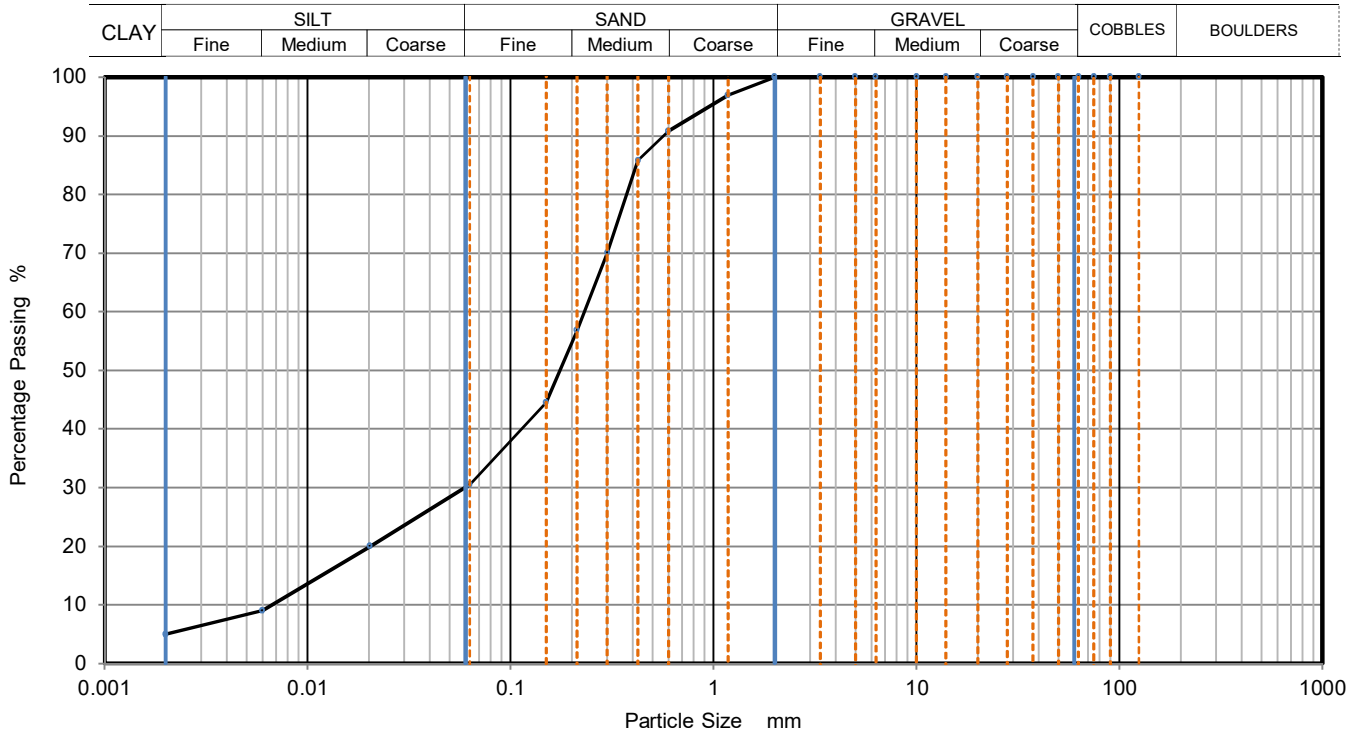
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Dark grey slightly clayey very silty SAND	Sample Depth (m)	29.00
		Sample Reference	B80



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	20
90	100	0.0060	9
75	100	0.0020	5
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	97		
0.6	91		
0.425	86	Particle density (assumed) 2.65 Mg/m3	
0.3	70		
0.212	57		
0.15	45		
0.063	31		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	70
Silt	25
Clay	5

Grading Analysis		
D100	mm	
D60	mm	0.231
D30	mm	0.060
D10	mm	0.006
Uniformity Coefficient		36
Curvature Coefficient		2.4

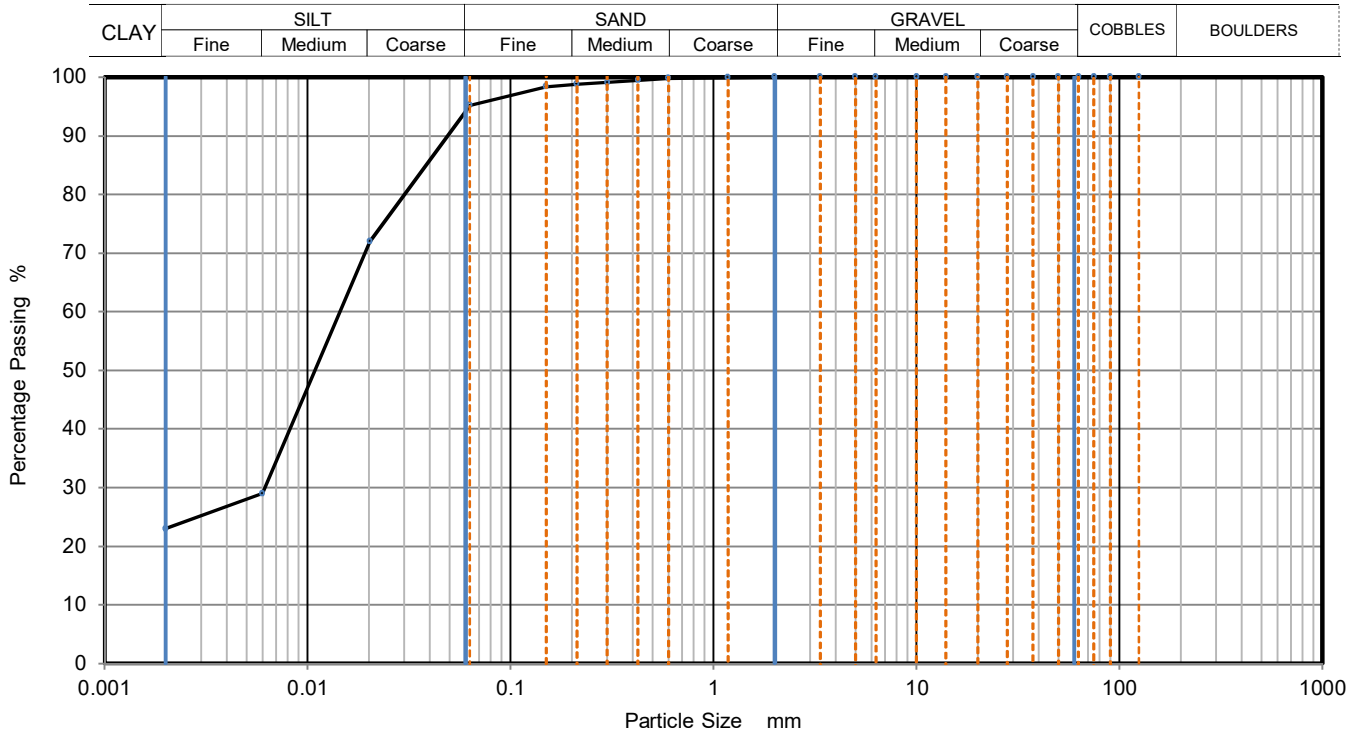
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Dark grey slightly sandy very silty CLAY.	Sample Depth (m)	31.00
		Sample Reference	D82



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	72
90	100	0.0060	29
75	100	0.0020	23
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100	Particle density (assumed) 2.65 Mg/m3	
0.3	99		
0.212	99		
0.15	98		
0.063	95		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	5
Silt	72
Clay	23

Grading Analysis		
D100	mm	
D60	mm	0.014
D30	mm	0.006
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

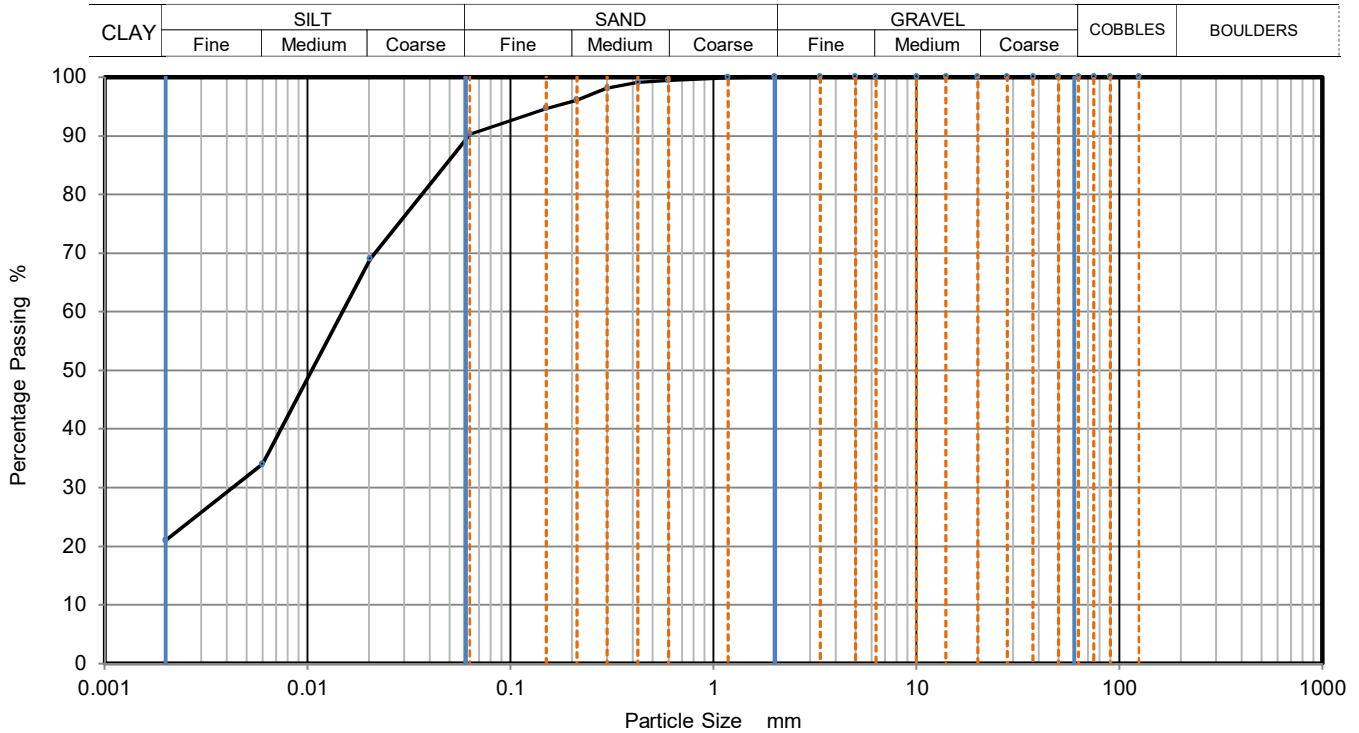
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Dark grey slightly sandy very silty CLAY	Sample Depth (m)	31.55
		Sample Reference	D85



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	69
90	100	0.0060	34
75	100	0.0020	21
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	99	Particle density (assumed) 2.65 Mg/m ³	
0.3	98		
0.212	96		
0.15	95		
0.063	90		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	10
Silt	70
Clay	21

Grading Analysis		
D100	mm	
D60	mm	0.015
D30	mm	0.004
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

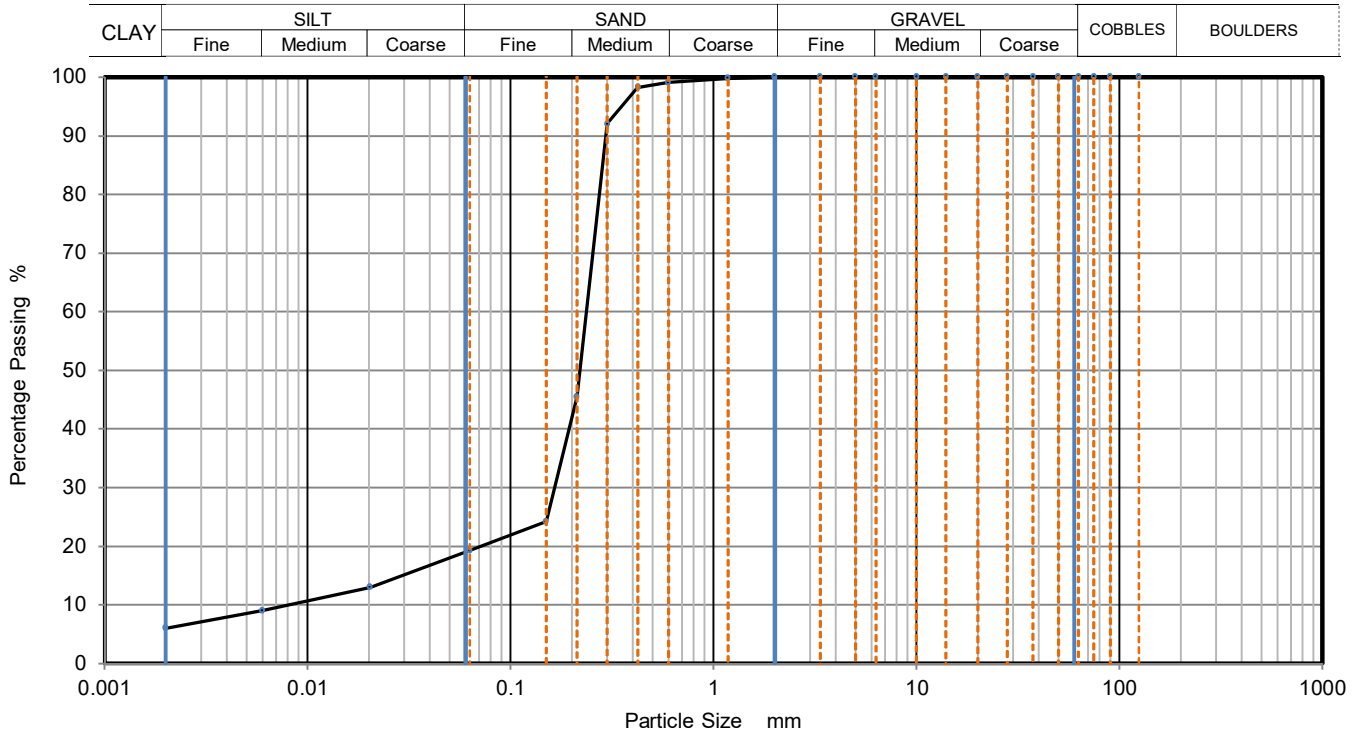
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Grey clayey silty SAND.	Sample Depth (m)	34.00
		Sample Reference	B90



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	13
90	100	0.0060	9
75	100	0.0020	6
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	98		
0.3	92		
0.212	46		
0.15	24		
0.063	19		
		Particle density (assumed) 2.65 Mg/m ³	

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	81
Silt	14
Clay	6

Grading Analysis		
D100	mm	
D60	mm	0.236
D30	mm	0.165
D10	mm	0.008
Uniformity Coefficient		28
Curvature Coefficient		14

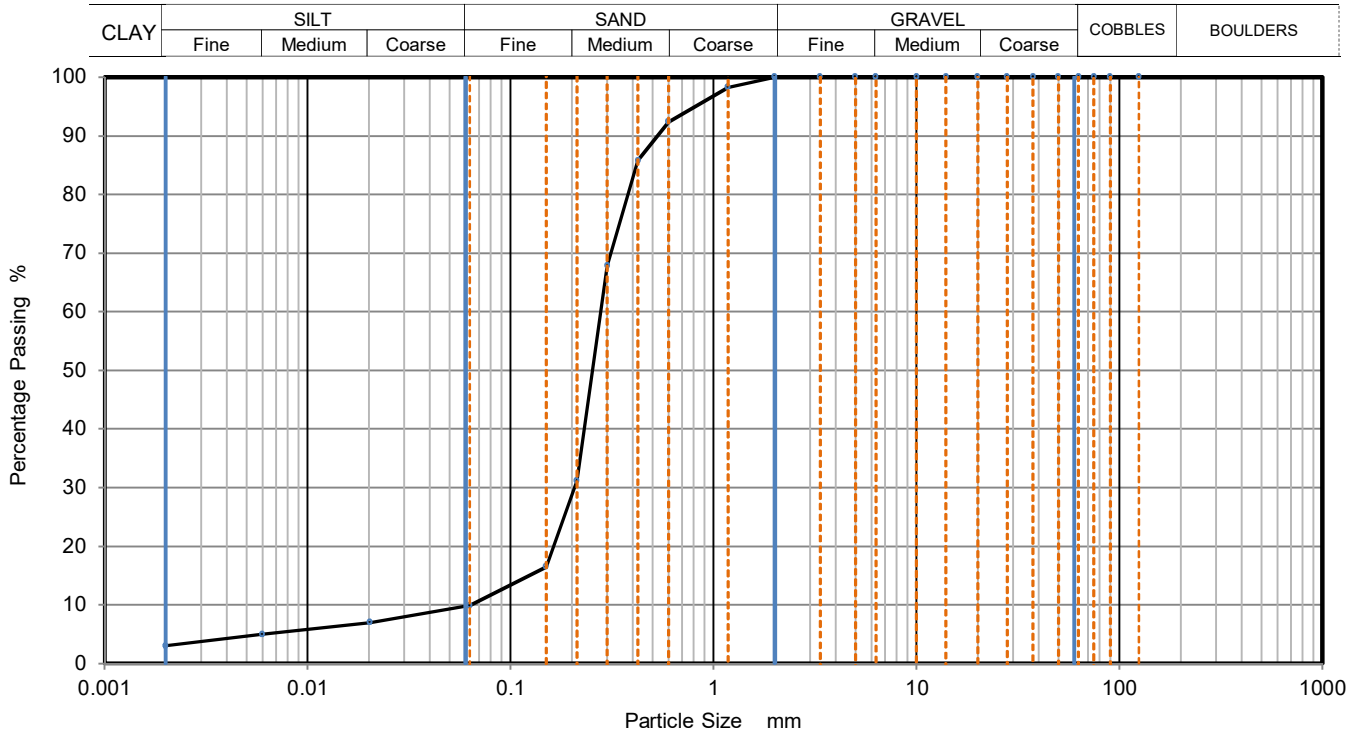
Remarks	Approved	Date	Sheet No.:
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Grey brown slightly clayey silty SAND.	Sample Depth (m)	37.00
		Sample Reference	B95



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	7
90	100	0.0060	5
75	100	0.0020	3
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	98		
0.6	92		
0.425	86	Particle density (assumed) 2.65 Mg/m ³	
0.3	68		
0.212	31		
0.15	17		
0.063	10		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	90
Silt	7
Clay	3

Grading Analysis		
D100	mm	
D60	mm	0.279
D30	mm	0.206
D10	mm	0.064
Uniformity Coefficient		4.3
Curvature Coefficient		2.4

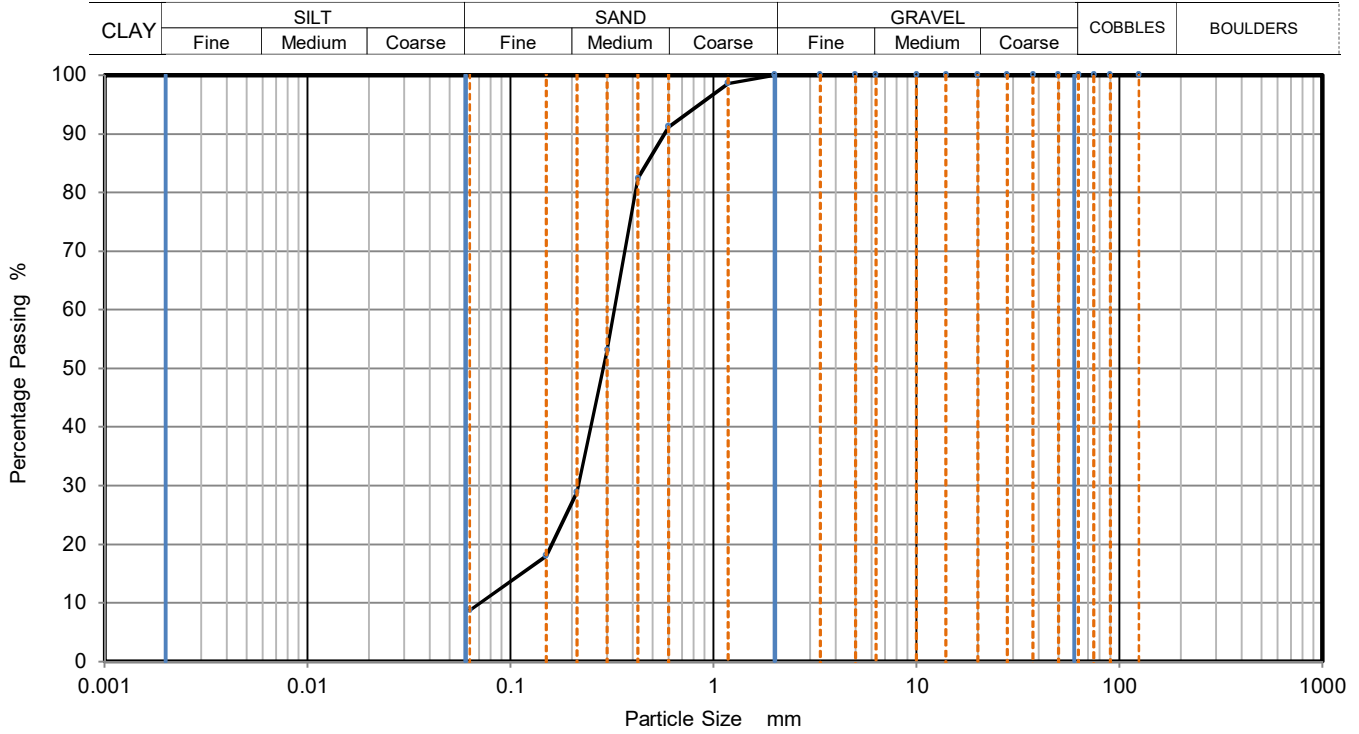
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Grey silty SAND	Sample Depth (m)	40.00
		Sample Reference	B98



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	91		
0.425	82		
0.3	53		
0.212	29		
0.15	18		
0.063	9		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	91
Fines <0.063mm	9

Grading Analysis		
D100	mm	
D60	mm	0.326
D30	mm	0.215
D10	mm	0.071
Uniformity Coefficient		4.6
Curvature Coefficient		2

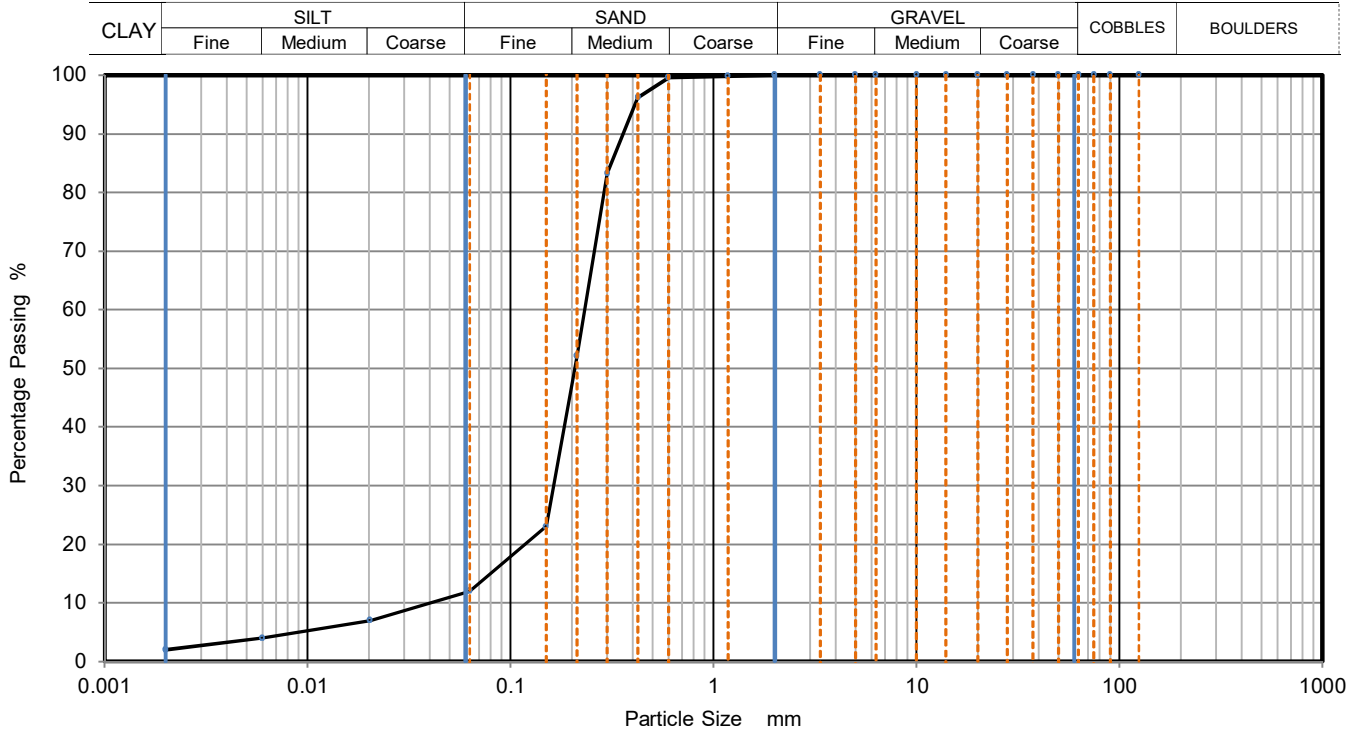
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Grey slightly clayey silty SAND.	Sample Depth (m)	43.00
		Sample Reference	B105



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	7
90	100	0.0060	4
75	100	0.0020	2
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	96	Particle density (assumed) 2.65 Mg/m3	
0.3	83		
0.212	52		
0.15	23		
0.063	12		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	88
Silt	10
Clay	2

Grading Analysis		
D100	mm	
D60	mm	0.232
D30	mm	0.163
D10	mm	0.040
Uniformity Coefficient		5.8
Curvature Coefficient		2.9

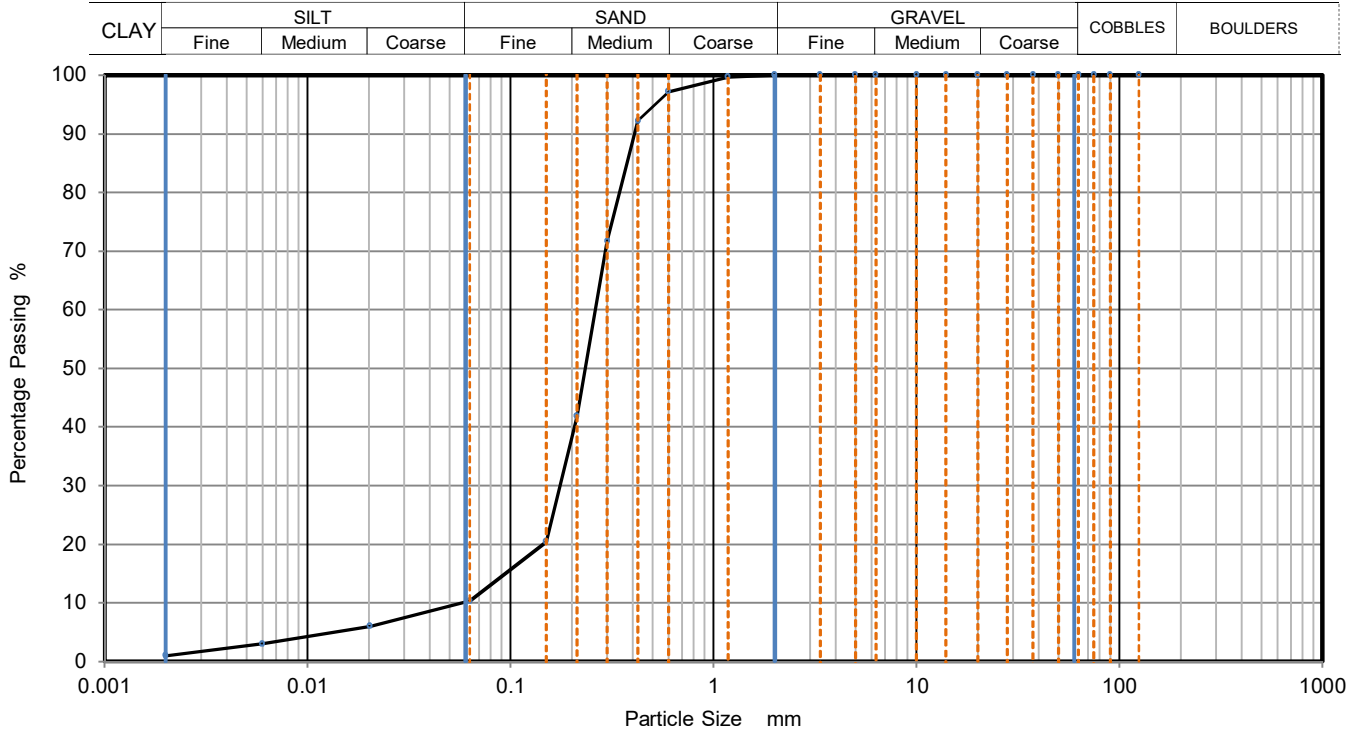
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Grey slightly clayey silty SAND.	Sample Depth (m)	45.00
		Sample Reference	B108



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	6
90	100	0.0060	3
75	100	0.0020	1
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	97	Particle density (assumed)	
0.425	92	2.65	Mg/m3
0.3	72		
0.212	42		
0.15	20		
0.063	10		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	90
Silt	9
Clay	2

Grading Analysis		
D100	mm	
D60	mm	0.262
D30	mm	0.175
D10	mm	0.059
Uniformity Coefficient		4.4
Curvature Coefficient		2

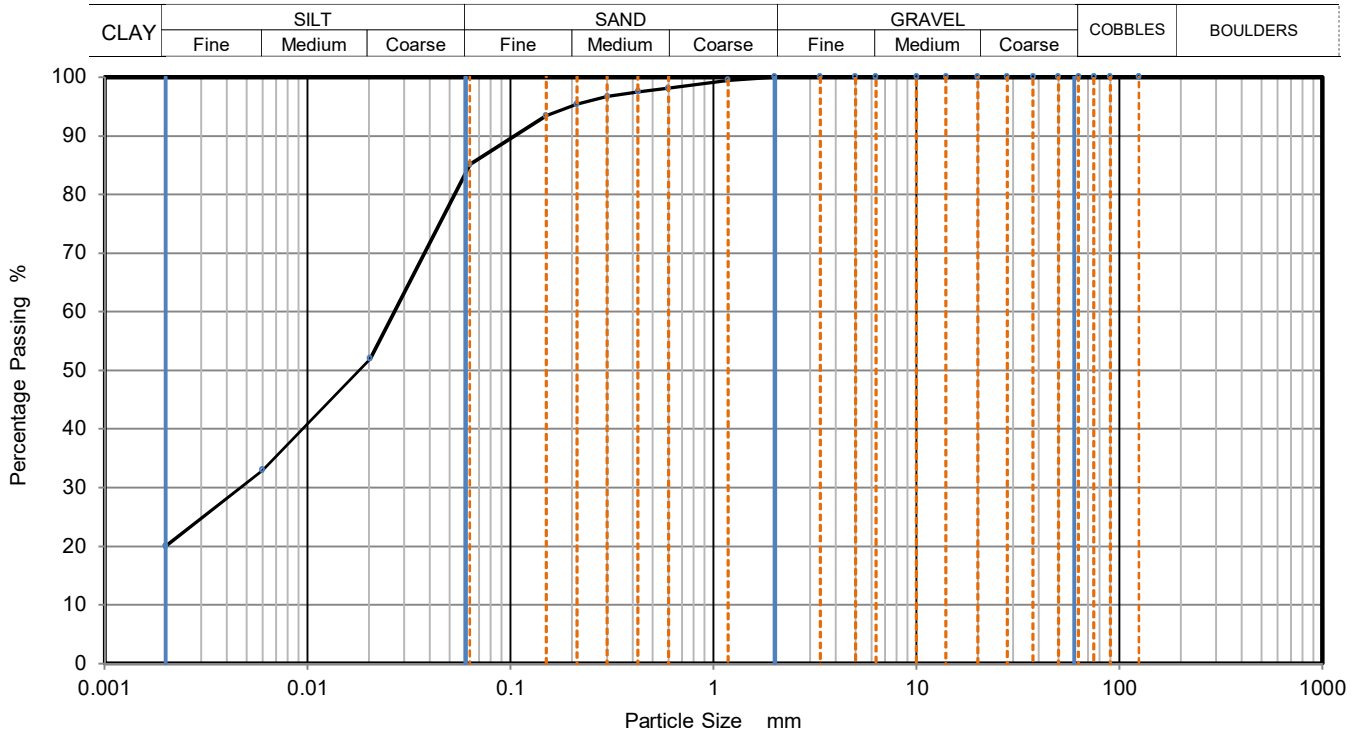
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Grey and dark grey slightly sandy very silty CLAY	Sample Depth (m)	45.95
		Sample Reference	D109



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	52
90	100	0.0060	33
75	100	0.0020	20
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	98	Particle density (assumed)	
0.425	98	2.65	Mg/m3
0.3	97		
0.212	95		
0.15	93		
0.063	85		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	15
Silt	66
Clay	20

Grading Analysis		
D100	mm	
D60	mm	0.027
D30	mm	0.005
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

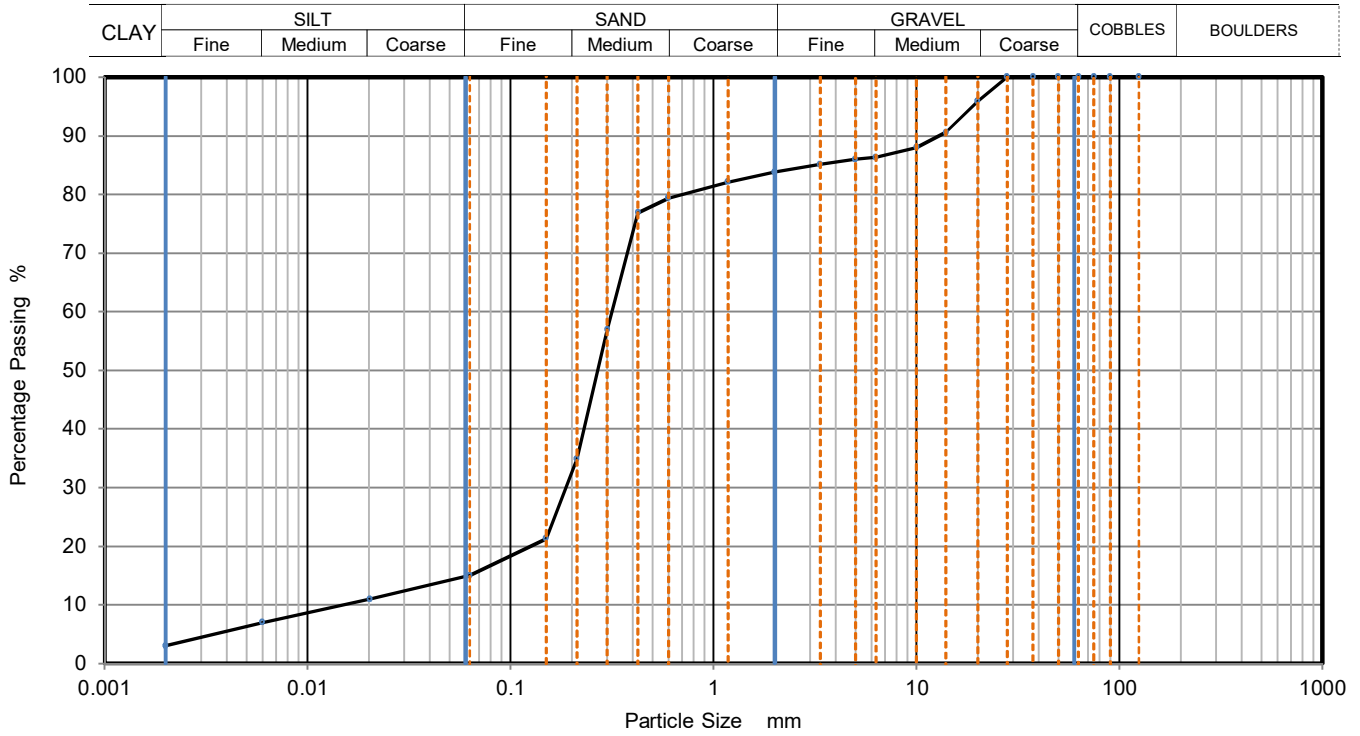
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Grey slightly clayey silty gravelly SAND. Gravel is of flint and shell fragments.	Sample Depth (m)	46.45
		Sample Reference	B111



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	11
90	100	0.0060	7
75	100	0.0020	3
63	100		
50	100		
37.5	100		
28	100		
20	96		
14	91		
10	88		
6.3	86		
5	86		
3.35	85		
2	84		
1.18	82		
0.6	79		
0.425	77		
0.3	57		
0.212	35		
0.15	21		
0.063	15		
		Particle density (assumed) 2.65 Mg/m ³	

Sample Proportions	% dry mass
Very coarse	0
Gravel	16
Sand	69
Silt	12
Clay	3

Grading Analysis		
D100	mm	
D60	mm	0.316
D30	mm	0.187
D10	mm	0.014
Uniformity Coefficient		23
Curvature Coefficient		8

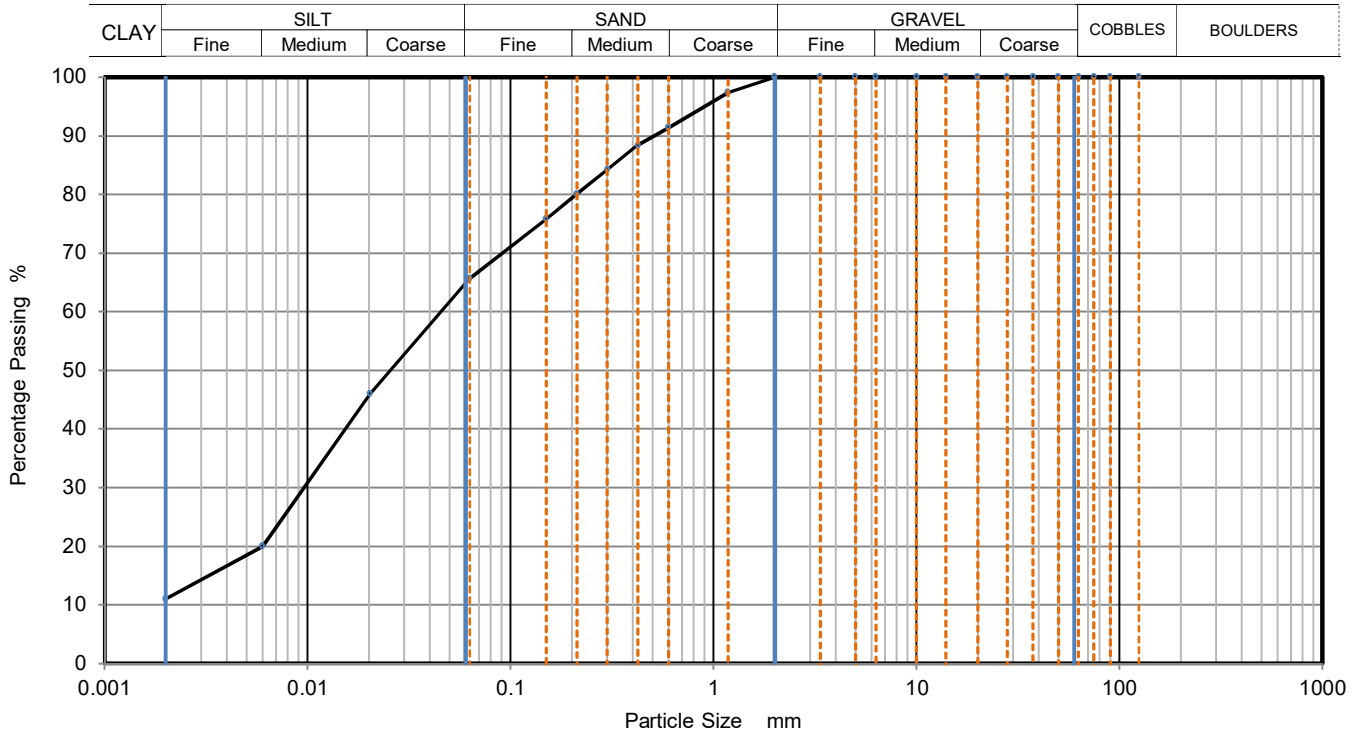
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Dark grey slightly sandy clayey SILT	Sample Depth (m)	46.80
		Sample Reference	D112



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	46
90	100	0.0060	20
75	100	0.0020	11
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	97		
0.6	91		
0.425	88	Particle density (assumed) 2.65 Mg/m ³	
0.3	84		
0.212	80		
0.15	76		
0.063	66		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	34
Silt	54
Clay	11

Grading Analysis		
D100	mm	
D60	mm	0.045
D30	mm	0.010
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

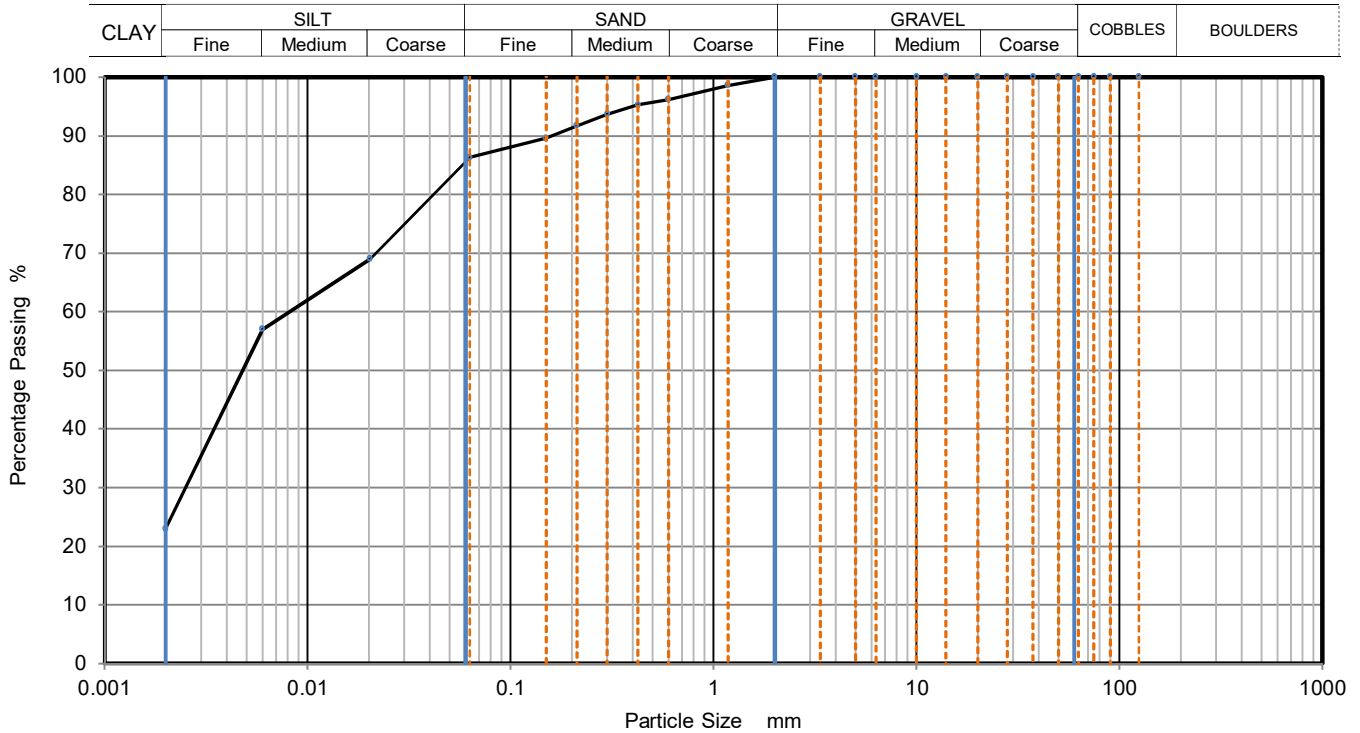
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Dark brown slightly sandy silty CLAY.	Sample Depth (m)	47.55
		Sample Reference	D115



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	69
90	100	0.0060	57
75	100	0.0020	23
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	96		
0.425	95	Particle density (assumed) 2.65 Mg/m3	
0.3	94		
0.212	92		
0.15	90		
0.063	86		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	14
Silt	64
Clay	23

Grading Analysis		
D100	mm	
D60	mm	0.008
D30	mm	0.003
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

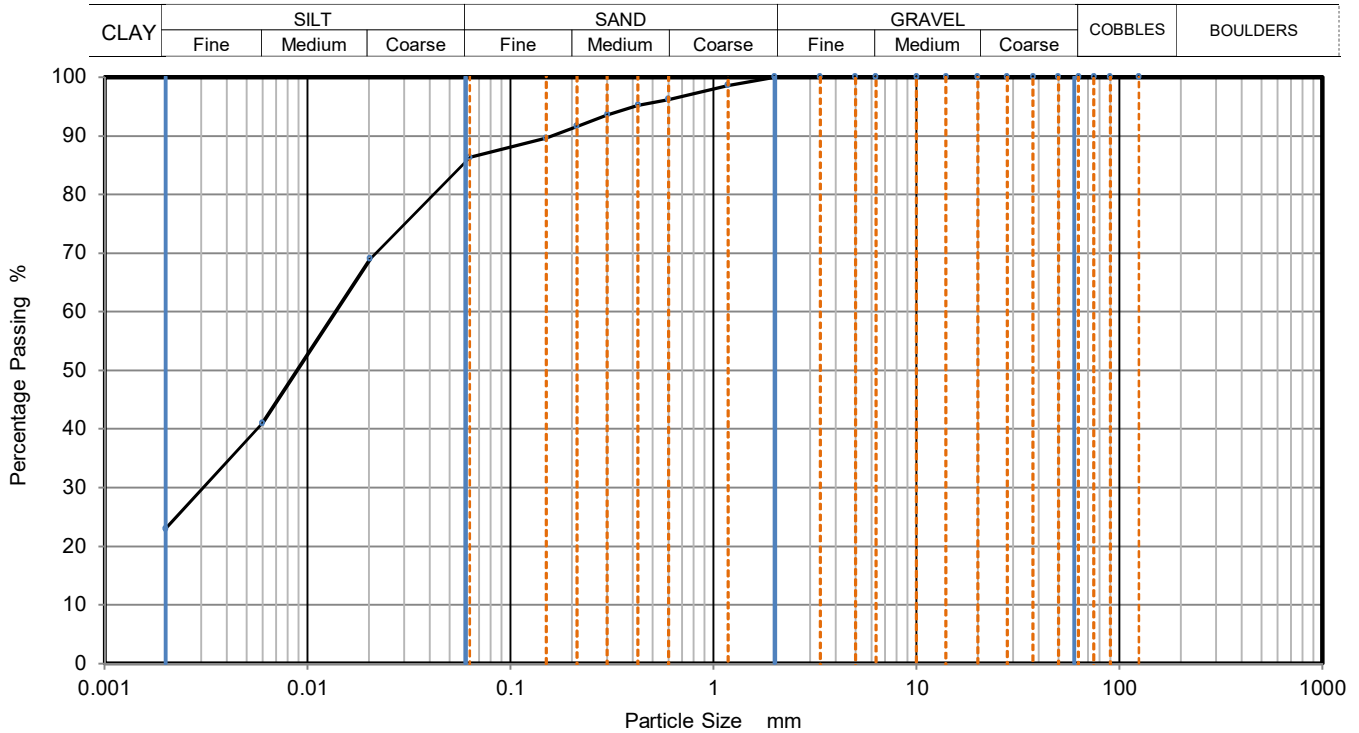
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH11
Sample Description:	Dark brown slightly sandy silty CLAY	Sample Depth (m)	49.55
		Sample Reference	D120



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	69
90	100	0.0060	41
75	100	0.0020	23
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	96		
0.425	95	Particle density (assumed) 2.65 Mg/m ³	
0.3	94		
0.212	92		
0.15	90		
0.063	86		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	14
Silt	64
Clay	23

Grading Analysis		
D100	mm	
D60	mm	0.014
D30	mm	0.003
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

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Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS6180212003-610**
Our Project No. PZ1522D1
Your Sample Ref 3
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 23-Apr-18

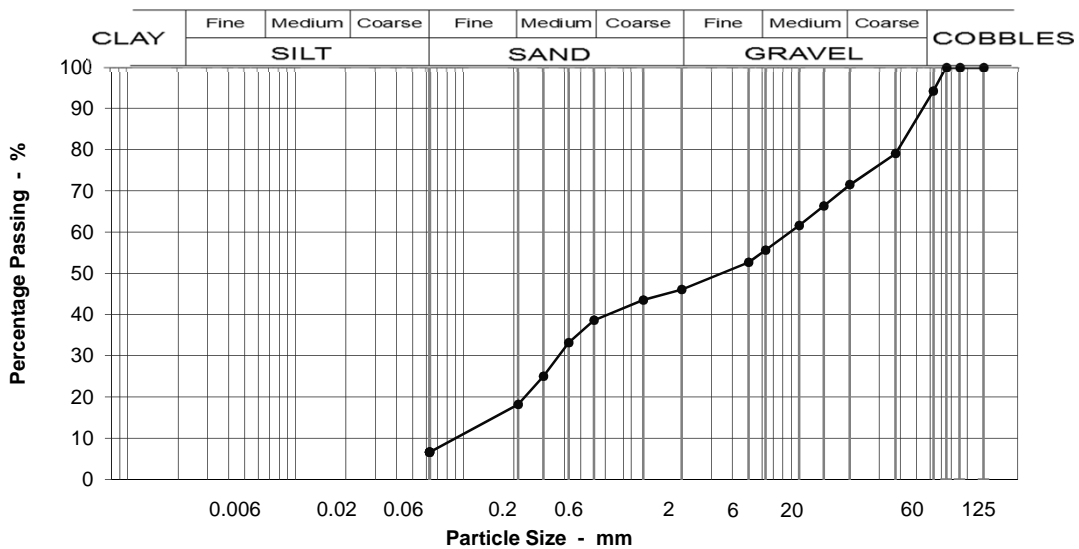
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH11A @ 0.5 - 0.7m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	94
37.5	79
20	71
14	66
10	62
6.3	56
5	53
2	46
1.18	44
0.600	39
0.425	33
0.300	25
0.212	18
0.063	7

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6E/6R, 6F1, 6I, 6M, 6N.

Moisture content % 13

Sample Proportions	
BOULDERS	0
COBBLES	6
Coarse GRAVEL	23
Medium GRAVEL	16
Fine GRAVEL	10
Coarse SAND	7
Medium SAND	20
Fine SAND	12
Silt & Clay	7

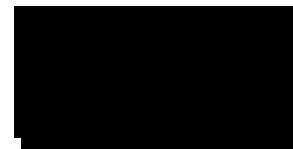
Grading Analysis	
D100	63
D60	9.00
D10	0.11
Uniformity Coefficient	85

Description
MADE GROUND comprising of up to cobble size sub-rounded to angular brick, concrete and flint in a matrix of greyish brown slightly silty fine and medium SAND.

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS6180212005-610
Our Project No PZ1522D1
Your Sample Ref 5
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 23-Apr-18

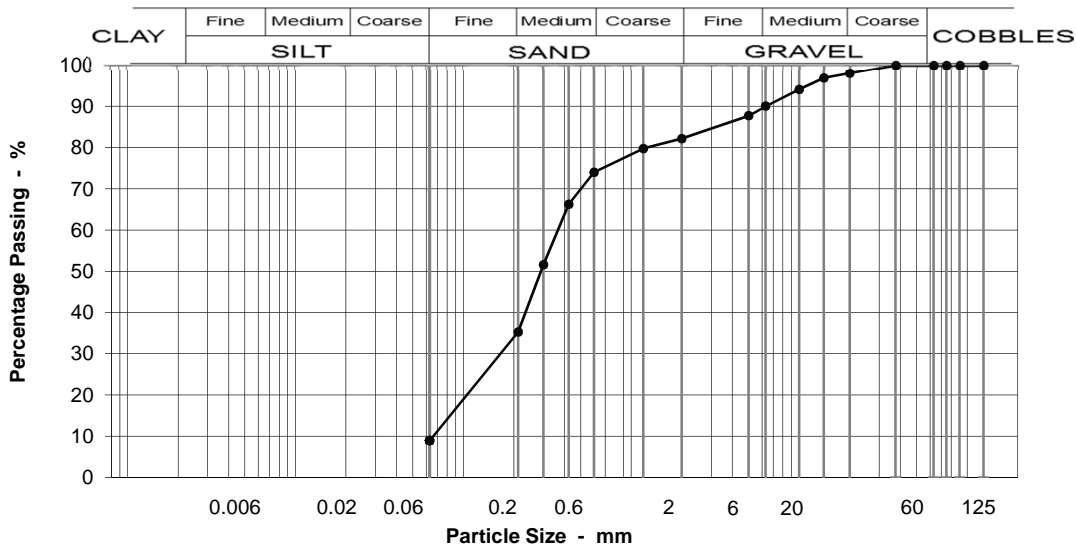
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH11A @ 0.7 - 0.9m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	98
14	97
10	94
6.3	90
5	88
2	82
1.18	80
0.600	74
0.425	66
0.300	52
0.212	35
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J, 6M.

Moisture content % 11

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	2
Medium GRAVEL	8
Fine GRAVEL	8
Coarse SAND	8
Medium SAND	39
Fine SAND	26
Silt & Clay	9

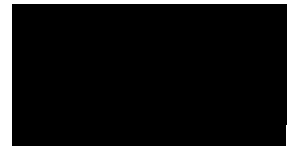
Grading Analysis	
D100	20
D60	0.37
D10	0.07
Uniformity Coefficient	5

Description
MADE GROUND comprising of greyish brown slightly silty gravelly fine and medium SAND. Gravel is sub-rounded to angular, fine and medium concrete, brick and flint.

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS6180212008-610
Our Project No PZ1522D1
Your Sample Ref 8
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 23-Apr-18

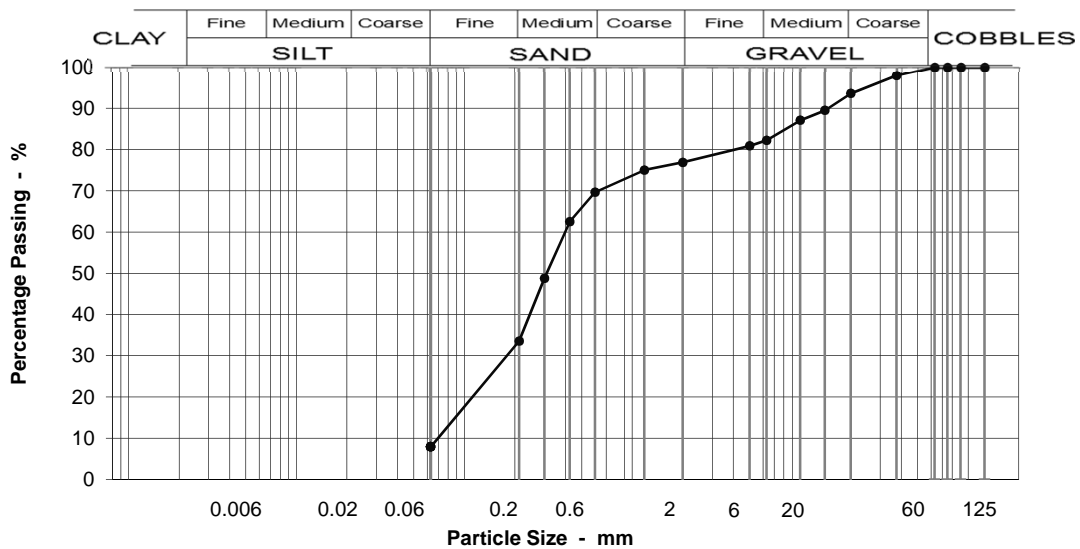
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH11A @ 1.05 - 1.2m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	98
20	94
14	89
10	87
6.3	82
5	81
2	77
1.18	75
0.600	70
0.425	63
0.300	49
0.212	34
0.063	8

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J, 6M.

Moisture content % 12

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	6
Medium GRAVEL	11
Fine GRAVEL	5
Coarse SAND	7
Medium SAND	36
Fine SAND	26
Silt & Clay	8

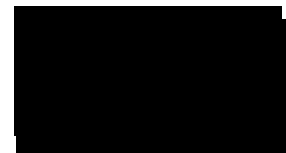
Grading Analysis	
D100	38
D60	0.40
D10	0.07
Uniformity Coefficient	5

Description
MADE GROUND comprising of greyish brown, slightly silty very gravelly fine and medium SAND. Gravel is sub-rounded to angular, fine, medium and coarse brick and flint.

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS6180212010-610**
Our Project No. PZ1522D1
Your Sample Ref. 10
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 23-Apr-18

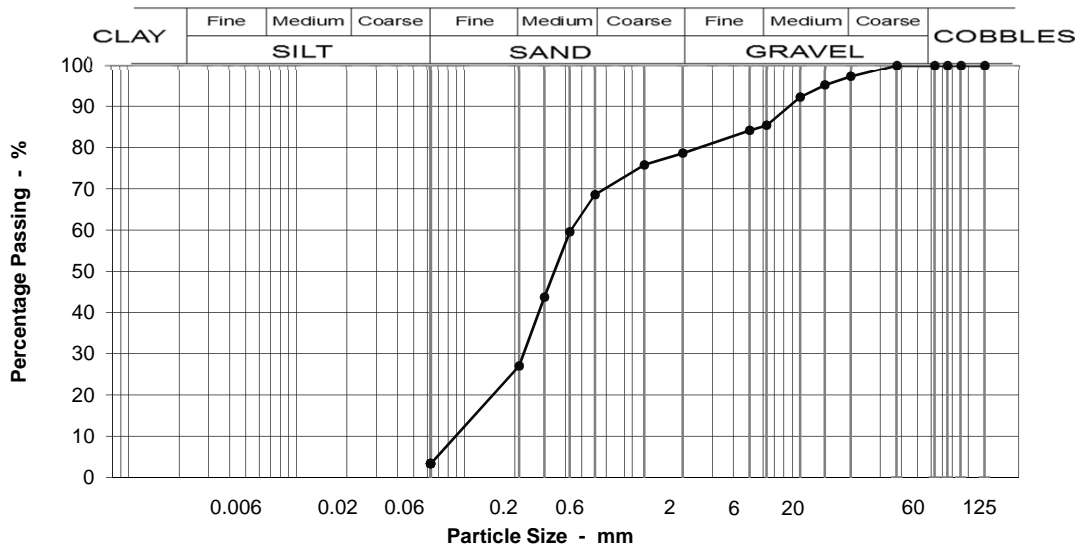
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH11A @ 1.2 - 1.7m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	97
14	95
10	92
6.3	85
5	84
2	79
1.18	76
0.600	69
0.425	60
0.300	44
0.212	27
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 15

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	3
Medium GRAVEL	12
Fine GRAVEL	7
Coarse SAND	10
Medium SAND	41
Fine SAND	24
Silt & Clay	3

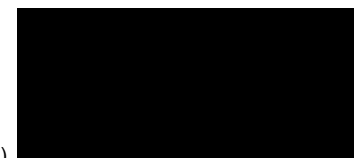
Grading Analysis	
D100	20
D60	0.43
D10	0.10
Uniformity Coefficient	4

Description	
Brown very gravelly fine and medium SAND. Gravel is fine and medium angular flint.	

Test Code = 610



Simon Holden (Project Technician)



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County Hall
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Norfolk
NR1 2DH

Our reference No. GTS6180212014-610
Our Project No PZ1522D1
Your Sample Ref 14
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 23-Apr-18

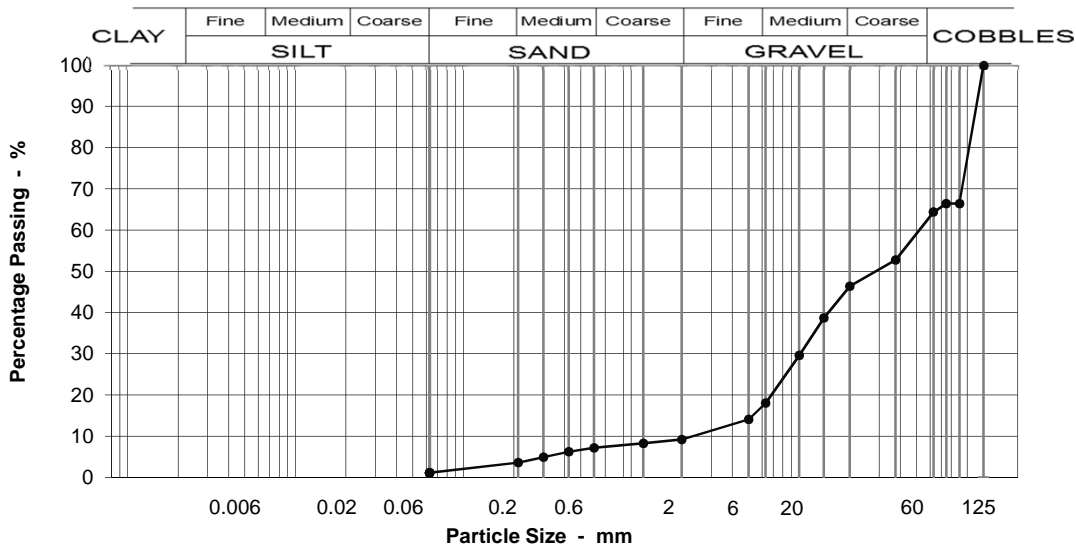
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH11A @ 2 - 2.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	66
75	66
63	64
37.5	53
20	46
14	39
10	30
6.3	18
5	14
2	9
1.18	8
0.600	7
0.425	6
0.300	5
0.212	4
0.063	1

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6A.

Moisture content % 12

Sample Proportions	
BOULDERS	0
COBBLES	36
Coarse GRAVEL	18
Medium GRAVEL	28
Fine GRAVEL	9
Coarse SAND	2
Medium SAND	4
Fine SAND	2
Silt & Clay	1

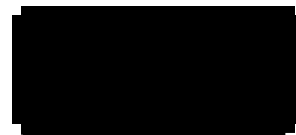
Grading Analysis	
D100	90
D60	53.45
D10	2.49
Uniformity Coefficient	21

Description
MADE GROUND comprising of brownish grey very cobbly silty, slightly sandy medium and coarse angular to sub-angular brick, concrete, asphalt and quartz. Cobbles are angular broken brick.

Test Code = 610



Simon Holden (Project Technician)



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NR1 2DH

Our reference No. **GTS6180212017-610**
Our Project No. PZ1522D1
Your Sample Ref. 17
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 2-Jul-18

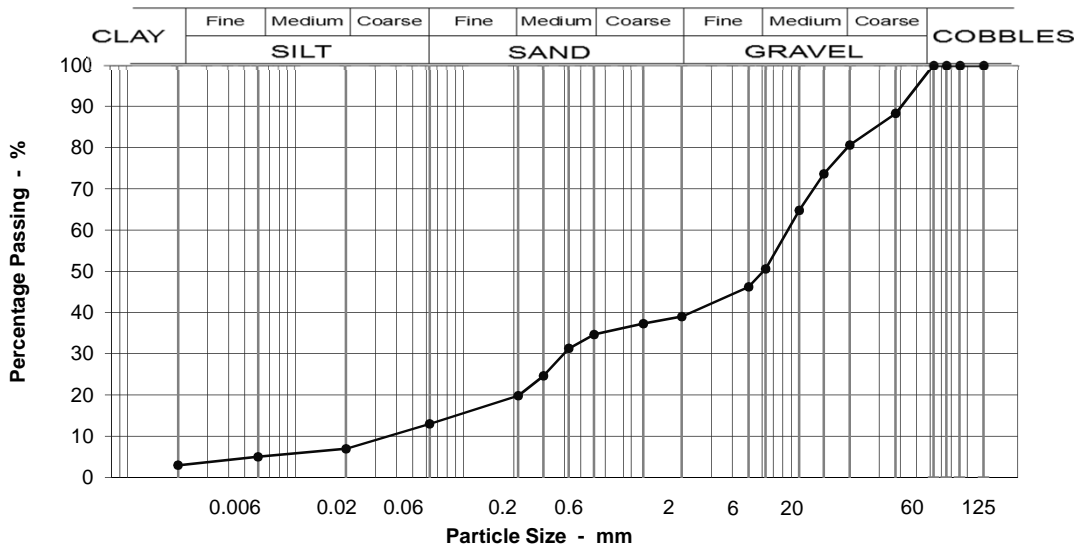
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH11A @ 3 - 3.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	88
20	81
14	74
10	65
6.3	51
5	46
2	39
1.18	37
0.600	35
0.425	31
0.300	25
0.212	20
0.063	13
0.020	7
0.006	5
0.002	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6E/6R, 6F1, 6I, 6N.

Moisture content % 16

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	19
Medium GRAVEL	30
Fine GRAVEL	12
Coarse SAND	4
Medium SAND	15
Fine SAND	7
Silt & Clay	13

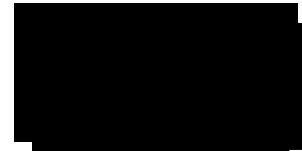
Grading Analysis	
D100	38
D60	8.76
D10	0.13
Uniformity Coefficient	67

Description
Grey slightly silty very sandy fine to coarse angular to subangular rounded flint GRAVEL.

Test Code = 610



Simon Holden (Project Technician)



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Norfolk
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Our reference No. **GTS6180212020-610**
Our Project No. PZ1522D1
Your Sample Ref. 20
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 2-Jul-18

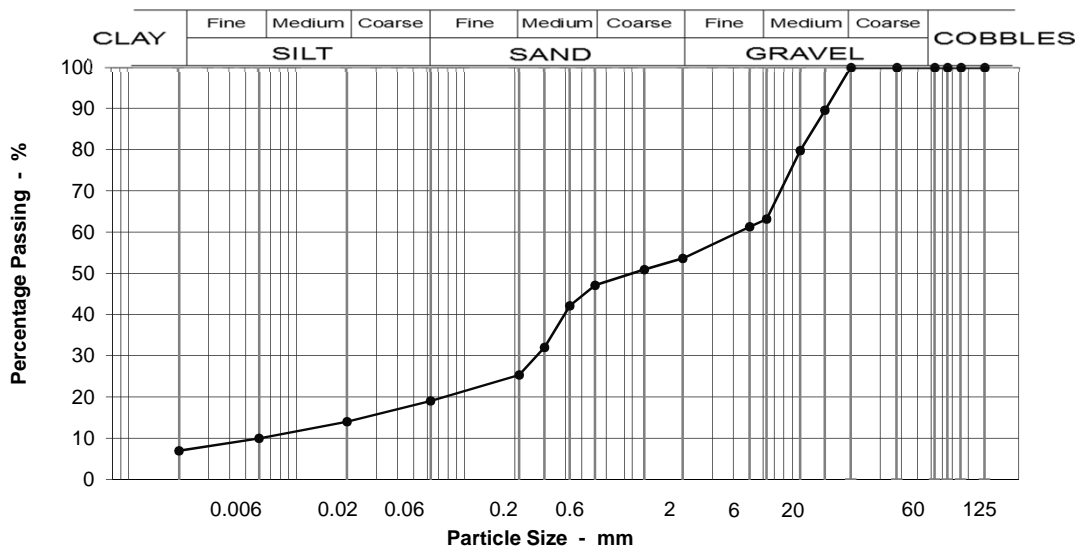
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH11A @ 4 - 4.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 2C.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	37
37.5	100		Fine GRAVEL	10
20	100		Coarse SAND	7
14	89		Medium SAND	22
10	80		Fine SAND	6
6.3	63		Silt & Clay	19
5	61			
2	54			
1.18	51			
0.600	47			
0.425	42			
0.300	32			
0.212	25			
0.063	19			
0.020	14			
0.006	10			
0.002	7			
		Moisture content %	26	

Grading Analysis	
D100	14
D60	4.50
D10	0.07
Uniformity Coefficient	63

Description	
Dark grey slightly organic slightly clayey silty fine and medium angular to subrounded flint and siltstone GRAVEL and medium SAND, some shell fragments.	

Test Code = 610



Simon Holden (Project Technician)



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Our reference No. **GTS6180212023-610**
Our Project No. PZ1522D1
Your Sample Ref. 23
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 2-Jul-18

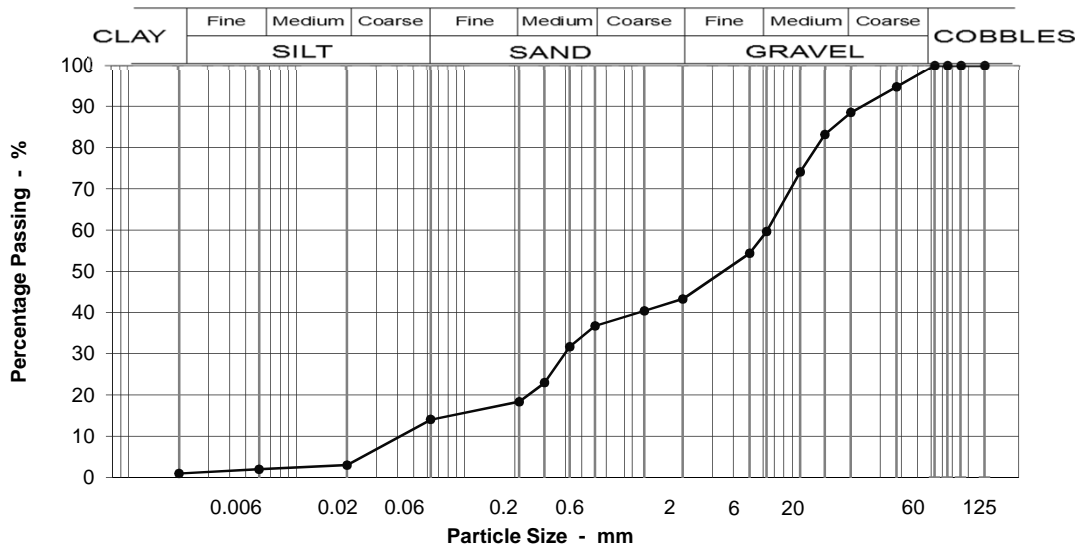
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH11A @ 5 - 5.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1A, 6E/6R, 6F1, 6I, 6N.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	12
63	100		Medium GRAVEL	29
37.5	95		Fine GRAVEL	16
20	88		Coarse SAND	6
14	83		Medium SAND	18
10	74		Fine SAND	4
6.3	60		Silt & Clay	14
5	54		Grading Analysis	
2	43		D100	38
1.18	40		D60	6.39
0.600	37		D10	0.14
0.425	32		Uniformity Coefficient	47
0.300	23		Description	
0.212	18	Dark grey slightly organic silty very sandy fine to coarse rounded to subangular flint and quartz GRAVEL. Some shell fragments.		
0.063	14			
0.020	3			
0.006	2			
0.002	1	Moisture content %	20	

Test Code = 610



Simon Holden (Project Technician)



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Our reference No. GTS6180212025-610
Our Project No PZ1522D1
Your Sample Ref 25
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 23-Apr-18

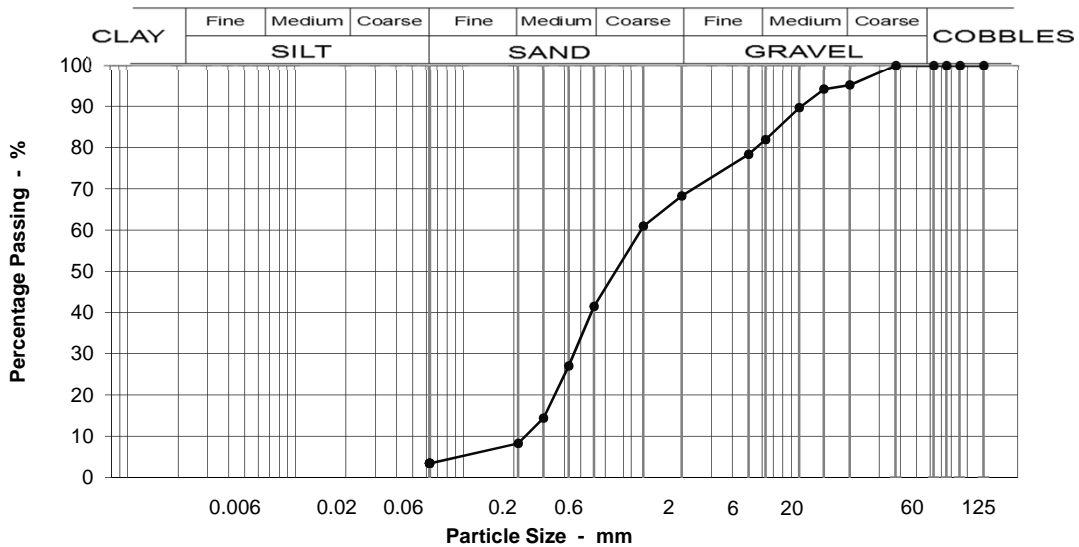
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH11A @ 6 - 6.45m **Specimen:** 1

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	95
14	94
10	90
6.3	82
5	78
2	68
1.18	61
0.600	41
0.425	27
0.300	14
0.212	8
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6F1, 6M.

Moisture content % 14

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	5
Medium GRAVEL	13
Fine GRAVEL	14
Coarse SAND	27
Medium SAND	33
Fine SAND	5
Silt & Clay	3

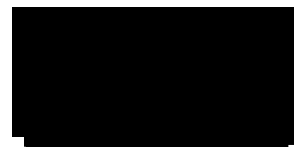
Grading Analysis	
D100	20
D60	1.15
D10	0.24
Uniformity Coefficient	5

Description	
Dark brown very gravelly medium and coarse SAND with some shell fragments. Gravel is fine and medium angular to rounded flint and quartz.	

Test Code = 610



Simon Holden (Project Technician)



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Our reference No. **GTS1180213009-610**
Our Project No. PZ1522D1
Your Sample Ref. 34
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 23-Apr-18

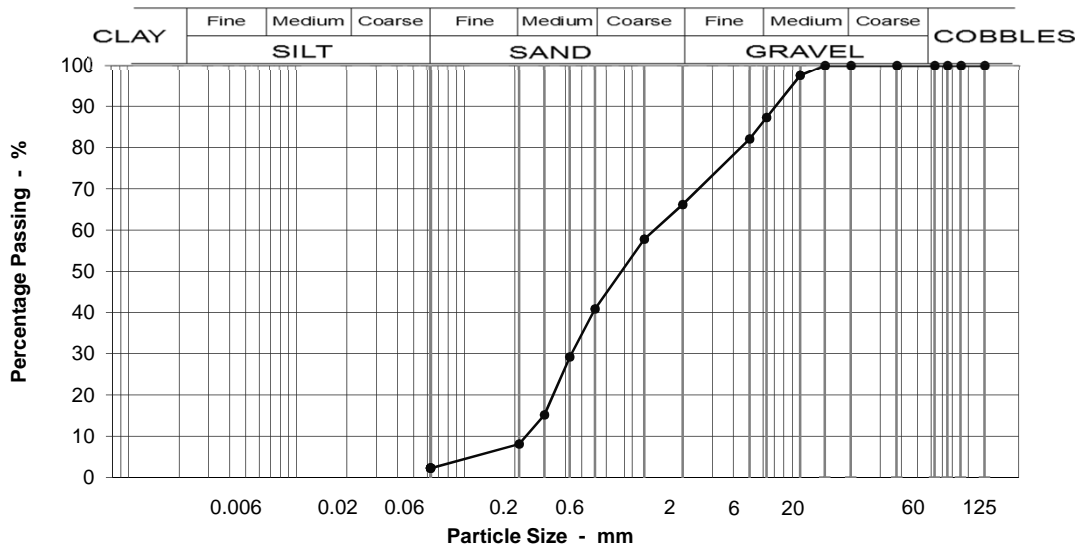
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH11A @ 9 - 9.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	98
6.3	87
5	82
2	66
1.18	58
0.600	41
0.425	29
0.300	15
0.212	8
0.063	2

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J, 6K, 6M.

Moisture content % 10

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	13
Fine GRAVEL	21
Coarse SAND	25
Medium SAND	33
Fine SAND	6
Silt & Clay	2

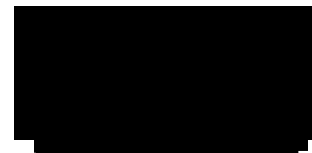
Grading Analysis	
D100	10
D60	1.40
D10	0.24
Uniformity Coefficient	6

Description
Brown very gravelly medium and coarse SAND. Gravel is fine and medium rounded flint and quartz.

Test Code = 610



Simon Holden (Project Technician)



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Our reference No. **GTS1180213012-610**
Our Project No. **PZ1522D1**
Your Sample Ref. **37**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **23-Apr-18**

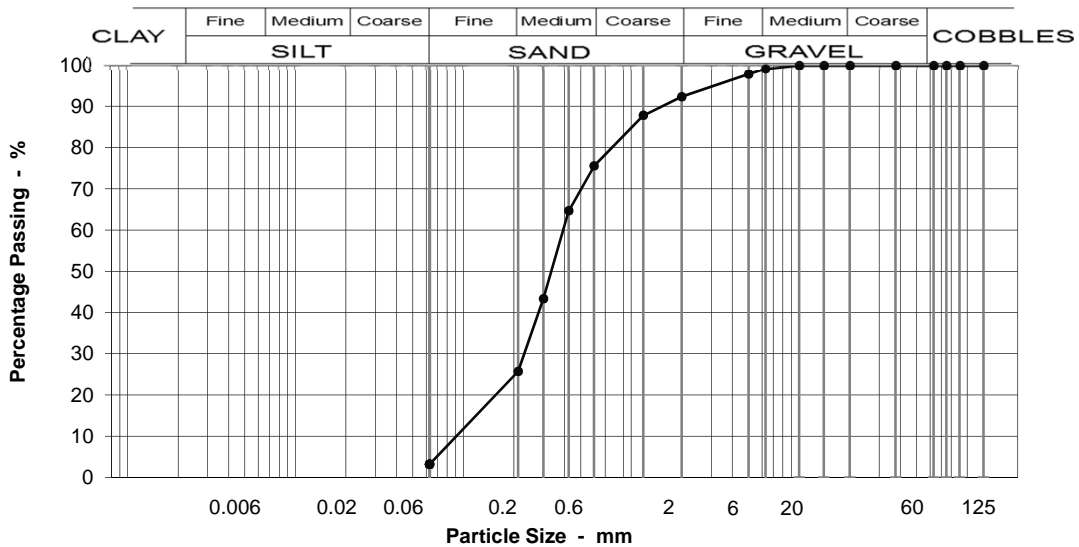
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH11A @ 10 - 10.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	99
5	98
2	92
1.18	88
0.600	76
0.425	65
0.300	43
0.212	26
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 17

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	1
Fine GRAVEL	7
Coarse SAND	17
Medium SAND	50
Fine SAND	22
Silt & Clay	3

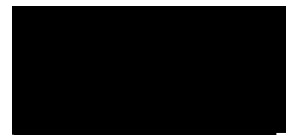
Grading Analysis	
D100	6
D60	0.40
D10	0.11
Uniformity Coefficient	4

Description	
Light brown slightly gravelly medium SAND. Gravel is fine, rounded to sub-rounded flint.	

Test Code = 610



Simon Holden (Project Technician)



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Our reference No. GTS1180213018-610
Our Project No PZ1522D1
Your Sample Ref 43
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 23-Apr-18

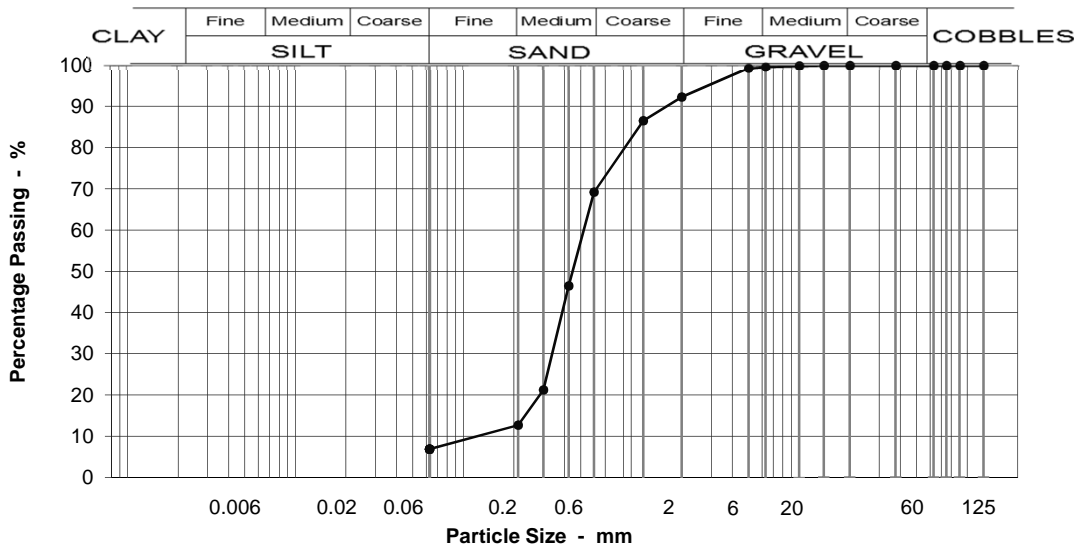
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH11A @ 12 - 12.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	99
2	92
1.18	87
0.600	69
0.425	46
0.300	21
0.212	13
0.063	7

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 18

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	7
Coarse SAND	23
Medium SAND	56
Fine SAND	6
Silt & Clay	7

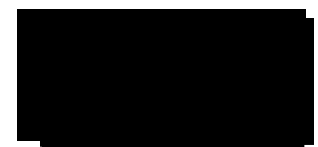
Grading Analysis	
D100	10
D60	0.53
D10	0.14
Uniformity Coefficient	4

Description
Orangey brown slightly gravelly medium SAND.
Gravel is fine rounded to sub-rounded flint.

Test Code = 610



Simon Holden (Project Technician)



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Our reference No. **GTS1180213021-610**
Our Project No. PZ1522D1
Your Sample Ref. 46
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 23-Apr-18

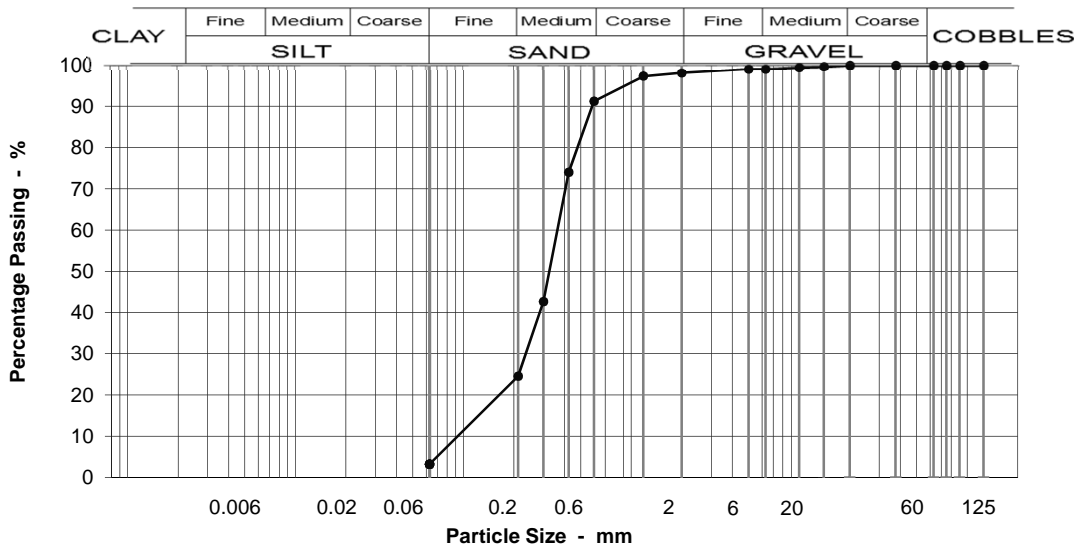
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH11A @ 13 - 13.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	99
6.3	99
5	99
2	98
1.18	97
0.600	91
0.425	74
0.300	43
0.212	25
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 19

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	1
Fine GRAVEL	1
Coarse SAND	7
Medium SAND	67
Fine SAND	21
Silt & Clay	3

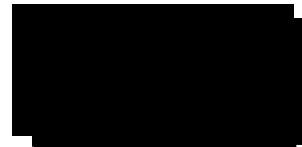
Grading Analysis	
D100	14
D60	0.37
D10	0.11
Uniformity Coefficient	3

Description	
Orangey brown medium SAND.	

Test Code = 610



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NR1 2DH

Our reference No. **GTS1180213024-610**
Our Project No. **PZ1522D1**
Your Sample Ref **49**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **23-Apr-18**

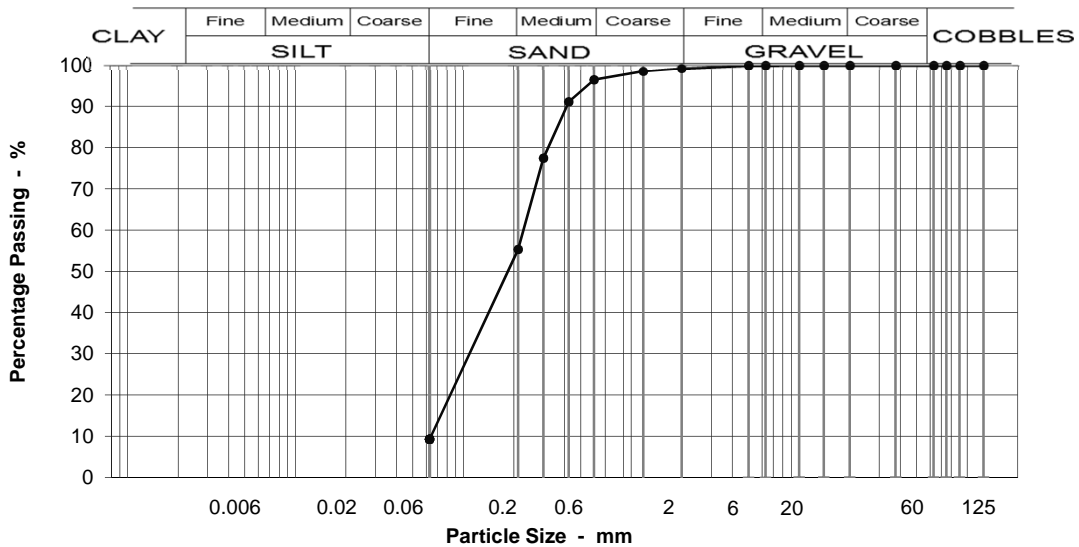
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH11A @ 14 - 14.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	99
0.600	96
0.425	91
0.300	77
0.212	55
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 22

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	3
Medium SAND	41
Fine SAND	46
Silt & Clay	9

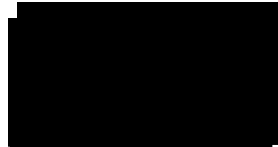
Grading Analysis	
D100	6
D60	0.23
D10	0.07
Uniformity Coefficient	4

Description	
Orangey brown fine and medium SAND with laminae of soft grey clay.	

Test Code = 610



Simon Holden (Project Technician)



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Our reference No. **GTS1180213029-610**
Our Project No. **PZ1522D1**
Your Sample Ref. **54**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **23-Apr-18**

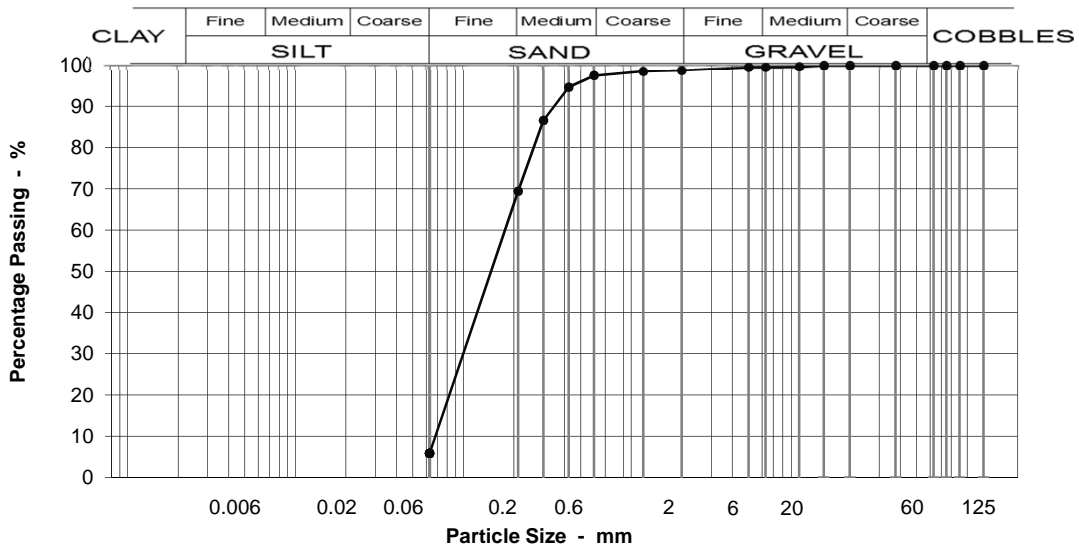
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH11A @ 16 - 16.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	99
0.600	97
0.425	95
0.300	87
0.212	69
0.063	6

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 25

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	1
Medium SAND	28
Fine SAND	64
Silt & Clay	6

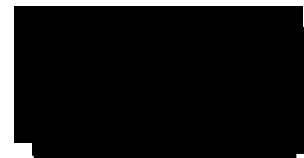
Grading Analysis	
D100	10
D60	0.19
D10	0.07
Uniformity Coefficient	3

Description	
Brown slightly silty fine SAND.	

Test Code = 610



Simon Holden (Project Technician)



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NR1 2DH

Our reference No. **GTS1180213031-610**
Our Project No. **PZ1522D1**
Your Sample Ref. **56**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **23-Apr-18**

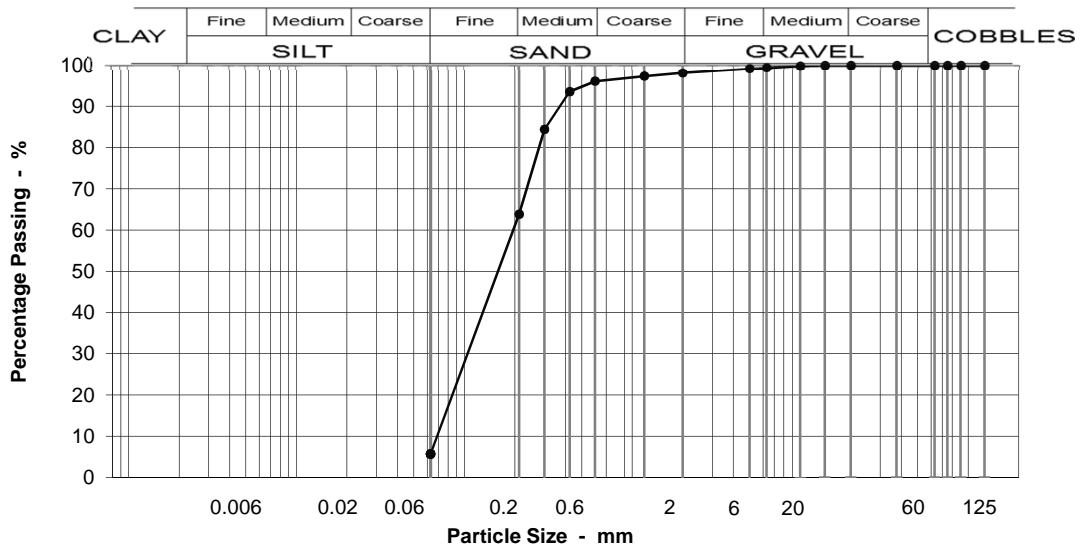
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH11A @ 17 - 17.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	99
5	99
2	98
1.18	97
0.600	96
0.425	94
0.300	84
0.212	64
0.063	6

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 19

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	1
Fine GRAVEL	1
Coarse SAND	2
Medium SAND	32
Fine SAND	58
Silt & Clay	6

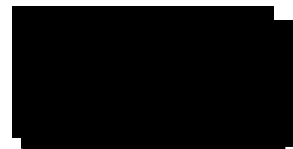
Grading Analysis	
D100	10
D60	0.20
D10	0.07
Uniformity Coefficient	3

Description	
Brown slightly silty fine and medium SAND.	

Test Code = 610



Simon Holden (Project Technician)



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Our reference No. **GTS1180214002-610**
Our Project No. **PZ1522D1**
Your Sample Ref. **61**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **23-Apr-18**

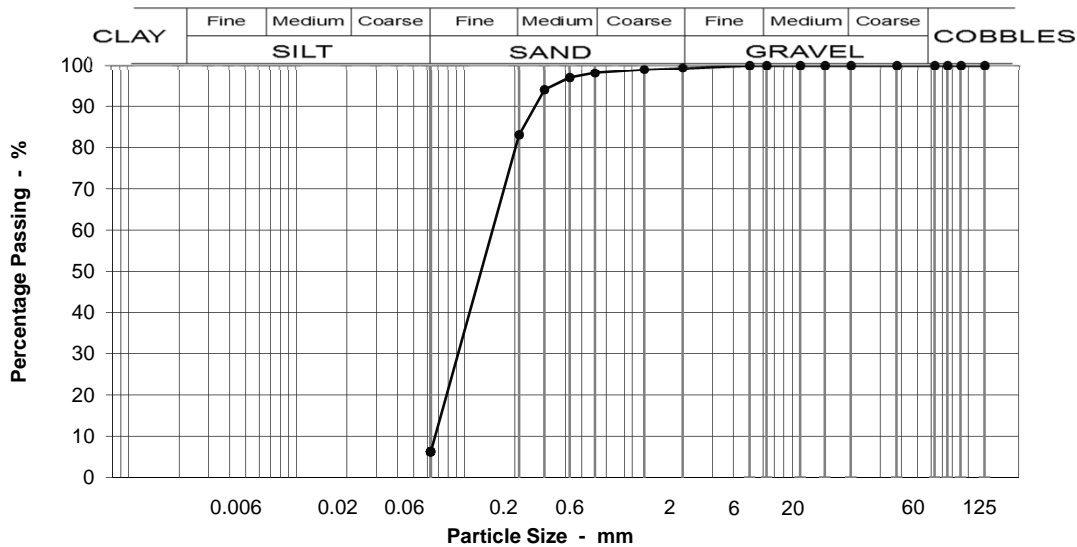
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH11A @ 19 - 19.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	99
0.600	98
0.425	97
0.300	94
0.212	83
0.063	6

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	1
Medium SAND	15
Fine SAND	77
Silt & Clay	6

Grading Analysis	
D100	2
D60	0.17
D10	0.07
Uniformity Coefficient	2

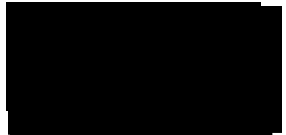
Description
Orangey brown fine SAND with laminae of soft grey clay.

Moisture content % 24

Test Code = 610



Simon Holden (Project Technician)



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County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1180214007-610**
Our Project No. **PZ1522D1**
Your Sample Ref. **65**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **23-Apr-18**

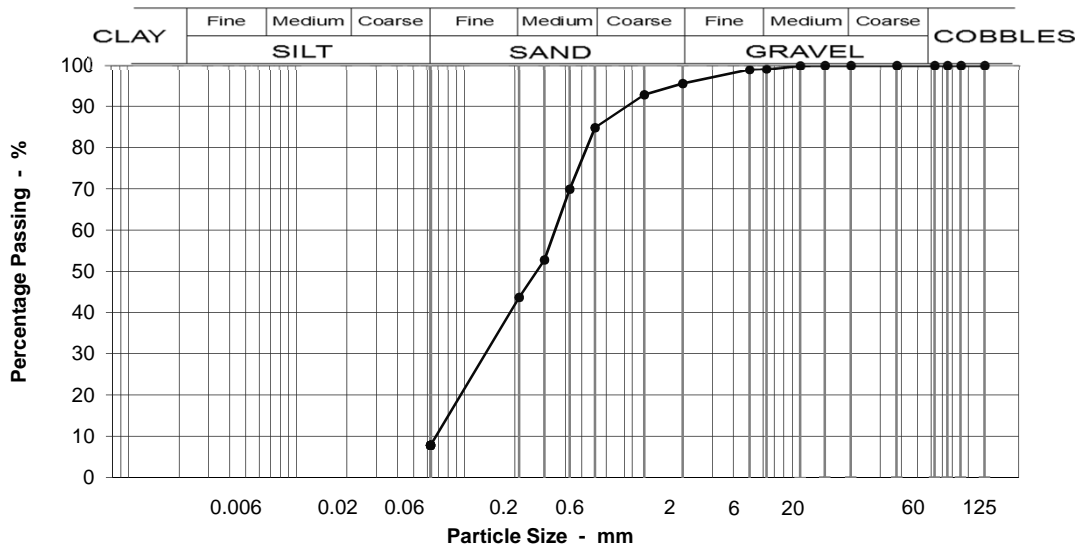
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH11A @ 21 - 21.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	99
5	99
2	95
1.18	93
0.600	85
0.425	70
0.300	53
0.212	44
0.063	8

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 25

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	1
Fine GRAVEL	4
Coarse SAND	11
Medium SAND	41
Fine SAND	36
Silt & Clay	8

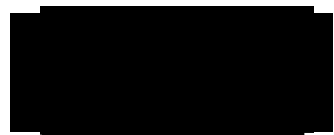
Grading Analysis	
D100	10
D60	0.35
D10	0.07
Uniformity Coefficient	5

Description
Orangey brown fine and medium SAND with numerous shell fragments.

Test Code = 610



Simon Holden (Project Technician)



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County Hall
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NR1 2DH

Our reference No. **GTS1180214009-610**
Our Project No. PZ1522D1
Your Sample Ref. 67
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 23-Apr-18

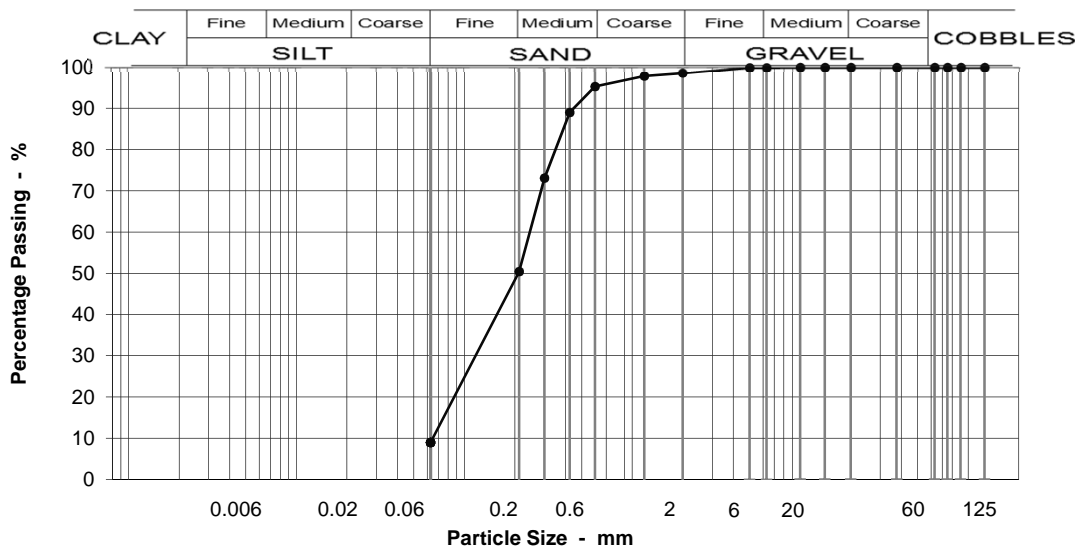
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH11A @ 22 - 22.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	98
0.600	95
0.425	89
0.300	73
0.212	50
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	3
Medium SAND	45
Fine SAND	41
Silt & Clay	9

Grading Analysis	
D100	6
D60	0.25
D10	0.07
Uniformity Coefficient	4

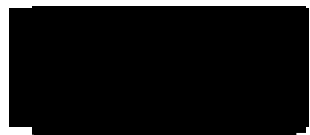
Description
Orangey brown fine and medium SAND with numerous shell fragments with laminae of soft light grey clay, firm grey silty clay and dark grey sandy silt.

Moisture content % 23

Test Code = 610



Simon Holden (Project Technician)



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NR1 2DH

Our reference No. **GTS1180214013-610**
Our Project No. **PZ1522D1**
Your Sample Ref **71**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **23-Apr-18**

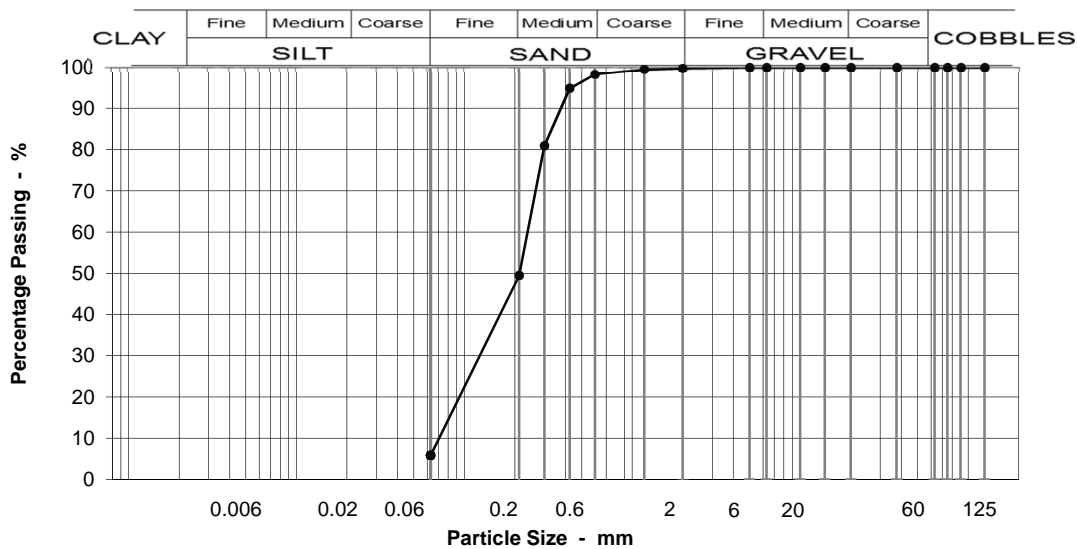
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH11A @ 24 - 24.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	99
0.600	98
0.425	95
0.300	81
0.212	50
0.063	6

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	1
Medium SAND	49
Fine SAND	44
Silt & Clay	6

Grading Analysis	
D100	2
D60	0.24
D10	0.08
Uniformity Coefficient	3

Description
Greyish brown slightly silty fine and medium SAND with some shell fragments.

Moisture content % 22

Test Code = 610



Simon Holden (Project Technician)



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Norfolk
NR1 2DH

Our reference No. **GTS1180214018-610**
Our Project No. **PZ1522D1**
Your Sample Ref. **76**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **23-Apr-18**

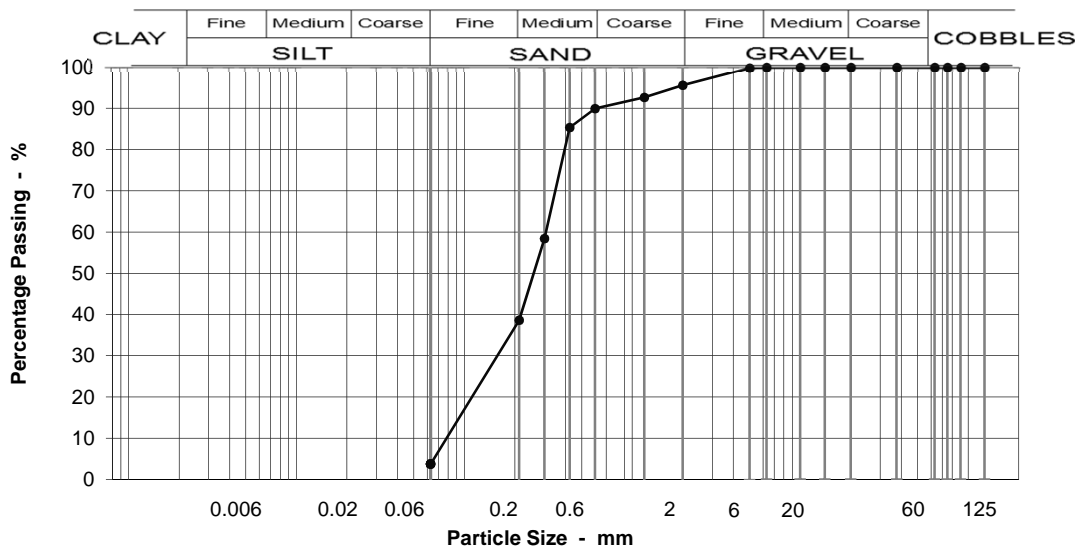
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH11A @ 26 - 26.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	96
1.18	93
0.600	90
0.425	85
0.300	58
0.212	39
0.063	4

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 27

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	4
Coarse SAND	6
Medium SAND	51
Fine SAND	35
Silt & Clay	4

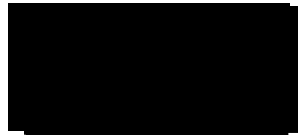
Grading Analysis	
D100	5
D60	0.31
D10	0.09
Uniformity Coefficient	3

Description
Brown grey fine and medium SAND with numerous laminae of soft grey clay. Occasional shell fragments.

Test Code = 610



Simon Holden (Project Technician)



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NR1 2DH

Our reference No. **GTS1180214020-610**
Our Project No. **PZ1522D1**
Your Sample Ref **78**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **12-Jun-18**

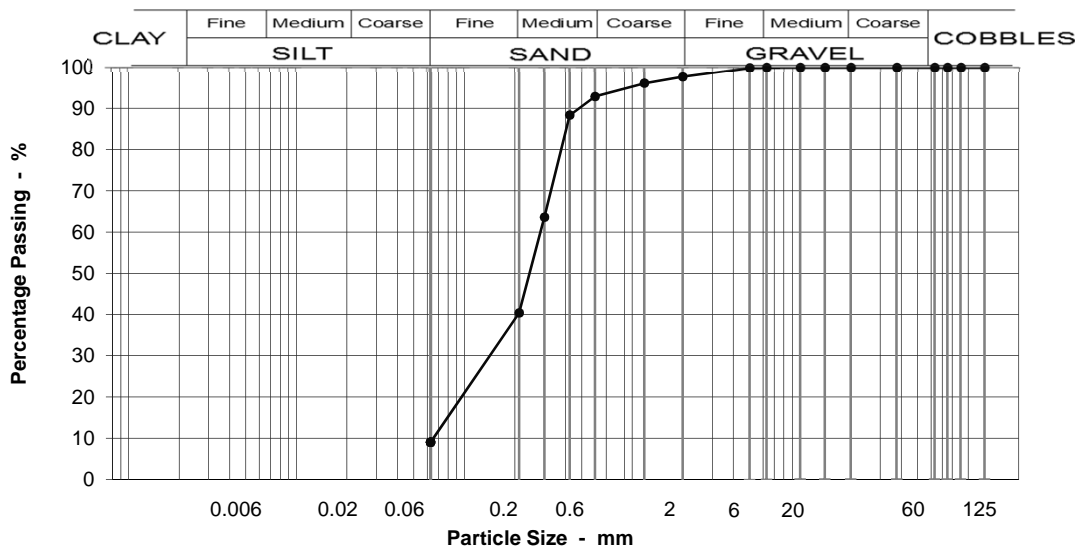
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH11A @ 27 - 27.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	98
1.18	96
0.600	93
0.425	88
0.300	64
0.212	40
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	2
Coarse SAND	5
Medium SAND	52
Fine SAND	31
Silt & Clay	9

Grading Analysis	
D100	6
D60	0.29
D10	0.07
Uniformity Coefficient	4

Description
Grey fine to medium SAND with numerous lenses of soft grey clay, some shell fragments.

Moisture content % 30

Test Code = 610



Simon Holden (Project Technician)



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Our reference No. **GTS1180214024-610**
Our Project No. **PZ1522D1**
Your Sample Ref **82**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **2-Jul-18**

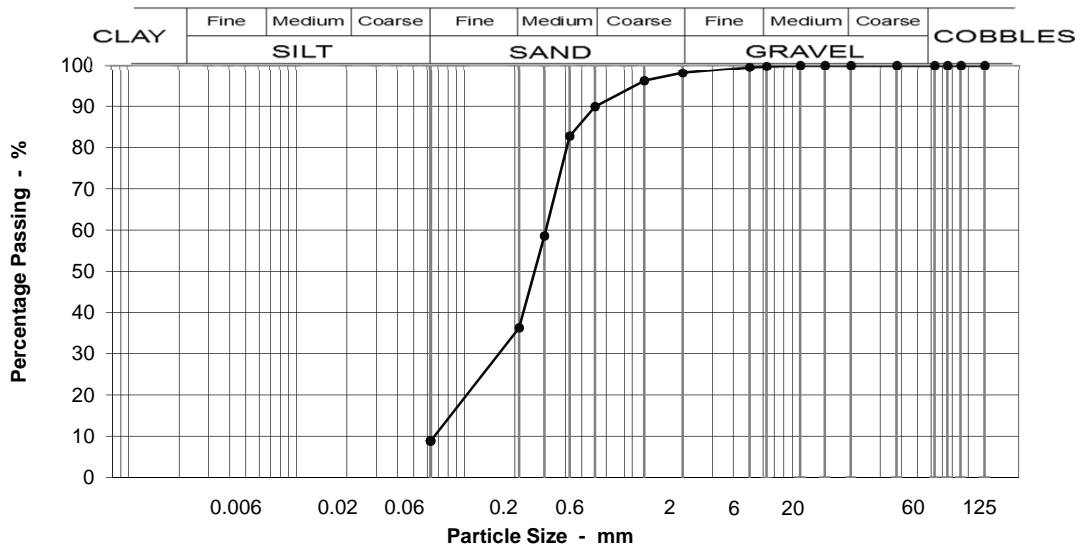
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH11A @ 29 - 29.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	98
1.18	96
0.600	90
0.425	83
0.300	59
0.212	36
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	2
Coarse SAND	8
Medium SAND	54
Fine SAND	27
Silt & Clay	9

Grading Analysis	
D100	6
D60	0.31
D10	0.07
Uniformity Coefficient	4

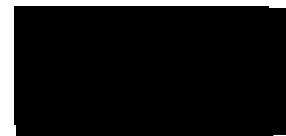
Description
Greyish brown fine and medium SAND with numerous laminae of firm dark grey very sandy silty clay, some shell fragments.

Moisture content % 20

Test Code = 610



Simon Holden (Project Technician)



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Our reference No. GTS1180214027-610
Our Project No PZ1522D1
Your Sample Ref 85
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 2-Jul-18

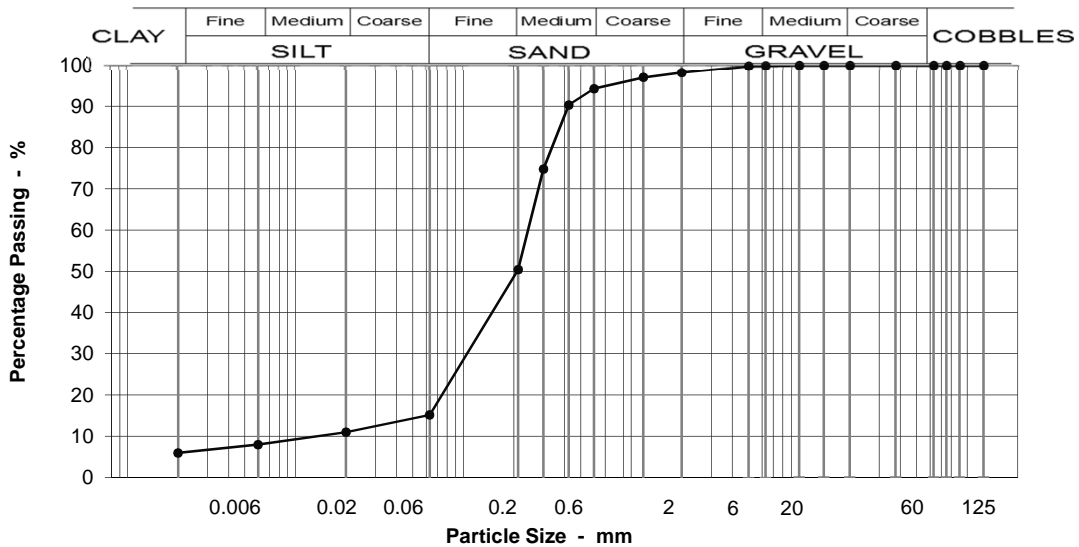
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH11A @ 30 - 30.5m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	98
1.18	97
0.600	94
0.425	90
0.300	75
0.212	50
0.063	15
0.020	11
0.006	8
0.002	6

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes
2A/2B, 2A/2B.

Moisture content % 29

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	2
Coarse SAND	4
Medium SAND	44
Fine SAND	35
Silt & Clay	15

Grading Analysis	
D100	6
D60	0.25
D10	0.06
Uniformity Coefficient	4

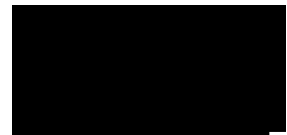
Description	
Greyish brown fine and medium SAND with numerous laminae of firm dark grey very sandy silty clay, some shell fragments.	

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



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Norwich
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NR1 2DH

Our reference No. **GTS1180215001-**
Our Project No **PZ1522D1**
Your Sample Ref **86**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

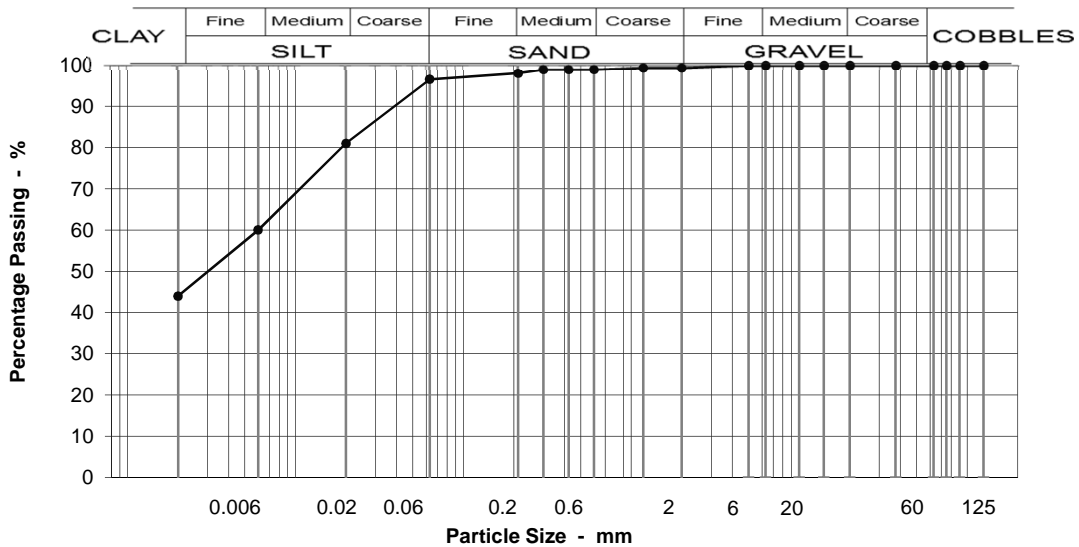
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH11A @ 31.2 - 31.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	99
0.600	99
0.425	99
0.300	99
0.212	98
0.063	97
0.020	81
0.006	60
0.002	44

Specification for Highway Works Classification
Table 6/2

Moisture content % 0

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	0
Medium SAND	1
Fine SAND	2
Silt & Clay	97

Grading Analysis	
D100	2
D60	0.01
D10	0.00
Uniformity Coefficient	>10*

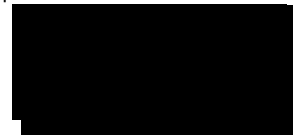
Description	
Laminated firm to stiff grey SILT, CLAY.	

* Uniformity coefficient extrapolated

Test Code =



Simon Holden (Project Technician)



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Martineau Lane
Norwich
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NR1 2DH

Our reference No. **GTS1180215005-610**
Our Project No. PZ1522D1
Your Sample Ref. 90
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 23-Apr-18

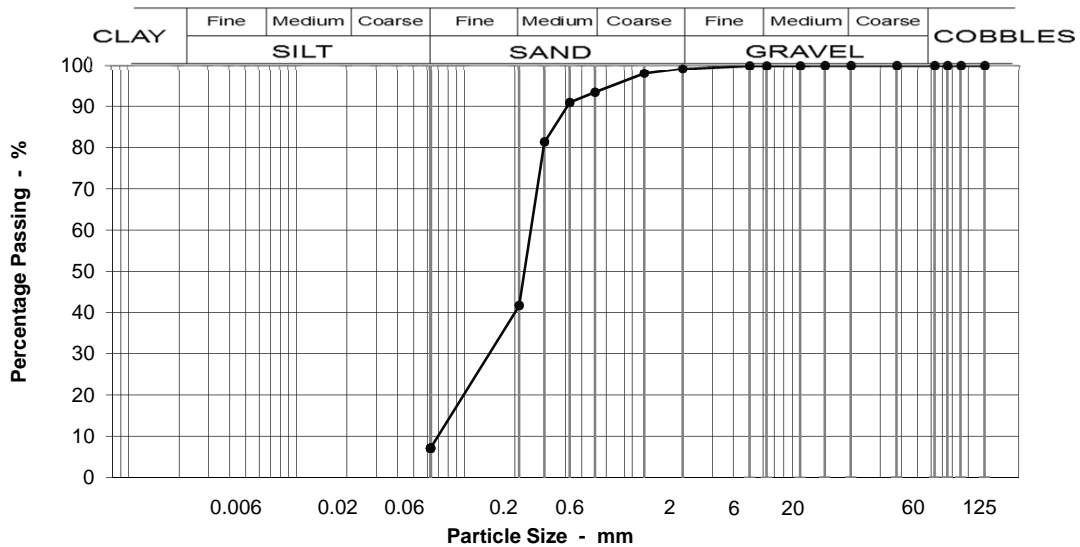
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH11A @ 32.2 - 32.7m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	98
0.600	93
0.425	91
0.300	81
0.212	42
0.063	7

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 25

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	6
Medium SAND	52
Fine SAND	35
Silt & Clay	7

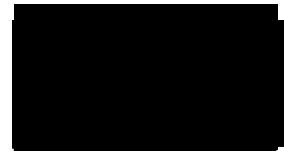
Grading Analysis	
D100	10
D60	0.25
D10	0.08
Uniformity Coefficient	3

Description	
Grey fine and medium SAND with numerous shell fragments.	

Test Code = 610



Simon Holden (Project Technician)



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County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS1180215011-610
Our Project No PZ1522D1
Your Sample Ref 96
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 25-Jun-18

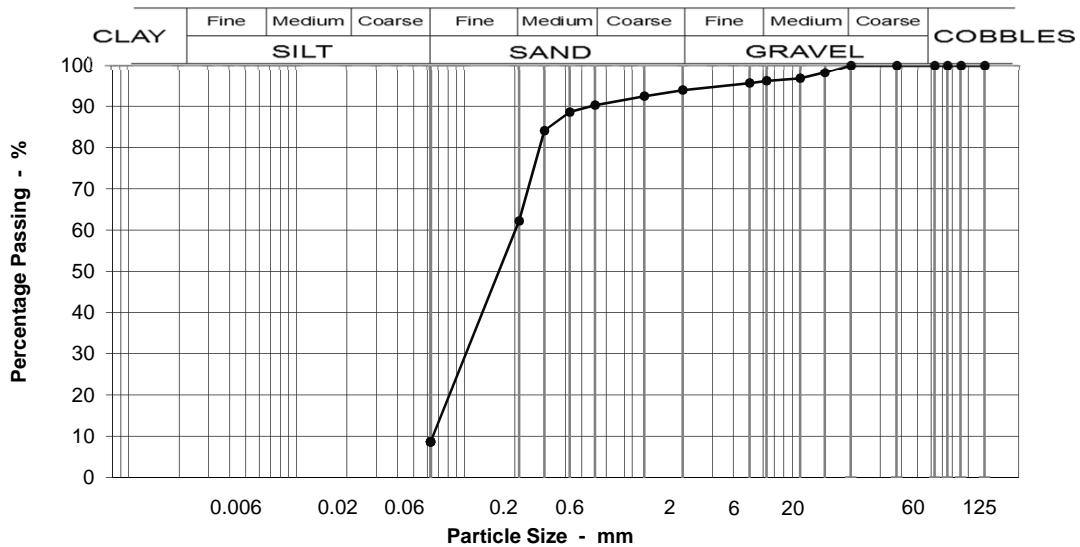
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH11A @ 36 - 36.5m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R, 6M.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	4
37.5	100		Fine GRAVEL	2
20	100		Coarse SAND	4
14	98		Medium SAND	28
10	97		Fine SAND	53
6.3	96		Silt & Clay	9
5	96		Grading Analysis	
2	94		D100	14
1.18	92		D60	0.21
0.600	90		D10	0.07
0.425	89		Uniformity Coefficient	3
0.300	84		Description	
0.212	62	Grey fine to medium SAND with numerous shell fragments.		
0.063	9			

Moisture content % 28

Test Code = 610



Simon Holden (Project Technician)



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NR1 2DH

Our reference No. **GTS1180215015-610**
Our Project No. PZ1522D1
Your Sample Ref 100
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 23-Apr-18

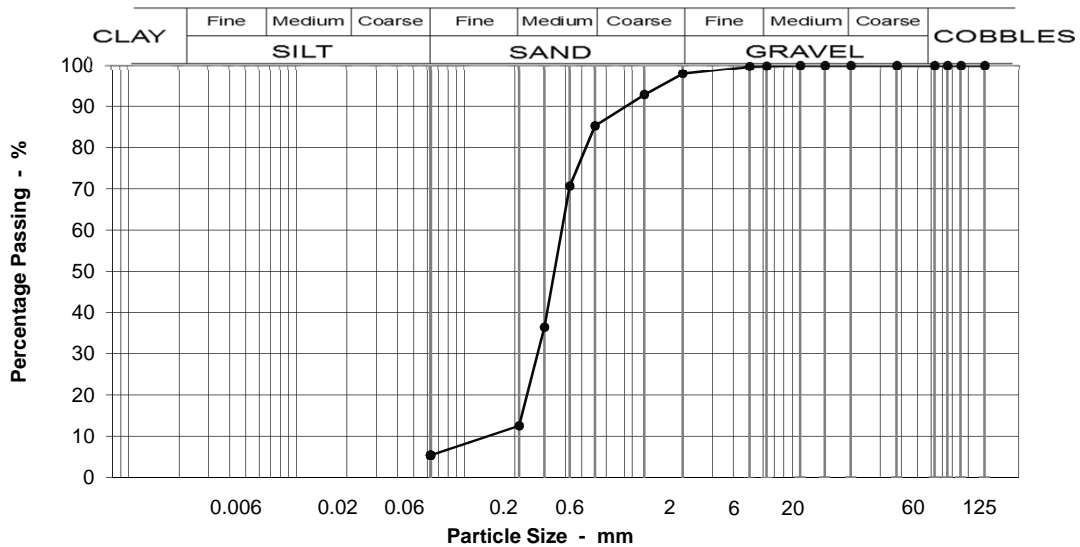
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH11A @ 39 - 39.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	98
1.18	93
0.600	85
0.425	71
0.300	36
0.212	13
0.063	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 23

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	2
Coarse SAND	13
Medium SAND	73
Fine SAND	7
Silt & Clay	5

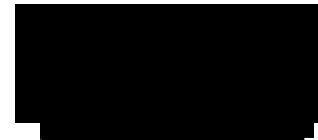
Grading Analysis	
D100	6
D60	0.39
D10	0.16
Uniformity Coefficient	2

Description	
Grey medium SAND with some shell fragments.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
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NR1 2DH

Our reference No. **GTS1180215018-610**
Our Project No. PZ1522D1
Your Sample Ref. 103
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 23-Apr-18

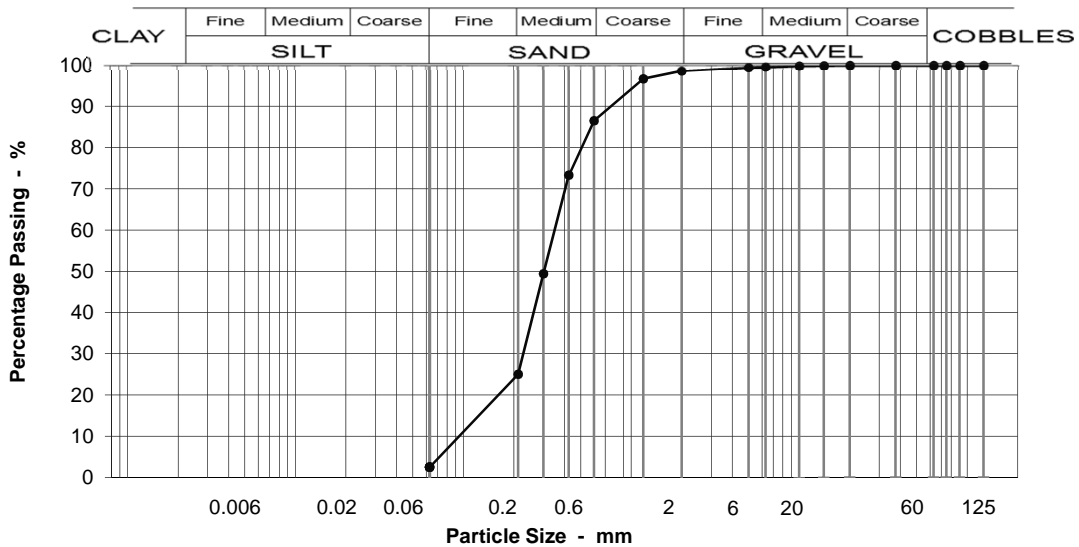
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH11A @ 41 - 41.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	99
2	99
1.18	97
0.600	87
0.425	73
0.300	49
0.212	25
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 19

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	12
Medium SAND	61
Fine SAND	22
Silt & Clay	3

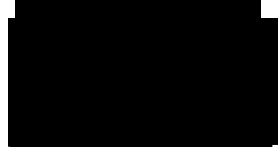
Grading Analysis	
D100	14
D60	0.36
D10	0.11
Uniformity Coefficient	3

Description	
Grey medium SAND with numerous shell fragments.	

Test Code = 610



Simon Holden (Project Technician)



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County Hall
Martineau Lane
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NR1 2DH

Our reference No. GTS1180215023-610
Our Project No PZ1522D1
Your Sample Ref 108
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 23-Apr-18

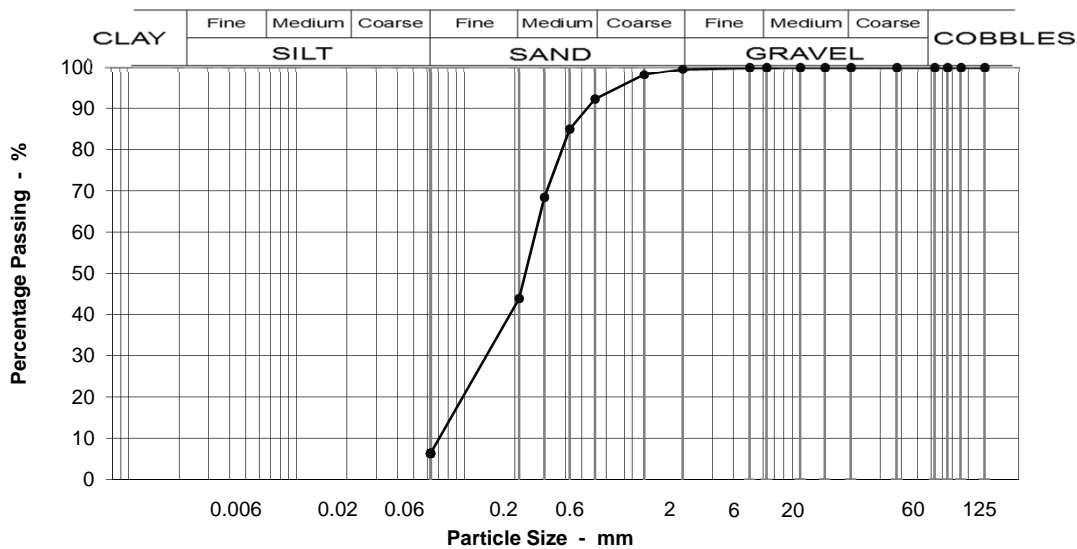
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH11A @ 44 - 44.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	98
0.600	92
0.425	85
0.300	68
0.212	44
0.063	6

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	7
Medium SAND	48
Fine SAND	38
Silt & Clay	6

Grading Analysis	
D100	6
D60	0.27
D10	0.08
Uniformity Coefficient	3

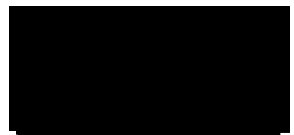
Description
Dark grey fine and medium sand with numerous shell fragments.

Moisture content % 24

Test Code = 610



Simon Holden (Project Technician)



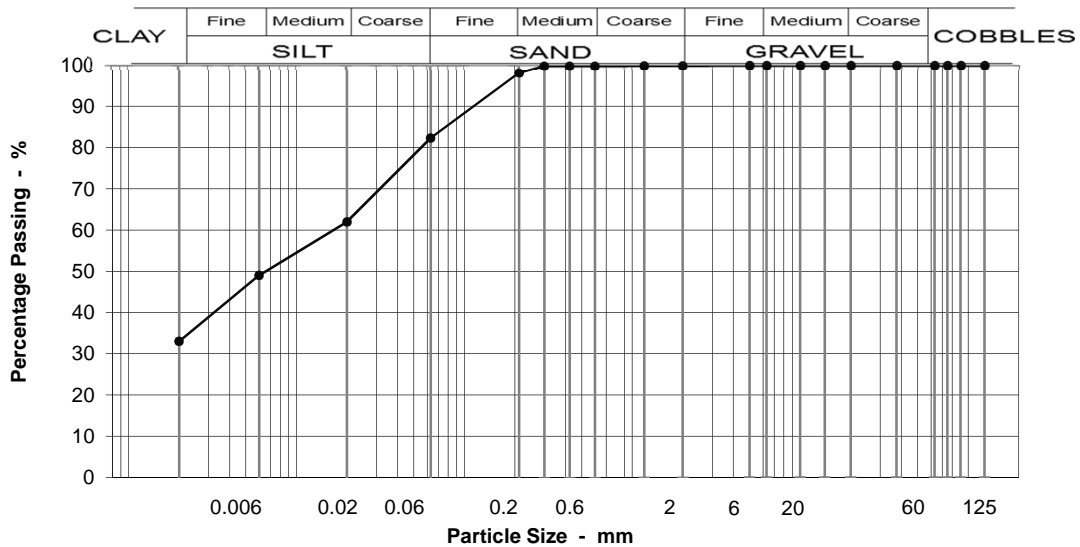
Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1180216002-**
Our Project No. PZ1522D1
Your Sample Ref. 110
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 11-Jun-18

Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing
Location and orientation within sample not applicable

Location: BH11A @ 45.8 - 46m Specimen: 1
Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100		BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	0
14	100		Medium SAND	2
10	100		Fine SAND	16
6.3	100		Silt & Clay	82
5	100			
2	100			
1.18	100			
0.600	100			
0.425	100			
0.300	100			
0.212	98			
0.063	82			
0.020	62			
0.006	49			
0.002	33			
		Moisture content %	0	

Grading Analysis	
D100	2
D60	0.02
D10	0.00
Uniformity Coefficient	>10*

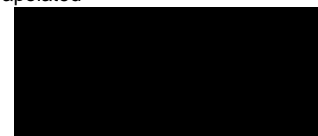
Description	
Stiff laminated grey silty CLAY, grey SILT, dark grey sandy SILT and light grey silty fine SAND.	

* Uniformity coefficient extrapolated

Test Code =



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NR1 2DH

Our reference No. **GTS1180216003-610**
Our Project No. PZ1522D1
Your Sample Ref. 111
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 23-Apr-18

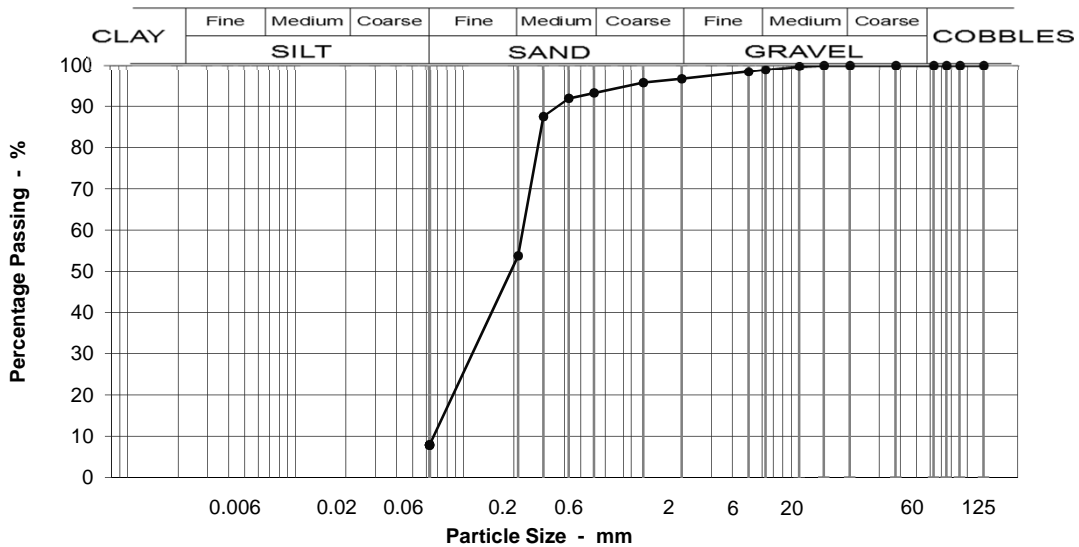
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH11A @ 46 - 46.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	99
5	98
2	97
1.18	96
0.600	93
0.425	92
0.300	87
0.212	54
0.063	8

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 26

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	1
Fine GRAVEL	2
Coarse SAND	3
Medium SAND	39
Fine SAND	46
Silt & Clay	8

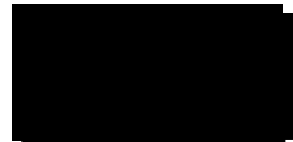
Grading Analysis	
D100	10
D60	0.23
D10	0.07
Uniformity Coefficient	3

Description	
Laminated light grey slightly silty fine and medium SAND.	

Test Code = 610



Simon Holden (Project Technician)



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NR1 2DH

Our reference No. **GTS1180216009-**
Our Project No. PZ1522D1
Your Sample Ref. 117
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 11-Jun-18

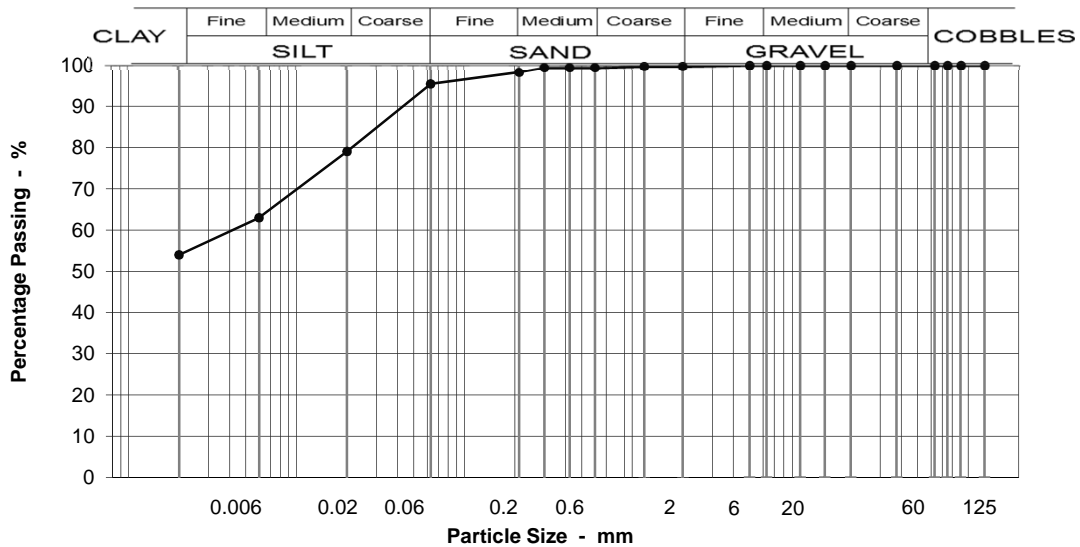
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH11A @ 47.5 - 48m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100		BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	0
14	100		Medium SAND	1
10	100		Fine SAND	3
6.3	100		Silt & Clay	95
5	100			
2	100			
1.18	100			
0.600	99			
0.425	99			
0.300	99			
0.212	98			
0.063	95			
0.020	79			
0.006	63			
0.002	54			
		Moisture content %		0

Grading Analysis	
D100	2
D60	0.00
D10	0.00
Uniformity Coefficient	>10*

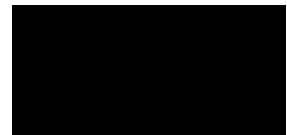
Description
Very stiff brown CLAY.

* Uniformity coefficient extrapolated

Test Code =



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NR1 2DH

Our reference No. **GTS3180307001-**
Our Project No **PZ1522D1**
Your Sample Ref **1**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

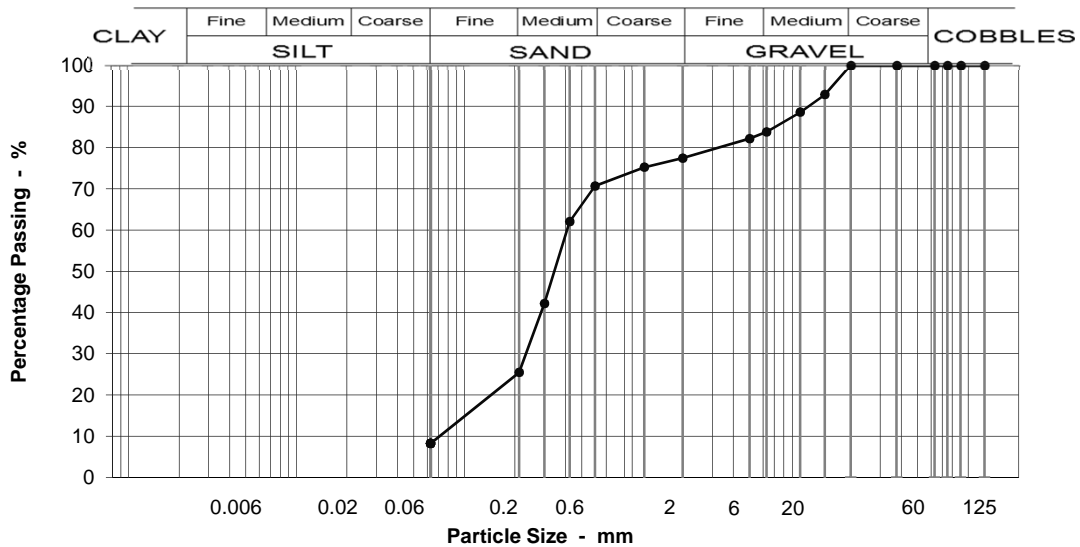
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12 @ 0.4 - 0.8m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	93
10	89
6.3	84
5	82
2	77
1.18	75
0.600	71
0.425	62
0.300	42
0.212	26
0.063	8

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J, 6K, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	16
Fine GRAVEL	6
Coarse SAND	7
Medium SAND	45
Fine SAND	17
Silt & Clay	8

Grading Analysis	
D100	14
D60	0.41
D10	0.08
Uniformity Coefficient	5

Description
MADE GROUND - comprising greyish brown silty very gravelley fine and medium SAND, gravel is fine and medium angular to rounded flint, brick, wood and concrete.

Moisture content % 13

Test Code =



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Norfolk
NR1 2DH

Our reference No. **GTS3180307004-**
Our Project No. PZ1522D1
Your Sample Ref 3
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 11-Jun-18

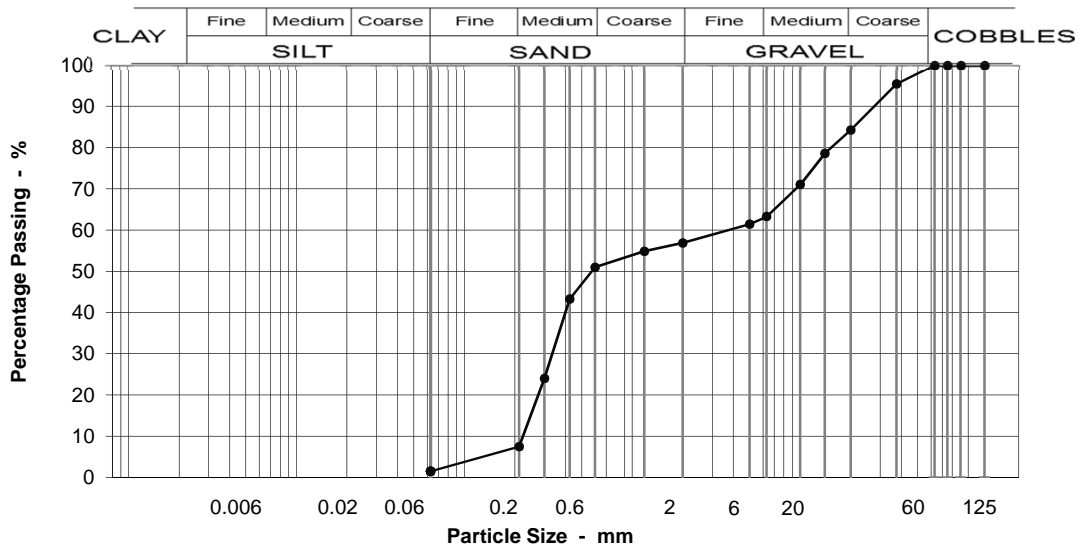
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12 @ 1.2 - 1.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1A, 6E/6R, 6I, 6M, 6N.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	16
63	100		Medium GRAVEL	21
37.5	95		Fine GRAVEL	6
20	84		Coarse SAND	6
14	79		Medium SAND	43
10	71		Fine SAND	6
6.3	63		Silt & Clay	2
5	61			
2	57			
1.18	55			
0.600	51			
0.425	43			
0.300	24			
0.212	8			
0.063	2			
Moisture content %		9		

Grading Analysis	
D100	38
D60	4.06
D10	0.23
Uniformity Coefficient	18

Description
Mottled grey and dark grey medium SAND, medium and coarse rounded to sub-angular flint, brick, quartz and sandstone.

Source : Inspection nit: Hand dug
Test Code =



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NR1 2DH

Our reference No. **GTS3180307006-**
Our Project No **PZ1522D1**
Your Sample Ref **5**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

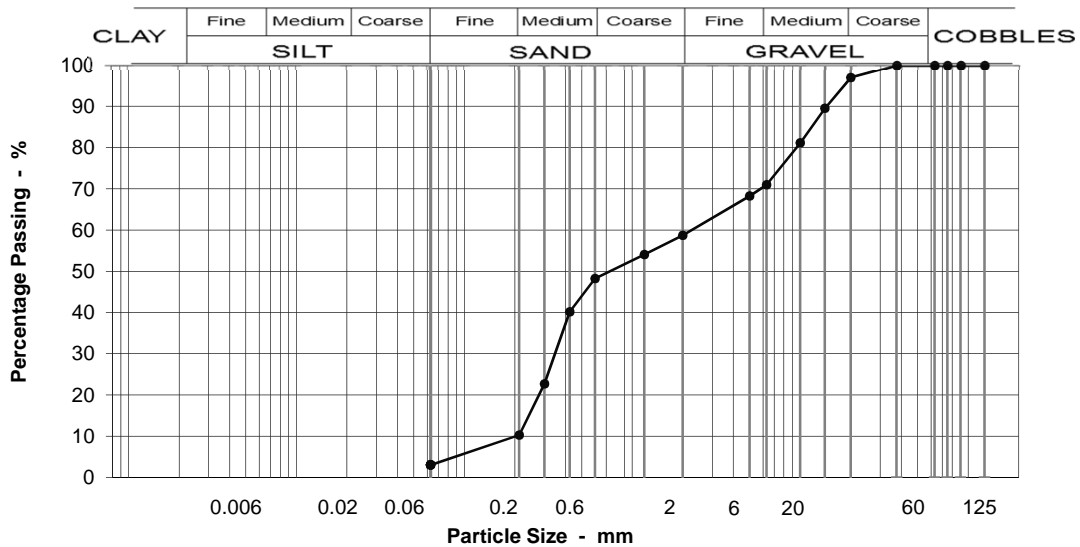
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12 @ 1.5 - 2m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	97
14	89
10	81
6.3	71
5	68
2	59
1.18	54
0.600	48
0.425	40
0.300	23
0.212	10
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6E/6R, 6F1, 6I, 6M, 6N.

Moisture content % 12

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	3
Medium GRAVEL	26
Fine GRAVEL	12
Coarse SAND	10
Medium SAND	38
Fine SAND	7
Silt & Clay	3

Grading Analysis	
D100	20
D60	2.40
D10	0.21
Uniformity Coefficient	12

Description	
MADE GROUND - comprising mottled grey and dark grey medium SAND, rounded to sub-angular flint, brick, quartz and sandstone GRAVEL.	

Test Code =



Simon Holden (Project Technician)

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Norfolk
NR1 2DH

Our reference No. **GTS3180307007-610**
Our Project No. **PZ1522D1**
Your Sample Ref **6**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

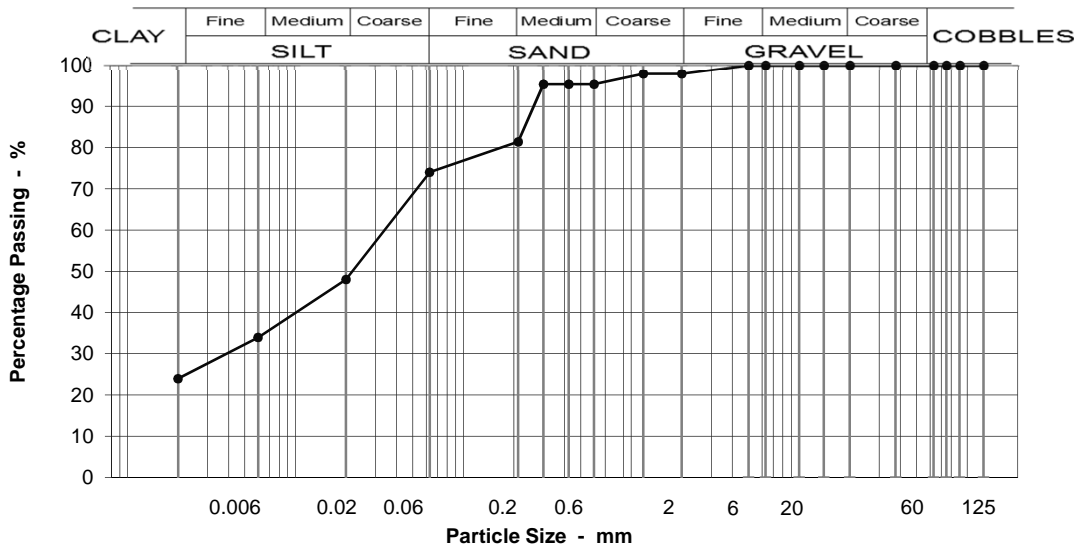
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12 @ 2 - 2.5m Specimen: 2

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	98
1.18	98
0.600	95
0.425	95
0.300	95
0.212	81
0.063	74
0.020	48
0.006	34
0.002	24

Specification for Highway Works Classification
Table 6/2

Moisture content % 0

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	2
Coarse SAND	3
Medium SAND	14
Fine SAND	7
Silt & Clay	74

Grading Analysis	
D100	2
D60	0.04
D10	0.00
Uniformity Coefficient	>10*

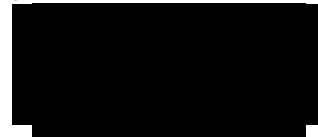
Description
MADE GROUND - comprising very soft, dark grey, slightly sandy, silty clay. Gravel is fine and medium, rounded to sub-rounded, flint, chalk and brick.

* Uniformity coefficient extrapolated

Test Code = 610



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Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3180307016-610**
Our Project No. PZ1522D1
Your Sample Ref. 15
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 4-Jul-18

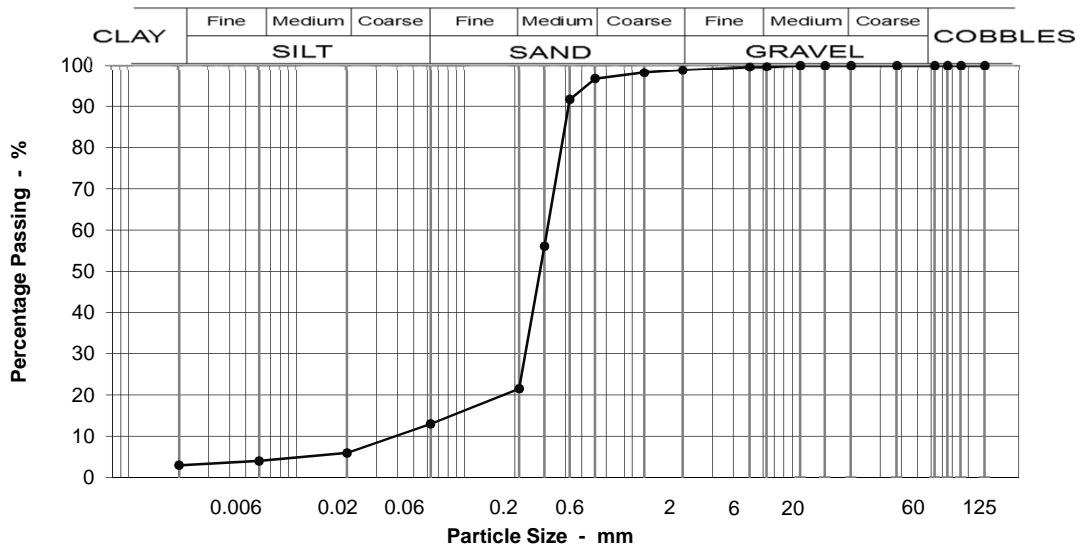
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12 @ 4.5 - 5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	98
0.600	97
0.425	92
0.300	56
0.212	22
0.063	13
0.020	6
0.006	4
0.002	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R.

Moisture content % 22

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	2
Medium SAND	75
Fine SAND	9
Silt & Clay	13

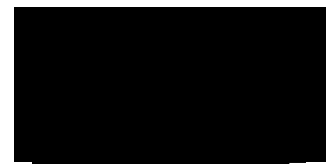
Grading Analysis	
D100	6
D60	0.31
D10	0.13
Uniformity Coefficient	2

Description	
Dark grey organic silty medium SAND.	

Test Code = 610



Simon Holden (Project Technician)



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Our reference No. **GTS3180307022-**
Our Project No. PZ1522D1
Your Sample Ref. 21
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 11-Jun-18

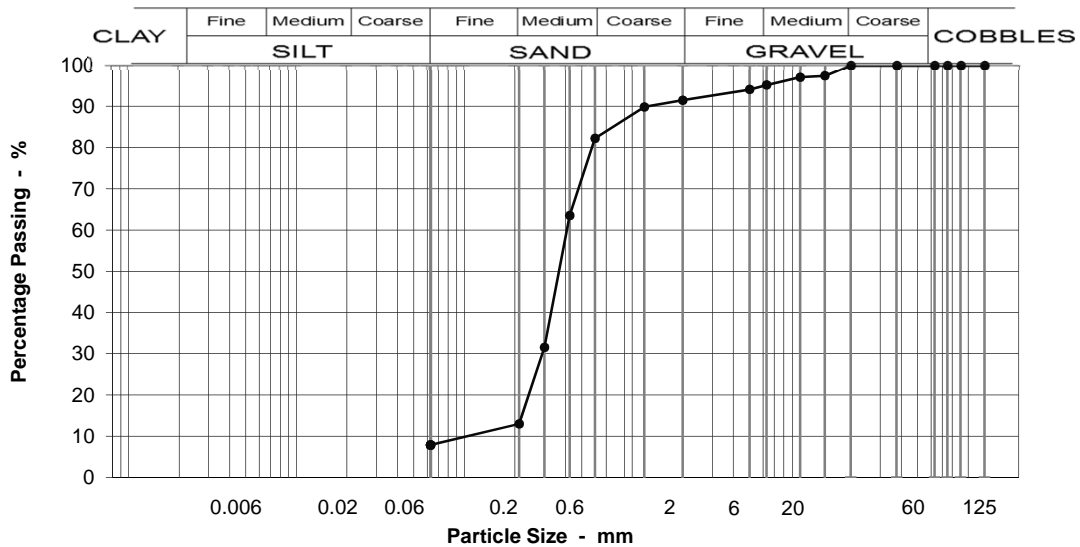
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12 @ 6.5 - 7m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	97
10	97
6.3	95
5	94
2	91
1.18	90
0.600	82
0.425	64
0.300	32
0.212	13
0.063	8

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 21

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	5
Fine GRAVEL	4
Coarse SAND	9
Medium SAND	69
Fine SAND	5
Silt & Clay	8

Grading Analysis	
D100	14
D60	0.41
D10	0.12
Uniformity Coefficient	3

Description
Brown slightly gravelly slightly silty medium SAND with some shell fragments. Gravel is fine and medium sub-angular to sub-rounded quartz and flint.

Source : Inspection pit: Hand dug
Test Code =



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Our reference No. **GTS3180307025-**
Our Project No. PZ1522D1
Your Sample Ref. 24
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 11-Jun-18

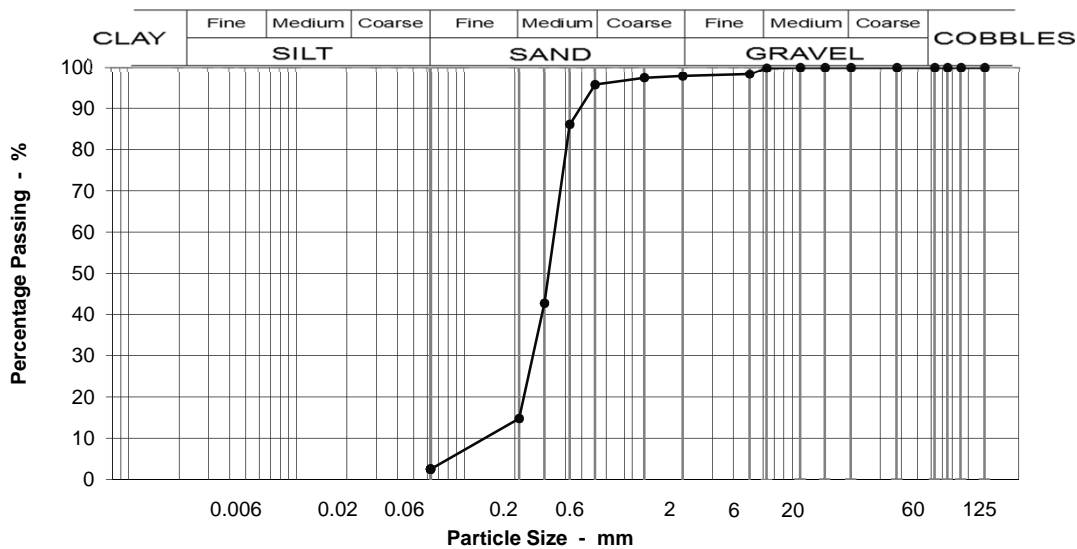
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12 @ 7.5 - 8m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	98
2	98
1.18	97
0.600	96
0.425	86
0.300	43
0.212	15
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 18

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	2
Coarse SAND	2
Medium SAND	81
Fine SAND	12
Silt & Clay	3

Grading Analysis	
D100	6
D60	0.35
D10	0.15
Uniformity Coefficient	2

Description
Brown slightly gravelly slightly silty medium SAND with some shell fragments. Gravel is fine and medium sub-angular to sub-rounded quartz and flint.

Source : Inspection pit: Hand dug
Test Code =



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Our reference No. **GTS3180307031-**
Our Project No. **PZ1522D1**
Your Sample Ref **30**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

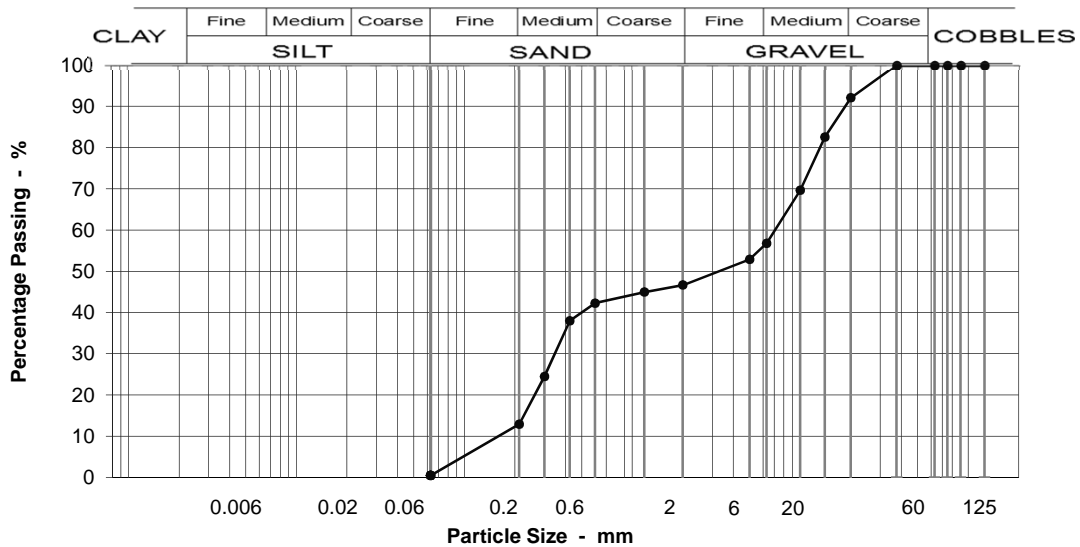
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12 @ 9.5 - 10m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	<p>This material complies with the following material classes 1A, 6A, 6E/6R, 6F1, 6I, 6M, 6N.</p>	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	8
63	100		Medium GRAVEL	35
37.5	100		Fine GRAVEL	10
20	92		Coarse SAND	4
14	83		Medium SAND	29
10	70		Fine SAND	12
6.3	57		Silt & Clay	1
5	53			
2	47			
1.18	45			
0.600	42			
0.425	38			
0.300	25			
0.212	13			
0.063	1			
Moisture content %		6.9		

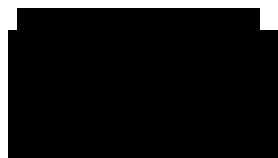
Grading Analysis	
D100	20
D60	7.23
D10	0.18
Uniformity Coefficient	41

Description	
Brown fine and medium sub-angular to rounded flint and quartz GRAVEL. Fine and medium SAND.	

Source : Inspection pit: Hand dug
Test Code =



Simon Holden (Project Technician)



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County Hall
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NR1 2DH

Our reference No. **GTS3180307034-**
Our Project No **PZ1522D1**
Your Sample Ref **33**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

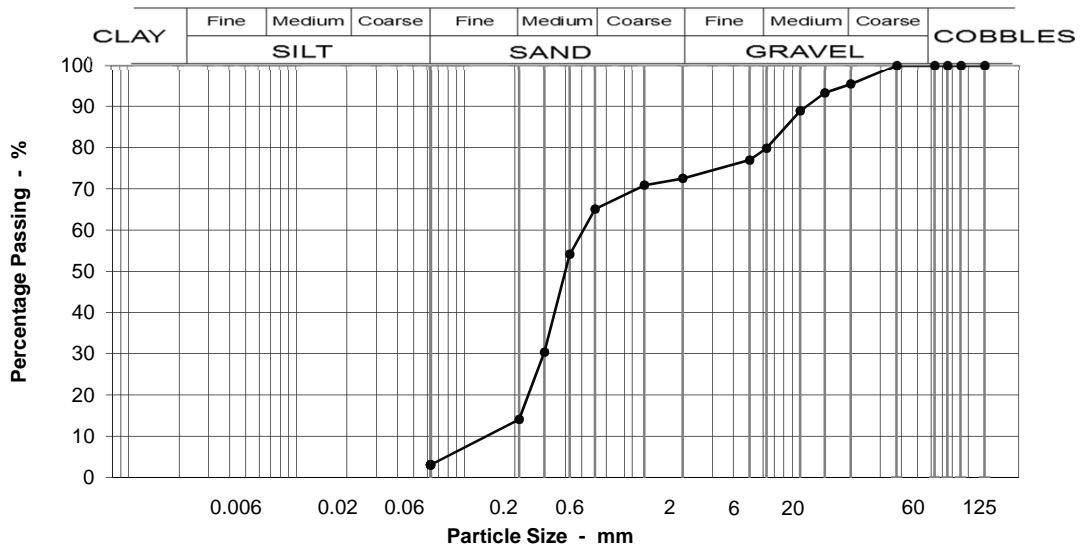
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12 @ 10.5 - 11m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	95
14	93
10	89
6.3	80
5	77
2	72
1.18	71
0.600	65
0.425	54
0.300	30
0.212	14
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 15

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	5
Medium GRAVEL	16
Fine GRAVEL	7
Coarse SAND	7
Medium SAND	51
Fine SAND	11
Silt & Clay	3

Grading Analysis	
D100	20
D60	0.52
D10	0.16
Uniformity Coefficient	3

Description	
Laminated orange medium SAND, brown fine SAND, soft grey CLAY, dark brown SILT.	

Source : Inspection pit: Hand dug
Test Code =



Simon Holden (Project Technician)

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Our reference No. **GTS3180307036-610**
Our Project No. **PZ1522D1**
Your Sample Ref **34**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **4-Jul-18**

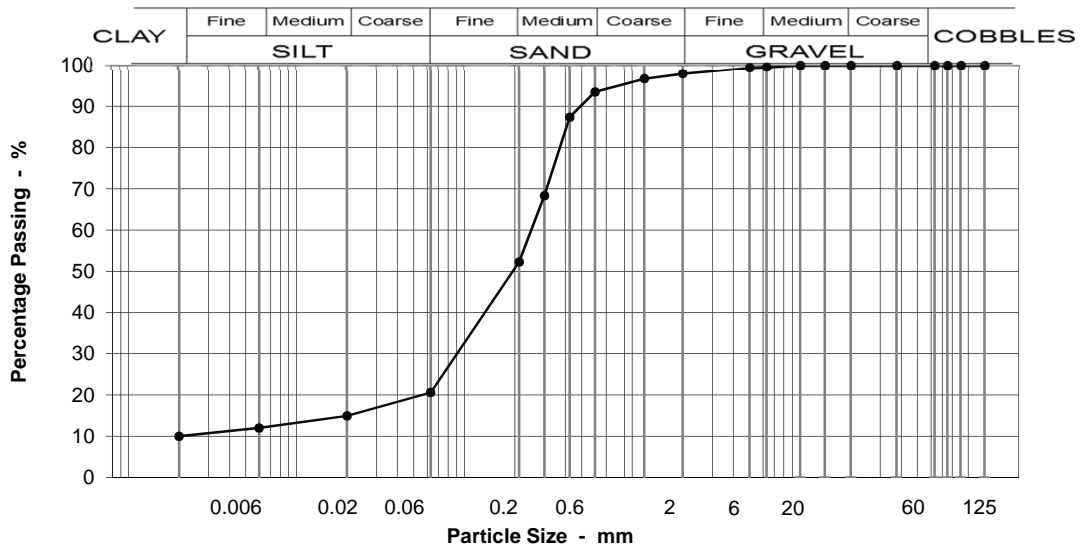
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12 @ 11.2 - 11.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100		BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	2
20	100		Coarse SAND	4
14	100		Medium SAND	41
10	100		Fine SAND	32
6.3	100		Silt & Clay	21
5	99			
2	98			
1.18	97			
0.600	93			
0.425	87			
0.300	68			
0.212	52			
0.063	21			
0.020	15			
0.006	12			
0.002	10			
		Moisture content %		23

Grading Analysis	
D100	6
D60	0.25
D10	0.00
Uniformity Coefficient	>10*

Description	
Laminated orange medium SAND, brown fine SAND, soft grey CLAY and dark brown SILT.	

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



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County Hall
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NR1 2DH

Our reference No. **GTS3180307041-**
Our Project No. **PZ1522D1**
Your Sample Ref. **39**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

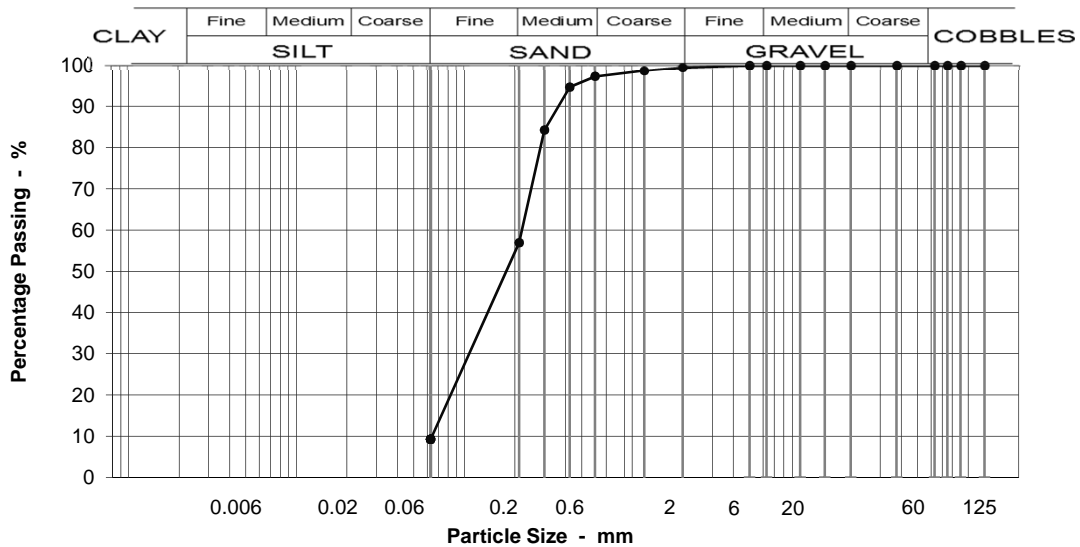
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12 @ 12.5 - 13m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	99
0.600	97
0.425	95
0.300	84
0.212	57
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 23

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	2
Medium SAND	40
Fine SAND	48
Silt & Clay	9

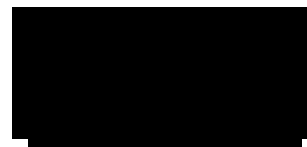
Grading Analysis	
D100	2
D60	0.22
D10	0.07
Uniformity Coefficient	3

Description	
Brown slightly silty fine and medium SAND some shell fragments.	

Source : Inspection pit: Hand dug
Test Code =



Simon Holden (Project Technician)



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Norfolk
NR1 2DH

Our reference No. **GTS3180309001-610**
Our Project No. PZ1522D1
Your Sample Ref. 43
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 4-Jul-18

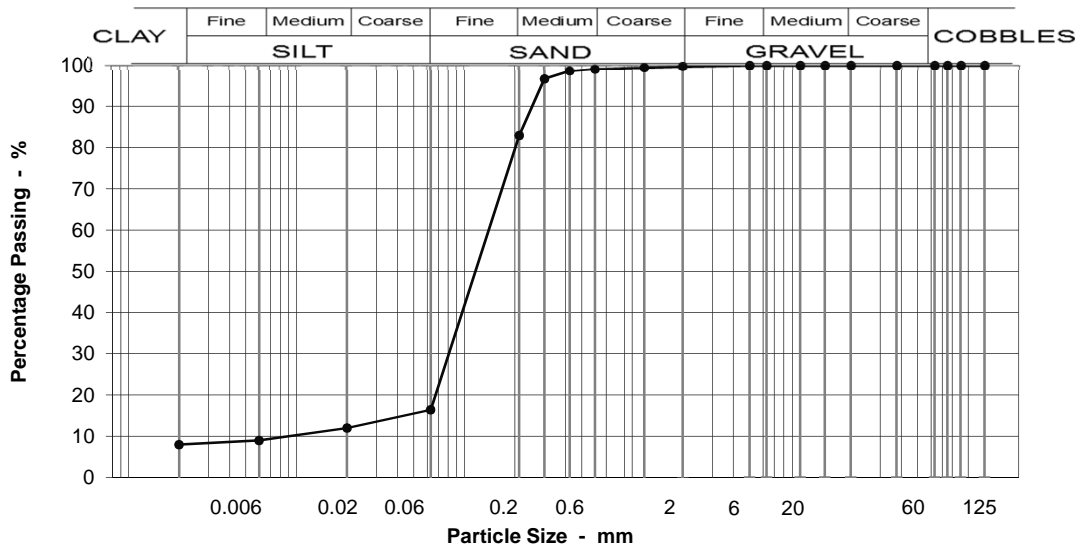
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12 @ 13.5 - 14m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 2A/2B, 2A/2B.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	1
14	100		Medium SAND	16
10	100		Fine SAND	66
6.3	100		Silt & Clay	16
5	100			
2	100			
1.18	99			
0.600	99			
0.425	99			
0.300	97			
0.212	83			
0.063	16			
0.020	12			
0.006	9			
0.002	8	Moisture content %	45	

Grading Analysis	
D100	2
D60	0.16
D10	0.04
Uniformity Coefficient	4*

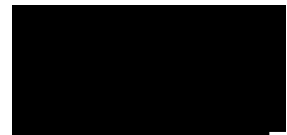
Description	
Brown slightly clayey slightly silty fine SAND, some shell fragments.	

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



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Norfolk
NR1 2DH

Our reference No. **GTS3180309011-**
Our Project No **PZ1522D1**
Your Sample Ref **53**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

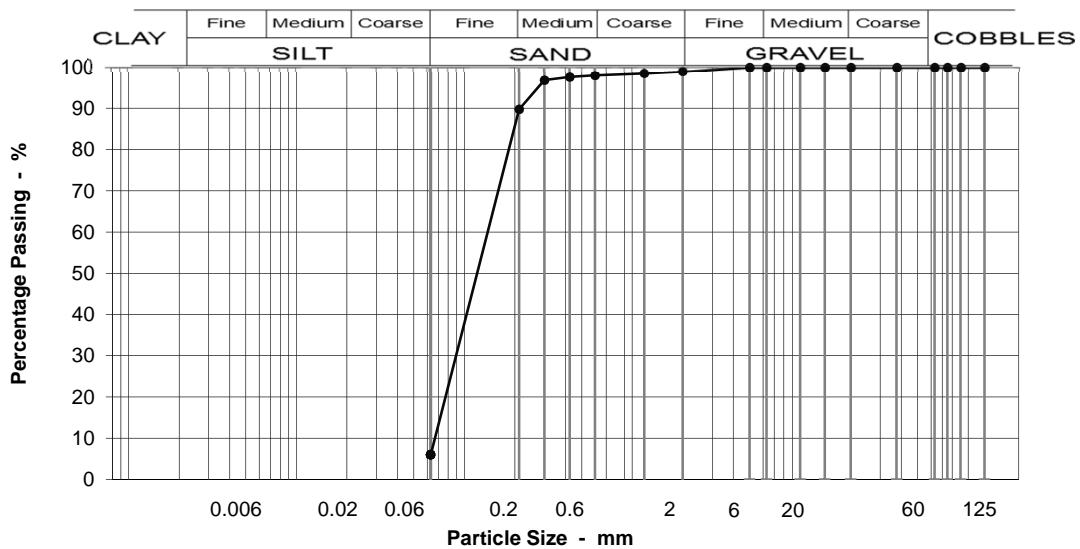
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12 @ 17.5 - 18m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	98
0.600	98
0.425	98
0.300	97
0.212	90
0.063	6

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	1
Medium SAND	8
Fine SAND	84
Silt & Clay	6

Grading Analysis	
D100	2
D60	0.16
D10	0.07
Uniformity Coefficient	2

Description
Brown slightly silty fine SAND with thin beds of soft brown silty CLAY.

Moisture content % 24

Source : Inspection pit: Hand dug
Test Code =



Simon Holden (Project Technician)



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NR1 2DH

Our reference No. **GTS3180309018-**
Our Project No **PZ1522D1**
Your Sample Ref **60**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

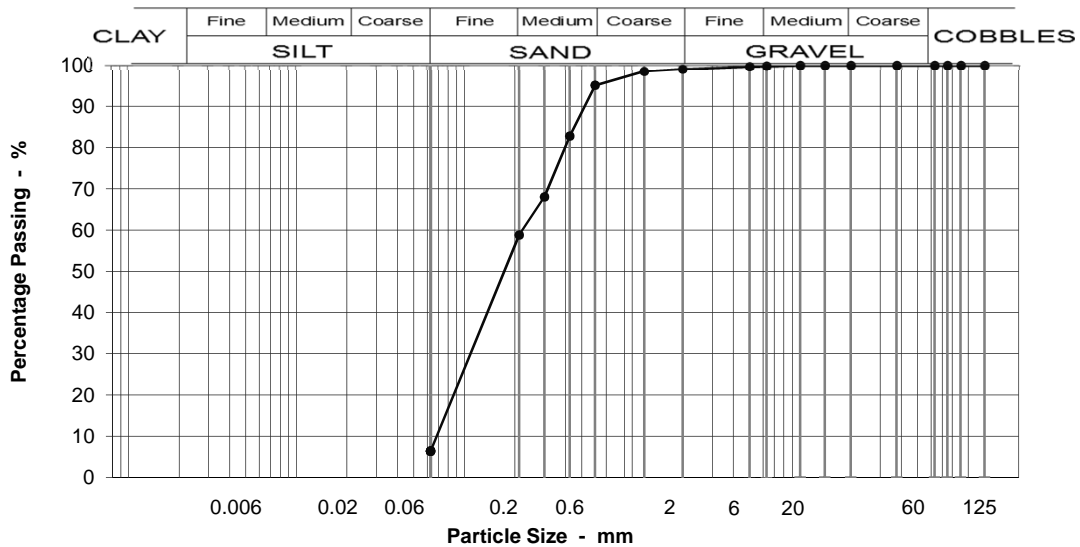
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12 @ 20.5 - 21m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



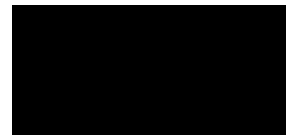
Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R, 6M.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	1
20	100		Coarse SAND	4
14	100		Medium SAND	36
10	100		Fine SAND	52
6.3	100		Silt & Clay	6
5	100		Grading Analysis	
2	99		D100	6
1.18	99		D60	0.22
0.600	95		D10	0.07
0.425	83		Uniformity Coefficient	3
0.300	68		Description	
0.212	59	Brown fine and medium SAND.		
0.063	6			

Moisture content % 27

Test Code =



Simon Holden (Project Technician)



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NR1 2DH

Our reference No. **GTS3180309019-**
Our Project No **PZ1522D1**
Your Sample Ref **61**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

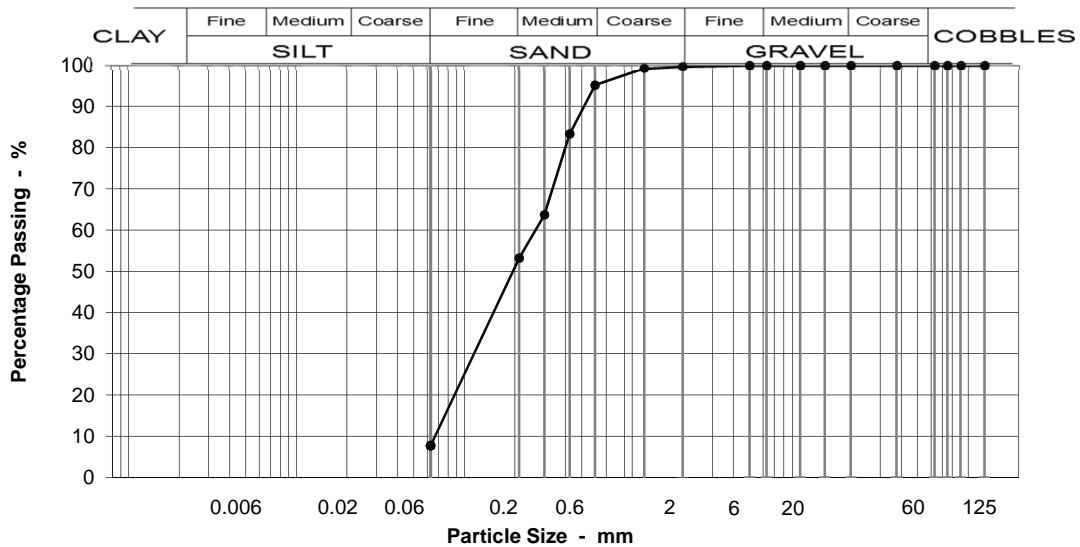
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12 @ 21.5 - 22m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



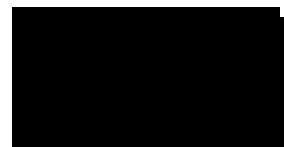
Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	<p>This material complies with the following material classes 1B, 6E/6R, 6M.</p>	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	5
14	100		Medium SAND	42
10	100		Fine SAND	45
6.3	100		Silt & Clay	8
5	100		Grading Analysis	
2	100		D100	2
1.18	99		D60	0.27
0.600	95		D10	0.07
0.425	83		Uniformity Coefficient	4
0.300	64		Description	
0.212	53	Brown fine and medium SAND.		
0.063	8			

Moisture content % 20

Test Code =



Simon Holden (Project Technician)



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NR1 2DH

Our reference No. **GTS3180309021-**
Our Project No **PZ1522D1**
Your Sample Ref **63**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

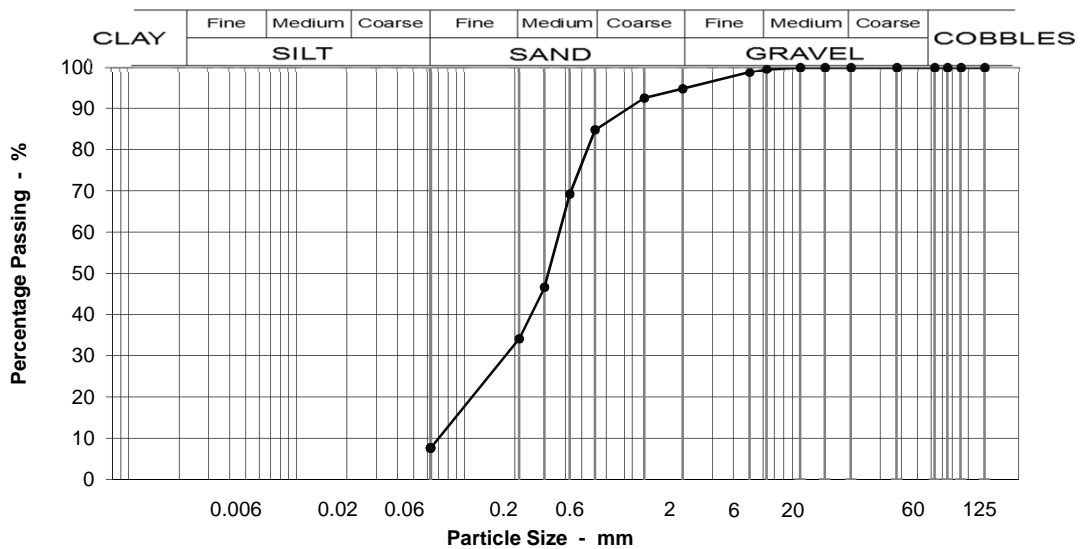
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12 @ 22.5 - 23m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	99
2	95
1.18	92
0.600	85
0.425	69
0.300	47
0.212	34
0.063	8

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	5
Coarse SAND	10
Medium SAND	51
Fine SAND	27
Silt & Clay	8

Grading Analysis	
D100	6
D60	0.37
D10	0.08
Uniformity Coefficient	5

Description
Grey slightly gravelly fine and medium SAND with lenses of soft to firm grey CLAY and numerous shell fragments. Gravel is fine sub-angular to sub-rounded flint.

Moisture content % 19

Source : Inspection pit: Hand dug
Test Code =



Simon Holden (Project Technician)



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Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3180309027-610**
Our Project No. PZ1522D1
Your Sample Ref. 69
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 4-Jul-18

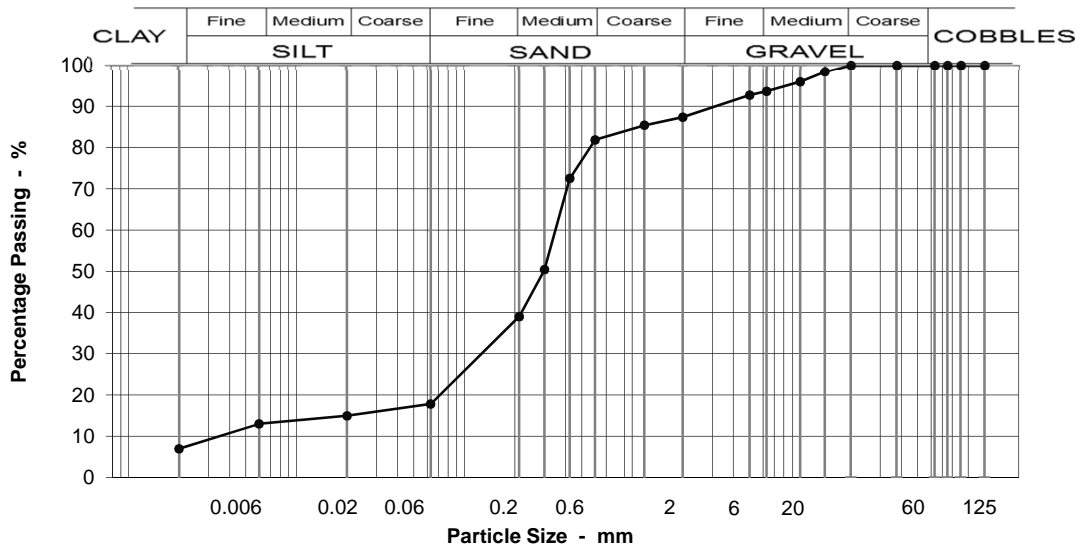
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12 @ 26.5 - 27m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 2A/2B, 2A/2B.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	6
37.5	100		Fine GRAVEL	6
20	100		Coarse SAND	6
14	98		Medium SAND	43
10	96		Fine SAND	21
6.3	94		Silt & Clay	18
5	93			
2	87			
1.18	85			
0.600	82			
0.425	73			
0.300	50			
0.212	39			
0.063	18			
0.020	15			
0.006	13			
0.002	7			
		Moisture content %	22	

Grading Analysis	
D100	14
D60	0.35
D10	0.06
Uniformity Coefficient	6

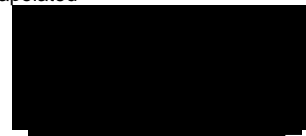
Description	
Grey gravelly fine and medium SAND with lenses of soft to firm grey clay and numerous shell fragments. Gravel is fine and medium subangular to subrounded flint.	

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



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Our reference No. **GTS3180312004-610**
Our Project No. PZ1522D1
Your Sample Ref. 73
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 11-Jun-18

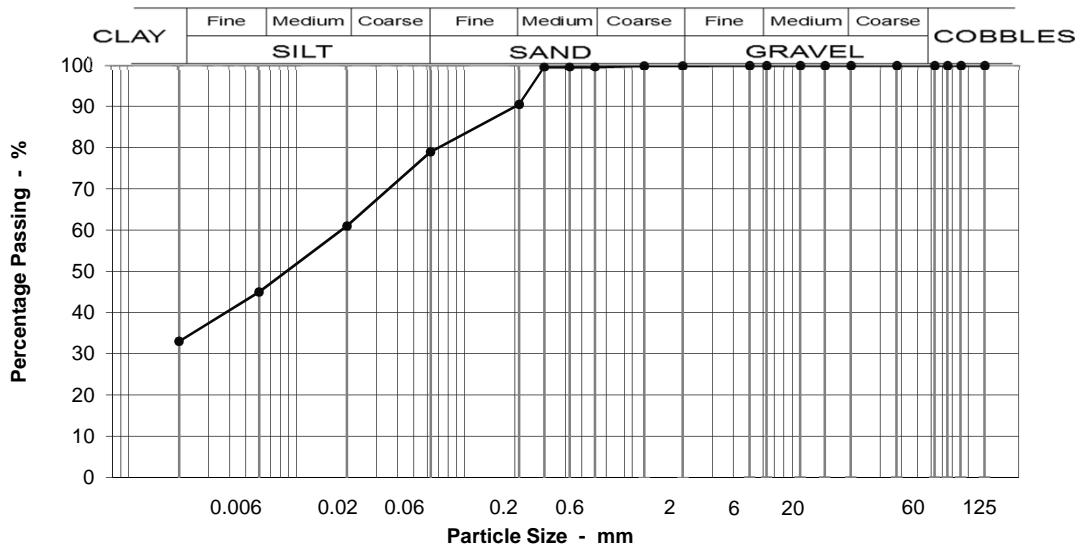
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12 @ 29.5 - 30m Specimen: 2

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100		BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	0
14	100		Medium SAND	9
10	100		Fine SAND	12
6.3	100		Silt & Clay	79
5	100			
2	100			
1.18	100			
0.600	100			
0.425	100			
0.300	100			
0.212	90			
0.063	79			
0.020	61			
0.006	45			
0.002	33			
		Moisture content %	0	

Grading Analysis	
D100	2
D60	0.02
D10	0.00
Uniformity Coefficient	>10*

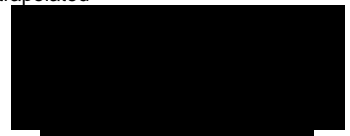
Description	
Laminated and thinly bedded, firm, grey, silty CLAY, light grey silty fine sand and black silt.	

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



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County Hall
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Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3180312007-610**
Our Project No. PZ1522D1
Your Sample Ref. 76
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 11-Jun-18

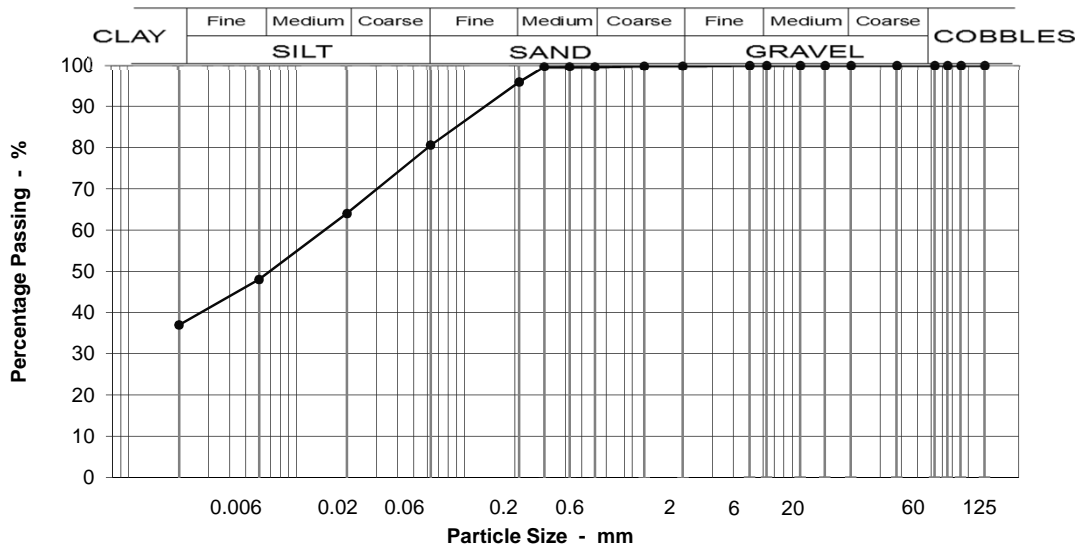
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12 @ 31.5 - 32m Specimen: 2

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100		BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	0
14	100		Medium SAND	4
10	100		Fine SAND	15
6.3	100		Silt & Clay	81
5	100			
2	100			
1.18	100			
0.600	100			
0.425	100			
0.300	100			
0.212	96			
0.063	81			
0.020	64			
0.006	48			
0.002	37			
		Moisture content %		0

Grading Analysis	
D100	2
D60	0.02
D10	0.00
Uniformity Coefficient	>10*

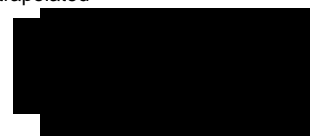
Description
Stiff, grey, slightly sandy, silty CLAY.

* Uniformity coefficient extrapolated

Source : Inspection nit: Hand dug
Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
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NR1 2DH

Our reference No. **GTS3180312009-610**
Our Project No. PZ1522D1
Your Sample Ref. 78
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 12-Jun-18

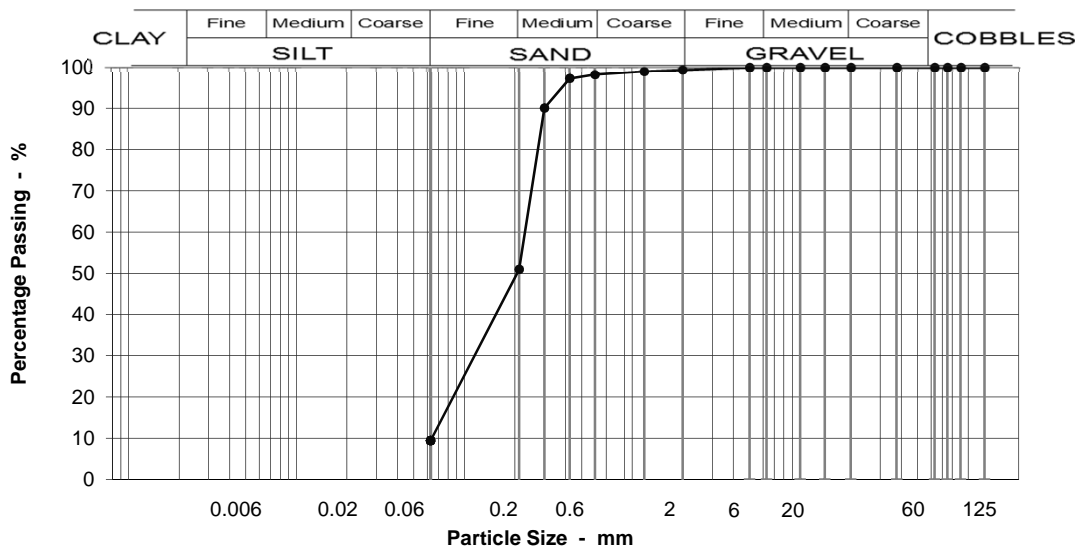
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12 @ 32.5 - 33m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	99
0.600	98
0.425	97
0.300	90
0.212	51
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	1
Medium SAND	47
Fine SAND	42
Silt & Clay	9

Grading Analysis	
D100	2
D60	0.23
D10	0.06
Uniformity Coefficient	4

Description
Laminated and thinly bedded grey fine and medium SAND, grey very sandy clayey SILT and stiff grey silty CLAY, occasional shell fragments.

Moisture content % 23

Test Code = 610



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Our reference No. **GTS3180312010-**
Our Project No **PZ1522D1**
Your Sample Ref **79**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

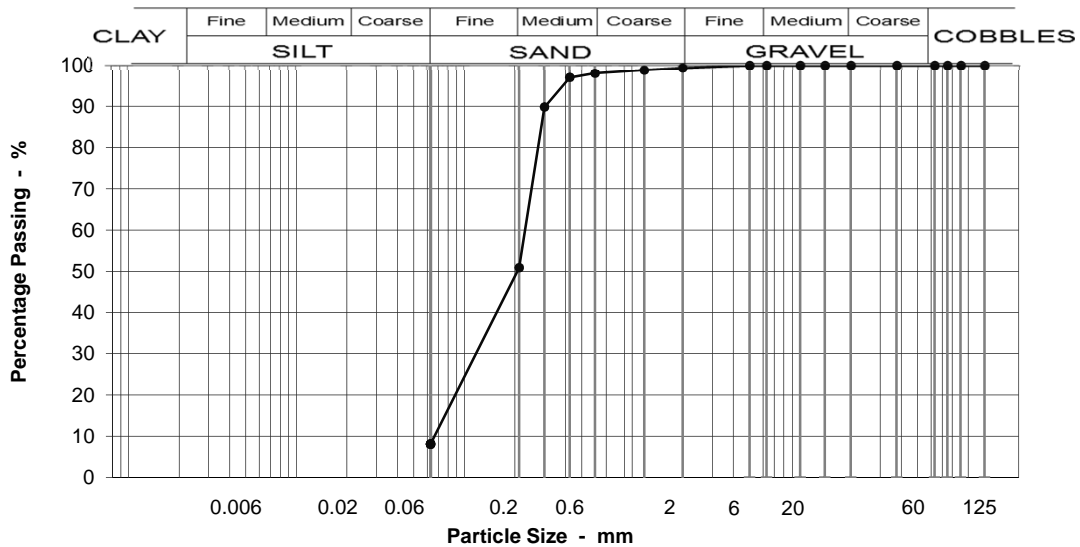
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12 @ 33.5 - 34m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample

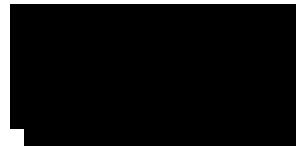


Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R, 6M.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	1
20	100		Coarse SAND	1
14	100		Medium SAND	47
10	100		Fine SAND	43
6.3	100		Silt & Clay	8
5	100		Grading Analysis	
2	99		D100	2
1.18	99		D60	0.23
0.600	98		D10	0.07
0.425	97		Uniformity Coefficient	3
0.300	90		Description	
0.212	51	Laminated thinly bedded grey slightly silty fine and medium SAND with laminae of grey very sandy clayey SILT and stiff light grey silty CLAY. Occasional shell fragments.		
0.063	8	Moisture content % 23		

Test Code =



Simon Holden (Project Technician)



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Norfolk
NR1 2DH

Our reference No. GTS3180312012-610
Our Project No PZ1522D1
Your Sample Ref 81
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 4-Jul-18

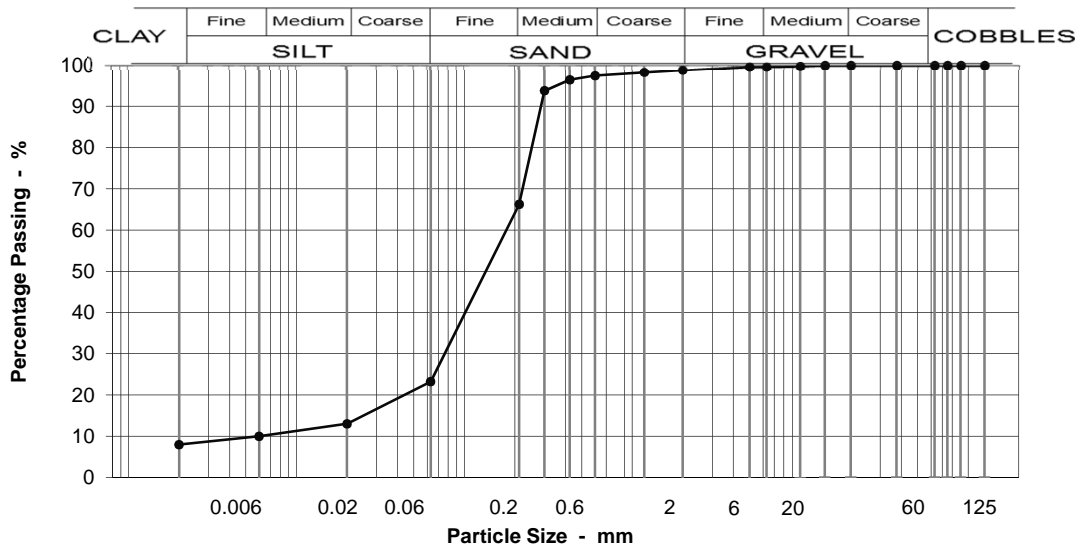
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12 @ 34.5 - 35m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 2A/2B, 2A/2B.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	1
20	100		Coarse SAND	1
14	100		Medium SAND	31
10	100		Fine SAND	43
6.3	100		Silt & Clay	23
5	100			
2	99			
1.18	98			
0.600	97			
0.425	96			
0.300	94			
0.212	66			
0.063	23			
0.020	13			
0.006	10			
0.002	8			
Moisture content %		0		

Grading Analysis	
D100	10
D60	0.19
D10	0.04
Uniformity Coefficient	5*

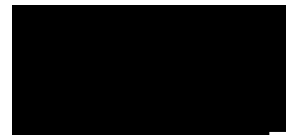
Description	
Grey slightly clayey silty fine and medium SAND with some shell fragments.	

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
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NR1 2DH

Our reference No. **GTS3180312016-**
Our Project No **PZ1522D1**
Your Sample Ref **85**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

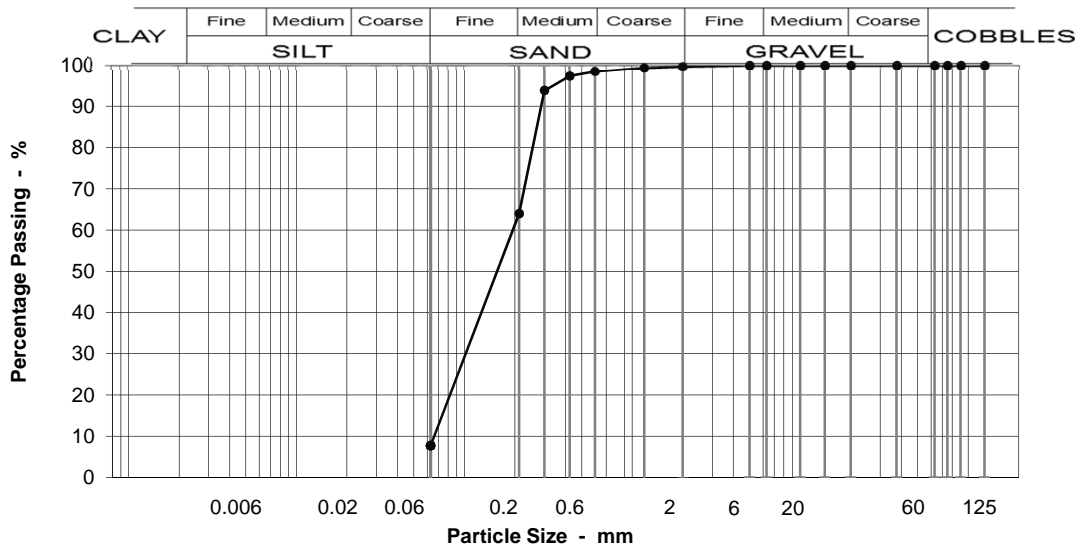
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12 @ 37.5 - 38m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R, 6M.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	1
14	100		Medium SAND	34
10	100		Fine SAND	56
6.3	100		Silt & Clay	8
5	100			
2	100			
1.18	99			
0.600	98			
0.425	97			
0.300	94			
0.212	64			
0.063	8			
Moisture content %		23		

Grading Analysis	
D100	2
D60	0.20
D10	0.07
Uniformity Coefficient	3

Description	
Grey slightly silty fine and medium SAND with some shell fragments.	

Test Code =



Simon Holden (Project Technician)



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County Hall
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Norfolk
NR1 2DH

Our reference No. **GTS3180312019-**
Our Project No **PZ1522D1**
Your Sample Ref **88**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

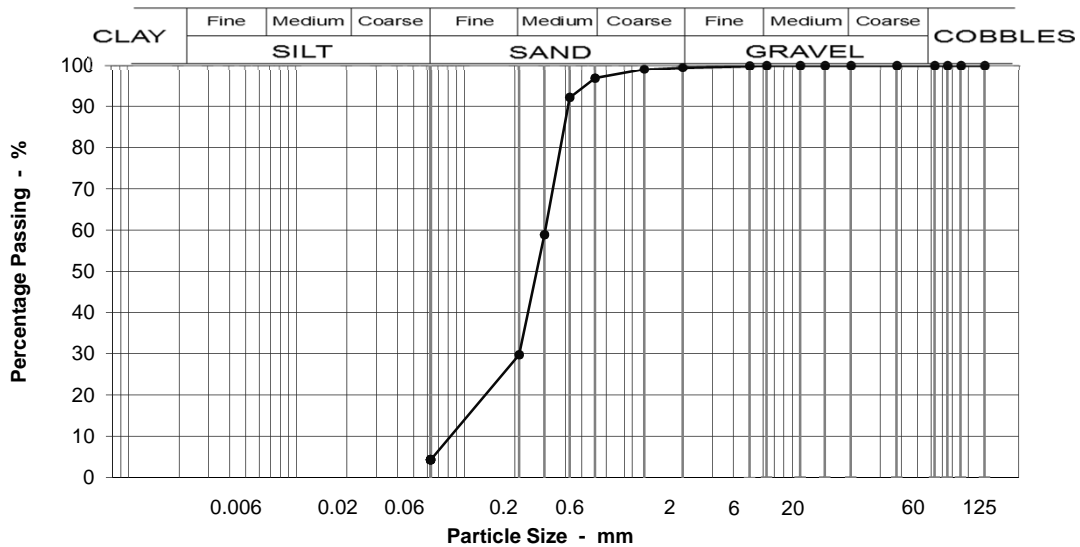
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12 @ 39.5 - 40m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



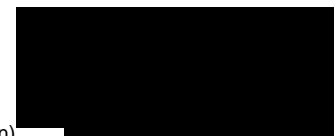
Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R, 6M.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	1
20	100		Coarse SAND	3
14	100		Medium SAND	67
10	100		Fine SAND	25
6.3	100		Silt & Clay	4
5	100		Grading Analysis	
2	99		D100	5
1.18	99		D60	0.30
0.600	97		D10	0.10
0.425	92		Uniformity Coefficient	3
0.300	59		Description	
0.212	30	Dark grey slightly silty fine and medium SAND with some shell fragments.		
0.063	4			

Moisture content % 21

Test Code =



Simon Holden (Project Technician)



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Norfolk
NR1 2DH

Our reference No. **GTS3180313001-**
Our Project No **PZ1522D1**
Your Sample Ref **90**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

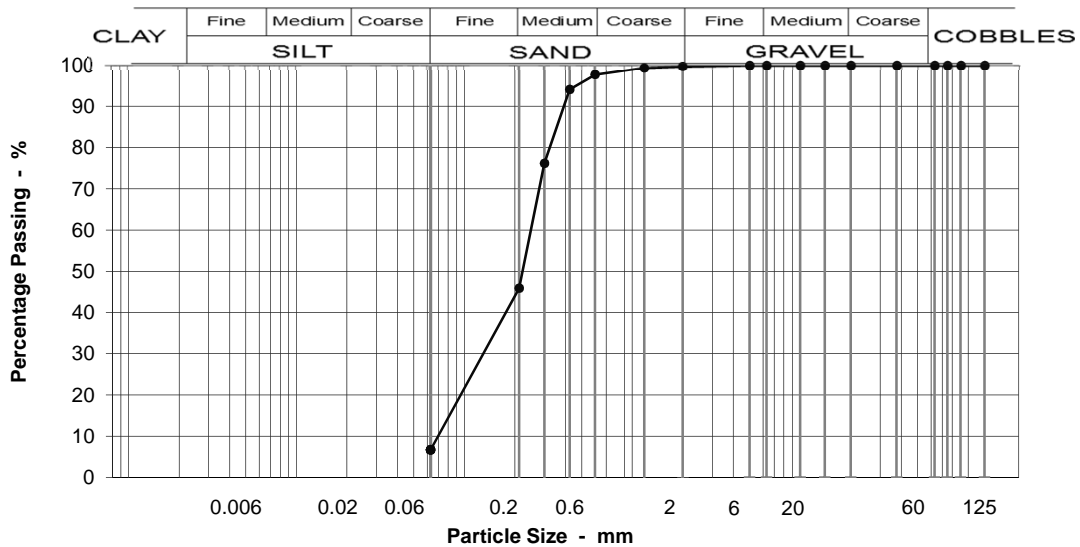
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12 @ 40.5 - 41m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample

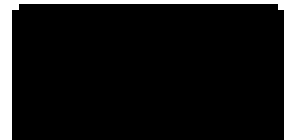


Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions											
Particle Size mm	% Passing													
125	100	<p>This material complies with the following material classes 1B, 6E/6R, 6M.</p>	BOULDERS	0										
90	100		COBBLES	0										
75	100		Coarse GRAVEL	0										
63	100		Medium GRAVEL	0										
37.5	100		Fine GRAVEL	0										
20	100		Coarse SAND	2										
14	100		Medium SAND	52										
10	100		Fine SAND	39										
6.3	100		Silt & Clay	7										
5	100													
2	100													
1.18	99													
0.600	98													
0.425	94													
0.300	76													
0.212	46													
0.063	7													
Moisture content %		20	<table border="1"> <thead> <tr> <th colspan="2">Grading Analysis</th> </tr> </thead> <tbody> <tr><td>D100</td><td>2</td></tr> <tr><td>D60</td><td>0.25</td></tr> <tr><td>D10</td><td>0.08</td></tr> <tr><td>Uniformity Coefficient</td><td>3</td></tr> </tbody> </table>		Grading Analysis		D100	2	D60	0.25	D10	0.08	Uniformity Coefficient	3
Grading Analysis														
D100	2													
D60	0.25													
D10	0.08													
Uniformity Coefficient	3													
			<table border="1"> <thead> <tr> <th colspan="2">Description</th> </tr> </thead> <tbody> <tr> <td colspan="2">Dark grey slightly silty fine and medium SAND with some shell fragments.</td> </tr> </tbody> </table>		Description		Dark grey slightly silty fine and medium SAND with some shell fragments.							
Description														
Dark grey slightly silty fine and medium SAND with some shell fragments.														

Test Code =



Simon Holden (Project Technician)



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County Hall
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Norfolk
NR1 2DH

Our reference No. **GTS3180313004-**
Our Project No. PZ1522D1
Your Sample Ref 93
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 11-Jun-18

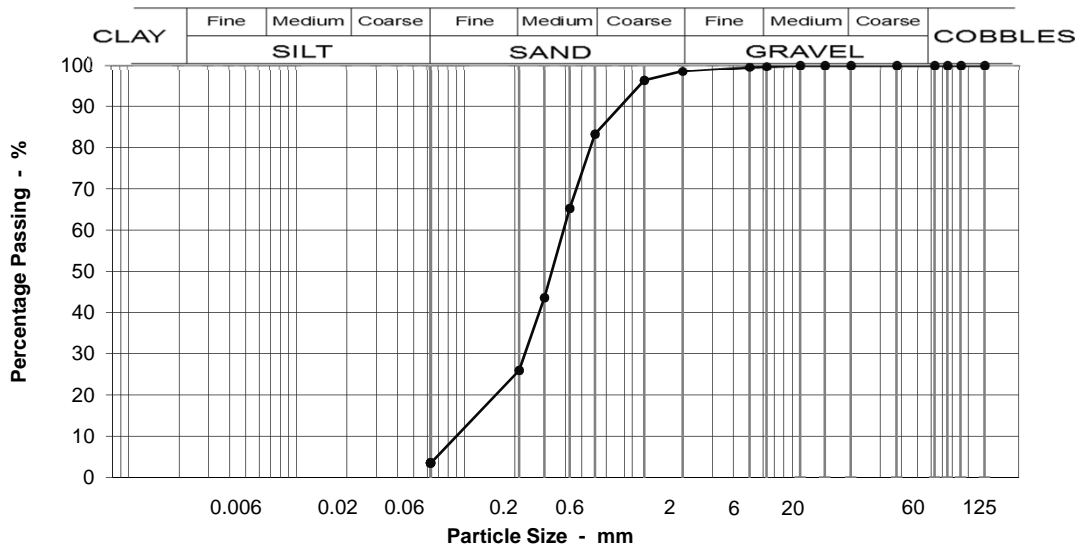
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12 @ 42.5 - 43m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	96
0.600	83
0.425	65
0.300	44
0.212	26
0.063	4

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 12

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	15
Medium SAND	57
Fine SAND	22
Silt & Clay	4

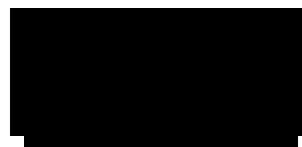
Grading Analysis	
D100	6
D60	0.39
D10	0.11
Uniformity Coefficient	4

Description	
Dark grey slightly silty fine medium and course SAND with some shell fragments.	

Test Code =



Simon Holden (Project Technician)



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Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3180313007-**
Our Project No. **PZ1522D1**
Your Sample Ref **96**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

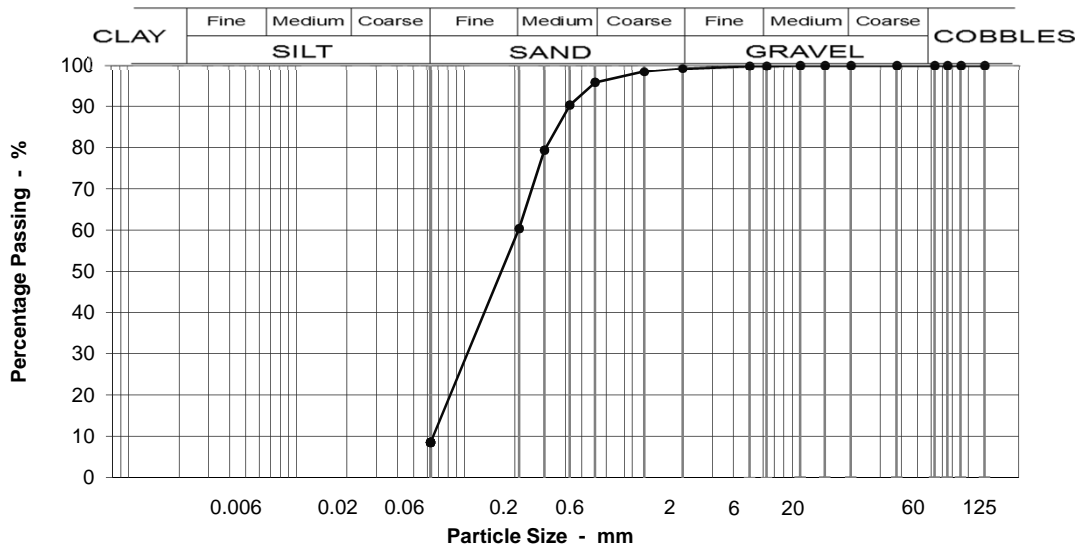
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12 @ 44.5 - 45m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R, 6M.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	1
20	100		Coarse SAND	3
14	100		Medium SAND	35
10	100		Fine SAND	52
6.3	100		Silt & Clay	9
5	100		Grading Analysis	
2	99		D100	6
1.18	98		D60	0.21
0.600	96		D10	0.07
0.425	90		Uniformity Coefficient	3
0.300	79		Description	
0.212	60	Dark grey slightly silty fine and medium SAND with some shell fragments.		
0.063	9	Moisture content % 23		

Source : Inspection pit: Hand dug
Test Code =



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Our reference No. **GTS3180313009-**
Our Project No. PZ1522D1
Your Sample Ref. 98
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 11-Jun-18

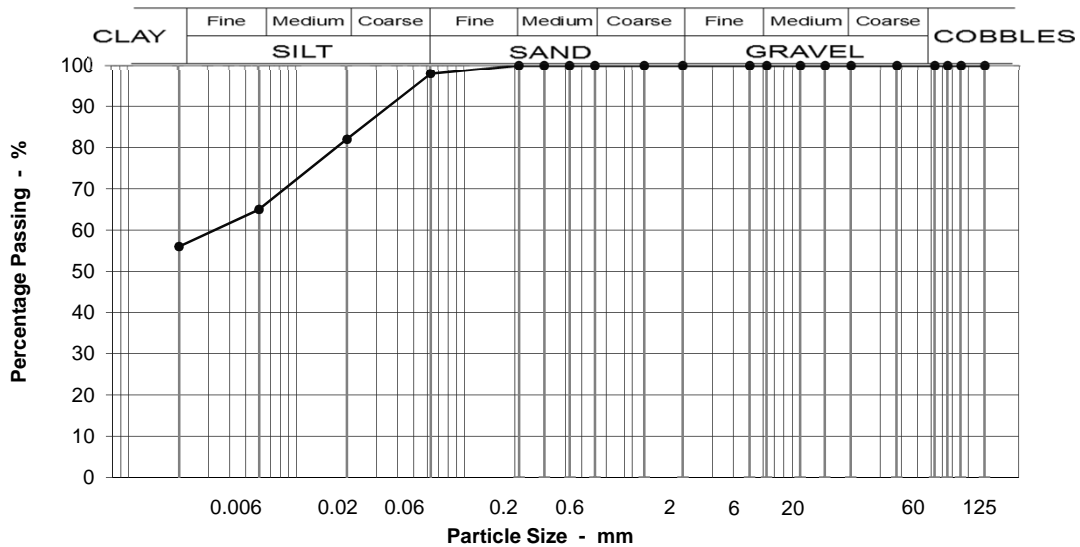
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12 @ 45.5 - 46m Specimen: 2

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100		BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	0
14	100		Medium SAND	0
10	100		Fine SAND	2
6.3	100		Silt & Clay	98
5	100			
2	100			
1.18	100			
0.600	100			
0.425	100			
0.300	100			
0.212	100			
0.063	98			
0.020	82			
0.006	65			
0.002	56			
		Moisture content %		0

Grading Analysis	
D100	0
D60	0.00
D10	0.00
Uniformity Coefficient	>10*

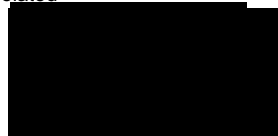
Description	
Very stiff laminated brown very silty CLAY.	

* Uniformity coefficient extrapolated

Test Code =



Simon Holden (Project Technician)



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NR1 2DH

Our reference No. **GTS3180313015-**
Our Project No **PZ1522D1**
Your Sample Ref **104**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

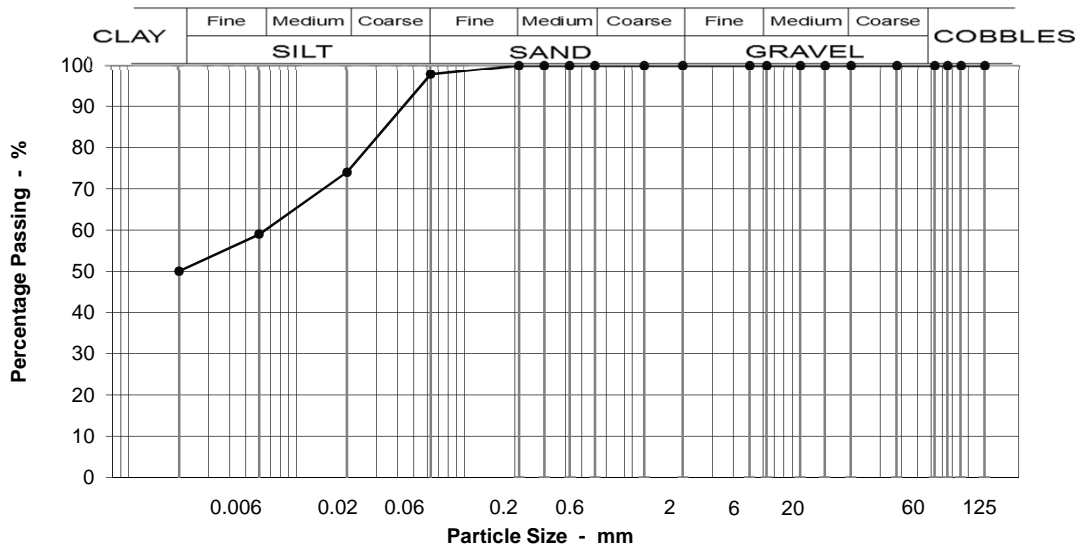
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12 @ 48.95 - 49m Specimen: 2

Location and orientation within sample not applicable

Disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100		BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	0
14	100		Medium SAND	0
10	100		Fine SAND	2
6.3	100		Silt & Clay	98
5	100			
2	100			
1.18	100			
0.600	100			
0.425	100			
0.300	100			
0.212	100			
0.063	98			
0.020	74			
0.006	59			
0.002	50			
		Moisture content %		0

Grading Analysis	
D100	0
D60	0.01
D10	0.00
Uniformity Coefficient	>10*

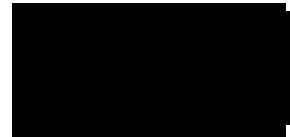
Description	
Very stiff laminated brown very silty CLAY with laminae of light brown and light grey silt.	

* Uniformity coefficient extrapolated

Test Code =



Simon Holden (Project Technician)



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County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3180315001-**
Our Project No **PZ1522D1**
Your Sample Ref **1**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

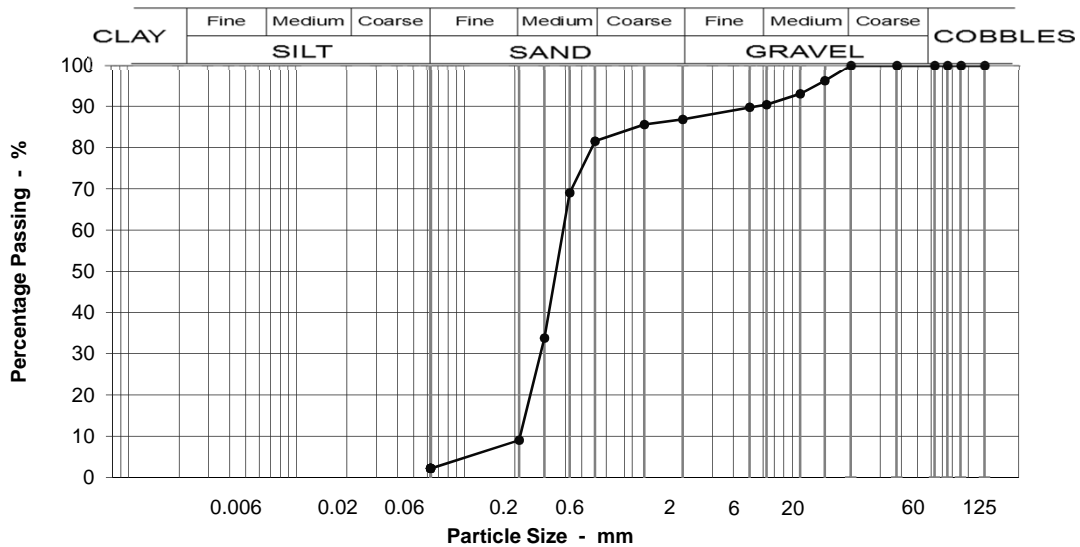
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12A @ 0.1 - 0.6m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	96
10	93
6.3	90
5	90
2	87
1.18	86
0.600	82
0.425	69
0.300	34
0.212	9
0.063	2

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 6.3

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	10
Fine GRAVEL	4
Coarse SAND	5
Medium SAND	72
Fine SAND	7
Silt & Clay	2

Grading Analysis	
D100	14
D60	0.39
D10	0.22
Uniformity Coefficient	2

Description
MADE GROUND - comprising of greyish brown gravelly fine and medium SAND. Gravel is fine and medium angular to sub-rounded flint,brick,porcelain and quartz.

Test Code =



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Our reference No. **GTS3180315003-**
Our Project No. PZ1522D1
Your Sample Ref 3
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 11-Jun-18

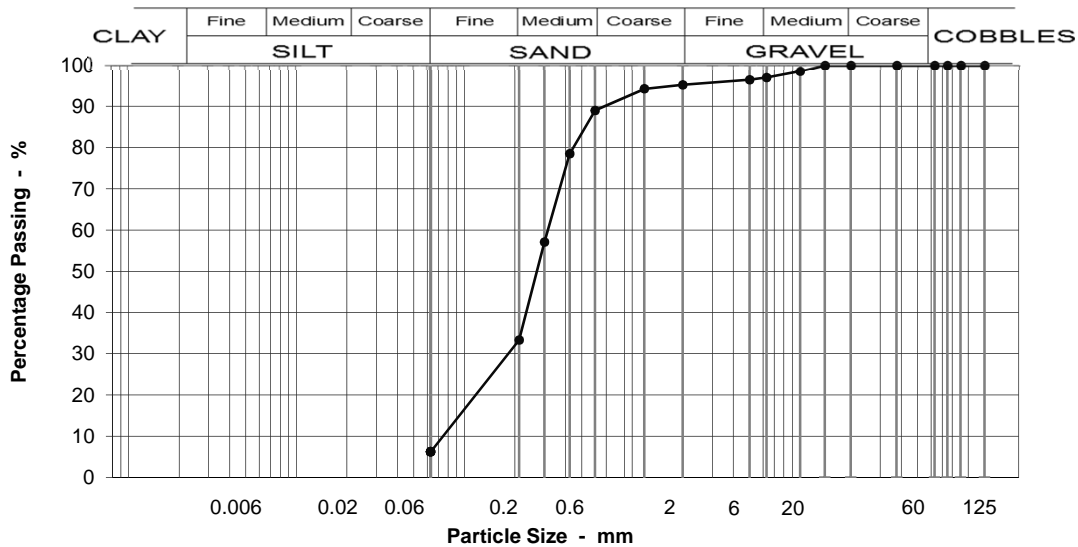
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12A @ 0.9 - 1.4m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	99
6.3	97
5	96
2	95
1.18	94
0.600	89
0.425	79
0.300	57
0.212	33
0.063	6

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	3
Fine GRAVEL	2
Coarse SAND	6
Medium SAND	56
Fine SAND	27
Silt & Clay	6

Grading Analysis	
D100	10
D60	0.32
D10	0.08
Uniformity Coefficient	4

Description
Brown slightly gravelly fine and medium SAND. Gravel is fine and medium, rounded to sub-rounded flint.

Moisture content % 9.2

Test Code =



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Norfolk
NR1 2DH

Our reference No. **GTS3180315006-**
Our Project No. **PZ1522D1**
Your Sample Ref. **6**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

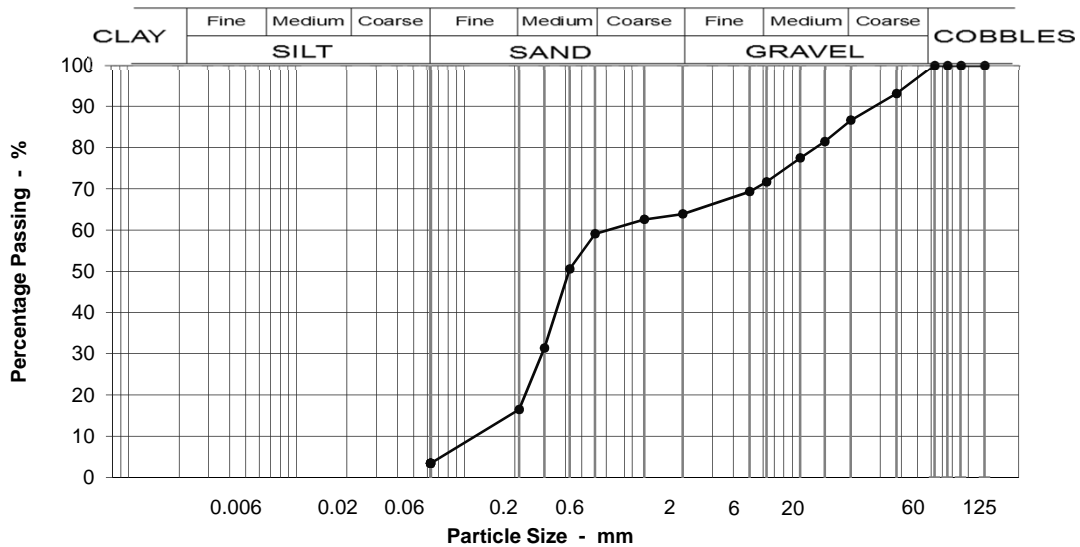
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12A @ 1.5 - 2m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	93
20	87
14	81
10	77
6.3	72
5	69
2	64
1.18	63
0.600	59
0.425	51
0.300	31
0.212	17
0.063	4

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	13
Medium GRAVEL	15
Fine GRAVEL	8
Coarse SAND	5
Medium SAND	43
Fine SAND	13
Silt & Clay	4

Grading Analysis	
D100	38
D60	0.75
D10	0.14
Uniformity Coefficient	5

Description
Greyish brown very gravelly medium SAND. Gravel is fine, medium and coarse angular to sub-rounded flint and quartz.

Moisture content % 13

Test Code =



Simon Holden (Project Technician)



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NR1 2DH

Our reference No. **GTS3180316001-**
Our Project No **PZ1522D1**
Your Sample Ref **15**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

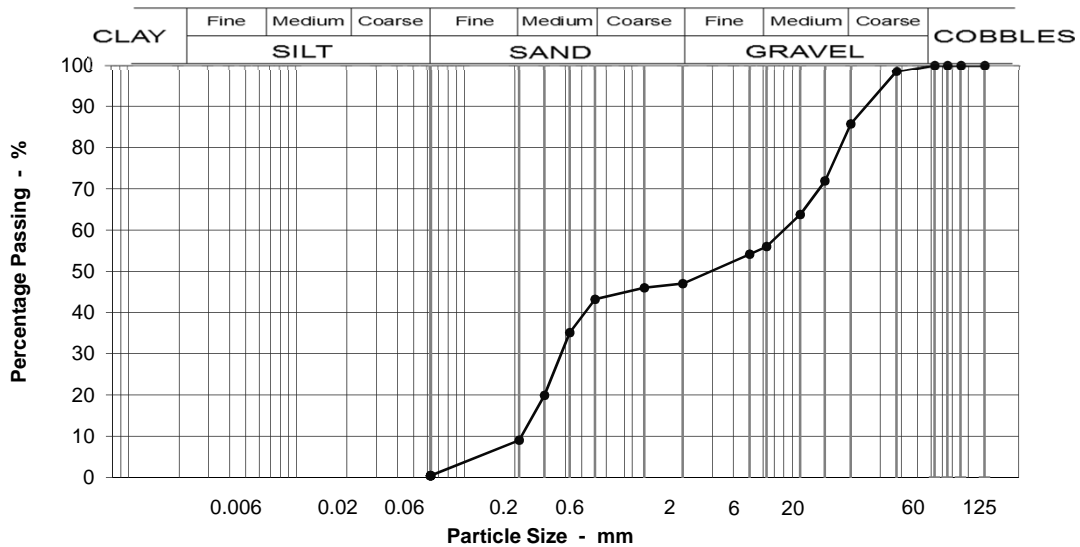
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12A @ 4.5 - 5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample

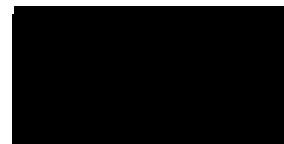


Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	<p>This material complies with the following material classes 1A, 6A, 6E/6R, 6F1, 6I, 6M, 6N.</p>	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	14
63	100		Medium GRAVEL	30
37.5	98		Fine GRAVEL	9
20	86		Coarse SAND	4
14	72		Medium SAND	34
10	64		Fine SAND	9
6.3	56		Silt & Clay	0
5	54		Grading Analysis	
2	47		D100	38
1.18	46		D60	8.20
0.600	43		D10	0.22
0.425	35		Uniformity Coefficient	37
0.300	20		Description	
0.212	9	MADE GROUND - comprising of greyish brown Fine medium and course rounded to sub-angular flint,brick,wood,quartzite and quartz GRAVEL and medium SAND.		
0.063	0	Moisture content % 8.3		

Test Code =



Simon Holden (Project Technician)



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NR1 2DH

Our reference No. **GTS3180320002-**
Our Project No. PZ1522D1
Your Sample Ref. 2
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 11-Jun-18

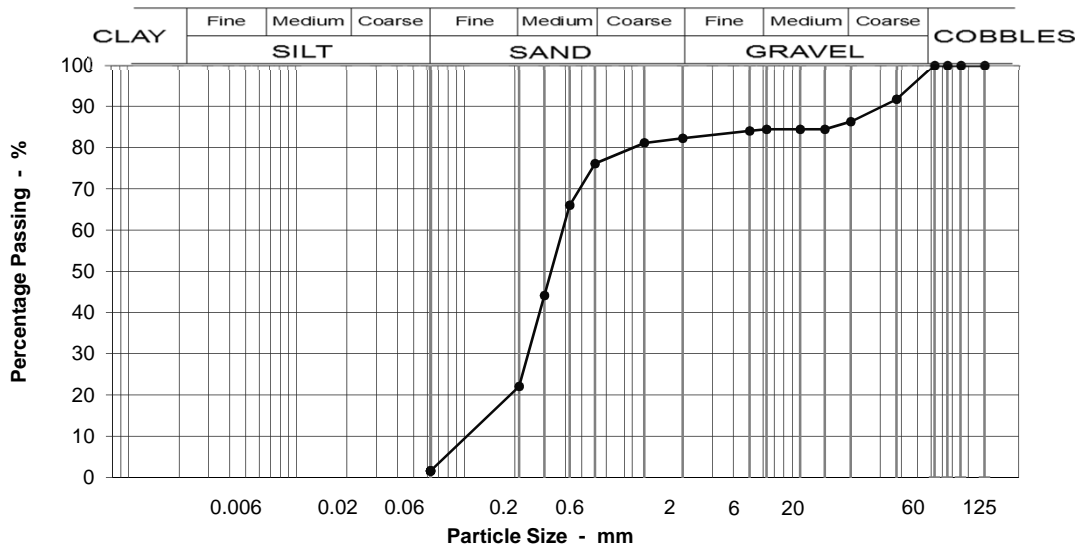
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12B @ 0.6 - 1m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	92
20	86
14	84
10	84
6.3	84
5	84
2	82
1.18	81
0.600	76
0.425	66
0.300	44
0.212	22
0.063	2

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 8.9

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	14
Medium GRAVEL	2
Fine GRAVEL	2
Coarse SAND	6
Medium SAND	54
Fine SAND	20
Silt & Clay	2

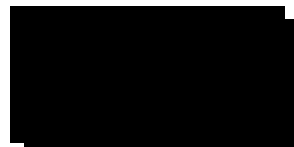
Grading Analysis	
D100	38
D60	0.39
D10	0.12
Uniformity Coefficient	3

Description
MADE GROUND - comprising of brown gravelly medium SAND. Gravel is rounded to angular flint, brick, concrete, quartz.

Test Code =



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
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Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3180320006-**
Our Project No **PZ1522D1**
Your Sample Ref **6**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

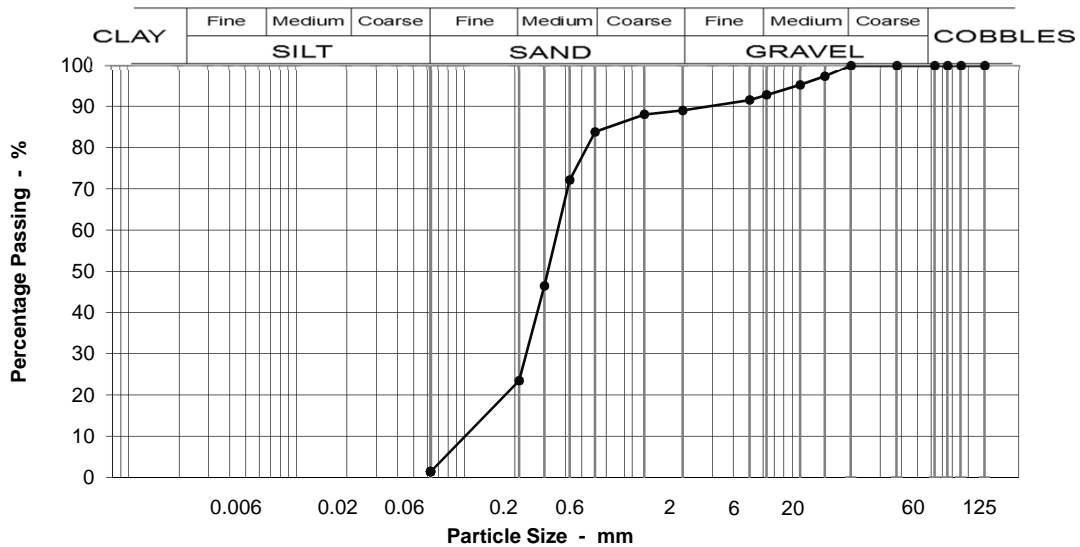
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12B @ 1.5 - 2m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	97
10	95
6.3	93
5	91
2	89
1.18	88
0.600	84
0.425	72
0.300	46
0.212	23
0.063	1

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	7
Fine GRAVEL	4
Coarse SAND	5
Medium SAND	60
Fine SAND	22
Silt & Clay	1

Grading Analysis	
D100	14
D60	0.37
D10	0.12
Uniformity Coefficient	3

Description
MADE GROUND - comprising of brown gravelly medium SAND. Gravel is fine and medium, rounded to angular flint, brick, concrete and quartz.

Moisture content % 20

Test Code =



Simon Holden (Project Technician)



Community & Environmental Services
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Our reference No. **GTS3180320012-**
Our Project No **PZ1522D1**
Your Sample Ref **12**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

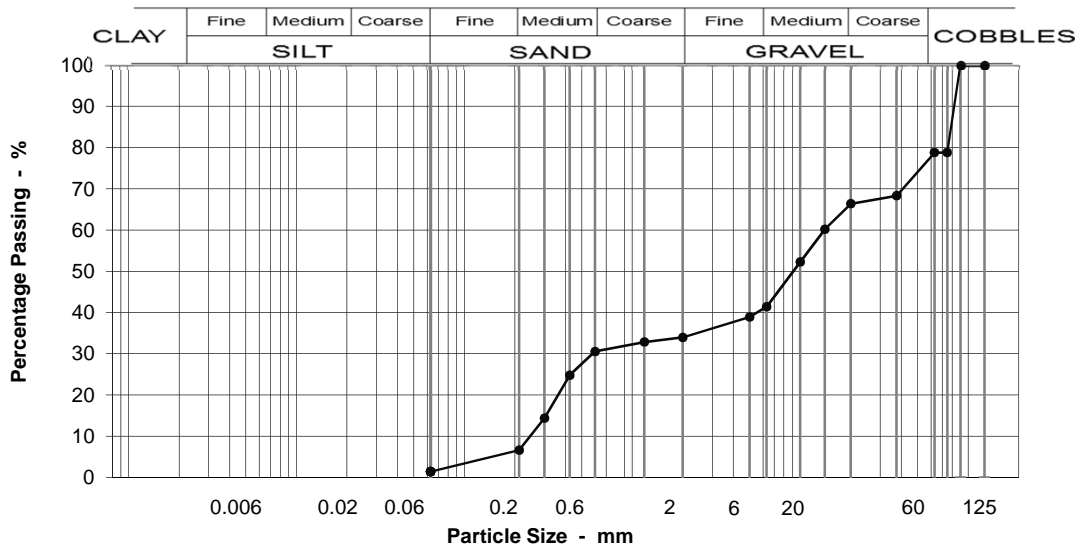
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12B @ 3.6 - 4m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	79
63	79
37.5	68
20	66
14	60
10	52
6.3	41
5	39
2	34
1.18	33
0.600	31
0.425	25
0.300	14
0.212	7
0.063	1

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6A, 6E/6R.

Moisture content % 11

Sample Proportions	
BOULDERS	0
COBBLES	21
Coarse GRAVEL	12
Medium GRAVEL	25
Fine GRAVEL	7
Coarse SAND	3
Medium SAND	24
Fine SAND	5
Silt & Clay	1

Grading Analysis	
D100	75
D60	13.91
D10	0.25
Uniformity Coefficient	56

Description	
MADE GROUND - comprising cobbles of brick, medium and coarse rounded to angular flint, concrete, brick and quartz gravel in a matrix of dark grey medium SAND.	

Source : Inspection pit: Hand dug. Gen
Test Code =



Simon Holden (Project Technician)

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Martineau Lane
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Norfolk
NR1 2DH

Our reference No. **GTS3180320015-610**
Our Project No. **PZ1522D1**
Your Sample Ref. **15**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **12-Jun-18**

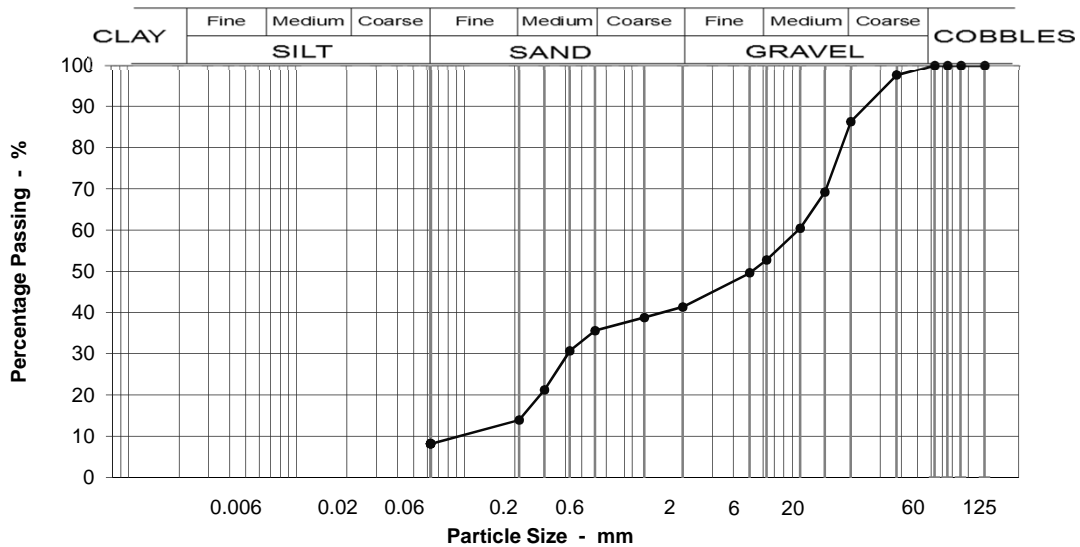
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12B @ 4.5 - 5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample

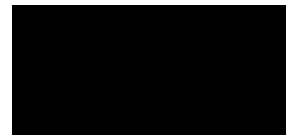


Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1A, 6E/6R, 6F1, 6I, 6M, 6N.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	14
63	100		Medium GRAVEL	34
37.5	98		Fine GRAVEL	11
20	86		Coarse SAND	6
14	69		Medium SAND	22
10	60		Fine SAND	6
6.3	53		Silt & Clay	8
5	50		Grading Analysis	
2	41		D100	38
1.18	39		D60	9.80
0.600	36		D10	0.11
0.425	31		Uniformity Coefficient	89
0.300	21		Description	
0.212	14	Dark grey organic clayey very sandy fine to coarse angular to sub-rounded flint, brick, wood & granite.		
0.063	8	Moisture content % 15		

Test Code = 610



Simon Holden (Project Technician)



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Norfolk
NR1 2DH

Our reference No. GTS3180320018-610
Our Project No PZ1522D1
Your Sample Ref 18
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 12-Jun-18

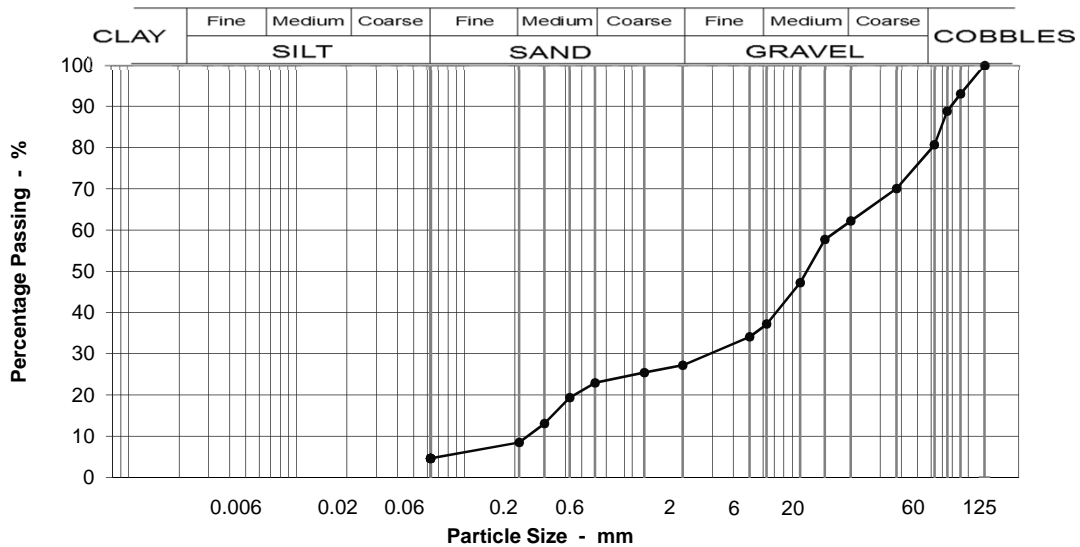
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12B @ 5.5 - 6m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	93
75	89
63	81
37.5	70
20	62
14	58
10	47
6.3	37
5	34
2	27
1.18	25
0.600	23
0.425	19
0.300	13
0.212	9
0.063	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6A, 6E/6R, 6F2/6F3, 6I.

Moisture content % 12

Sample Proportions	
BOULDERS	0
COBBLES	19
Coarse GRAVEL	18
Medium GRAVEL	25
Fine GRAVEL	10
Coarse SAND	4
Medium SAND	14
Fine SAND	4
Silt & Clay	5

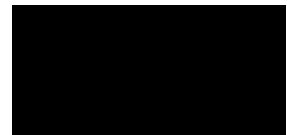
Grading Analysis	
D100	90
D60	17.06
D10	0.24
Uniformity Coefficient	71

Description	
Dark grey organic cobblely clayey very sandy fine to coarse angular to sub-rounded flint, brick, wood, granite and plastic. Cobbles are of brick.	

Test Code = 610



Simon Holden (Project Technician)



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Norfolk
NR1 2DH

Our reference No. **GTS3180320021-610**
Our Project No. PZ1522D1
Your Sample Ref. 21
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 18-Jun-18

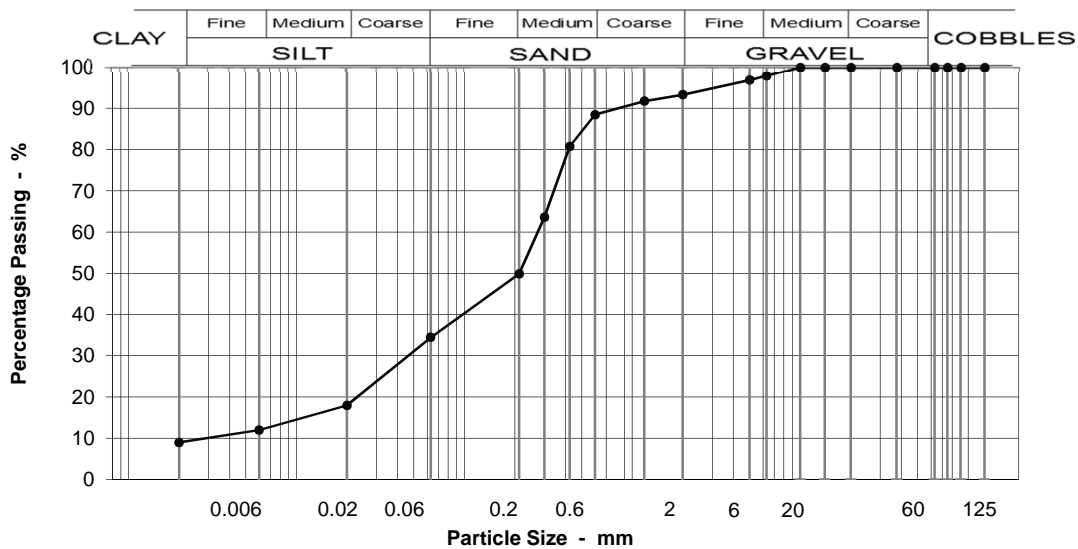
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12B @ 6.5 - 7m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



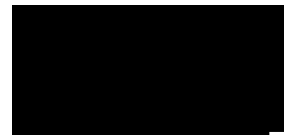
Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 2A/2B, 2A/2B.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	2
37.5	100		Fine GRAVEL	5
20	100		Coarse SAND	5
14	100		Medium SAND	39
10	100		Fine SAND	15
6.3	98		Silt & Clay	34
5	97		Grading Analysis	
2	93		D100	6
1.18	92		D60	0.28
0.600	88		D10	0.04
0.425	81		Uniformity Coefficient	7
0.300	64		Description	
0.212	50	Firm to stiff greyish brown very sandy SILT with thin beds of black silty CLAY and greyish brown silty fine SAND. Some shell fragments.		
0.063	34			
0.020	18			
0.006	12			
0.002	9	Moisture content %	27	

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



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Norfolk
NR1 2DH

Our reference No. **GTS3180320024-610**
Our Project No. PZ1522D1
Your Sample Ref. 24
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 12-Jun-18

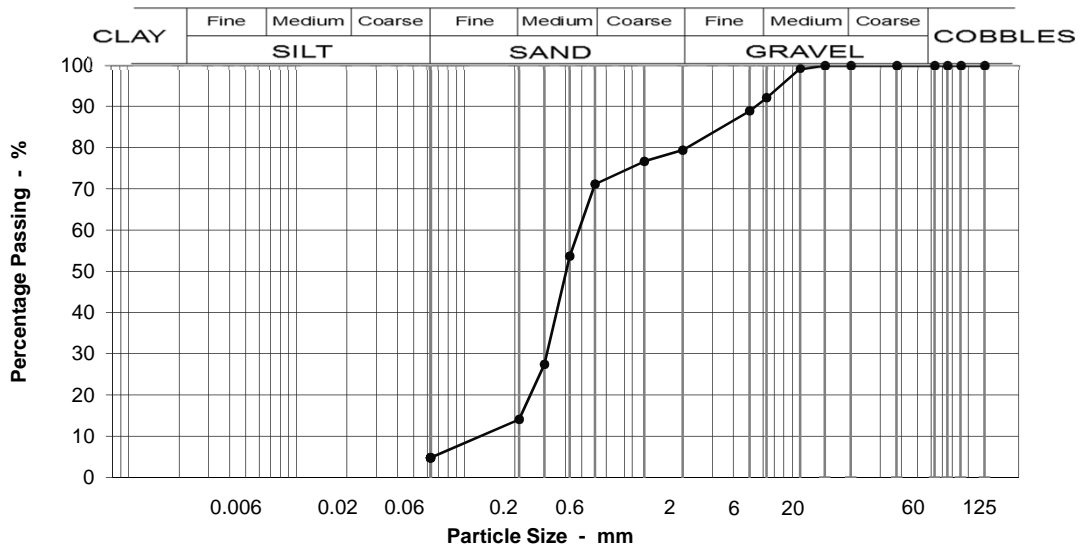
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12B @ 7.5 - 8m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	99
6.3	92
5	89
2	79
1.18	77
0.600	71
0.425	54
0.300	27
0.212	14
0.063	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	8
Fine GRAVEL	13
Coarse SAND	8
Medium SAND	57
Fine SAND	9
Silt & Clay	5

Grading Analysis	
D100	10
D60	0.49
D10	0.15
Uniformity Coefficient	3

Description
Grey slightly organic very gravelly medium SAND. Gravel is fine and medium rounded to angular flint and quartz.

Moisture content % 17

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
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Our reference No. **GTS3180320028-610**
Our Project No. PZ1522D1
Your Sample Ref. 27
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 25-Jun-18

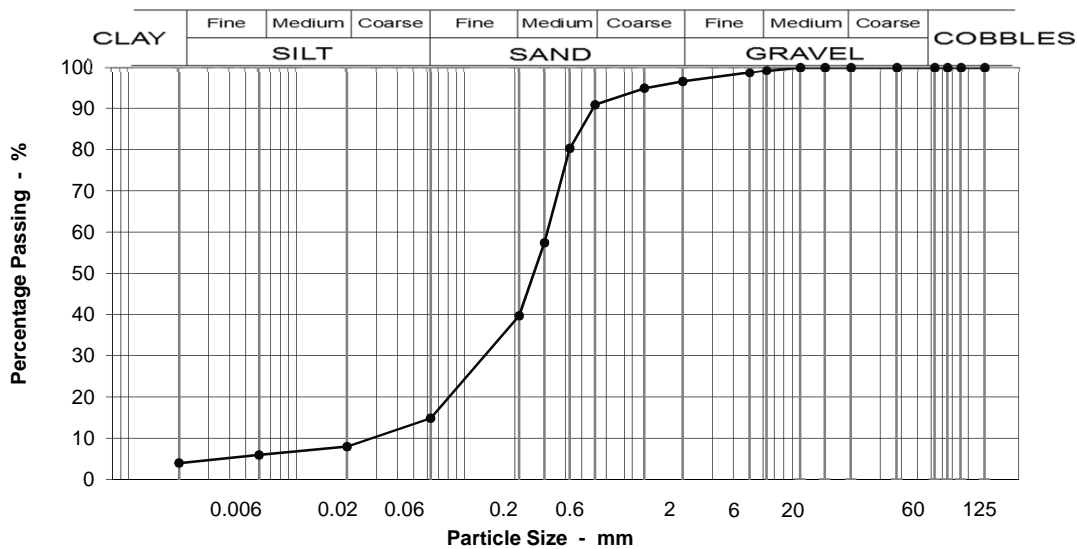
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12B @ 8.5 - 9m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample

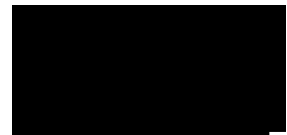


Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	1
37.5	100		Fine GRAVEL	3
20	100		Coarse SAND	6
14	100		Medium SAND	51
10	100		Fine SAND	25
6.3	99		Silt & Clay	15
5	99		Grading Analysis	
2	96		D100	6
1.18	95		D60	0.31
0.600	91		D10	0.08
0.425	80		Uniformity Coefficient	4
0.300	57		Description	
0.212	40	Laminated and thinly bedded brown medium SAND with laminae of brownish grey very sandy SILT and black silty CLAY.		
0.063	15			
0.020	8			
0.006	6			
0.002	4	Moisture content %	22	

Test Code = 610



Simon Holden (Project Technician)



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County Hall
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Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3180320032-610**
Our Project No. **PZ1522D1**
Your Sample Ref **31**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **12-Jun-18**

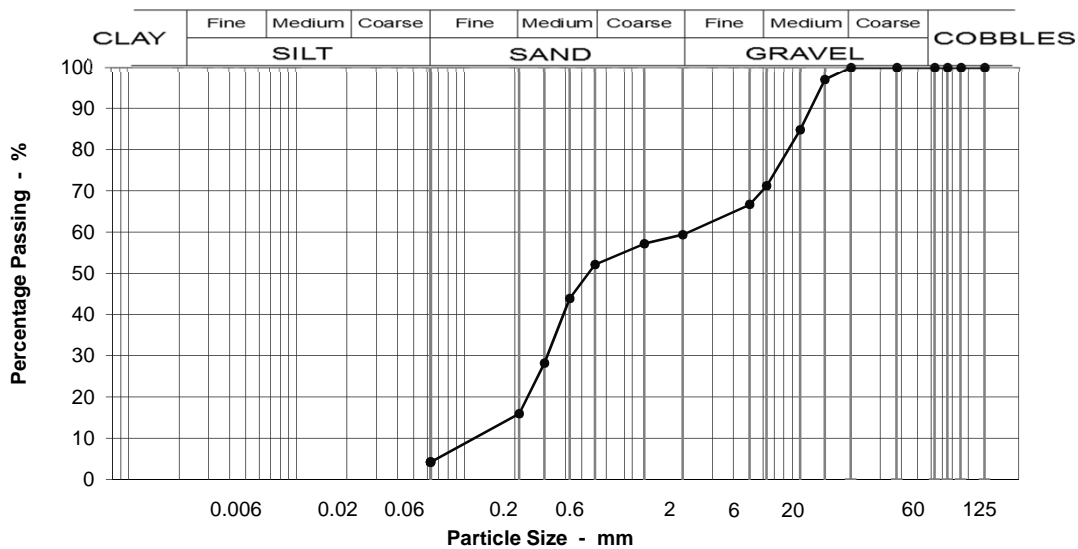
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12B @ 9.5 - 10m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	97
10	85
6.3	71
5	67
2	59
1.18	57
0.600	52
0.425	44
0.300	28
0.212	16
0.063	4

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6E/6R, 6I, 6K, 6M, 6N.

Moisture content % 11

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	29
Fine GRAVEL	12
Coarse SAND	7
Medium SAND	36
Fine SAND	12
Silt & Clay	4

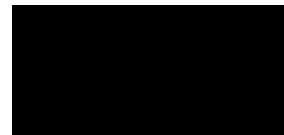
Grading Analysis	
D100	14
D60	2.26
D10	0.14
Uniformity Coefficient	17

Description	
Grey slightly organic medium SAND and medium angular flint and quartz GRAVEL.	

Test Code = 610



Simon Holden (Project Technician)



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NR1 2DH

Our reference No. GTS3180320035-610
Our Project No PZ1522D1
Your Sample Ref 34
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 25-Jun-18

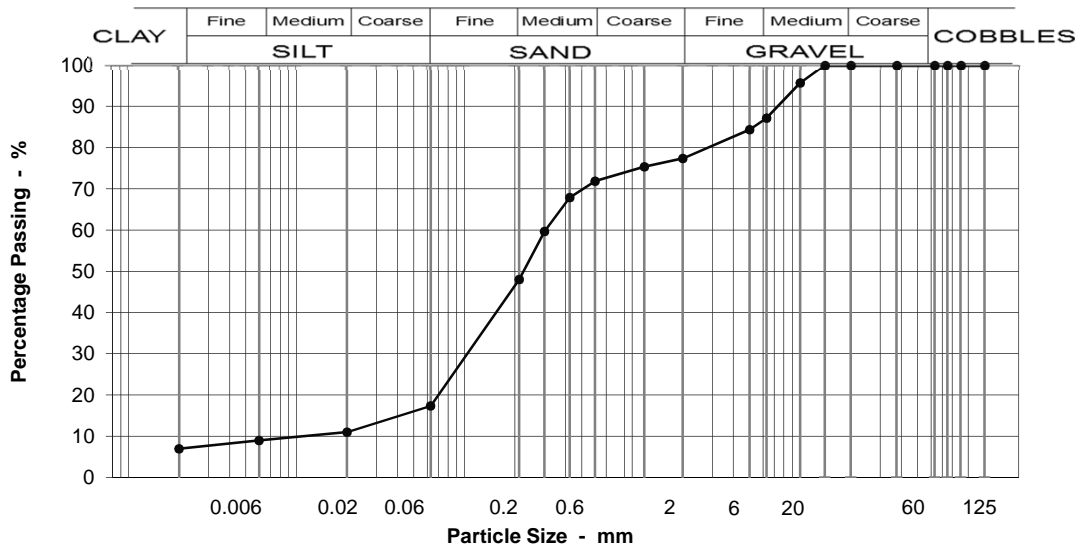
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12B @ 10.5 - 11m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 2C.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	13
37.5	100		Fine GRAVEL	10
20	100		Coarse SAND	5
14	100		Medium SAND	24
10	96		Fine SAND	31
6.3	87		Silt & Clay	17
5	84			
2	77			
1.18	75			
0.600	72			
0.425	68			
0.300	60			
0.212	48			
0.063	17			
0.020	11			
0.006	9			
0.002	7	Moisture content %	21	

Grading Analysis	
D100	10
D60	0.30
D10	0.06
Uniformity Coefficient	5

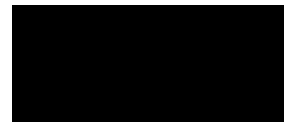
Description	
Thinly bedded greyish brown very gravelly fine and medium SAND, grey silty CLAY and orangey-brown weakly cemented fine and medium SAND. Gravel is fine and medium subangular to subrounded flint and quartz.	

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



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Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3180320040-610**
Our Project No. PZ1522D1
Your Sample Ref. 39
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 18-Jun-18

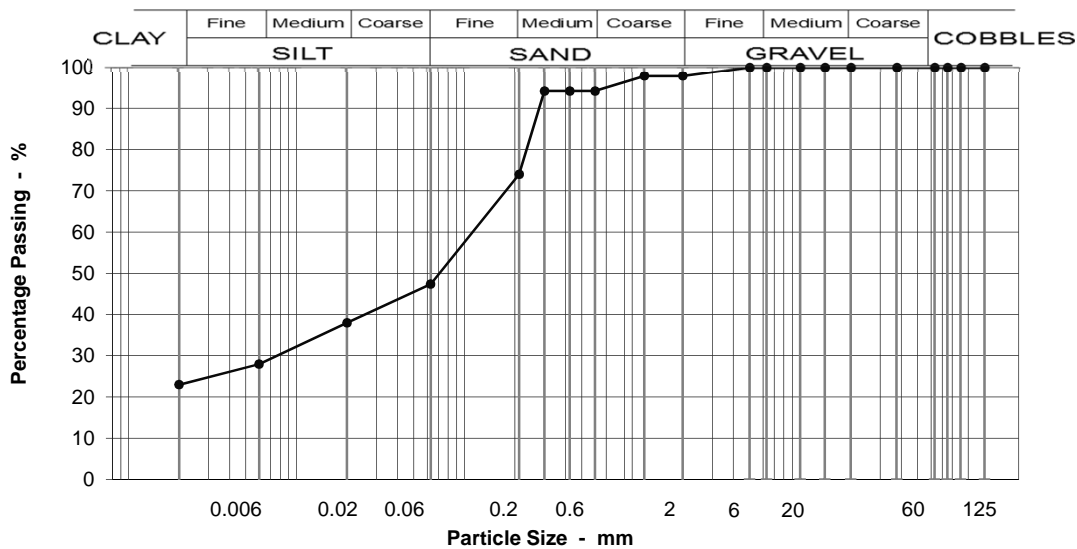
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12B @ 12.4 - 12.7m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100		BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	2
20	100		Coarse SAND	4
14	100		Medium SAND	20
10	100		Fine SAND	27
6.3	100		Silt & Clay	47
5	100			
2	98			
1.18	98			
0.600	94			
0.425	94			
0.300	94			
0.212	74			
0.063	47			
0.020	38			
0.006	28			
0.002	23			
		Moisture content %		0

Grading Analysis	
D100	2
D60	0.13
D10	0.00
Uniformity Coefficient	>10*

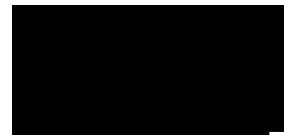
Description	
Orangey-brown SAND with numerous laminae and thin beds of light grey silty CLAY, black clayey SILT and orange sandy SILT.	

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



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County Hall
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Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3180321001-**
Our Project No **PZ1522D1**
Your Sample Ref **41**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

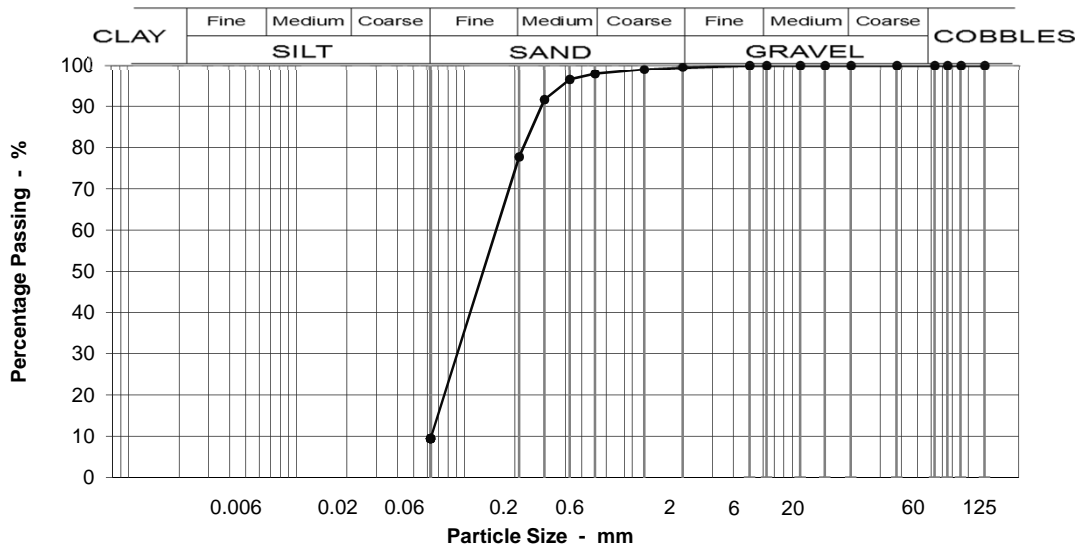
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12B @ 12.7 - 13m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	99
0.600	98
0.425	97
0.300	92
0.212	78
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 35

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	2
Medium SAND	20
Fine SAND	68
Silt & Clay	9

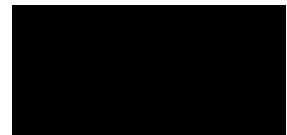
Grading Analysis	
D100	2
D60	0.17
D10	0.06
Uniformity Coefficient	3

Description
Orange brown fine and medium SAND with laminae of light grey silty CLAY, black clayey SILT and orange sandy SILT.

Test Code =



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3180321009-**
Our Project No. PZ1522D1
Your Sample Ref. 49
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 11-Jun-18

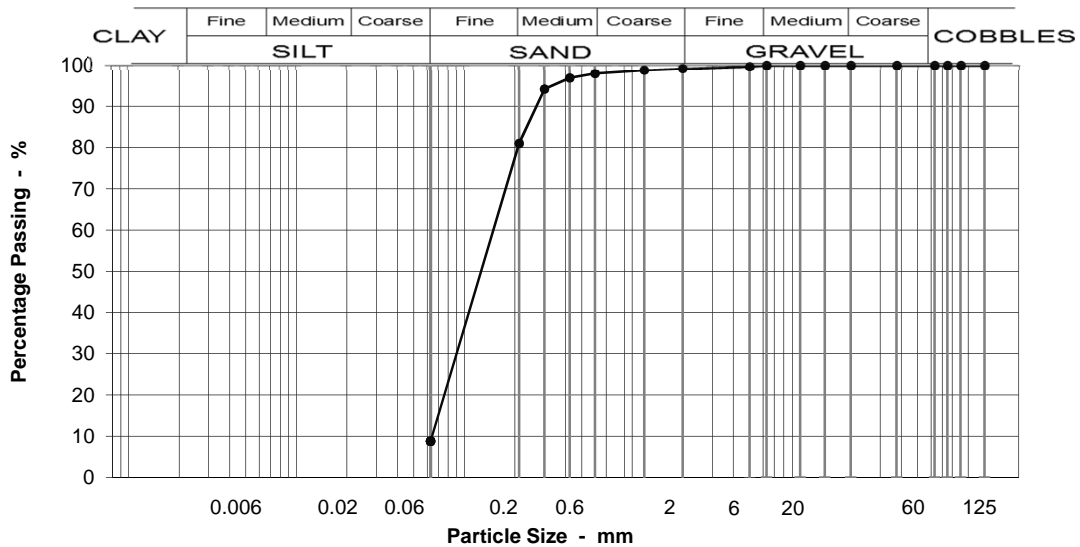
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12B @ 15.5 - 16m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



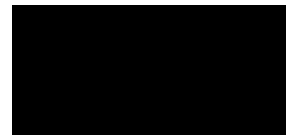
Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R, 6M.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	1
20	100		Coarse SAND	1
14	100		Medium SAND	17
10	100		Fine SAND	72
6.3	100		Silt & Clay	9
5	100		Grading Analysis	
2	99		D100	5
1.18	99		D60	0.17
0.600	98		D10	0.07
0.425	97		Uniformity Coefficient	3
0.300	94		Description	
0.212	81	Thinly bedded light brown fine SAND, orange brown sandy SILT and soft grey silty CLAY.		
0.063	9			

Moisture content % 30

Source : Inspection nit: Hand dug. Gen
Test Code =



Simon Holden (Project Technician)



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Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3180321014-610**
Our Project No. **PZ1522D1**
Your Sample Ref **54**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **12-Jun-18**

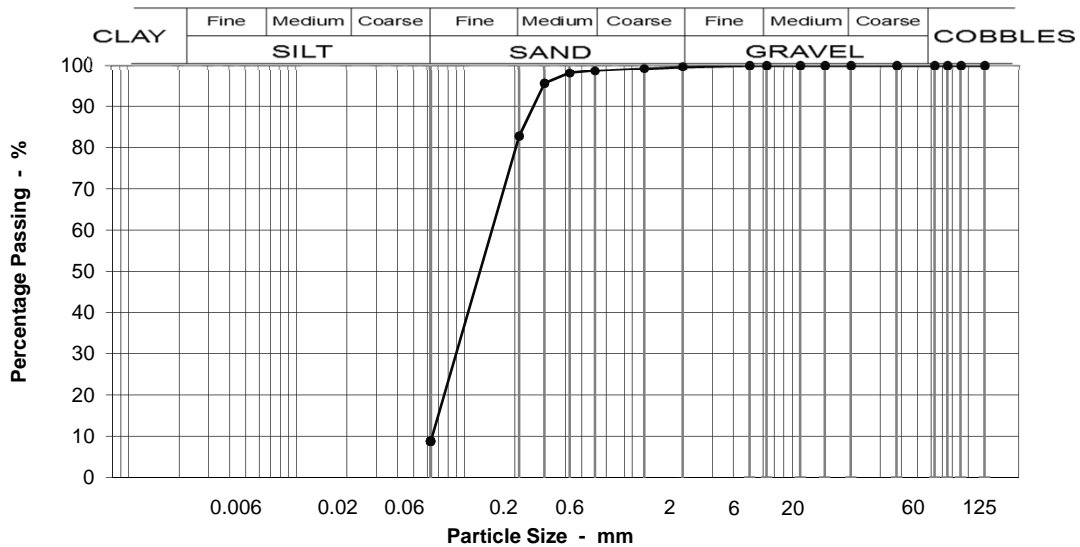
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12B @ 17.5 - 18m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	99
0.600	99
0.425	98
0.300	96
0.212	83
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 25

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	1
Medium SAND	16
Fine SAND	74
Silt & Clay	9

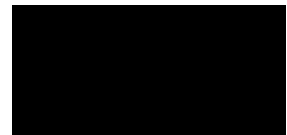
Grading Analysis	
D100	2
D60	0.17
D10	0.07
Uniformity Coefficient	3

Description	
Laminated olive fine SAND with laminae of orangey-brown clayey fine and medium sand.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS3180321020-610
Our Project No PZ1522D1
Your Sample Ref 60
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 12-Jun-18

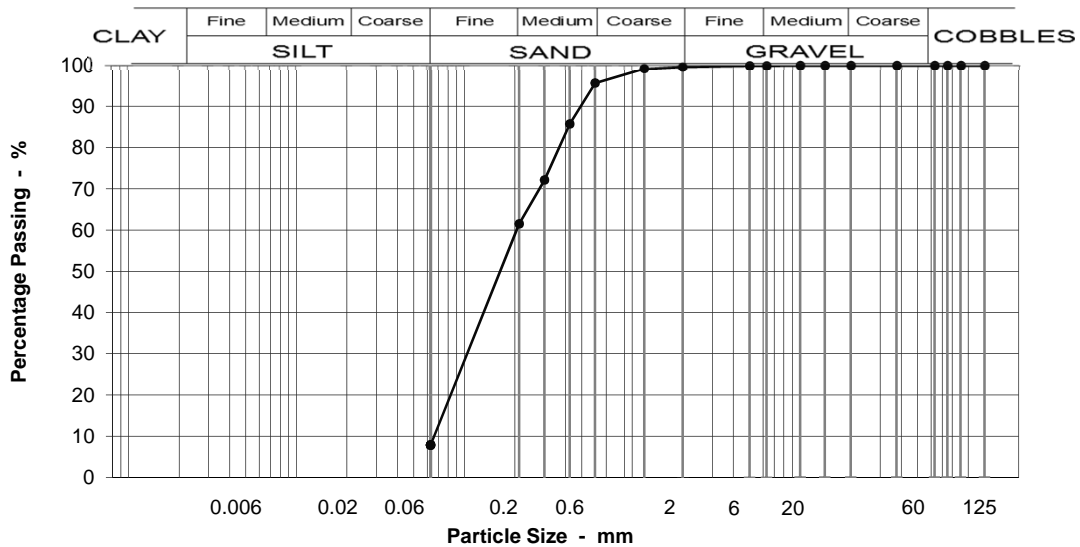
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12B @ 20.5 - 21m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	99
0.600	96
0.425	86
0.300	72
0.212	62
0.063	8

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 26

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	4
Medium SAND	34
Fine SAND	54
Silt & Clay	8

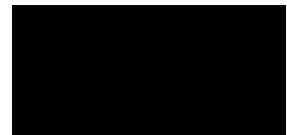
Grading Analysis	
D100	6
D60	0.21
D10	0.07
Uniformity Coefficient	3

Description
Laminated olive fine and medium SAND with laminae of orangey-brown clayey fine and medium SAND and soft grey CLAY.

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS3180321022-610
Our Project No PZ1522D1
Your Sample Ref 62
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 25-Jun-18

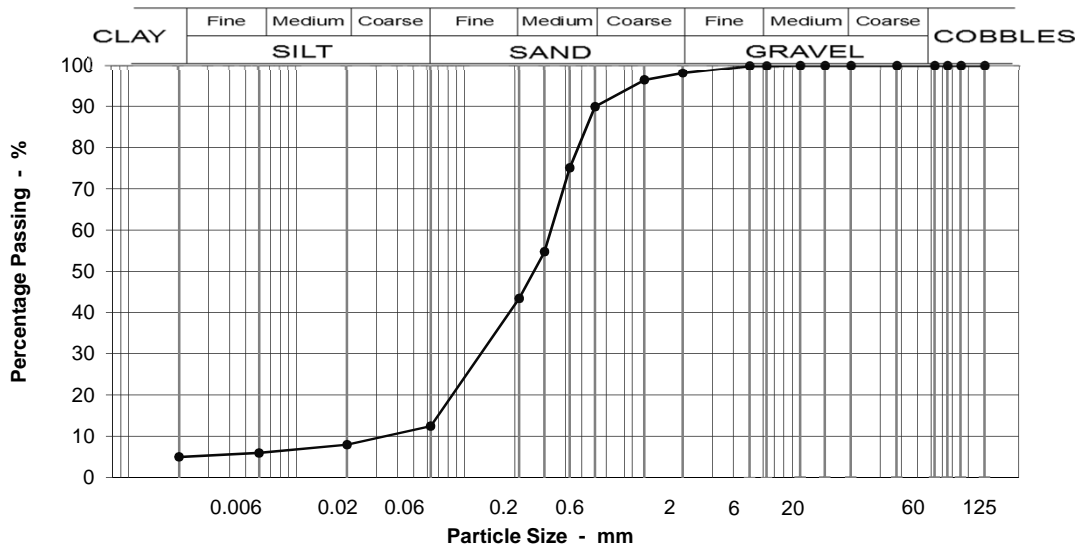
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12B @ 21.7 - 22m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample

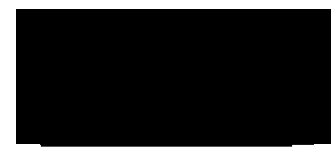


Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	2
20	100		Coarse SAND	8
14	100		Medium SAND	47
10	100		Fine SAND	31
6.3	100		Silt & Clay	13
5	100		Grading Analysis	
2	98		D100	6
1.18	96		D60	0.33
0.600	90		D10	0.09
0.425	75		Uniformity Coefficient	4
0.300	55		Description	
0.212	43		Orangey-brown fine and medium SAND with numerous laminae of light grey silty CLAY, black clayey SILT and orange sandy SILT.	
0.063	13			
0.020	8			
0.006	6			
0.002	5	Moisture content %	20	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3180321026-610**
Our Project No. **PZ1522D1**
Your Sample Ref **66**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **12-Jun-18**

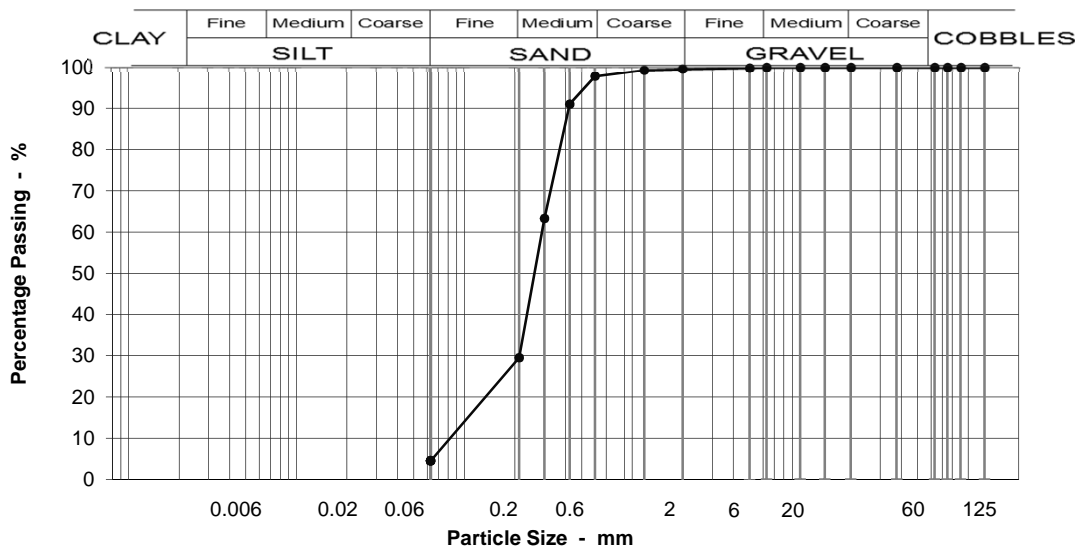
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12B @ 24.5 - 25m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	99
0.600	98
0.425	91
0.300	63
0.212	30
0.063	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 20

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	2
Medium SAND	68
Fine SAND	25
Silt & Clay	5

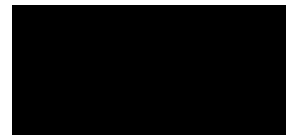
Grading Analysis	
D100	5
D60	0.29
D10	0.10
Uniformity Coefficient	3

Description
Grey medium SAND with laminae of firm grey CLAY, numerous shell fragments.

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
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Norfolk
NR1 2DH

Our reference No. **GTS3180322003-610**
Our Project No. PZ1522D1
Your Sample Ref. 71
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 4-Jul-18

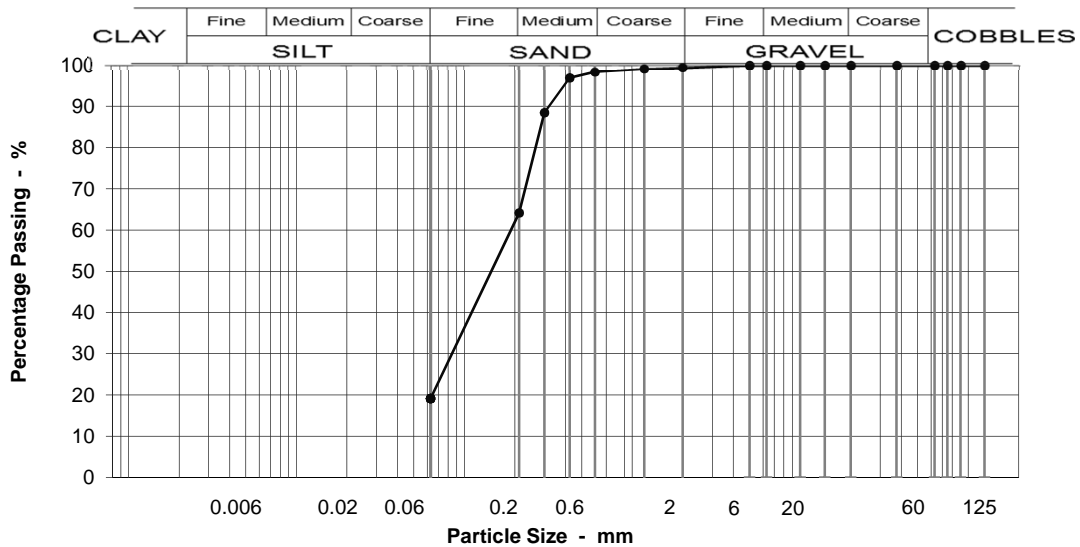
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12B @ 27.5 - 28m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 2A/2B, 2A/2B.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	1
20	100		Coarse SAND	1
14	100		Medium SAND	34
10	100		Fine SAND	45
6.3	100		Silt & Clay	19
5	100			
2	99			
1.18	99			
0.600	98			
0.425	97			
0.300	88			
0.212	64			
0.063	19			
Moisture content %		22		

Grading Analysis	
D100	2
D60	0.20
D10	0.03
Uniformity Coefficient	6*

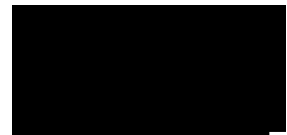
Description	
Laminated and thinly bedded grey clayey silty fine and medium SAND and firm grey silty CLAY with occasional shell fragments.	

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3180322004-610**
Our Project No. **PZ1522D1**
Your Sample Ref **72**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **18-Jun-18**

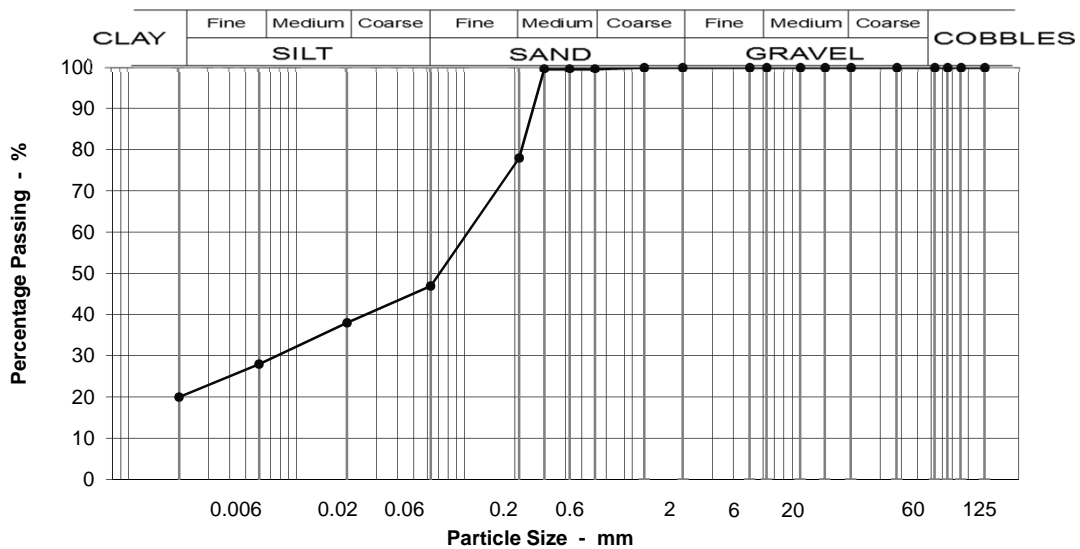
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12B @ 28.5 - 29m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100		BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	0
14	100		Medium SAND	22
10	100		Fine SAND	31
6.3	100		Silt & Clay	47
5	100			
2	100			
1.18	100			
0.600	100			
0.425	100			
0.300	100			
0.212	78			
0.063	47			
0.020	38			
0.006	28			
0.002	20			
		Moisture content %		0

Grading Analysis	
D100	1
D60	0.13
D10	0.00
Uniformity Coefficient	>10*

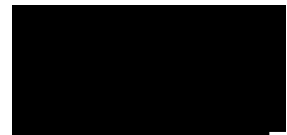
Description	
Laminated and thinly bedded clayey silty fine SAND, firm grey silty CLAY and occasional shell fragments.	

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3180322006-610**
Our Project No. PZ1522D1
Your Sample Ref. 74
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 18-Jun-18

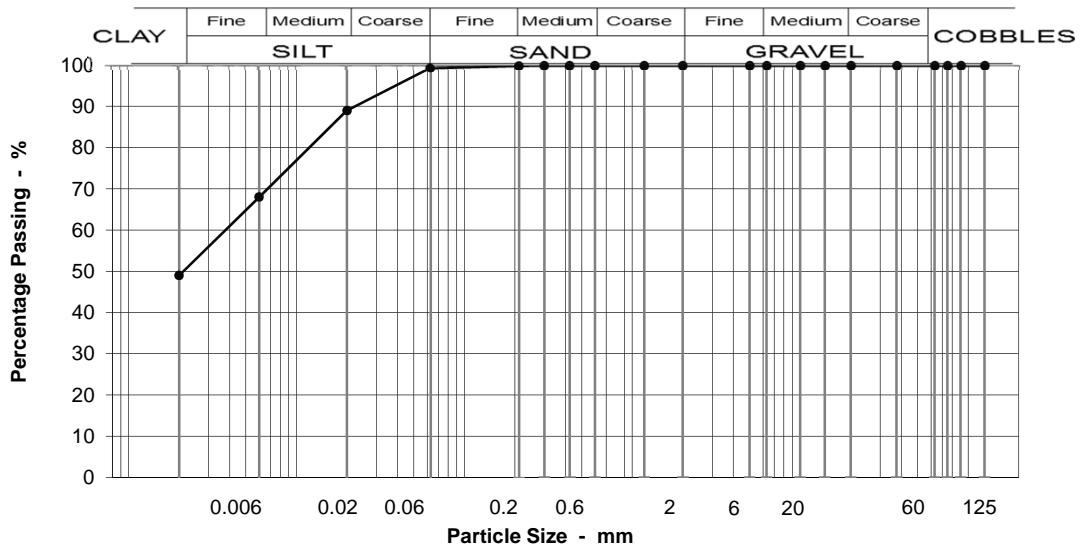
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12B @ 29.95 - 30.1m Specimen: 1

Location and orientation within sample not applicable

Disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100		BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	0
14	100		Medium SAND	0
10	100		Fine SAND	1
6.3	100		Silt & Clay	99
5	100			
2	100			
1.18	100			
0.600	100			
0.425	100			
0.300	100			
0.212	100			
0.063	99			
0.020	89			
0.006	68			
0.002	49			
		Moisture content %		0

Grading Analysis	
D100	0
D60	0.00
D10	0.00
Uniformity Coefficient	>10*

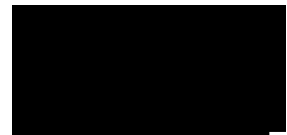
Description	
Laminated grey silty CLAY and light grey SILT.	

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3180322013-610**
Our Project No. **PZ1522D1**
Your Sample Ref **80**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **12-Jun-18**

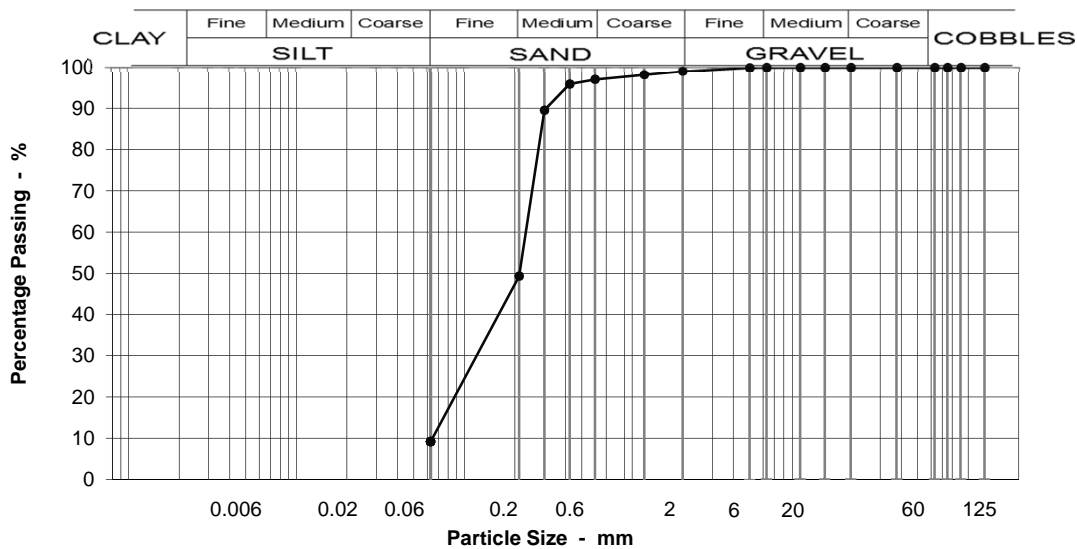
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12B @ 33.5 - 34m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



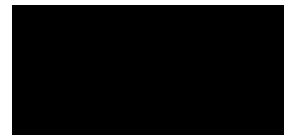
Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R, 6M.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	1
20	100		Coarse SAND	2
14	100		Medium SAND	48
10	100		Fine SAND	40
6.3	100		Silt & Clay	9
5	100		Grading Analysis	
2	99		D100	5
1.18	98		D60	0.24
0.600	97		D10	0.07
0.425	96		Uniformity Coefficient	4
0.300	90		Description	
0.212	49	Grey slightly silty fine and medium SAND with some shell fragments.		
0.063	9			

Moisture content % 25

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
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Norfolk
NR1 2DH

Our reference No. GTS3180322016-610
Our Project No PZ1522D1
Your Sample Ref 83
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 12-Jun-18

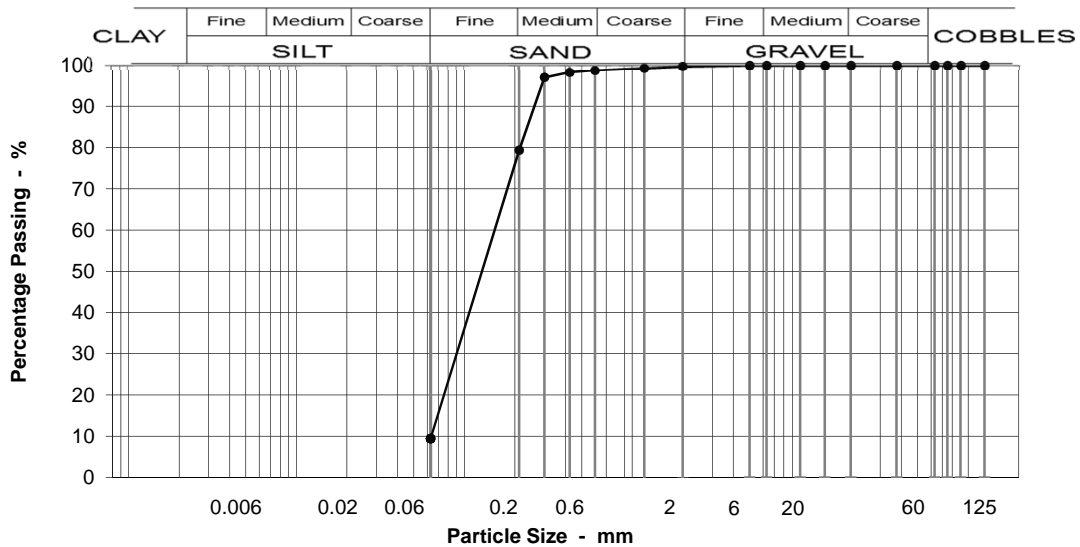
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12B @ 35.5 - 36m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample

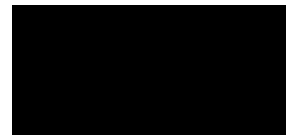


Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R, 6M.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	1
14	100		Medium SAND	19
10	100		Fine SAND	70
6.3	100		Silt & Clay	9
5	100			
2	100			
1.18	99			
0.600	99			
0.425	98			
0.300	97			
0.212	79			
0.063	9			
Moisture content %		2	Grading Analysis	
			D100	2
			D60	0.17
			D10	0.06
			Uniformity Coefficient	3
			Description	
			Grey slightly silty fine SAND with some shell fragments.	

Test Code = 610



Simon Holden (Project Technician)



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County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS3180322020-610
Our Project No PZ1522D1
Your Sample Ref 87
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 12-Jun-18

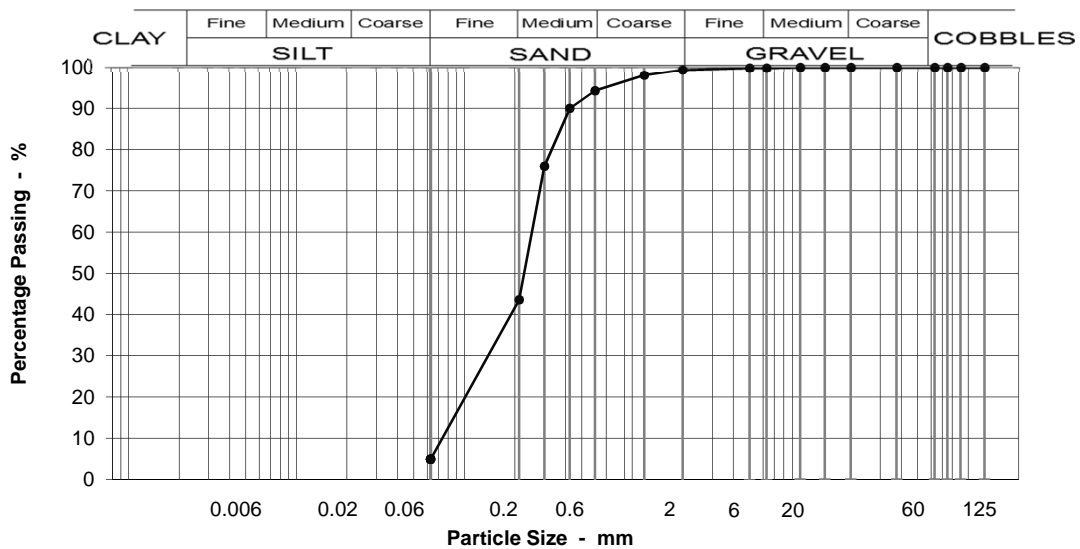
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12B @ 38.5 - 39m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample

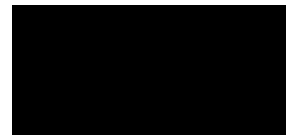


Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R, 6M.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	5
14	100		Medium SAND	51
10	100		Fine SAND	39
6.3	100		Silt & Clay	5
5	100		Grading Analysis	
2	99		D100	6
1.18	98		D60	0.26
0.600	94		D10	0.08
0.425	90		Uniformity Coefficient	3
0.300	76		Description	
0.212	44	Grey slightly silty fine and medium SAND with some shell fragments.		
0.063	5	Moisture content % 19		

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3180323004-610**
Our Project No. PZ1522D1
Your Sample Ref. 92
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 12-Jun-18

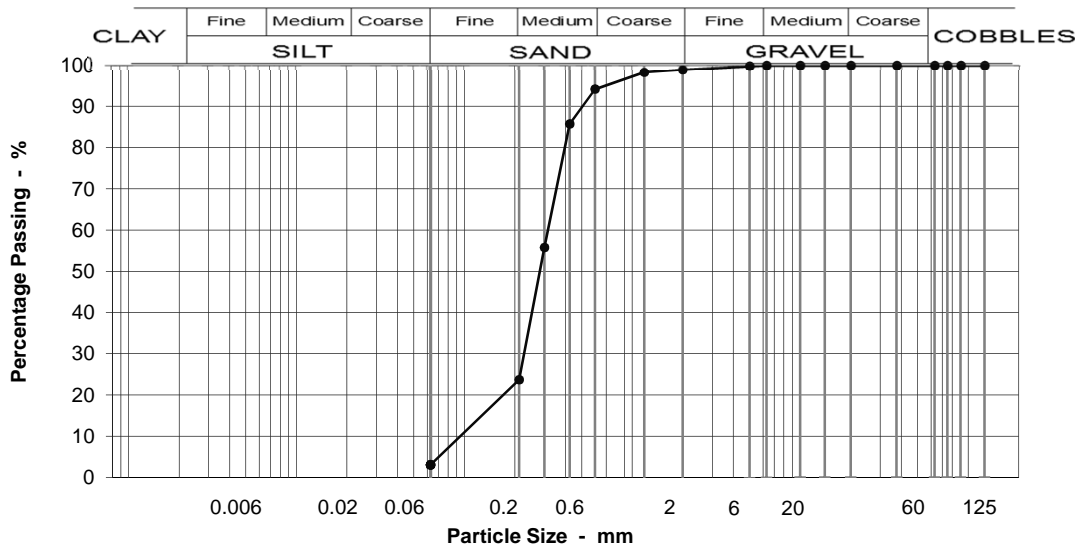
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12B @ 41.5 - 42m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	98
0.600	94
0.425	86
0.300	56
0.212	24
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 20

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	5
Medium SAND	70
Fine SAND	21
Silt & Clay	3

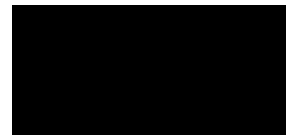
Grading Analysis	
D100	6
D60	0.32
D10	0.11
Uniformity Coefficient	3

Description	
Grey medium SAND.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3180323008-**
Our Project No. PZ1522D1
Your Sample Ref. 96
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 11-Jun-18

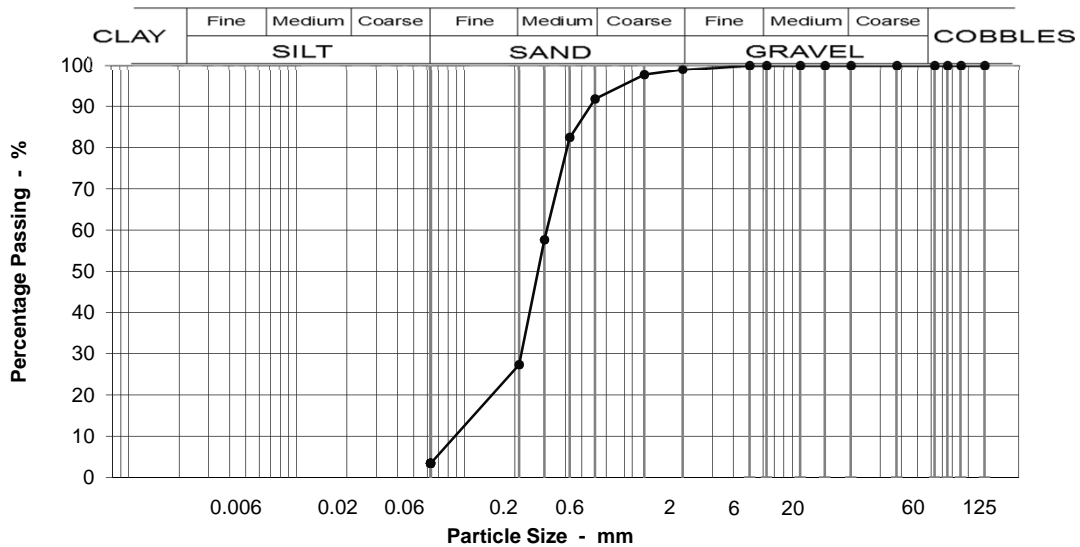
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12B @ 44.5 - 45m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	98
0.600	92
0.425	82
0.300	58
0.212	27
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	7
Medium SAND	64
Fine SAND	24
Silt & Clay	3

Grading Analysis	
D100	2
D60	0.31
D10	0.10
Uniformity Coefficient	3

Description
Grey medium SAND.

Moisture content % 19

Test Code =



Simon Holden (Project Technician)



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County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3180323010-610**
Our Project No. PZ1522D1
Your Sample Ref. 98
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 18-Jun-18

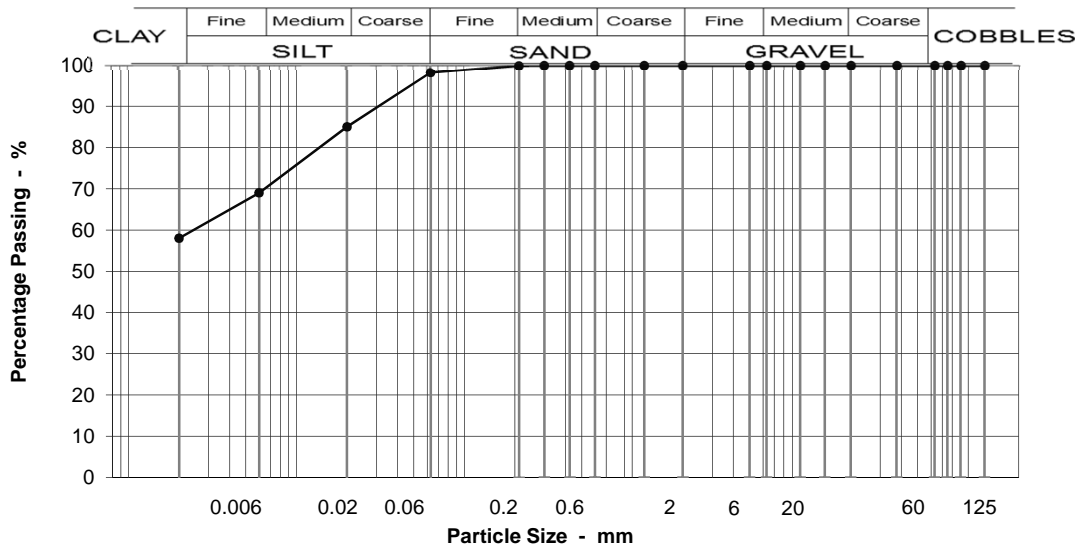
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12B @ 45.7 - 46.2m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100		BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	0
14	100		Medium SAND	0
10	100		Fine SAND	2
6.3	100		Silt & Clay	98
5	100			
2	100			
1.18	100			
0.600	100			
0.425	100			
0.300	100			
0.212	100			
0.063	98			
0.020	85			
0.006	69			
0.002	58			
		Moisture content %	0	

Grading Analysis	
D100	0
D60	0.00
D10	0.00
Uniformity Coefficient	>10*

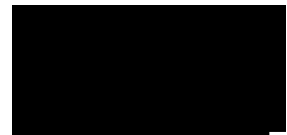
Description	
Very stiff grey and brown SILT:CLAY with some shell fragments. Occasional gypsum crystals.	

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS3180323017-610**
Our Project No. PZ1522D1
Your Sample Ref. 105
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 18-Jun-18

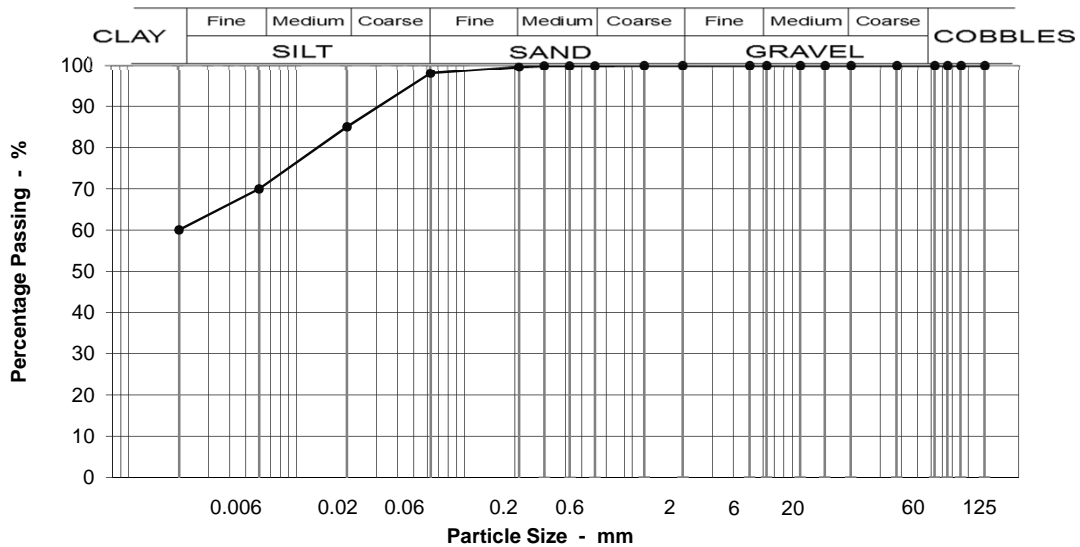
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH12B @ 49.5 - 49.95m Specimen: 1

Location and orientation within sample not applicable

Disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100		BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	0
14	100		Medium SAND	0
10	100		Fine SAND	2
6.3	100		Silt & Clay	98
5	100			
2	100			
1.18	100			
0.600	100			
0.425	100			
0.300	100			
0.212	100			
0.063	98			
0.020	85			
0.006	70			
0.002	60			
		Moisture content %		0

Grading Analysis	
D100	1
D60	0.00
D10	0.00
Uniformity Coefficient	>10*

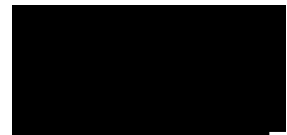
Description	
Very stiff grey and brown SILT:CLAY with some shell fragments. Occasional gypsum crystals.	

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
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NR1 2DH

Our reference No. **GTS1180305001-610**
Our Project No. **PZ1522D1**
Your Sample Ref **1**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **22-May-18**

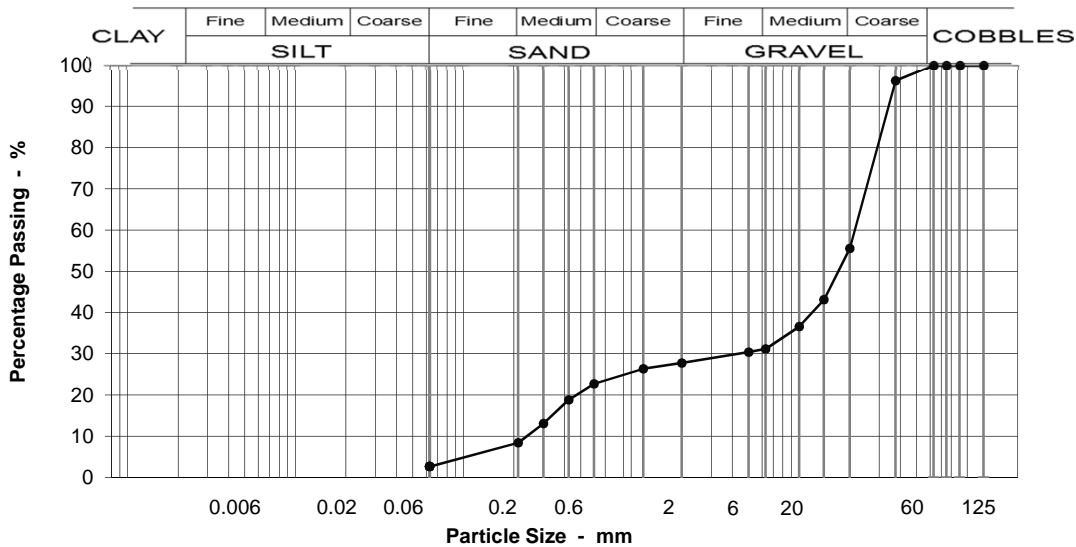
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13 @ 0.2 - 0.4m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	96
20	56
14	43
10	37
6.3	31
5	30
2	28
1.18	26
0.600	23
0.425	19
0.300	13
0.212	8
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6A, 6E/6R, 6F2/6F3, 6I, 6M, 6N.

Moisture content % 5.6

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	44
Medium GRAVEL	24
Fine GRAVEL	3
Coarse SAND	5
Medium SAND	14
Fine SAND	6
Silt & Clay	3

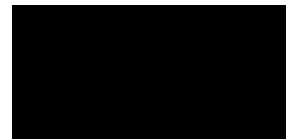
Grading Analysis	
D100	38
D60	21.92
D10	0.24
Uniformity Coefficient	91

Description
MADE GROUND: Comprising greyish brown, very sandy medium and coarse, angular to sub-rounded flint, concrete, brick and asphalt GRAVEL.

Test Code = 610



Simon Holden (Project Technician)



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County Hall
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Norfolk
NR1 2DH

Our reference No. **GTS1180305004-610**
Our Project No. **PZ1522D1**
Your Sample Ref **4**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **22-May-18**

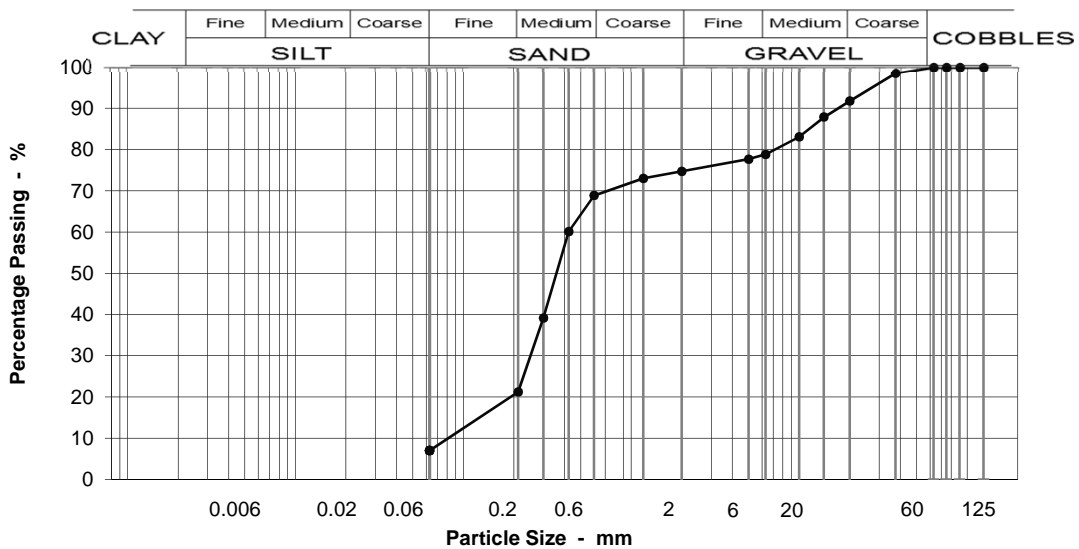
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13 @ 0.5 - 0.8m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	99
20	92
14	88
10	83
6.3	79
5	78
2	75
1.18	73
0.600	69
0.425	60
0.300	39
0.212	21
0.063	7

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 8.9

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	8
Medium GRAVEL	13
Fine GRAVEL	4
Coarse SAND	6
Medium SAND	48
Fine SAND	14
Silt & Clay	7

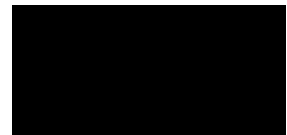
Grading Analysis	
D100	38
D60	0.42
D10	0.09
Uniformity Coefficient	5

Description
Brownish grey very gravelly medium SAND.
Gravel is medium and coarse angular to rounded flint and quartz.

Test Code = 610



Simon Holden (Project Technician)



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Norfolk
NR1 2DH

Our reference No. **GTS1180305008-610**
Our Project No. PZ1522D1
Your Sample Ref. 8
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 4-Jul-18

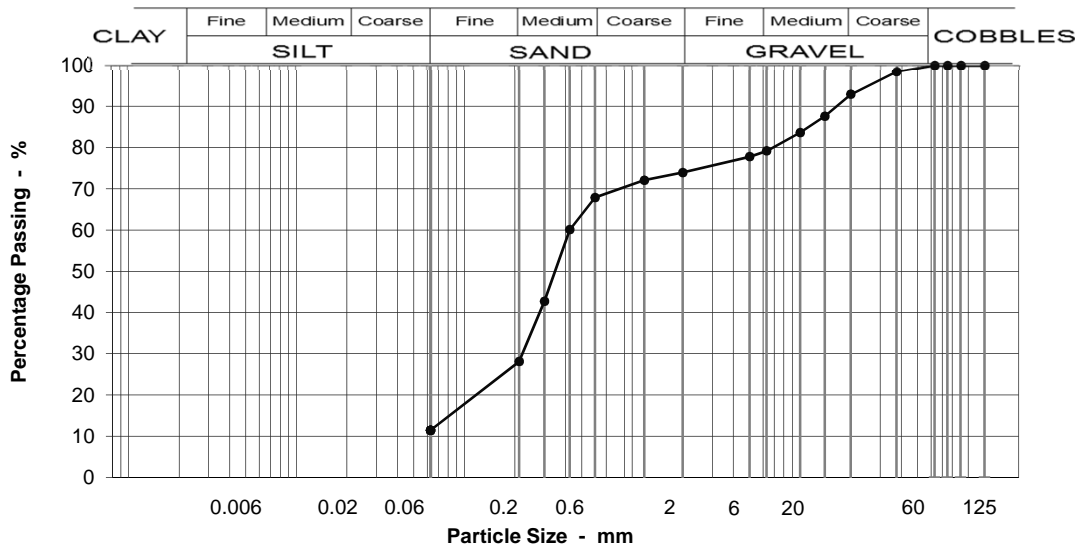
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13 @ 1.1 - 1.2m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



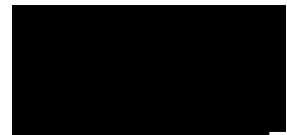
Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R, 6J.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	7
63	100		Medium GRAVEL	14
37.5	98		Fine GRAVEL	5
20	93		Coarse SAND	6
14	88		Medium SAND	40
10	84		Fine SAND	17
6.3	79		Silt & Clay	11
5	78		Grading Analysis	
2	74		D100	38
1.18	72		D60	0.42
0.600	68		D10	0.07
0.425	60		Uniformity Coefficient	6
0.300	43		Description	
0.212	28	Brownish grey very gravelly fine and medium SAND. Gravel is medium angular to rounded flint, quartz, ceramics and chalk.		
0.063	11			

Moisture content % 14

Test Code = 610



Simon Holden (Project Technician)

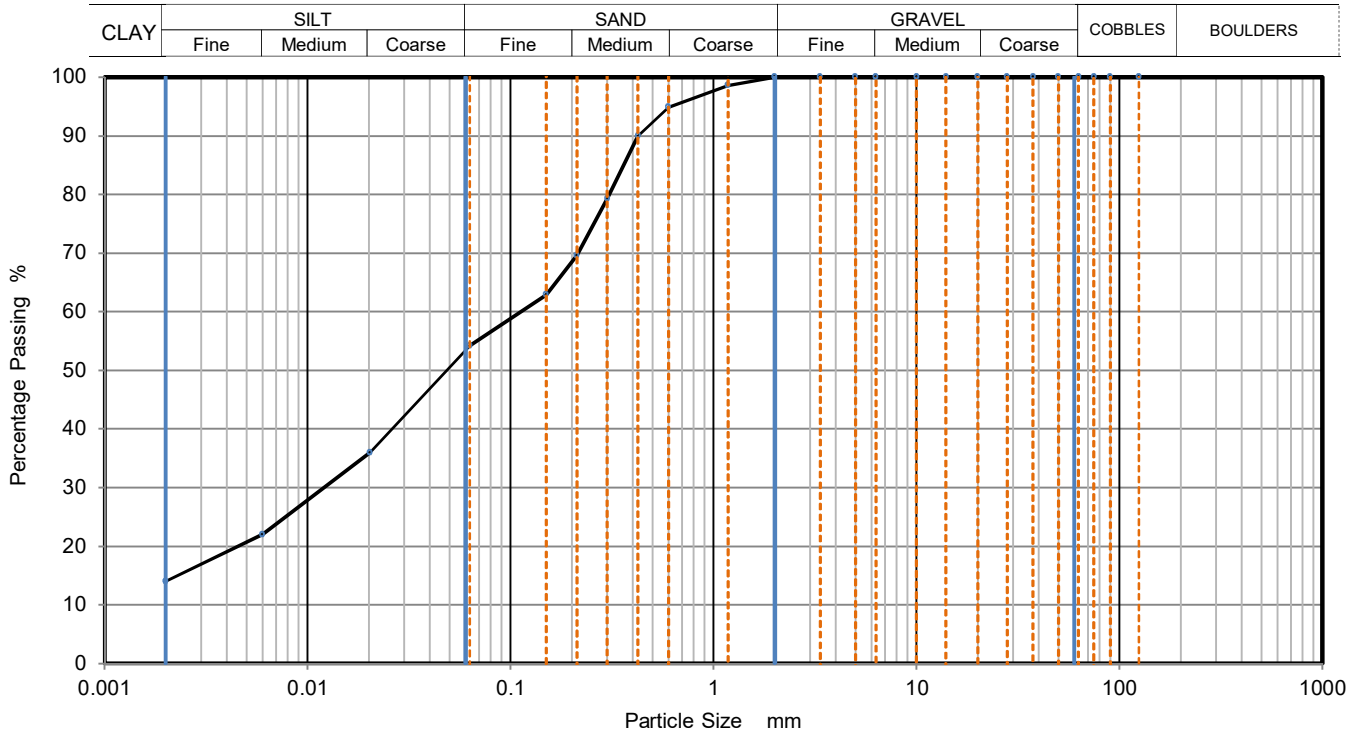




DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH13
Sample Description:	Brown sandy clayey SILT	Sample Depth (m)	1.20
		Sample Reference	D9



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	36
90	100	0.0060	22
75	100	0.0020	14
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.6	95		
0.425	90	Particle density (assumed) 2.65 Mg/m ³	
0.3	79		
0.212	70		
0.15	63		
0.063	54		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	46
Silt	41
Clay	14

Grading Analysis		
D100	mm	
D60	mm	0.112
D30	mm	0.012
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks	Approved	Date	Sheet No.:
	MW	03/07/2018	1 of 1

Community & Environmental Services
County Hall
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Norwich
Norfolk
NR1 2DH

Our reference No. GTS1180305015-610
Our Project No PZ1522D1
Your Sample Ref 15
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 25-Jun-18

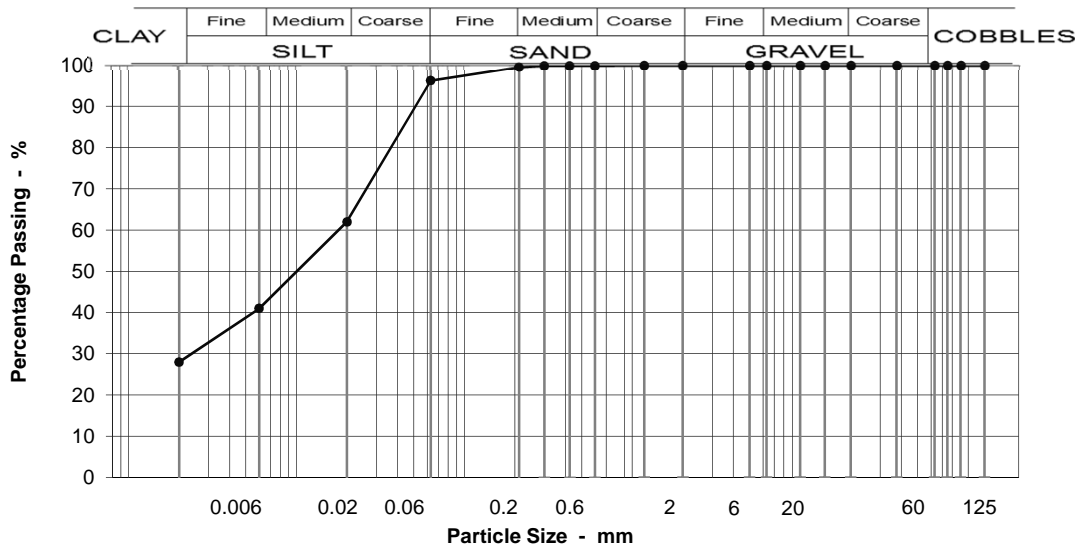
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13 @ 2.6 - 2.7m **Specimen:** 1

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	100
0.600	100
0.425	100
0.300	100
0.212	100
0.063	96
0.020	62
0.006	41
0.002	28

Specification for Highway Works Classification
Table 6/2

Moisture content % 0

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	0
Medium SAND	0
Fine SAND	3
Silt & Clay	96

Grading Analysis	
D100	1
D60	0.02
D10	0.00
Uniformity Coefficient	>10*

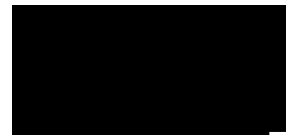
Description	
Black organic very clayey SILT.	

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



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County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1180306002-610**
Our Project No. PZ1522D1
Your Sample Ref. 22
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 2-Jul-18

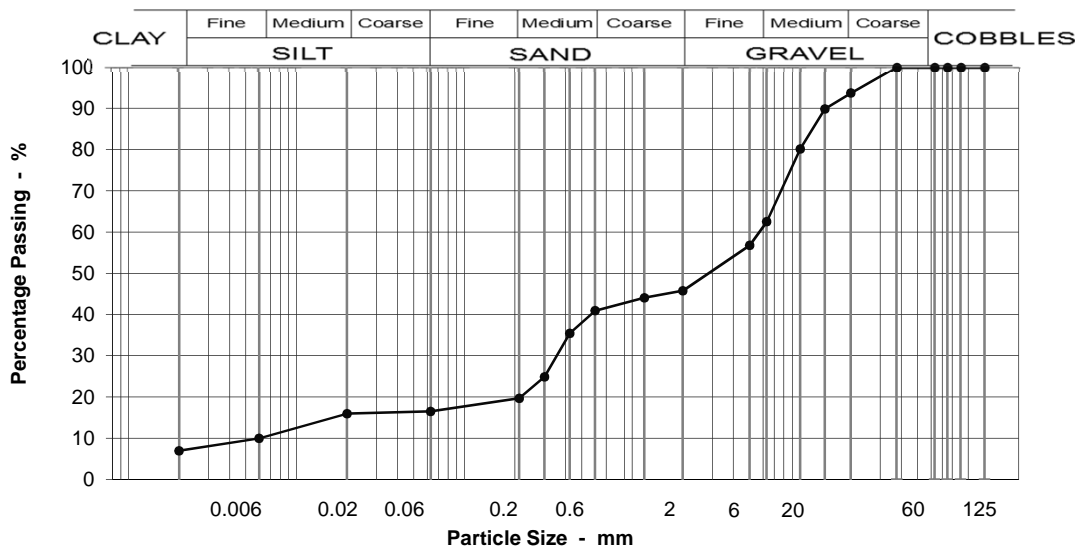
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13 @ 4 - 4.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 2C.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	6
63	100		Medium GRAVEL	31
37.5	100		Fine GRAVEL	17
20	94		Coarse SAND	5
14	90		Medium SAND	21
10	80		Fine SAND	3
6.3	62		Silt & Clay	17
5	57			
2	46			
1.18	44			
0.600	41			
0.425	35			
0.300	25			
0.212	20			
0.063	17			
0.020	16			
0.006	10			
0.002	7			
Moisture content %		18		

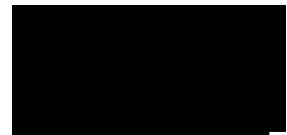
Grading Analysis	
D100	20
D60	5.73
D10	0.08
Uniformity Coefficient	68

Description	
Brown very sandy slightly clayey slightly silty fine and medium angular to rounded flint GRAVEL. Occasional shell fragments.	

Test Code = 610



Simon Holden (Project Technician)



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Our reference No. **GTS1180306005-610**
Our Project No. PZ1522D1
Your Sample Ref. 25
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 22-May-18

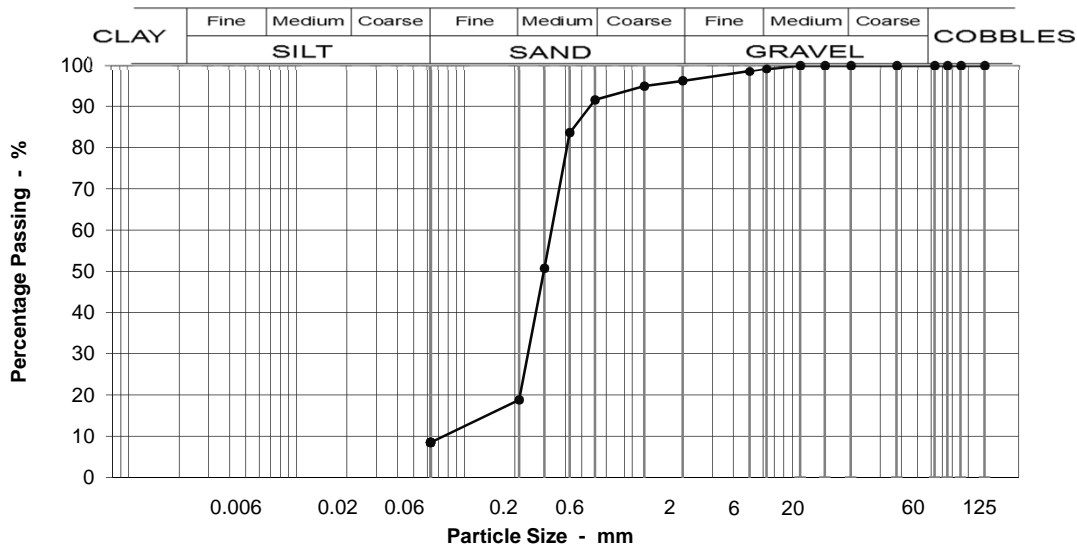
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13 @ 5 - 5.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	99
5	99
2	96
1.18	95
0.600	92
0.425	84
0.300	51
0.212	19
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 20

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	1
Fine GRAVEL	3
Coarse SAND	5
Medium SAND	73
Fine SAND	10
Silt & Clay	9

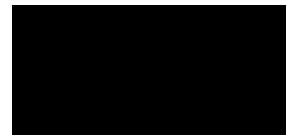
Grading Analysis	
D100	6
D60	0.34
D10	0.08
Uniformity Coefficient	4

Description	
Dark grey organic medium SAND. Weathering to brown, occasional shell fragments.	

Test Code = 610



Simon Holden (Project Technician)



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Martineau Lane
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Norfolk
NR1 2DH

Our reference No. **GTS1180306017-610**
Our Project No. **PZ1522D1**
Your Sample Ref **37**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **22-May-18**

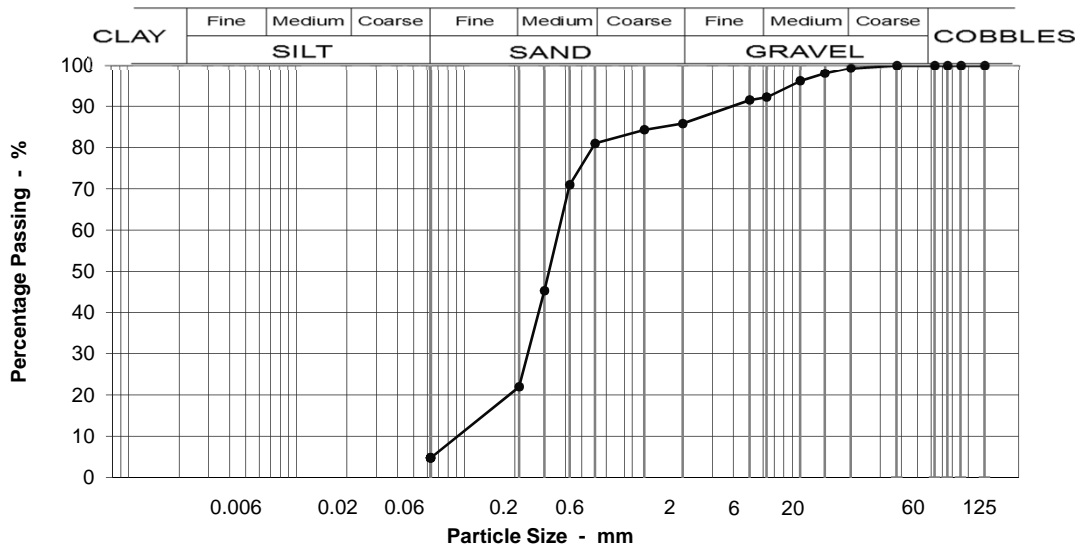
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13 @ 9 - 9.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	99
14	98
10	96
6.3	92
5	92
2	86
1.18	84
0.600	81
0.425	71
0.300	45
0.212	22
0.063	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	1
Medium GRAVEL	7
Fine GRAVEL	6
Coarse SAND	5
Medium SAND	59
Fine SAND	17
Silt & Clay	5

Grading Analysis	
D100	20
D60	0.37
D10	0.11
Uniformity Coefficient	3

Description
Grey slightly organic gravelly medium SAND weathering to brown. Gravel is fine and medium angular to rounded flint and quartz.

Moisture content % 17

Test Code = 610



Simon Holden (Project Technician)



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County Hall
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Norwich
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NR1 2DH

Our reference No. **GTS1180306018-610**
Our Project No. PZ1522D1
Your Sample Ref. 38
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 22-May-18

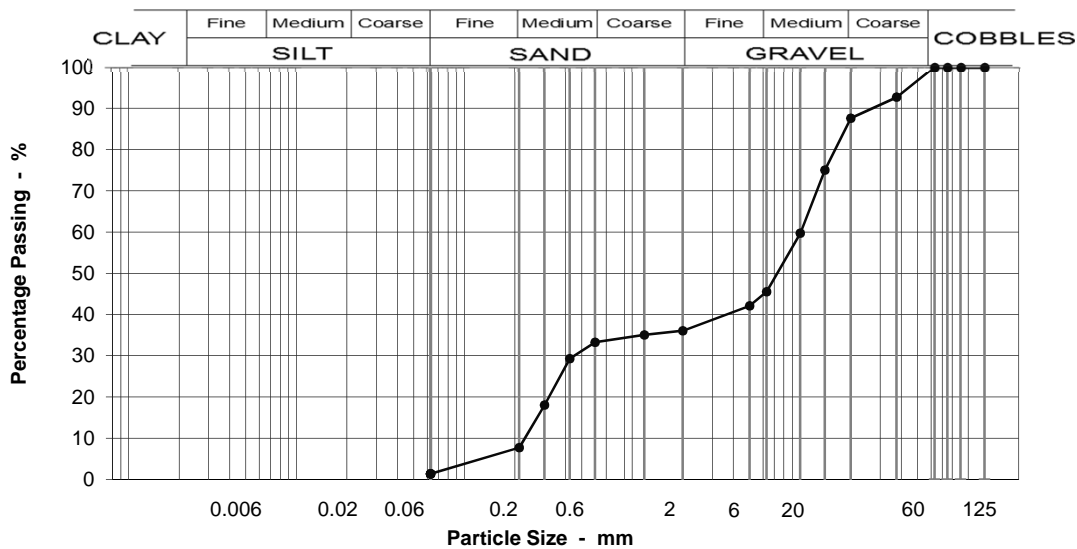
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13 @ 9.5 - 10m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	93
20	88
14	75
10	60
6.3	46
5	42
2	36
1.18	35
0.600	33
0.425	29
0.300	18
0.212	8
0.063	1

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6A, 6E/6R, 6F1, 6I, 6M, 6N.

Moisture content % 8.4

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	12
Medium GRAVEL	42
Fine GRAVEL	9
Coarse SAND	3
Medium SAND	26
Fine SAND	6
Silt & Clay	1

Grading Analysis	
D100	38
D60	10.08
D10	0.23
Uniformity Coefficient	44

Description
Dark grey organic very sandy medium, rounded to angular flint and quartz GRAVEL. Occasional shell fragments.

Test Code = 610



Simon Holden (Project Technician)



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NR1 2DH

Our reference No. **GTS1180306021-610**
Our Project No. PZ1522D1
Your Sample Ref. 41
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 22-May-18

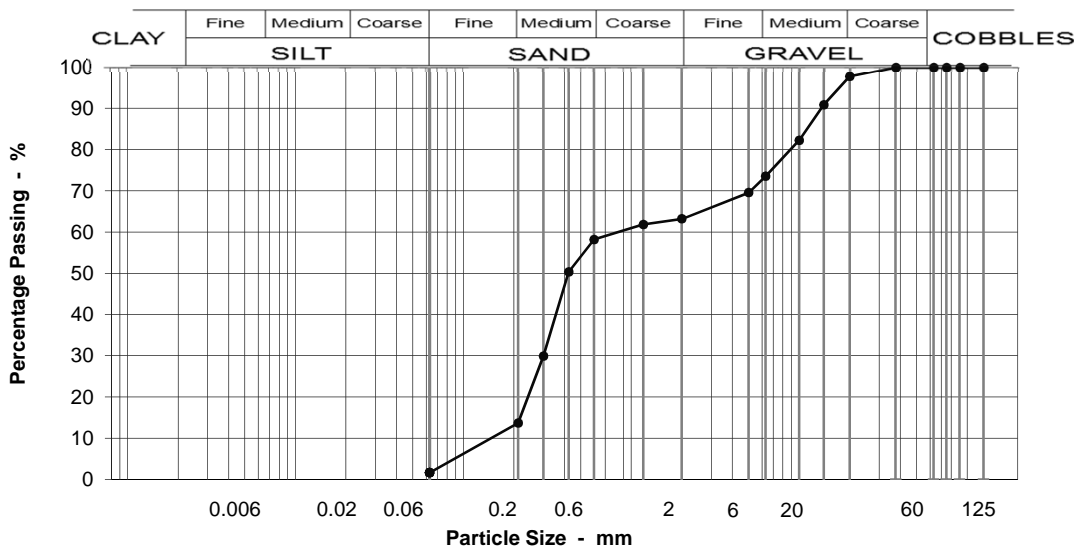
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13 @ 10 - 10.5m Specimen: 2

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	98
14	91
10	82
6.3	73
5	70
2	63
1.18	62
0.600	58
0.425	50
0.300	30
0.212	14
0.063	2

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J, 6M.

Moisture content % 13

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	2
Medium GRAVEL	24
Fine GRAVEL	10
Coarse SAND	5
Medium SAND	44
Fine SAND	12
Silt & Clay	2

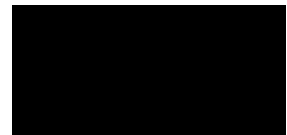
Grading Analysis	
D100	20
D60	0.89
D10	0.17
Uniformity Coefficient	5

Description
Dark grey very gravelly organic medium SAND. Gravel is fine and medium rounded to angular flint, quartz, quartzite and sandstone.

Test Code = 610



Simon Holden (Project Technician)



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County Hall
Martineau Lane
Norwich
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NR1 2DH

Our reference No. GTS1180306023-610
Our Project No PZ1522D1
Your Sample Ref 43
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 22-May-18

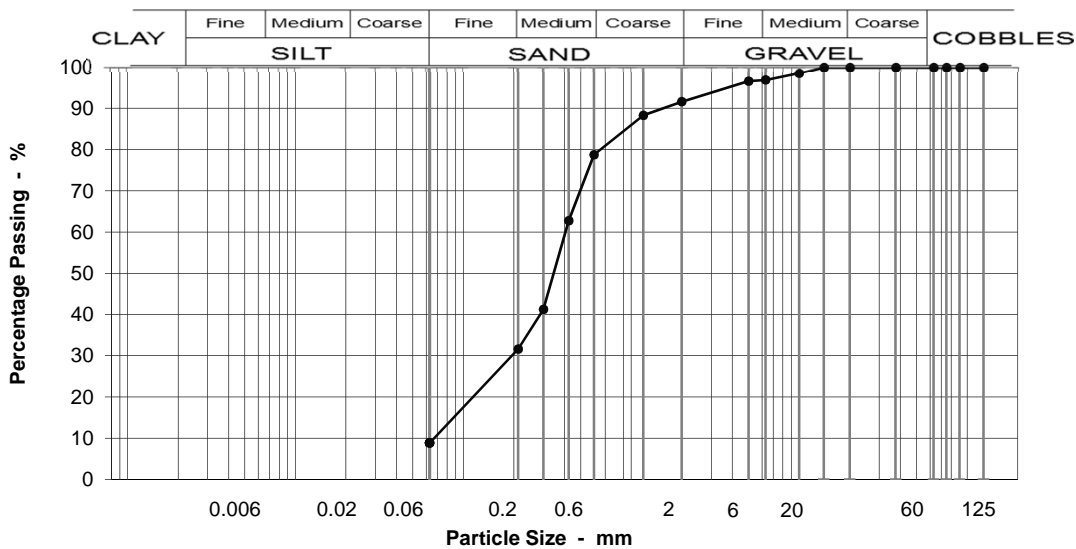
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13 @ 11 - 11.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	99
6.3	97
5	97
2	92
1.18	88
0.600	79
0.425	63
0.300	41
0.212	32
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J, 6K, 6M.

Moisture content % 21

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	3
Fine GRAVEL	5
Coarse SAND	13
Medium SAND	47
Fine SAND	23
Silt & Clay	9

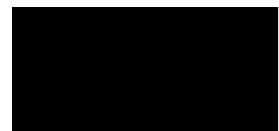
Grading Analysis	
D100	10
D60	0.41
D10	0.07
Uniformity Coefficient	6

Description
Laminated and thinly bedded light grey slightly organic fine medium and coarse SAND, light brown fine and medium SAND. Black organic sandy SILT and light brown silty CLAY.

Test Code = 610



Simon Holden (Project Technician)



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NR1 2DH

Our reference No. **GTS1180306024-610**
Our Project No. PZ1522D1
Your Sample Ref. 44
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 22-May-18

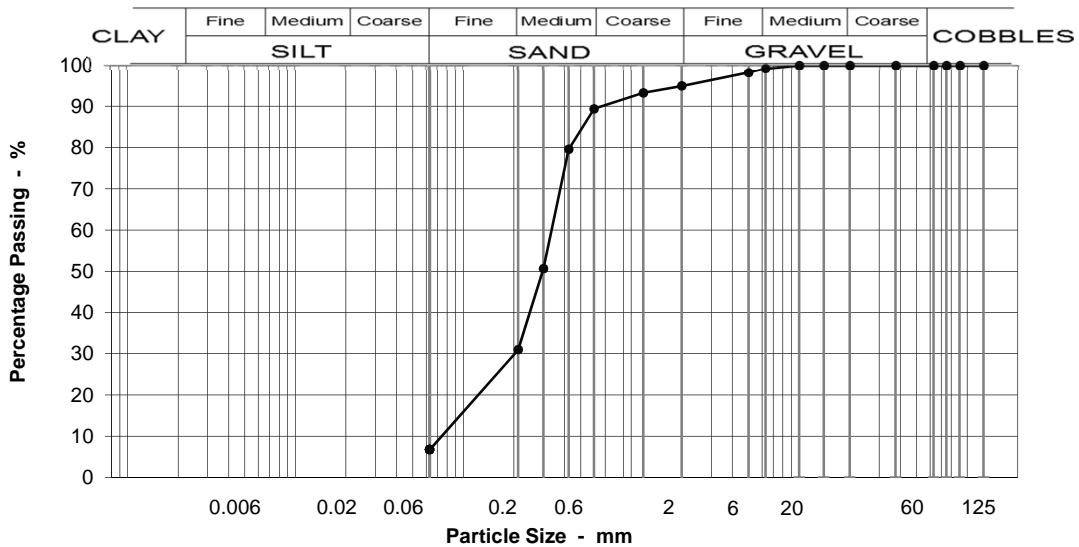
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13 @ 11.7 - 12m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	99
5	98
2	95
1.18	93
0.600	89
0.425	80
0.300	51
0.212	31
0.063	7

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 18

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	1
Fine GRAVEL	4
Coarse SAND	6
Medium SAND	58
Fine SAND	24
Silt & Clay	7

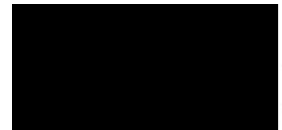
Grading Analysis	
D100	6
D60	0.34
D10	0.08
Uniformity Coefficient	4

Description	
Dark brownish grey slightly organic medium SAND with lenses of brown silty clay.	

Test Code = 610



Simon Holden (Project Technician)



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NR1 2DH

Our reference No. **GTS1180306027-610**
Our Project No. PZ1522D1
Your Sample Ref. 47
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 2-Jul-18

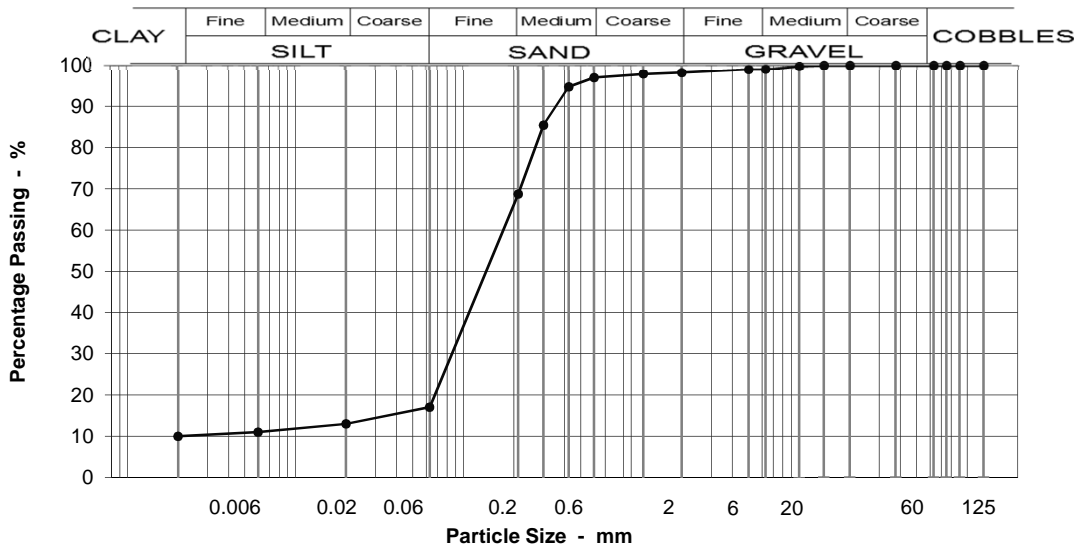
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13 @ 12 - 12.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	99
5	99
2	98
1.18	98
0.600	97
0.425	95
0.300	85
0.212	69
0.063	17
0.020	13
0.006	11
0.002	10

Specification for Highway Works Classification
Table 6/2

Moisture content % 36

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	1
Fine GRAVEL	1
Coarse SAND	1
Medium SAND	28
Fine SAND	52
Silt & Clay	17

Grading Analysis	
D100	10
D60	0.19
D10	0.00
Uniformity Coefficient	>10*

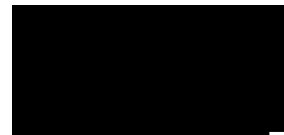
Description
Laminated brown, fine to medium SAND, firm grey and brown silty CLAY, and black sandy SILT.

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS1180307005-610
Our Project No PZ1522D1
Your Sample Ref 52
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 22-May-18

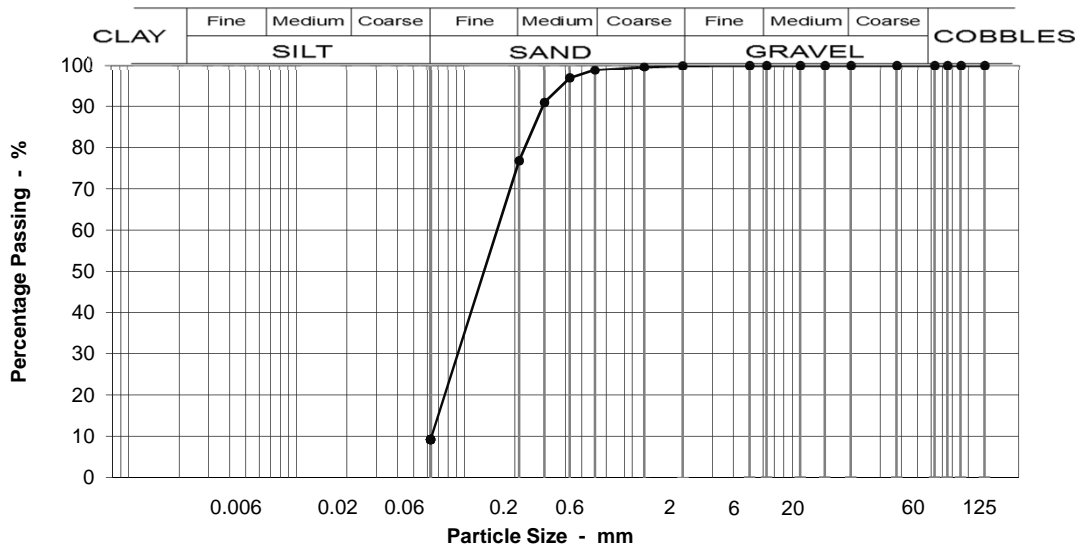
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13 @ 14 - 14.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	100
0.600	99
0.425	97
0.300	91
0.212	77
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	1
Medium SAND	22
Fine SAND	68
Silt & Clay	9

Grading Analysis	
D100	2
D60	0.17
D10	0.06
Uniformity Coefficient	3

Description
Thinly bedded brown and orange brown fine SAND. Laminae of soft brown clay.

Moisture content % 27

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS1180307010-610
Our Project No PZ1522D1
Your Sample Ref 57
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 22-May-18

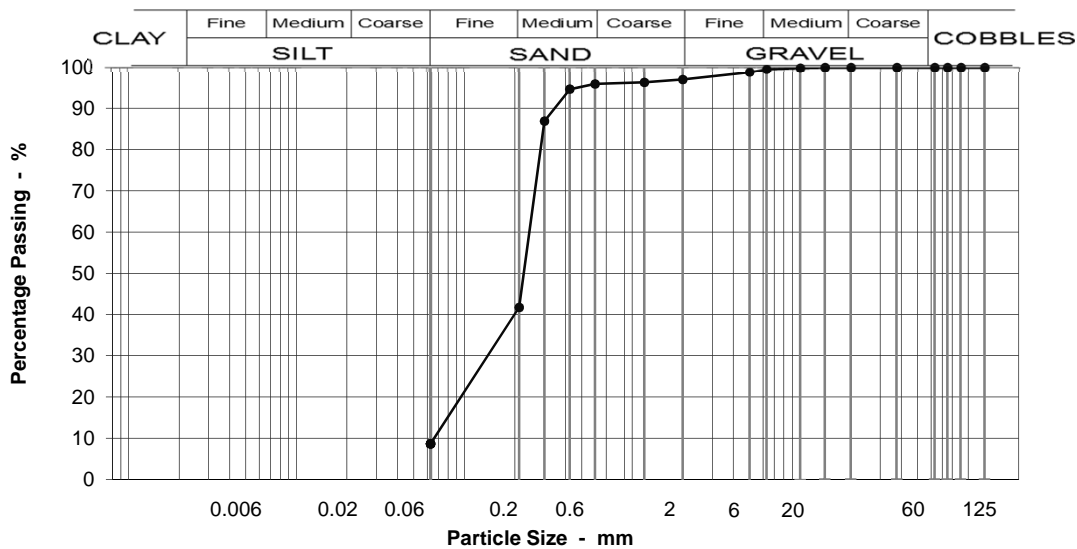
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13 @ 16 - 16.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	99
2	97
1.18	96
0.600	96
0.425	95
0.300	87
0.212	42
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	3
Coarse SAND	1
Medium SAND	54
Fine SAND	33
Silt & Clay	9

Grading Analysis	
D100	10
D60	0.25
D10	0.07
Uniformity Coefficient	4

Description
Laminated and thinly bedded light brown, orangey brown and grey fine and medium SAND, orangey brown medium SAND and soft grey CLAY.

Moisture content % 26

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1180307015-**
Our Project No **PZ1522D1**
Your Sample Ref **62**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

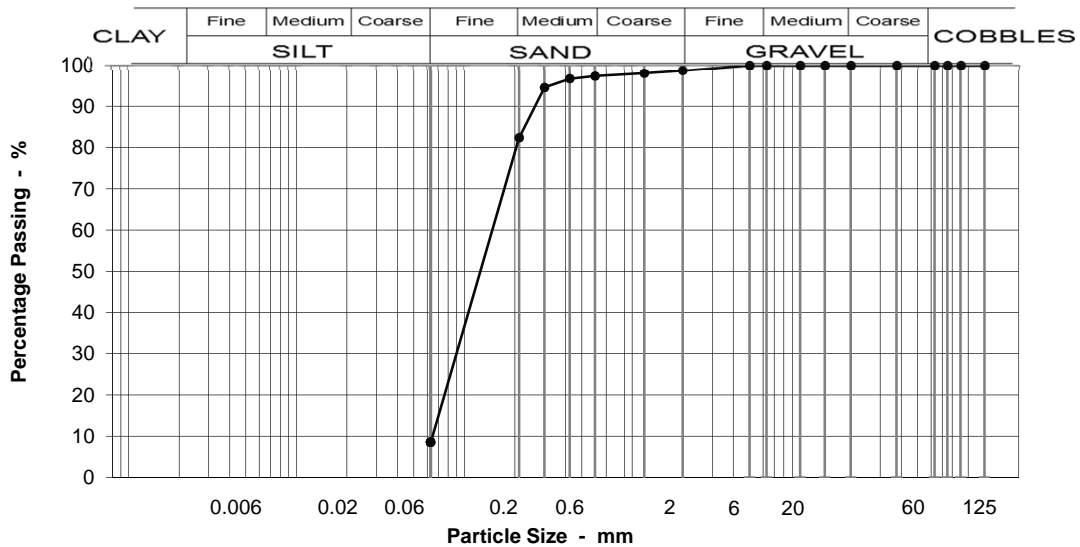
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13 @ 18 - 18.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	98
0.600	97
0.425	97
0.300	95
0.212	82
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 23

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	1
Medium SAND	15
Fine SAND	74
Silt & Clay	9

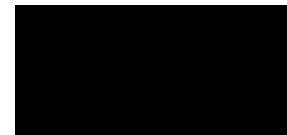
Grading Analysis	
D100	2
D60	0.17
D10	0.07
Uniformity Coefficient	3

Description	
Brown fine and medium SAND.	

Test Code =



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1180307017-610**
Our Project No. PZ1522D1
Your Sample Ref. 64
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 22-May-18

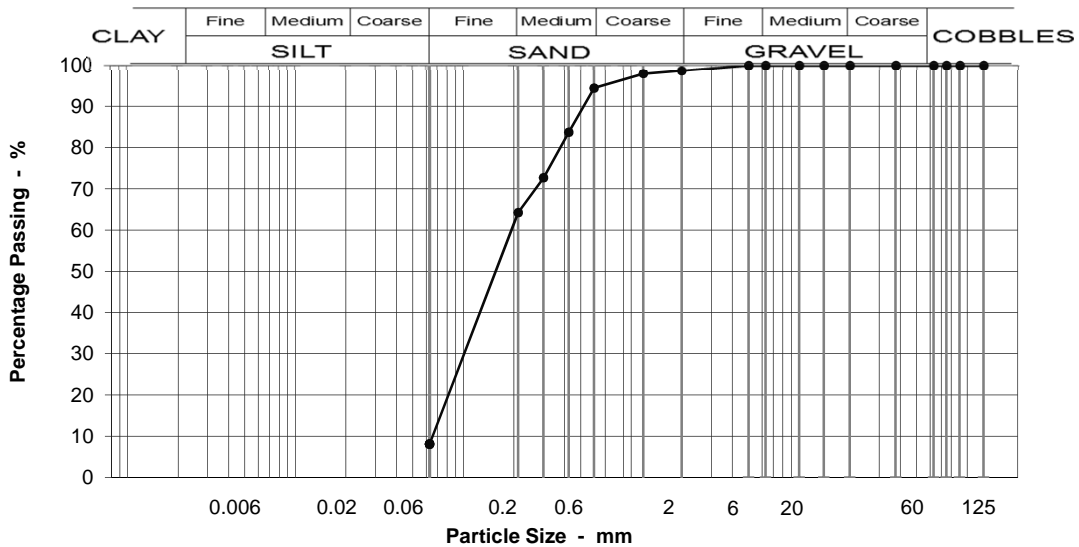
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13 @ 19 - 19.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	98
0.600	94
0.425	84
0.300	73
0.212	64
0.063	8

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 20

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	4
Medium SAND	30
Fine SAND	56
Silt & Clay	8

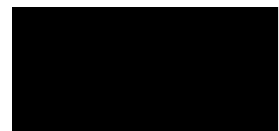
Grading Analysis	
D100	2
D60	0.20
D10	0.07
Uniformity Coefficient	3

Description
Thinly bedded light brown fine and medium SAND and orangey brown silty fine SAND.

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS1180307023-610
Our Project No PZ1522D1
Your Sample Ref 70
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 22-May-18

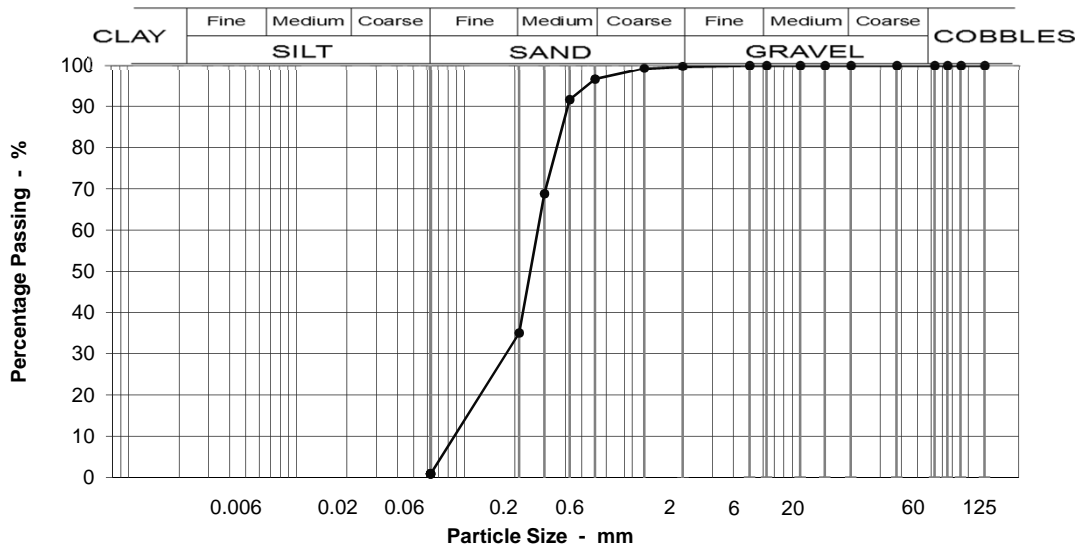
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13 @ 22 - 22.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	99
0.600	97
0.425	92
0.300	69
0.212	35
0.063	1

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 17

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	3
Medium SAND	62
Fine SAND	34
Silt & Clay	1

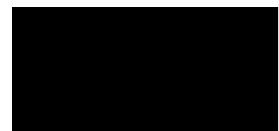
Grading Analysis	
D100	2
D60	0.28
D10	0.10
Uniformity Coefficient	3

Description	
Grey fine and medium SAND, occasional shell fragments.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1180307024-610**
Our Project No. PZ1522D1
Your Sample Ref. 71
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 22-May-18

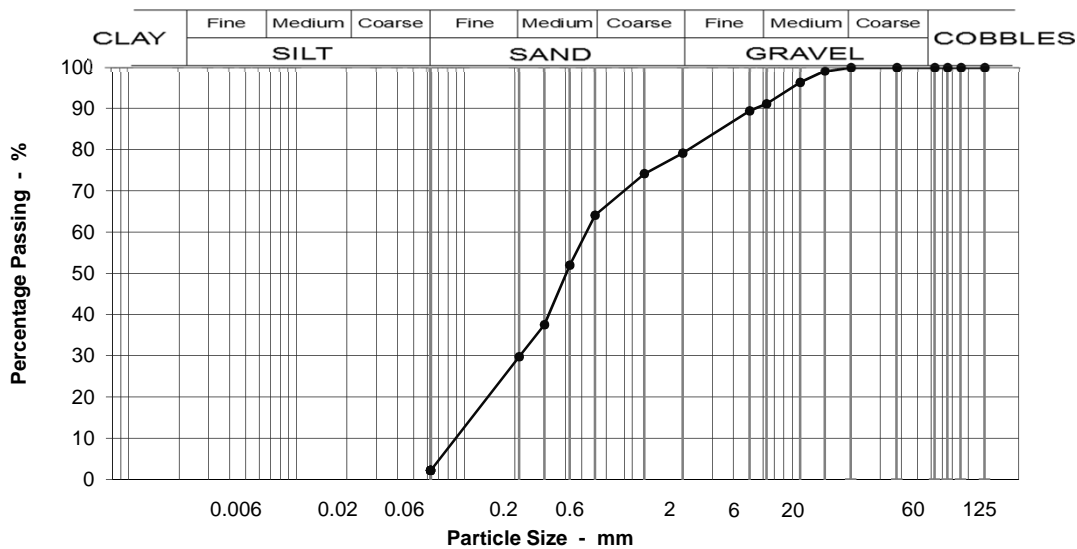
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13 @ 23 - 23.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	99
10	96
6.3	91
5	89
2	79
1.18	74
0.600	64
0.425	52
0.300	38
0.212	30
0.063	2

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J, 6K, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	9
Fine GRAVEL	12
Coarse SAND	15
Medium SAND	34
Fine SAND	28
Silt & Clay	2

Grading Analysis	
D100	14
D60	0.54
D10	0.10
Uniformity Coefficient	5

Description
Grey very gravelly fine and medium SAND, some shell fragments. Gravel is fine and medium rounded flint.

Moisture content % 17

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1180307029-610**
Our Project No. PZ1522D1
Your Sample Ref. 76
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 22-May-18

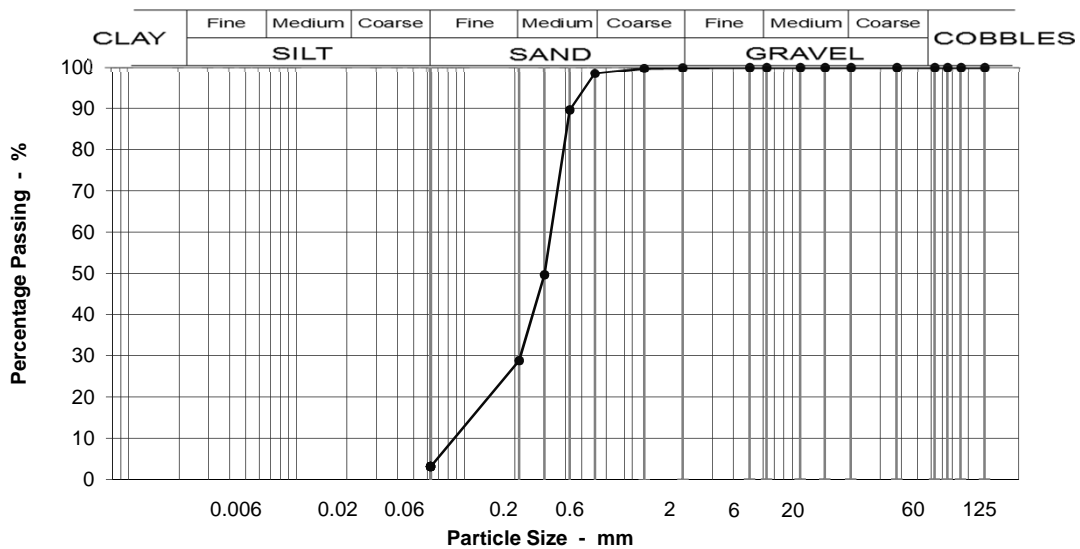
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13 @ 26 - 26.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	100
0.600	99
0.425	90
0.300	50
0.212	29
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 18

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	1
Medium SAND	70
Fine SAND	26
Silt & Clay	3

Grading Analysis	
D100	2
D60	0.33
D10	0.10
Uniformity Coefficient	3

Description
Grey medium SAND.

Test Code = 610



Simon Holden (Project Technician)

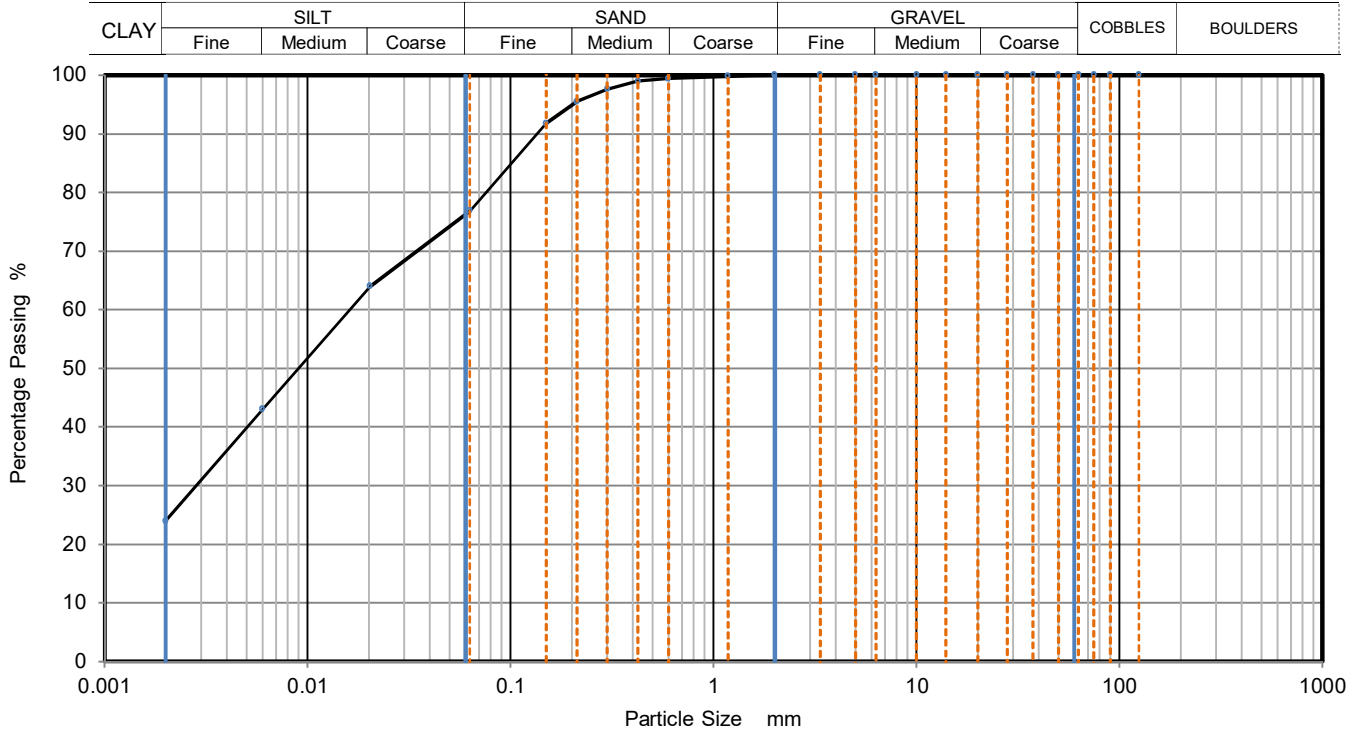




DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH13
Sample Description:	Grey slightly sandy silty CLAY	Sample Depth (m)	28.25
		Sample Reference	D79



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	64
90	100	0.0060	43
75	100	0.0020	24
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99	Particle density (assumed)	
0.425	99	2.65	Mg/m3
0.3	98		
0.212	96		
0.15	92		
0.063	77		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	23
Silt	53
Clay	24

Grading Analysis		
D100	mm	
D60	mm	0.016
D30	mm	0.003
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks	Approved	Date	Sheet No.:
	MW	03/07/2018	1 of 1

Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS1180307036-610
Our Project No PZ1522D1
Your Sample Ref 83
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 25-Jun-18

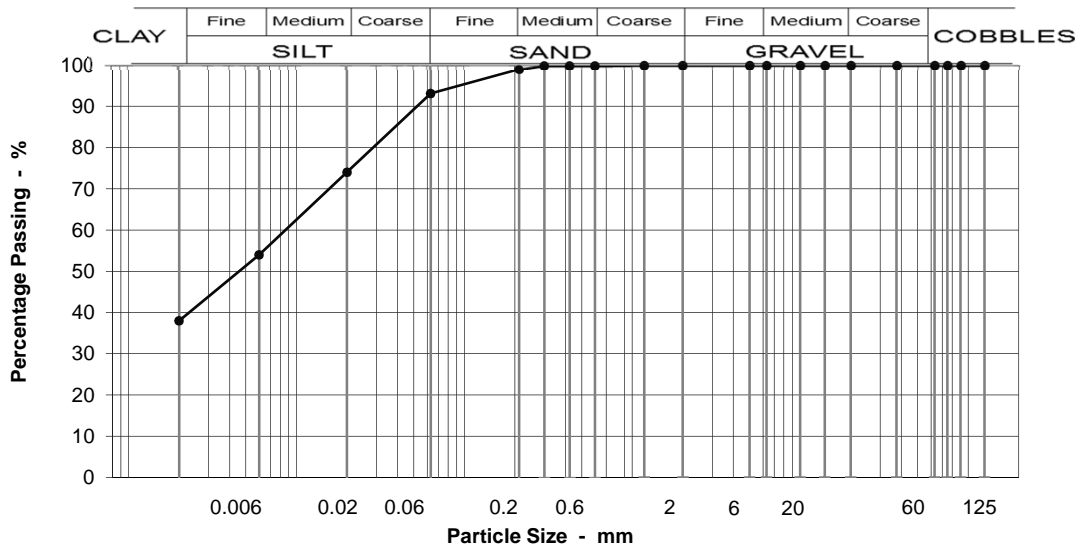
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13 @ 30 - 30.5m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100		BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	0
14	100		Medium SAND	1
10	100		Fine SAND	6
6.3	100		Silt & Clay	93
5	100			
2	100			
1.18	100			
0.600	100			
0.425	100			
0.300	100			
0.212	99			
0.063	93			
0.020	74			
0.006	54			
0.002	38			
		Moisture content %		0

Grading Analysis	
D100	1
D60	0.01
D10	0.00
Uniformity Coefficient	>10*

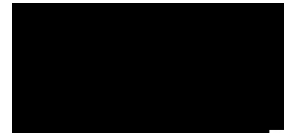
Description	
Thinly bedded stiff grey silty CLAY with laminae of silty fine SAND.	

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1180308001-610**
Our Project No. PZ1522D1
Your Sample Ref. 84
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 2-Jul-18

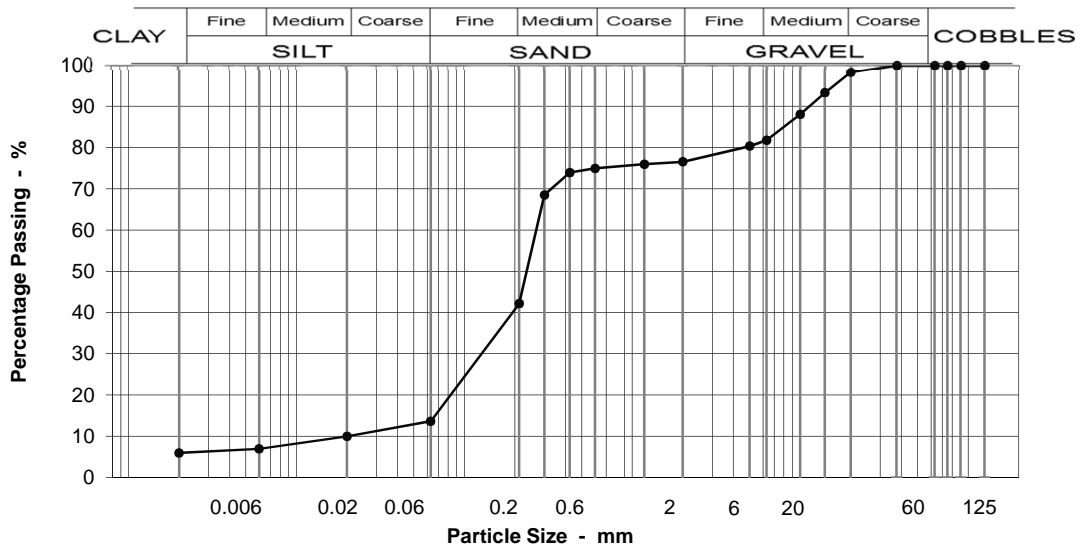
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13 @ 30.8 - 31.3m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample

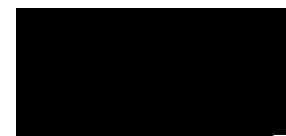


Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	2
63	100		Medium GRAVEL	17
37.5	100		Fine GRAVEL	5
20	98		Coarse SAND	2
14	93		Medium SAND	33
10	88		Fine SAND	28
6.3	82		Silt & Clay	14
5	80		Grading Analysis	
2	77		D100	20
1.18	76		D60	0.27
0.600	75		D10	0.07
0.425	74		Uniformity Coefficient	4
0.300	69		Description	
0.212	42	Thinly bedded very gravelly silty fine and medium SAND. Gravel is medium rounded flint with laminae of stiff grey silty clay. Some shell fragments.		
0.063	14			
0.020	10			
0.006	7			
0.002	6			
Moisture content %		21		

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1180308003-610**
Our Project No. PZ1522D1
Your Sample Ref. 86
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 25-Jun-18

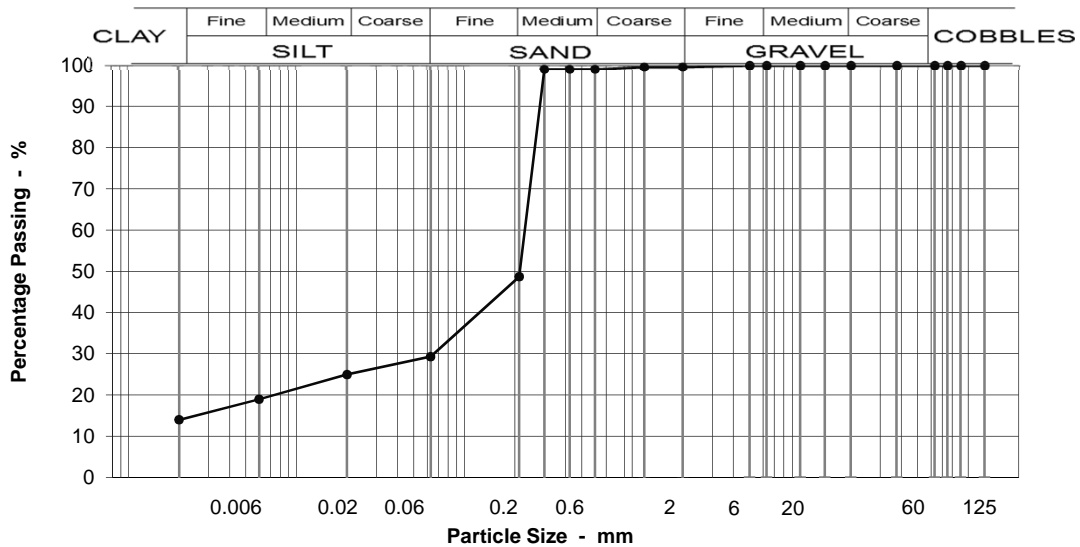
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13 @ 32 - 32.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	100
0.600	99
0.425	99
0.300	99
0.212	49
0.063	29
0.020	25
0.006	19
0.002	14

Specification for Highway Works Classification
Table 6/2

Moisture content % 0

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	1
Medium SAND	50
Fine SAND	19
Silt & Clay	29

Grading Analysis	
D100	2
D60	0.23
D10	0.00
Uniformity Coefficient	>10*

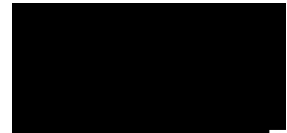
Description	
Laminated and thinly bedded light grey medium SAND and firm grey silty CLAY.	

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1180308004-610**
Our Project No. **PZ1522D1**
Your Sample Ref **87**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **2-Jul-18**

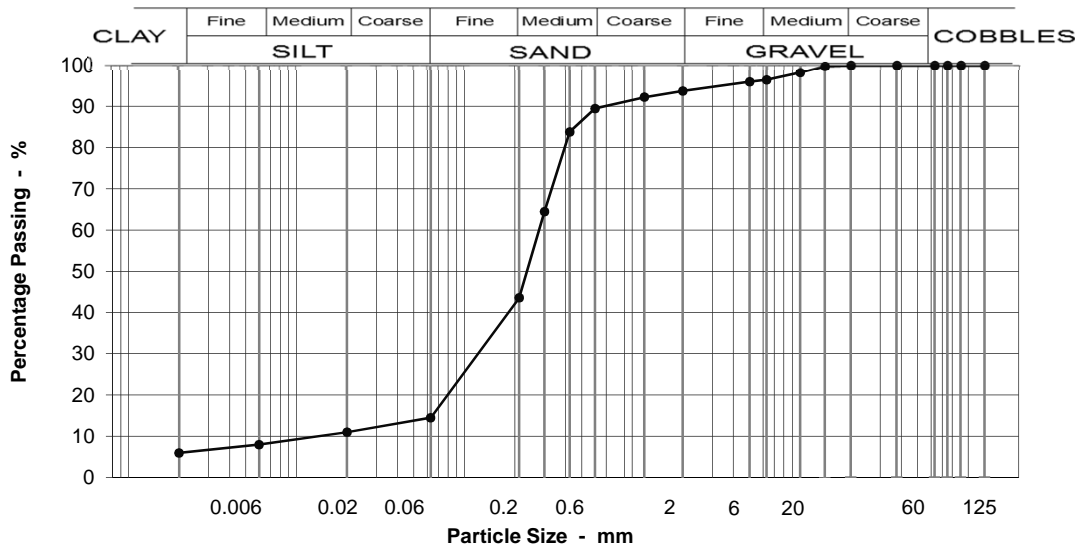
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13 @ 33 - 33.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample

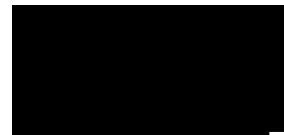


Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	4
37.5	100		Fine GRAVEL	3
20	100		Coarse SAND	4
14	100		Medium SAND	46
10	98		Fine SAND	29
6.3	96		Silt & Clay	15
5	96		Grading Analysis	
2	94		D100	14
1.18	92		D60	0.28
0.600	89		D10	0.06
0.425	84		Uniformity Coefficient	4
0.300	64		Description	
0.212	44	Greyish brown slightly clayey slightly silty fine and medium SAND with occasional shell fragments.		
0.063	15			
0.020	11			
0.006	8			
0.002	6	Moisture content %	23	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1180308006-610**
Our Project No. PZ1522D1
Your Sample Ref. 89
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 22-May-18

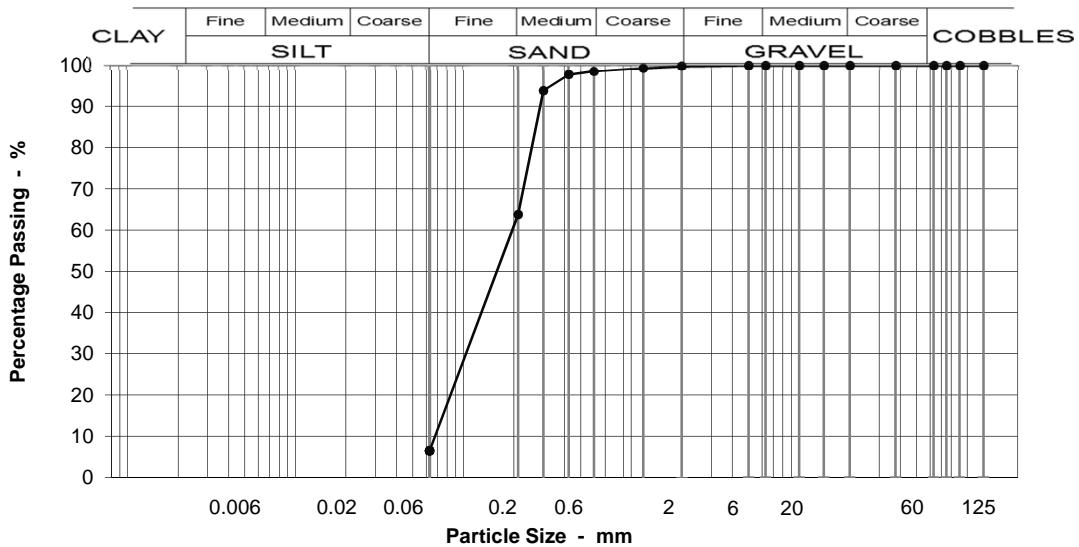
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13 @ 34 - 34.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	99
0.600	99
0.425	98
0.300	94
0.212	64
0.063	7

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 25

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	1
Medium SAND	35
Fine SAND	57
Silt & Clay	7

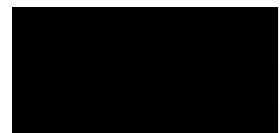
Grading Analysis	
D100	2
D60	0.20
D10	0.07
Uniformity Coefficient	3

Description	
Grey slightly silty fine and medium SAND with laminae of soft grey silty clay.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS1180308011-610
Our Project No PZ1522D1
Your Sample Ref 93
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 22-May-18

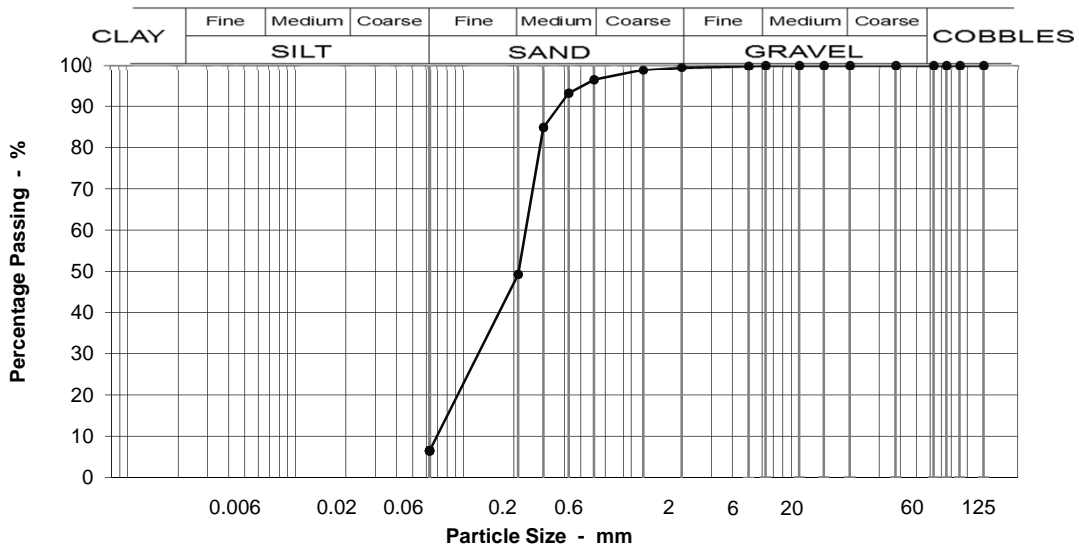
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13 @ 37 - 37.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	99
0.600	96
0.425	93
0.300	85
0.212	49
0.063	7

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 23

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	3
Medium SAND	47
Fine SAND	43
Silt & Clay	7

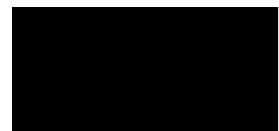
Grading Analysis	
D100	5
D60	0.24
D10	0.08
Uniformity Coefficient	3

Description	
Grey slightly silty fine and medium SAND. Occasional shell fragments.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1180308013-610**
Our Project No. PZ1522D1
Your Sample Ref. 95
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 22-May-18

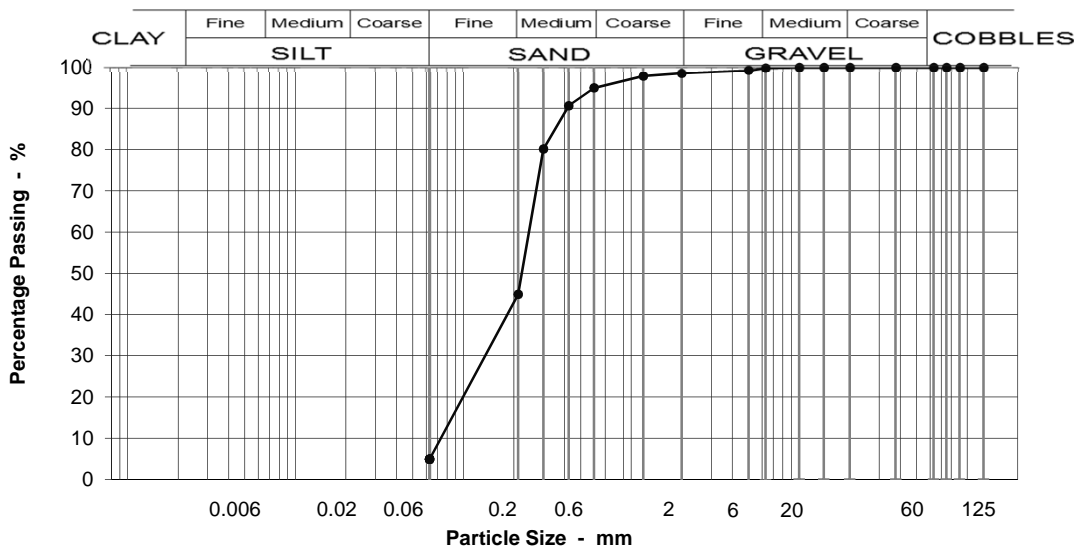
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13 @ 38 - 38.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	99
2	99
1.18	98
0.600	95
0.425	91
0.300	80
0.212	45
0.063	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 22

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	4
Medium SAND	50
Fine SAND	40
Silt & Clay	5

Grading Analysis	
D100	6
D60	0.25
D10	0.08
Uniformity Coefficient	3

Description
Grey slightly silty fine and medium SAND.
Occasional shell fragments.

Test Code = 610



Simon Holden (Project Technician)



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County Hall
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NR1 2DH

Our reference No. **GTS1180308014-**
Our Project No **PZ1522D1**
Your Sample Ref **96**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

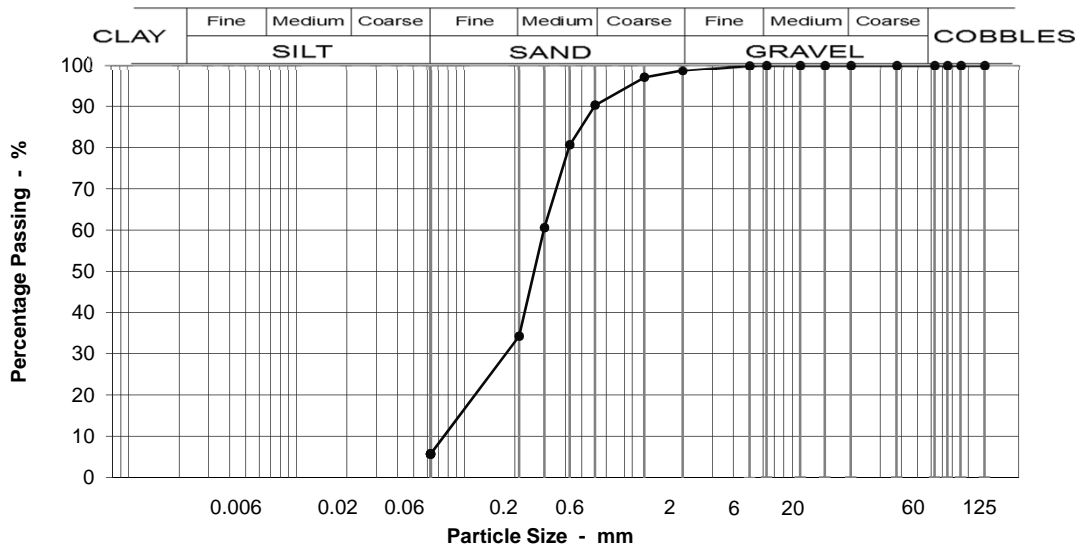
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13 @ 39 - 39.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	97
0.600	90
0.425	81
0.300	61
0.212	34
0.063	6

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 22

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	8
Medium SAND	56
Fine SAND	29
Silt & Clay	6

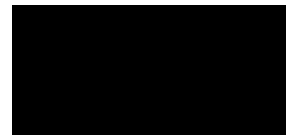
Grading Analysis	
D100	5
D60	0.30
D10	0.09
Uniformity Coefficient	3

Description	
Grey medium SAND with some shell fragments.	

Test Code =



Simon Holden (Project Technician)



Community & Environmental Services
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Norfolk
NR1 2DH

Our reference No. GTS1180309005-610
Our Project No PZ1522D1
Your Sample Ref 102
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 22-May-18

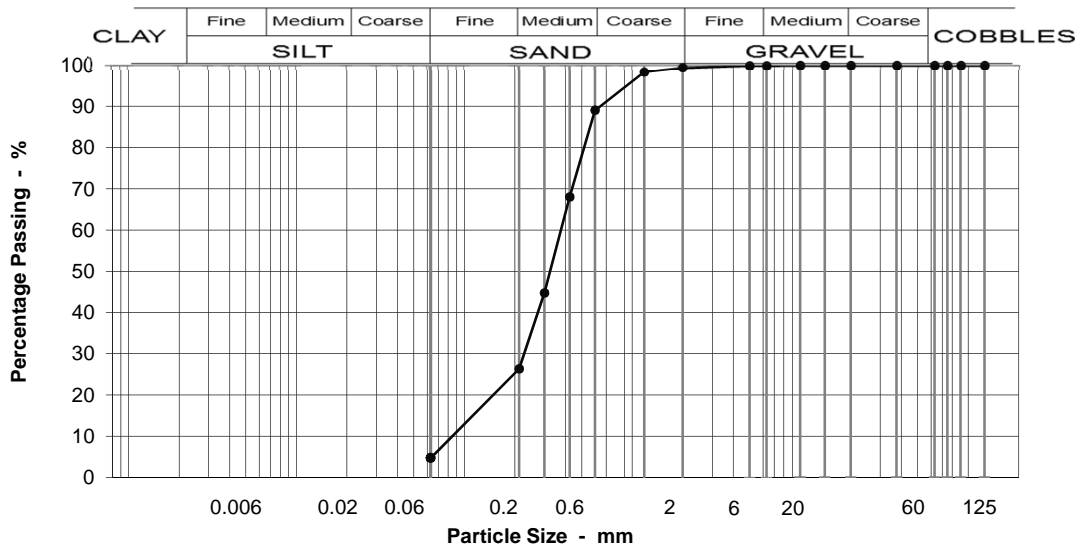
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13 @ 43 - 43.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	98
0.600	89
0.425	68
0.300	45
0.212	26
0.063	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 21

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	10
Medium SAND	63
Fine SAND	22
Silt & Clay	5

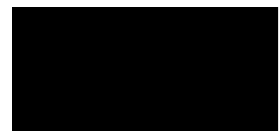
Grading Analysis	
D100	6
D60	0.38
D10	0.10
Uniformity Coefficient	4

Description	
Grey medium SAND with some shell fragments.	

Test Code = 610



Simon Holden (Project Technician)

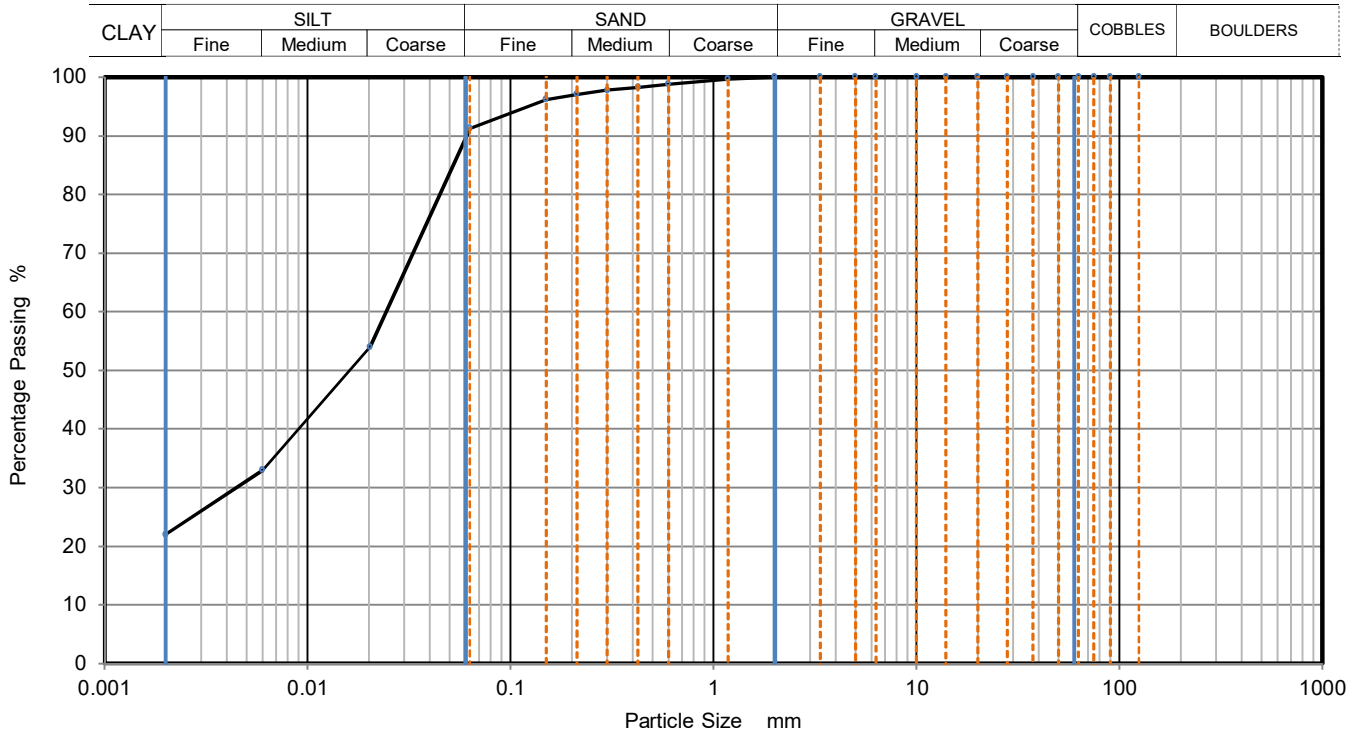




DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH13
Sample Description:	Grey brown and blue grey slightly sandy very silty CLAY	Sample Depth (m)	44.80
		Sample Reference	B105



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	54
90	100	0.0060	33
75	100	0.0020	22
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	98		
0.3	98		
0.212	97		
0.15	96		
0.063	91		
		Particle density (assumed) 2.65 Mg/m ³	

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	9
Silt	69
Clay	22

Grading Analysis		
D100	mm	
D60	mm	0.024
D30	mm	0.004
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks	Approved	Date	Sheet No.:
	MW	03/07/2018	1 of 1

Community & Environmental Services
County Hall
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Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1180309012-610**
Our Project No. PZ1522D1
Your Sample Ref. 109
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 25-Jun-18

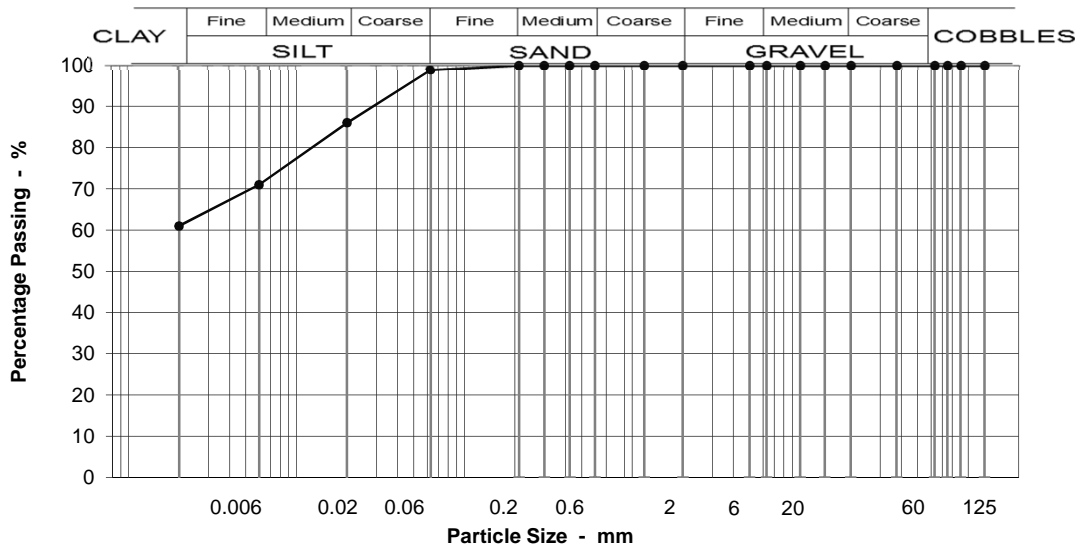
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13 @ 45.5 - 46m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100		BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	0
14	100		Medium SAND	0
10	100		Fine SAND	1
6.3	100		Silt & Clay	99
5	100			
2	100			
1.18	100			
0.600	100			
0.425	100			
0.300	100			
0.212	100			
0.063	99			
0.020	86			
0.006	71			
0.002	61			
		Moisture content %		0

Grading Analysis	
D100	0
D60	0.00
D10	0.00
Uniformity Coefficient	>10*

Description	
Very stiff laminated brown very silty CLAY.	

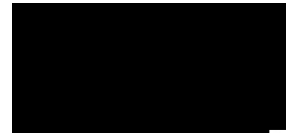
* Uniformity coefficient extrapolated

Test Code = 610



0920

Not approved



Community & Environmental Services
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Our reference No. **GTS1180309021-610**
Our Project No. **PZ1522D1**
Your Sample Ref. **118**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **25-Jun-18**

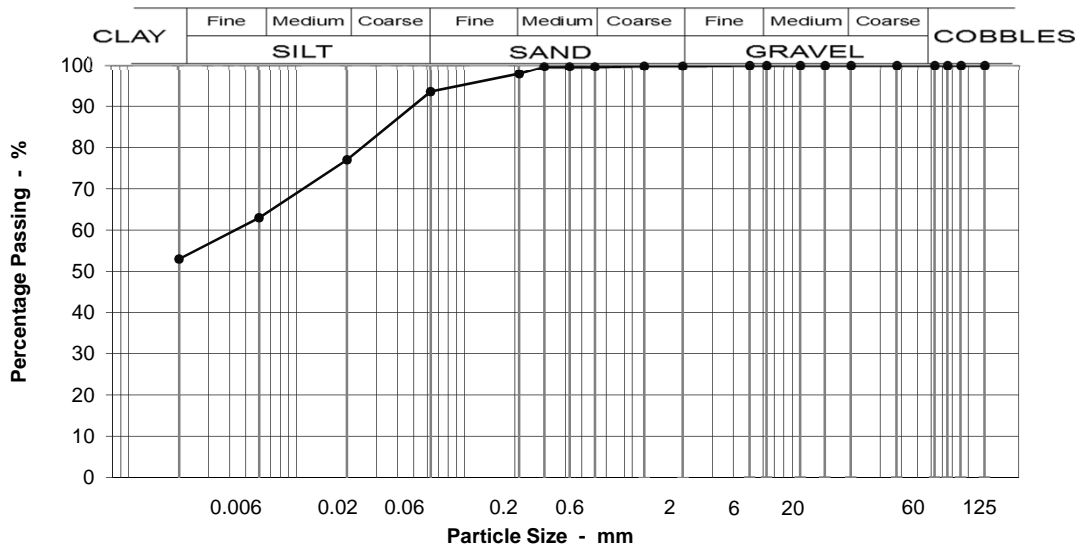
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13 @ 49.5 - 50m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100		BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	0
14	100		Medium SAND	2
10	100		Fine SAND	4
6.3	100		Silt & Clay	94
5	100			
2	100			
1.18	100			
0.600	100			
0.425	100			
0.300	100			
0.212	98			
0.063	94			
0.020	77			
0.006	63			
0.002	53			
		Moisture content %		0

Grading Analysis	
D100	2
D60	0.00
D10	0.00
Uniformity Coefficient	>10*

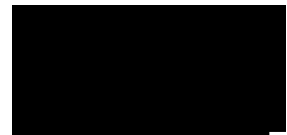
Description	
Very stiff laminated brownish grey very silty CLAY.	

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS1180315003-610
Our Project No PZ1522D1
Your Sample Ref 3
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 14-Jun-18

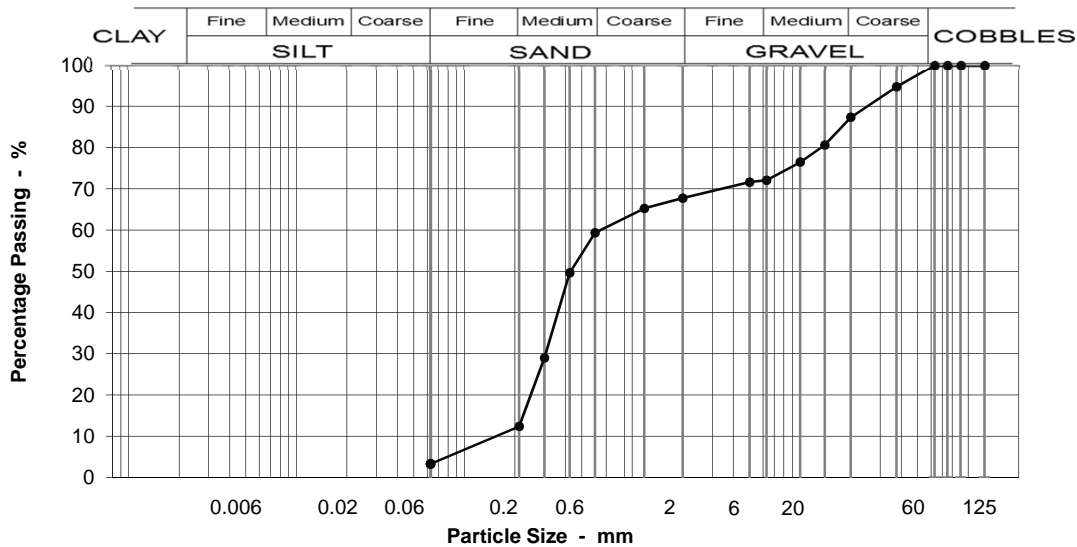
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13A @ 0.6 - 0.9m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	95
20	87
14	81
10	76
6.3	72
5	72
2	68
1.18	65
0.600	59
0.425	50
0.300	29
0.212	12
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 7.4

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	13
Medium GRAVEL	15
Fine GRAVEL	4
Coarse SAND	8
Medium SAND	47
Fine SAND	9
Silt & Clay	3

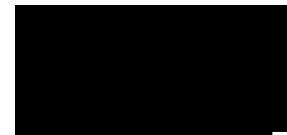
Grading Analysis	
D100	38
D60	0.66
D10	0.17
Uniformity Coefficient	4

Description
Brown very gravelly medium SAND. Gravel is medium and coarse angular to rounded concrete, flint, quartz and quartzite.

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS1180315007-610
Our Project No PZ1522D1
Your Sample Ref 7
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 14-Jun-18

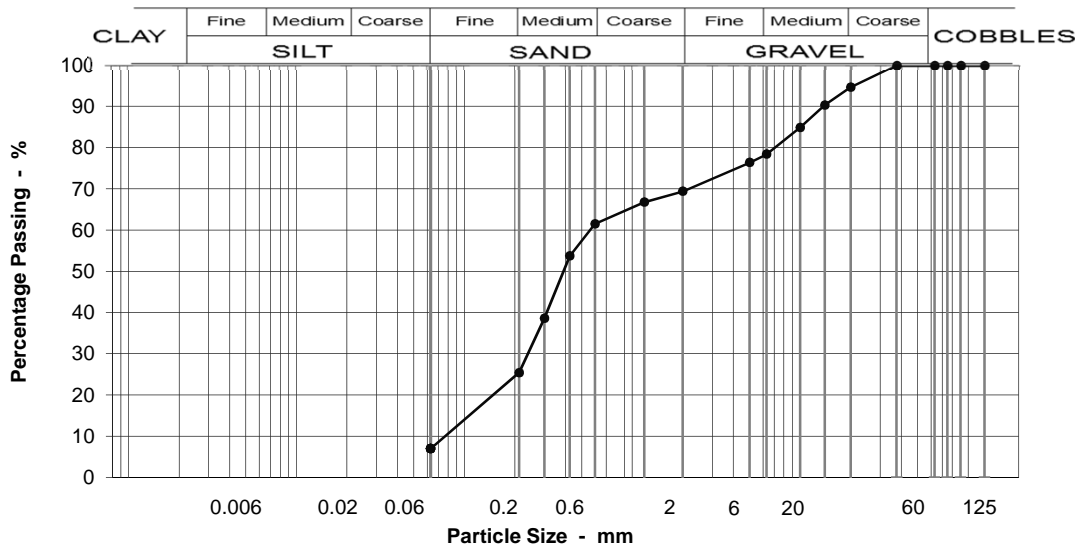
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13A @ 1.2 - 1.7m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	95
14	90
10	85
6.3	78
5	76
2	69
1.18	67
0.600	62
0.425	54
0.300	39
0.212	25
0.063	7

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J, 6M.

Moisture content % 14

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	5
Medium GRAVEL	16
Fine GRAVEL	9
Coarse SAND	8
Medium SAND	36
Fine SAND	18
Silt & Clay	7

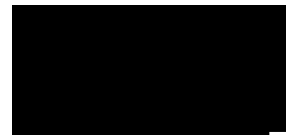
Grading Analysis	
D100	20
D60	0.57
D10	0.09
Uniformity Coefficient	6

Description
Brown very gravelly slightly silty fine and medium SAND. Gravel is fine and medium angular to rounded flint and quartz.

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1180315010-610**
Our Project No. **PZ1522D1**
Your Sample Ref **10**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **4-Jul-18**

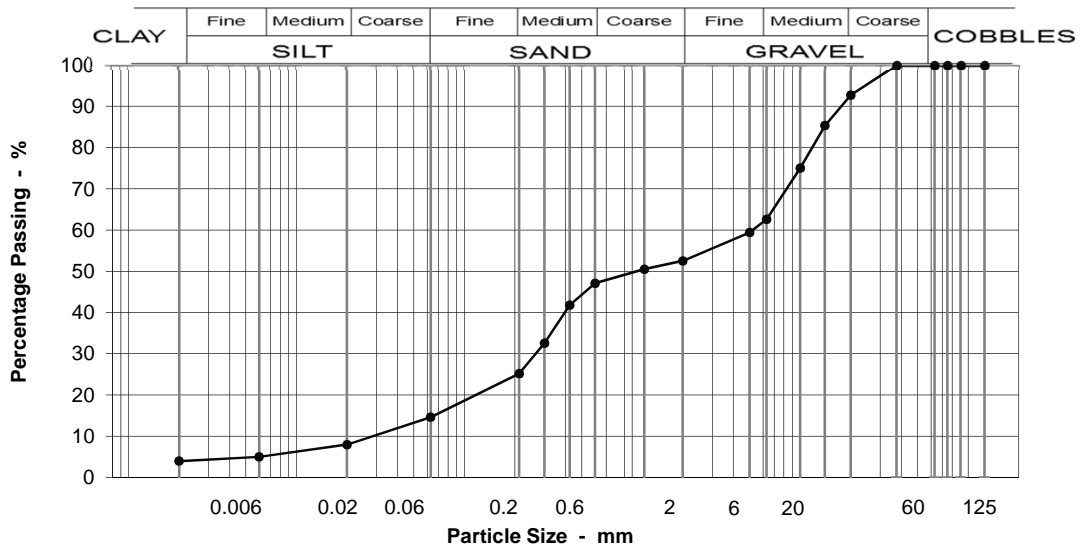
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13A @ 2 - 2.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	93
14	85
10	75
6.3	63
5	59
2	52
1.18	51
0.600	47
0.425	42
0.300	33
0.212	25
0.063	15
0.020	8
0.006	5
0.002	4

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6E/6R, 6F1, 6I, 6N.

Moisture content % 16

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	7
Medium GRAVEL	30
Fine GRAVEL	10
Coarse SAND	5
Medium SAND	22
Fine SAND	11
Silt & Clay	15

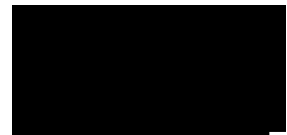
Grading Analysis	
D100	20
D60	5.23
D10	0.11
Uniformity Coefficient	49

Description	
Brown silty medium angular to rounded flint and quartz GRAVEL and fine to medium SAND.	

Test Code = 610



Simon Holden (Project Technician)

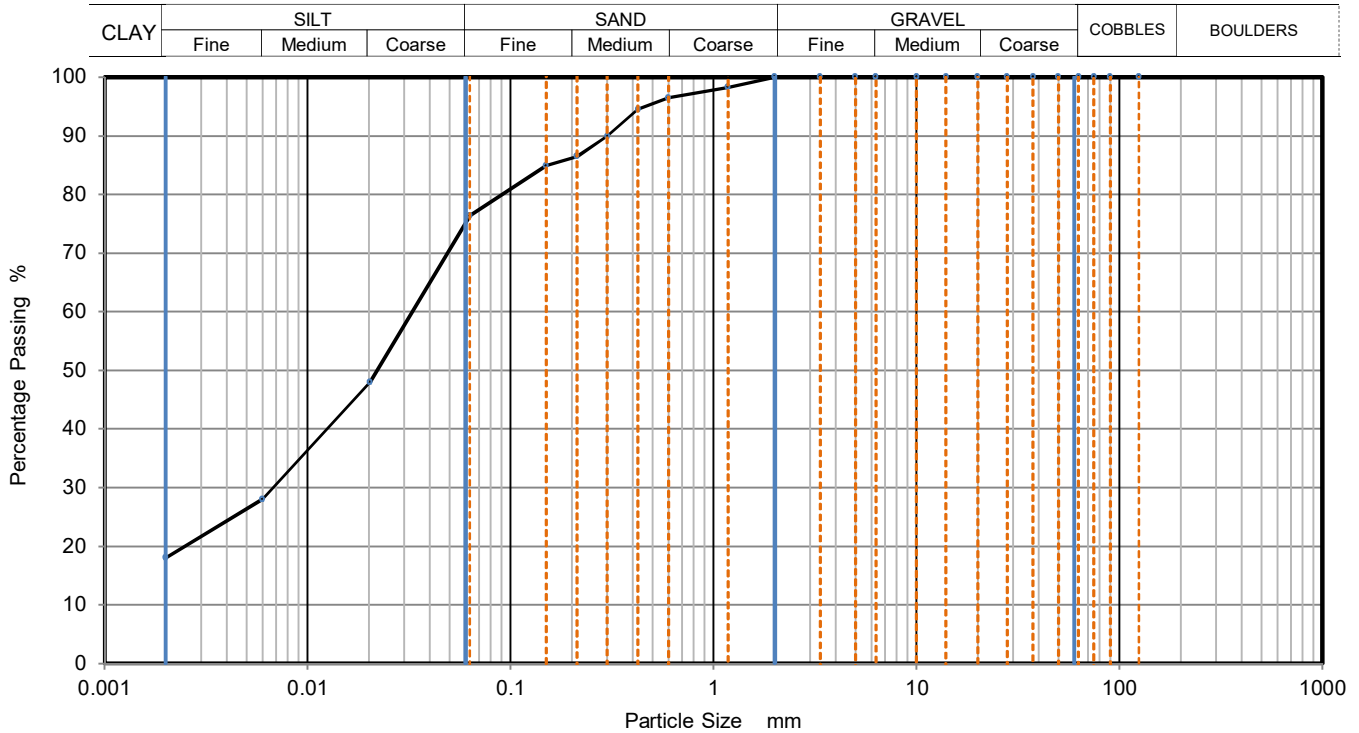




DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH13A
Sample Description:	Brown and dark grey slightly sandy silty CLAY	Sample Depth (m)	2.70
		Sample Reference	D11



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	48
90	100	0.0060	28
75	100	0.0020	18
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	98		
0.6	97		
0.425	95	Particle density (assumed) 2.65 Mg/m ³	
0.3	90		
0.212	87		
0.15	85		
0.063	76		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	24
Silt	59
Clay	18

Grading Analysis		
D100	mm	
D60	mm	0.033
D30	mm	0.007
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

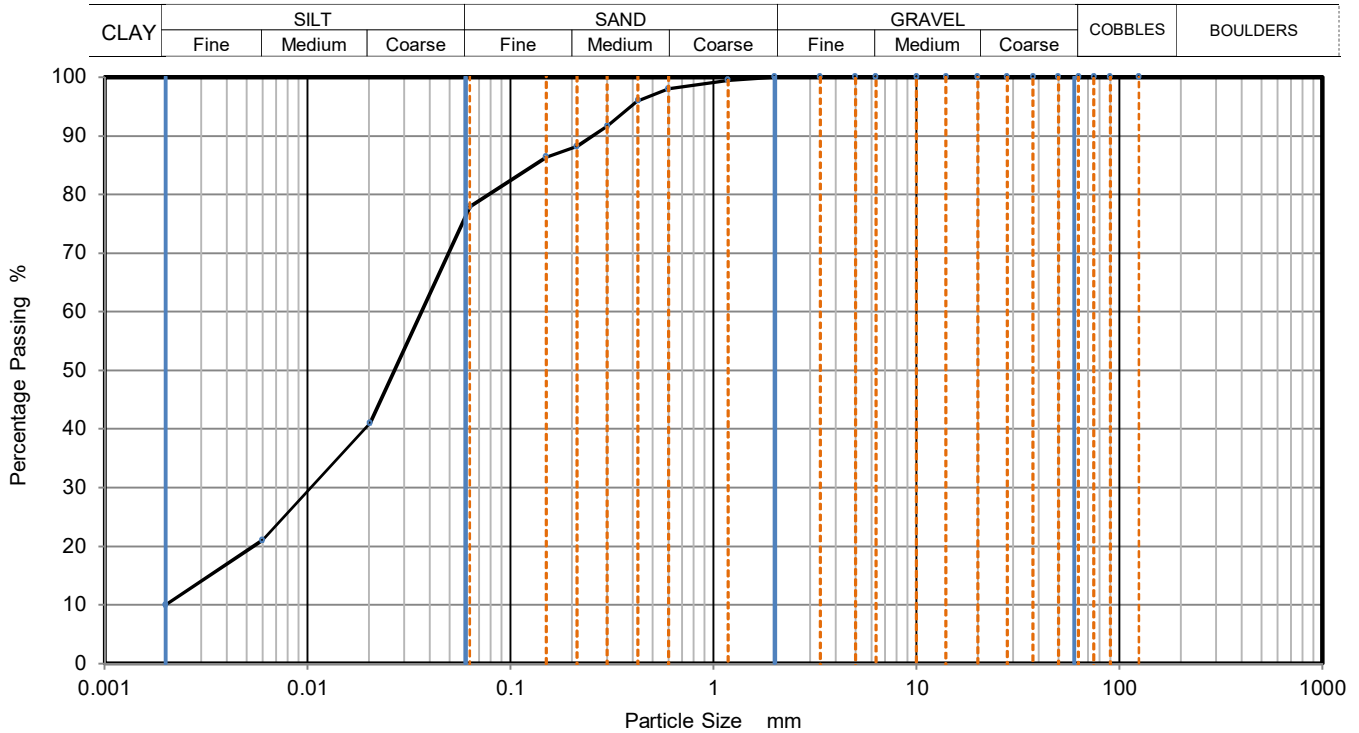
Remarks	Approved	Date	Sheet No.:
	MW	03/07/2018	1 of 1



DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH13A
Sample Description:	Brown and dark grey slightly sandy clayey SILT	Sample Depth (m)	4.60
		Sample Reference	B19



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	41
90	100	0.0060	21
75	100	0.0020	10
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	98	Particle density (assumed)	
0.425	96	2.65	Mg/m3
0.3	92		
0.212	88		
0.15	86		
0.063	78		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	22
Silt	68
Clay	10

Grading Analysis		
D100	mm	
D60	mm	0.037
D30	mm	0.011
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks	Approved	Date	Sheet No.:
	MW	03/07/2018	1 of 1

Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL2018040521-610**
Our Project No. PZ1522D1
Your Sample Ref. 22
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 14-Jun-18

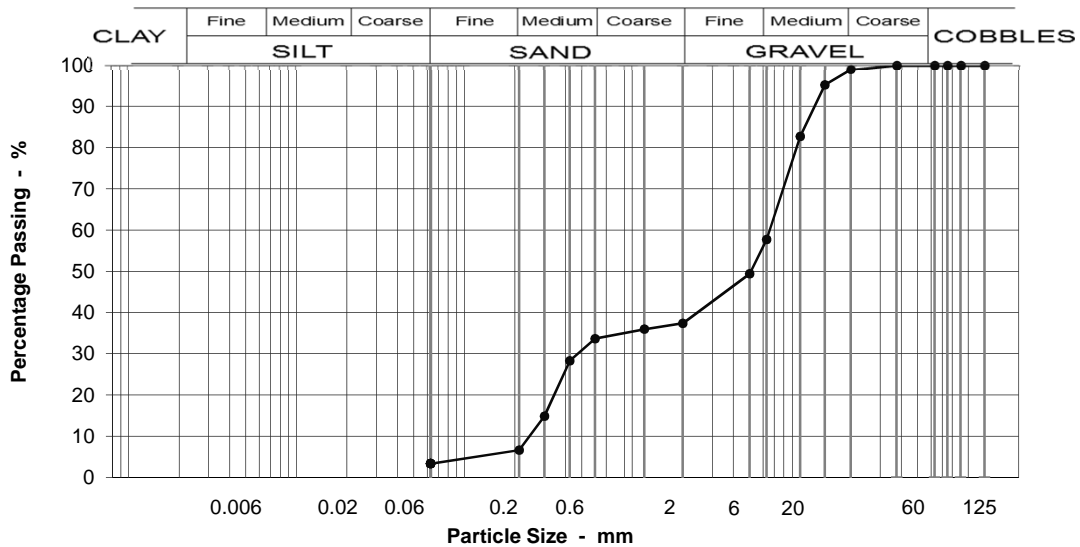
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13A @ 5 - 5.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample

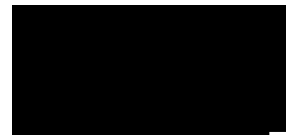


Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	<p>This material complies with the following material classes 1A, 6A, 6E/6R, 6F1, 6I, 6M, 6N.</p>	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	1
63	100		Medium GRAVEL	41
37.5	100		Fine GRAVEL	20
20	99		Coarse SAND	4
14	95		Medium SAND	27
10	83		Fine SAND	3
6.3	58		Silt & Clay	3
5	49		Grading Analysis	
2	37		D100	20
1.18	36		D60	6.64
0.600	34		D10	0.25
0.425	28		Uniformity Coefficient	27
0.300	15	Description		
0.212	7	Greyish brown very sandy fine and medium subangular to subrounded flint and quartz GRAVEL.		
0.063	3	Moisture content % 6.8		

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1180316003-610**
Our Project No. PZ1522D1
Your Sample Ref. 25
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 14-Jun-18

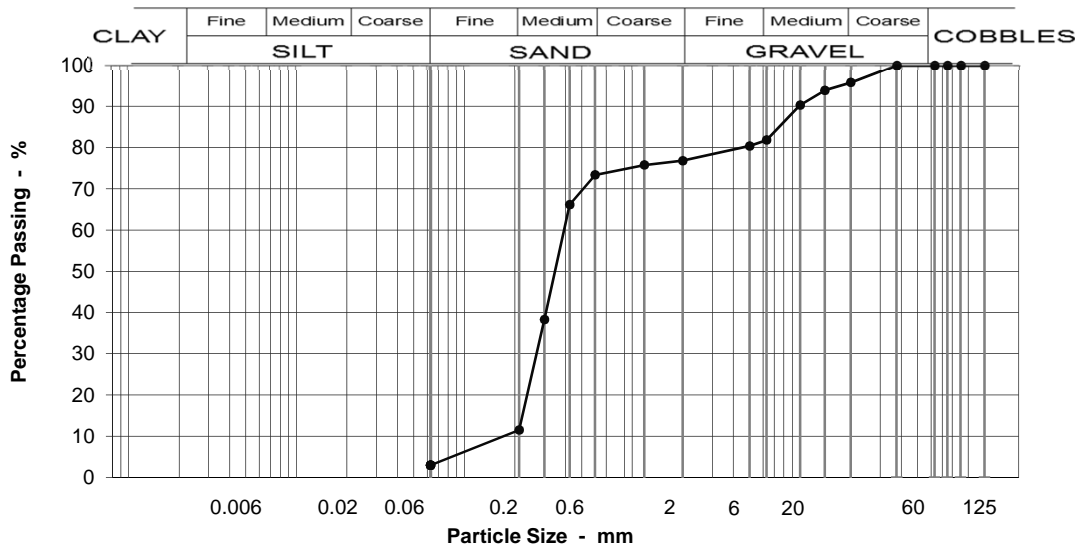
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13A @ 6 - 6.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	96
14	94
10	90
6.3	82
5	80
2	77
1.18	76
0.600	73
0.425	66
0.300	38
0.212	12
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	4
Medium GRAVEL	14
Fine GRAVEL	5
Coarse SAND	3
Medium SAND	62
Fine SAND	9
Silt & Clay	3

Grading Analysis	
D100	20
D60	0.40
D10	0.19
Uniformity Coefficient	2

Description
Brown slightly organic very gravelly medium SAND. Gravel is medium angular to rounded flint and quartz. Some shell fragments.

Moisture content % 17

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS1180316007-610
Our Project No PZ1522D1
Your Sample Ref 29
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 14-Jun-18

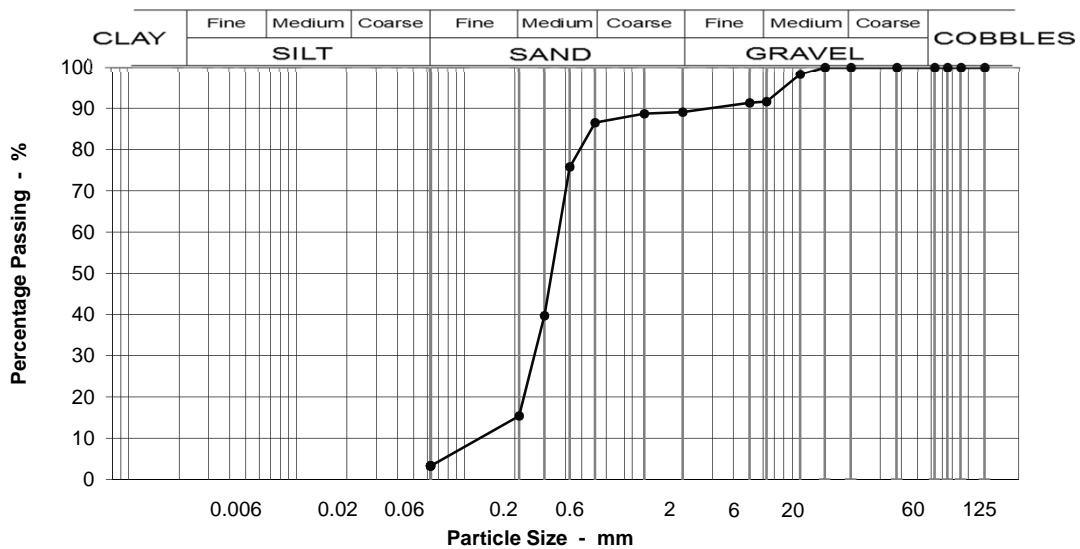
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13A @ 7 - 7.5m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	98
6.3	92
5	91
2	89
1.18	89
0.600	87
0.425	76
0.300	40
0.212	15
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 17

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	8
Fine GRAVEL	3
Coarse SAND	3
Medium SAND	71
Fine SAND	12
Silt & Clay	3

Grading Analysis	
D100	10
D60	0.37
D10	0.15
Uniformity Coefficient	3

Description
Brown slightly organic gravelly medium SAND. Gravel is fine and medium subangular to angular flint.

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1180316013-610**
Our Project No. **PZ1522D1**
Your Sample Ref **35**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **14-Jun-18**

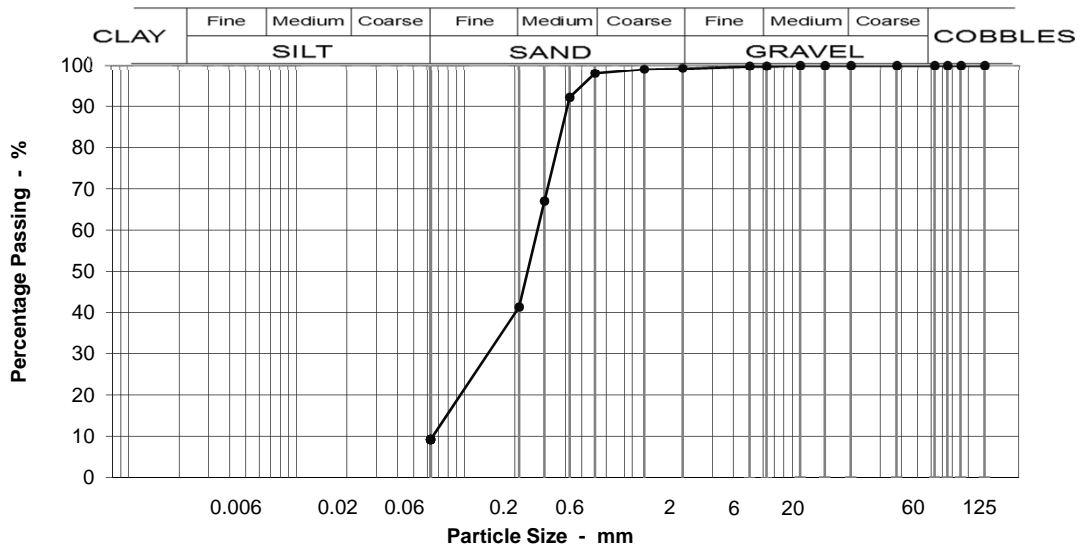
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13A @ 9 - 9.5m Specimen: 2

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	99
0.600	98
0.425	92
0.300	67
0.212	41
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 19

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	1
Medium SAND	57
Fine SAND	32
Silt & Clay	9

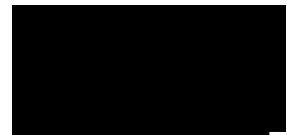
Grading Analysis	
D100	6
D60	0.28
D10	0.07
Uniformity Coefficient	4

Description	
Brown slightly organic fine and medium SAND with laminae of dark grey silty clay and black clayey silt.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS1180316016-610
Our Project No PZ1522D1
Your Sample Ref 38
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 14-Jun-18

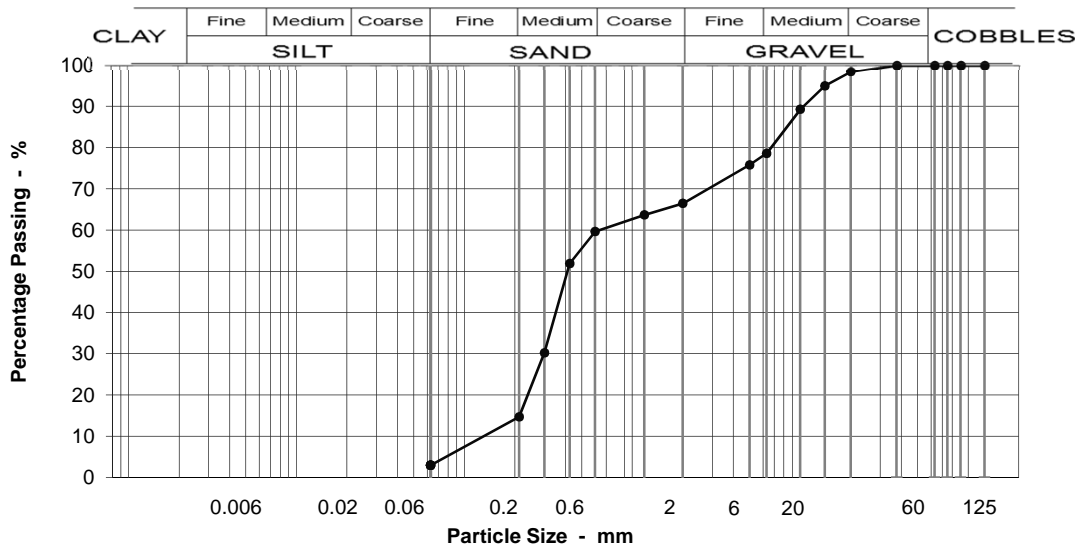
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13A @ 10 - 10.5m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



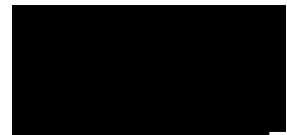
Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R, 6M.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	2
63	100		Medium GRAVEL	20
37.5	100		Fine GRAVEL	12
20	98		Coarse SAND	7
14	95		Medium SAND	45
10	89		Fine SAND	12
6.3	79		Silt & Clay	3
5	76		Grading Analysis	
2	66		D100	20
1.18	64		D60	0.65
0.600	60		D10	0.15
0.425	52		Uniformity Coefficient	4
0.300	30		Description	
0.212	15	Brown very gravelly medium SAND. Gravel is fine and medium angular to rounded flint and quartz.		
0.063	3			

Moisture content % 14

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1180316018-610**
Our Project No. PZ1522D1
Your Sample Ref. 40
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 14-Jun-18

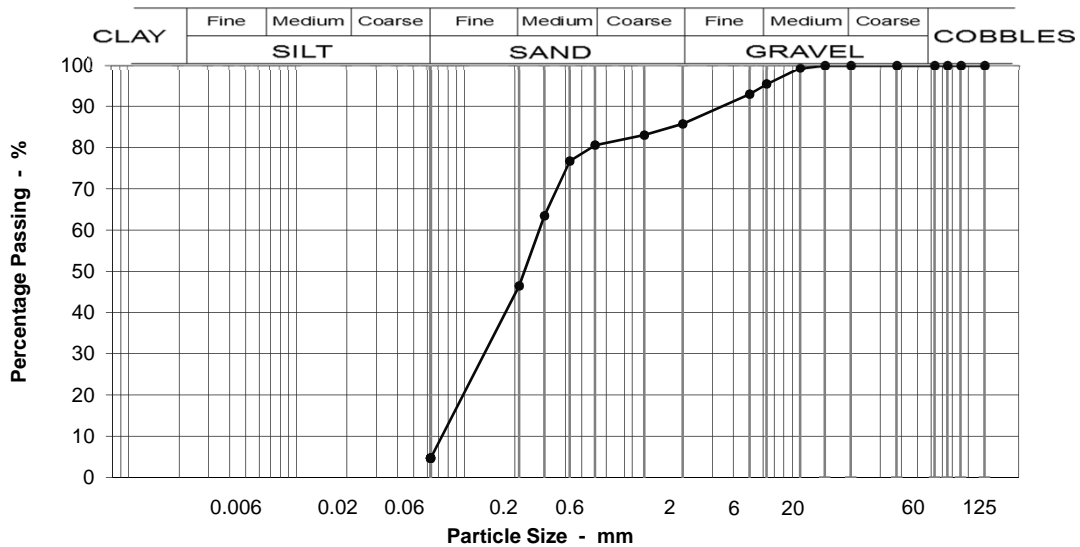
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13A @ 11 - 11.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	99
6.3	95
5	93
2	86
1.18	83
0.600	81
0.425	77
0.300	63
0.212	46
0.063	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	5
Fine GRAVEL	10
Coarse SAND	5
Medium SAND	34
Fine SAND	42
Silt & Clay	5

Grading Analysis	
D100	10
D60	0.28
D10	0.08
Uniformity Coefficient	3

Description
Dark grey slightly organic slightly silty gravelly fine and medium SAND and orangey-brown fine SAND.

Moisture content % 19

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1180316021-610**
Our Project No. **PZ1522D1**
Your Sample Ref **43**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **14-Jun-18**

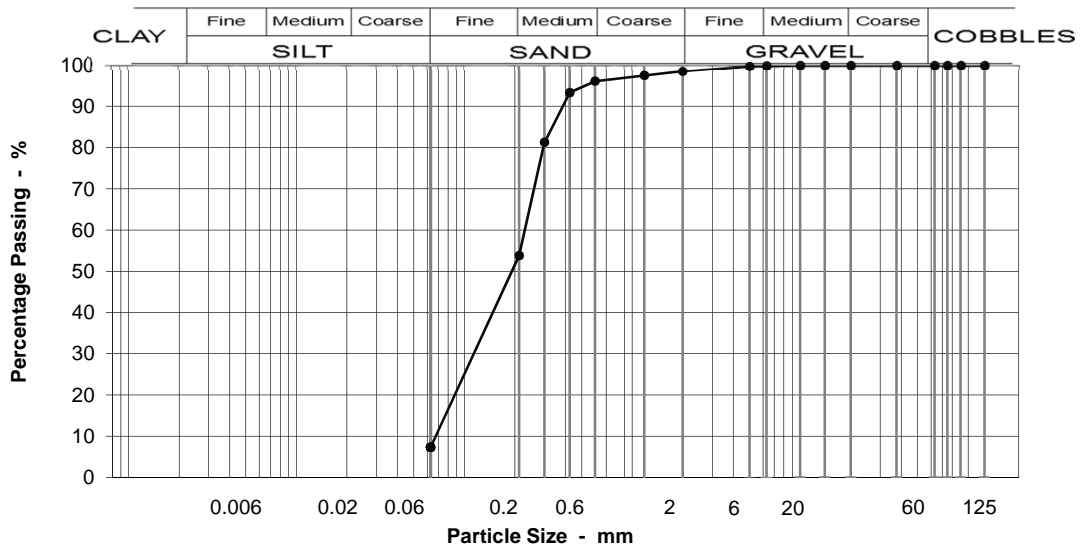
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13A @ 12 - 12.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



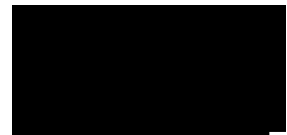
Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R, 6M.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	1
20	100		Coarse SAND	2
14	100		Medium SAND	42
10	100		Fine SAND	46
6.3	100		Silt & Clay	7
5	100		Grading Analysis	
2	99		D100	6
1.18	97		D60	0.23
0.600	96		D10	0.07
0.425	93		Uniformity Coefficient	3
0.300	81		Description	
0.212	54	Olive fine and medium SAND with laminae of soft grey clay.		
0.063	7			

Moisture content % 22

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS1180316028-610
Our Project No PZ1522D1
Your Sample Ref 50
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 12-Jun-18

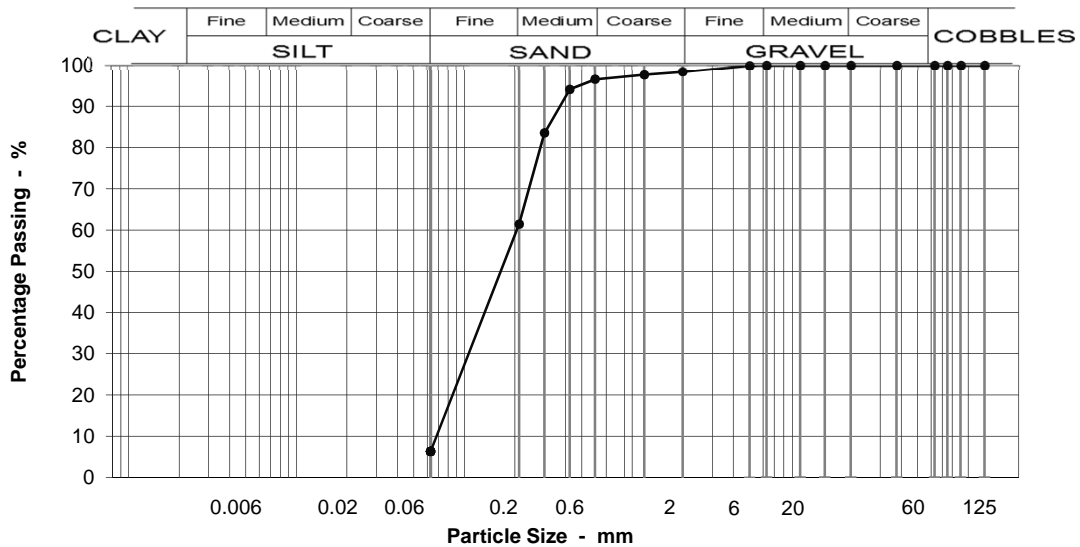
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13A @ 15 - 15.5m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



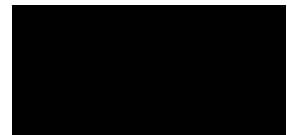
Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R, 6M.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	2
20	100		Coarse SAND	2
14	100		Medium SAND	35
10	100		Fine SAND	55
6.3	100		Silt & Clay	6
5	100		Grading Analysis	
2	98		D100	5
1.18	98		D60	0.21
0.600	97		D10	0.07
0.425	94		Uniformity Coefficient	3
0.300	84		Description	
0.212	61	Brown fine and medium SAND with laminae of soft grey clay.		
0.063	6			

Moisture content % 23

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1180319003-610**
Our Project No. **PZ1522D1**
Your Sample Ref. **53**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **4-Jul-18**

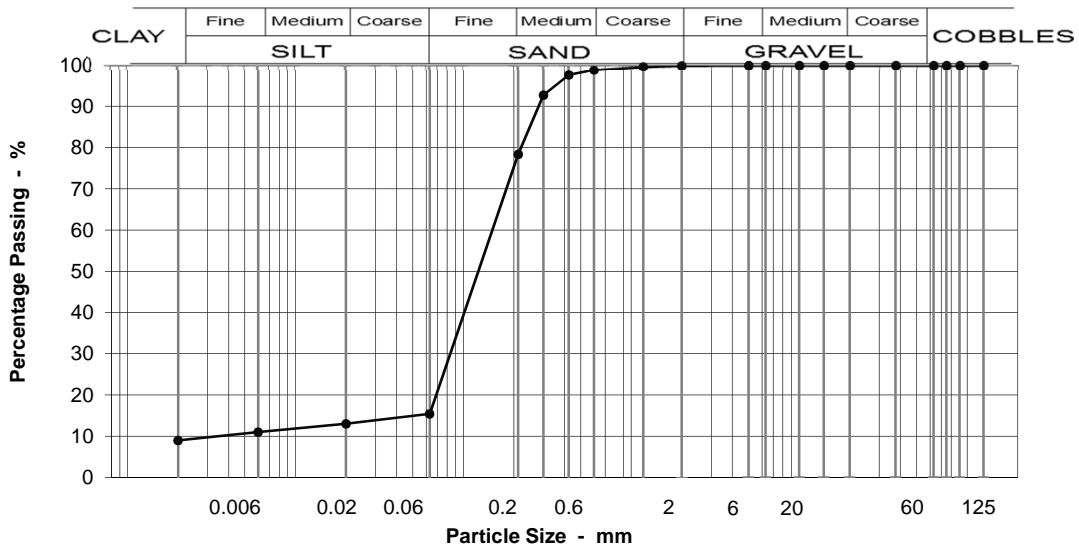
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13A @ 16 - 16.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	100
0.600	99
0.425	98
0.300	93
0.212	78
0.063	15
0.020	13
0.006	11
0.002	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 2A/2B, 2A/2B.

Moisture content % 33

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	1
Medium SAND	21
Fine SAND	63
Silt & Clay	15

Grading Analysis	
D100	2
D60	0.17
D10	0.03
Uniformity Coefficient	5*

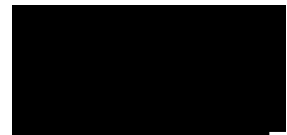
Description	
Olive fine SAND with numerous lenses of soft grey silty CLAY.	

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS1180319010-610
Our Project No PZ1522D1
Your Sample Ref 60
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 14-Jun-18

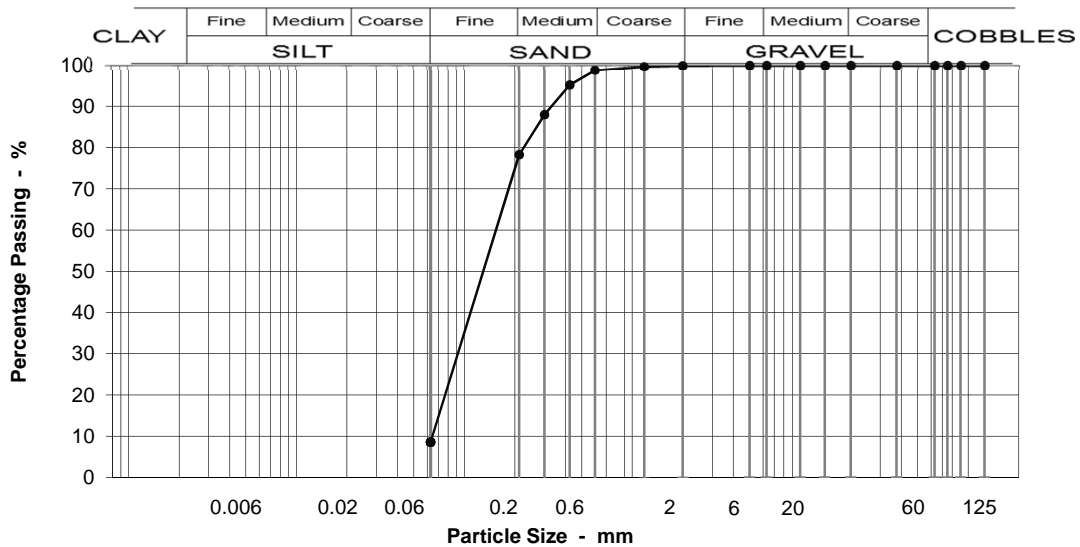
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13A @ 19 - 19.5m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	100
0.600	99
0.425	95
0.300	88
0.212	78
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 23

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	1
Medium SAND	21
Fine SAND	70
Silt & Clay	9

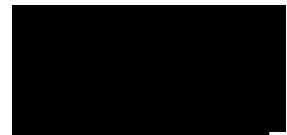
Grading Analysis	
D100	2
D60	0.17
D10	0.07
Uniformity Coefficient	3

Description	
Brown fine SAND with laminae of soft grey clay. Occasional dark brown ironstone nodules.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1180319013-610**
Our Project No. **PZ1522D1**
Your Sample Ref **63**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **14-Jun-18**

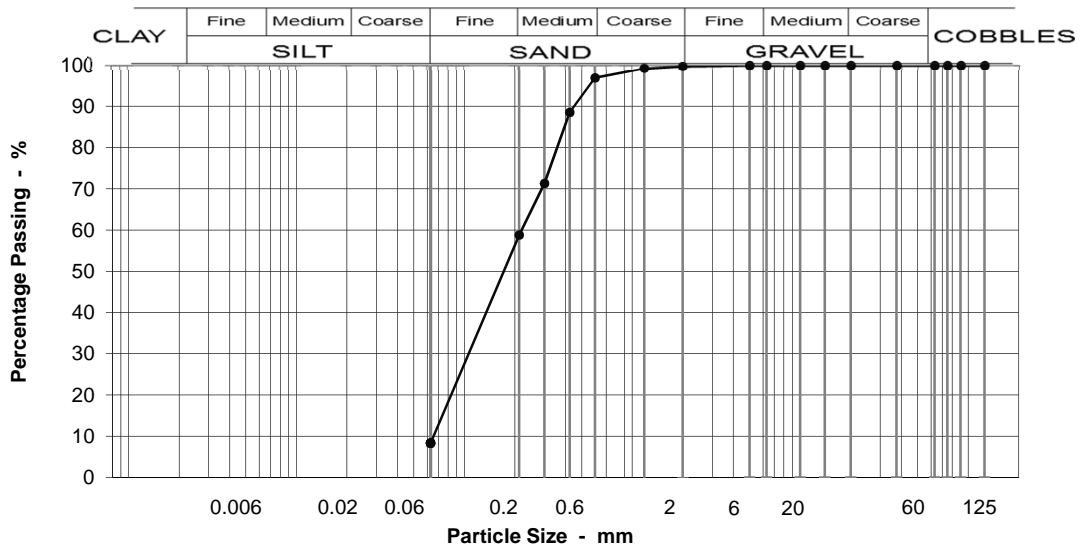
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13A @ 20 - 20.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	99
0.600	97
0.425	89
0.300	71
0.212	59
0.063	8

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 22

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	3
Medium SAND	38
Fine SAND	50
Silt & Clay	8

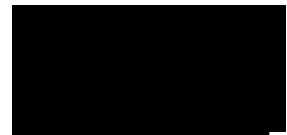
Grading Analysis	
D100	2
D60	0.22
D10	0.07
Uniformity Coefficient	3

Description	
Laminated and thinly bedded brown and orange slightly silty fine and medium SAND and sandy SILT.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS1180319014-610
Our Project No PZ1522D1
Your Sample Ref 64
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 18-Jun-18

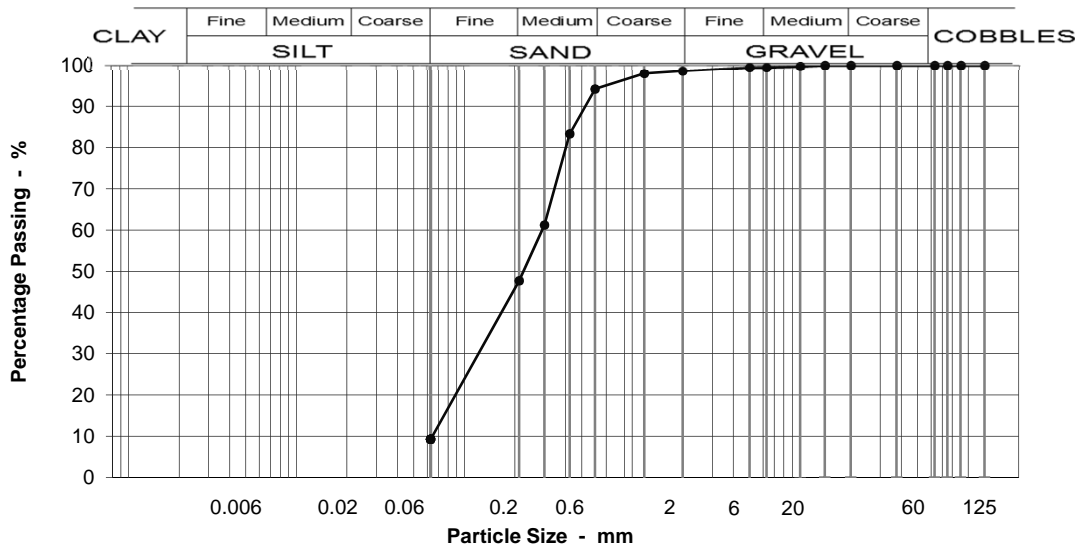
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13A @ 21 - 21.5m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	99
5	99
2	99
1.18	98
0.600	94
0.425	83
0.300	61
0.212	48
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 22

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	1
Fine GRAVEL	1
Coarse SAND	4
Medium SAND	46
Fine SAND	38
Silt & Clay	9

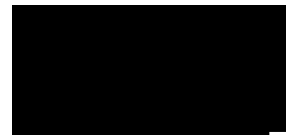
Grading Analysis	
D100	10
D60	0.29
D10	0.07
Uniformity Coefficient	4

Description
Laminated and thinly bedded brown and orange slightly silty fine and medium SAND and occasional laminae of brown sandy silt.

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS1180319016-610
Our Project No PZ1522D1
Your Sample Ref 66
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 14-Jun-18

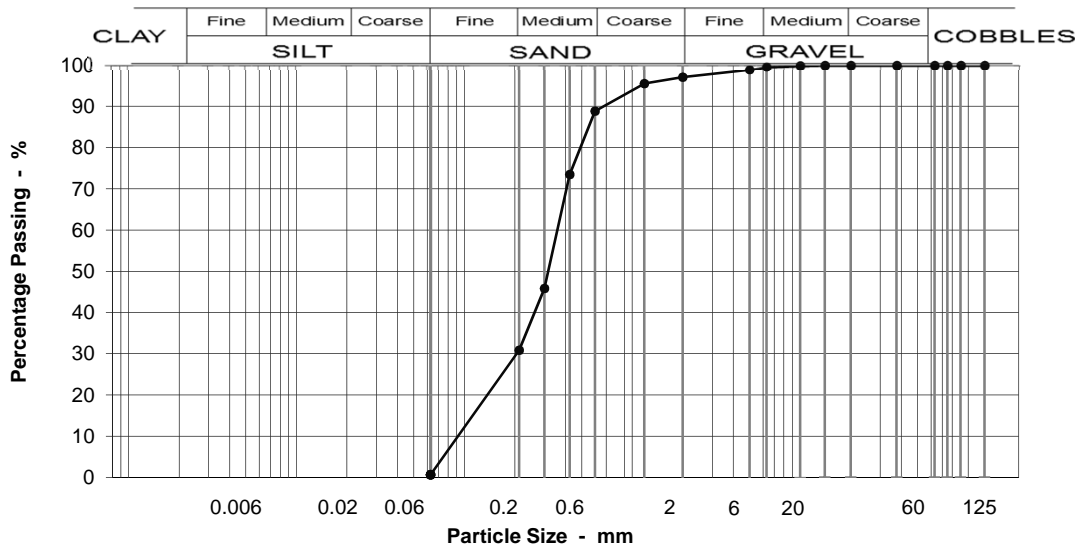
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13A @ 22 - 22.5m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



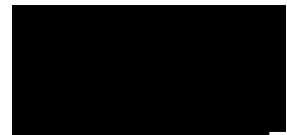
Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R, 6M.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	3
20	100		Coarse SAND	8
14	100		Medium SAND	58
10	100		Fine SAND	30
6.3	100		Silt & Clay	1
5	99		Grading Analysis	
2	97		D100	10
1.18	96		D60	0.36
0.600	89		D10	0.11
0.425	73		Uniformity Coefficient	3
0.300	46		Description	
0.212	31	Laminated and thinly bedded brown and orange fine and medium SAND.		
0.063	1			

Moisture content % 20

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1180319017-610**
Our Project No. **PZ1522D1**
Your Sample Ref. **67**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **12-Jun-18**

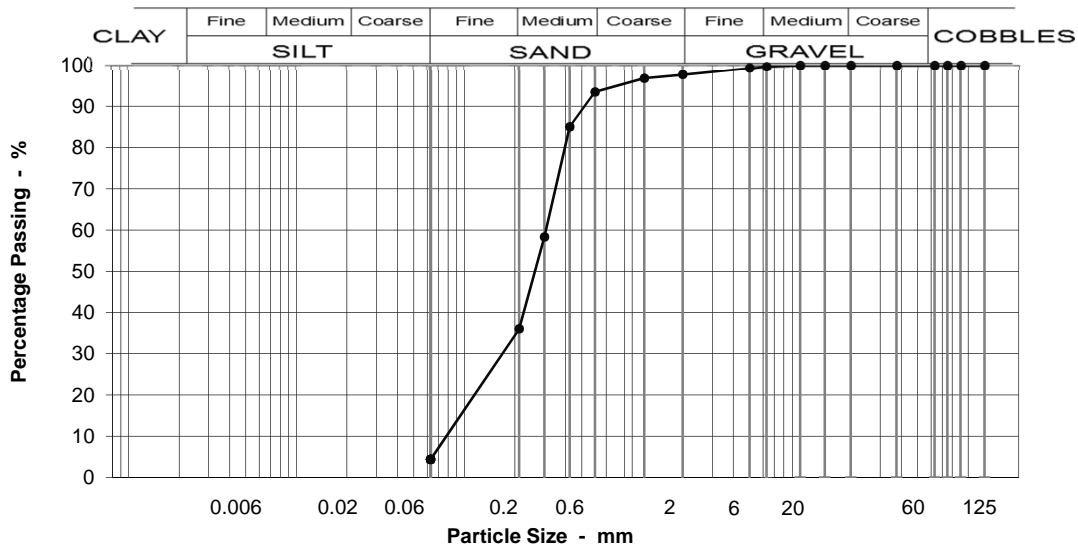
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13A @ 23 - 23.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample

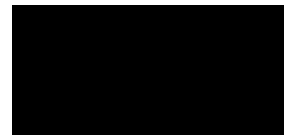


Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R, 6M.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	2
20	100		Coarse SAND	4
14	100		Medium SAND	57
10	100		Fine SAND	32
6.3	100		Silt & Clay	4
5	99		Grading Analysis	
2	98		D100	6
1.18	97		D60	0.31
0.600	93		D10	0.09
0.425	85		Uniformity Coefficient	3
0.300	58		Description	
0.212	36	Dark brown fine and medium SAND with laminae of soft grey CLAY, some shell fragments.		
0.063	4	Moisture content % 20		

Test Code = 610



Simon Holden (Project Technician)

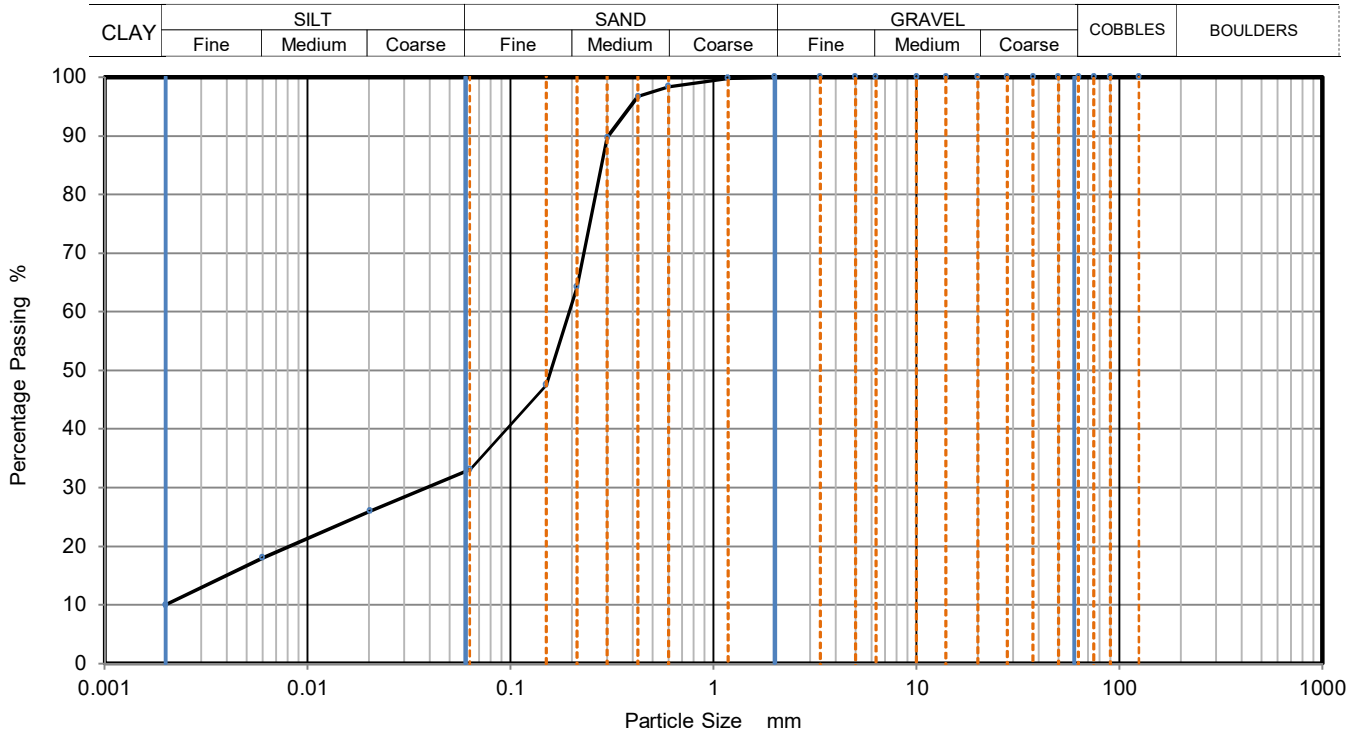




DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH13A
Sample Description:	Dark grey clayey very silty SAND	Sample Depth (m)	26.00
		Sample Reference	B72



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	26
90	100	0.0060	18
75	100	0.0020	10
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	98	Particle density (assumed)	
0.425	97	2.65	Mg/m3
0.3	90		
0.212	64		
0.15	48		
0.063	33		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	67
Silt	23
Clay	10

Grading Analysis		
D100	mm	
D60	mm	0.194
D30	mm	0.039
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks	Approved	Date	Sheet No.:
	MW	03/07/2018	1 of 1

Community & Environmental Services
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Norfolk
NR1 2DH

Our reference No. GTS1180319023-610
Our Project No PZ1522D1
Your Sample Ref 73
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 14-Jun-18

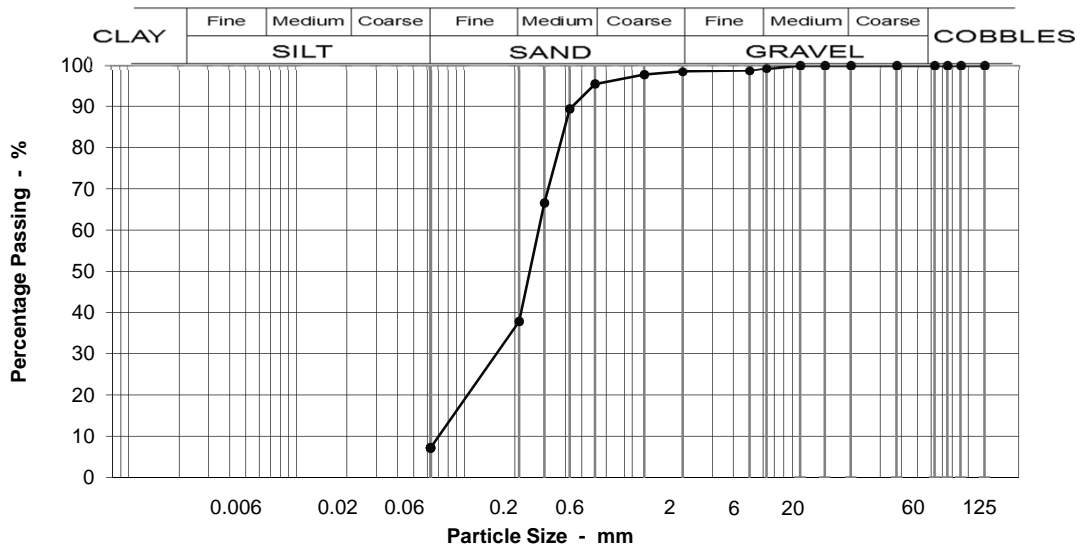
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13A @ 27 - 27.5m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



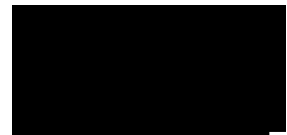
Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R, 6M.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	1
37.5	100		Fine GRAVEL	1
20	100		Coarse SAND	3
14	100		Medium SAND	58
10	100		Fine SAND	31
6.3	99		Silt & Clay	7
5	99		Grading Analysis	
2	98		D100	6
1.18	98		D60	0.28
0.600	95		D10	0.08
0.425	89		Uniformity Coefficient	4
0.300	67		Description	
0.212	38	Dark brown fine and medium SAND with laminae of soft grey clay.		
0.063	7			

Moisture content % 22

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS1180319026-610
Our Project No PZ1522D1
Your Sample Ref 76
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 4-Jul-18

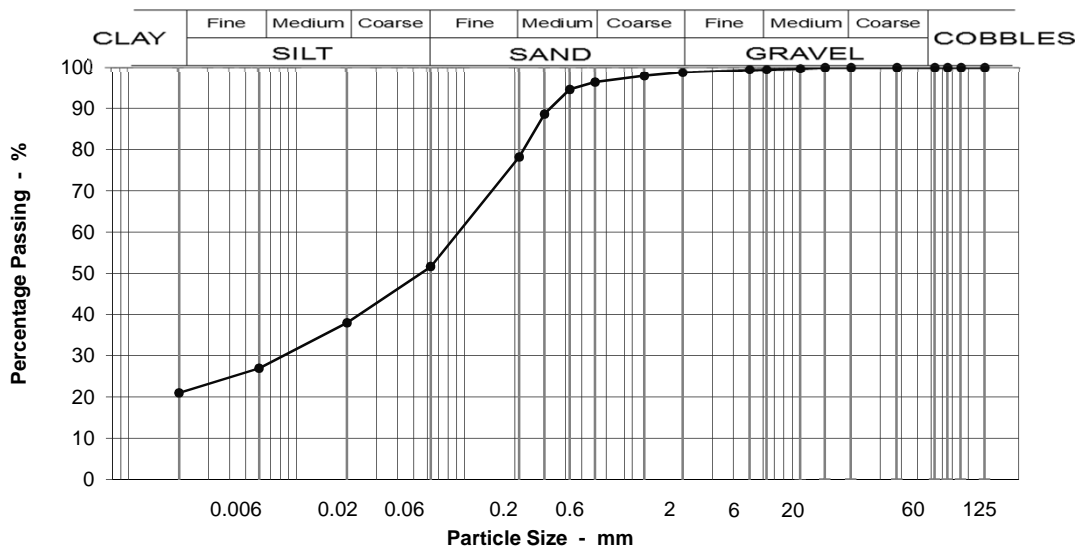
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13A @ 27.7 - 28m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	99
5	99
2	99
1.18	98
0.600	96
0.425	95
0.300	89
0.212	78
0.063	52
0.020	38
0.006	27
0.002	21

Specification for Highway Works Classification
Table 6/2

Moisture content % 28

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	1
Fine GRAVEL	1
Coarse SAND	2
Medium SAND	18
Fine SAND	27
Silt & Clay	52

Grading Analysis	
D100	10
D60	0.11
D10	0.00
Uniformity Coefficient	>10*

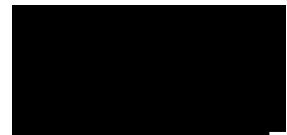
Description	
Laminated and thinly bedded soft to firm grey CLAY:SILT and light grey silty fine and medium SAND.	

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)

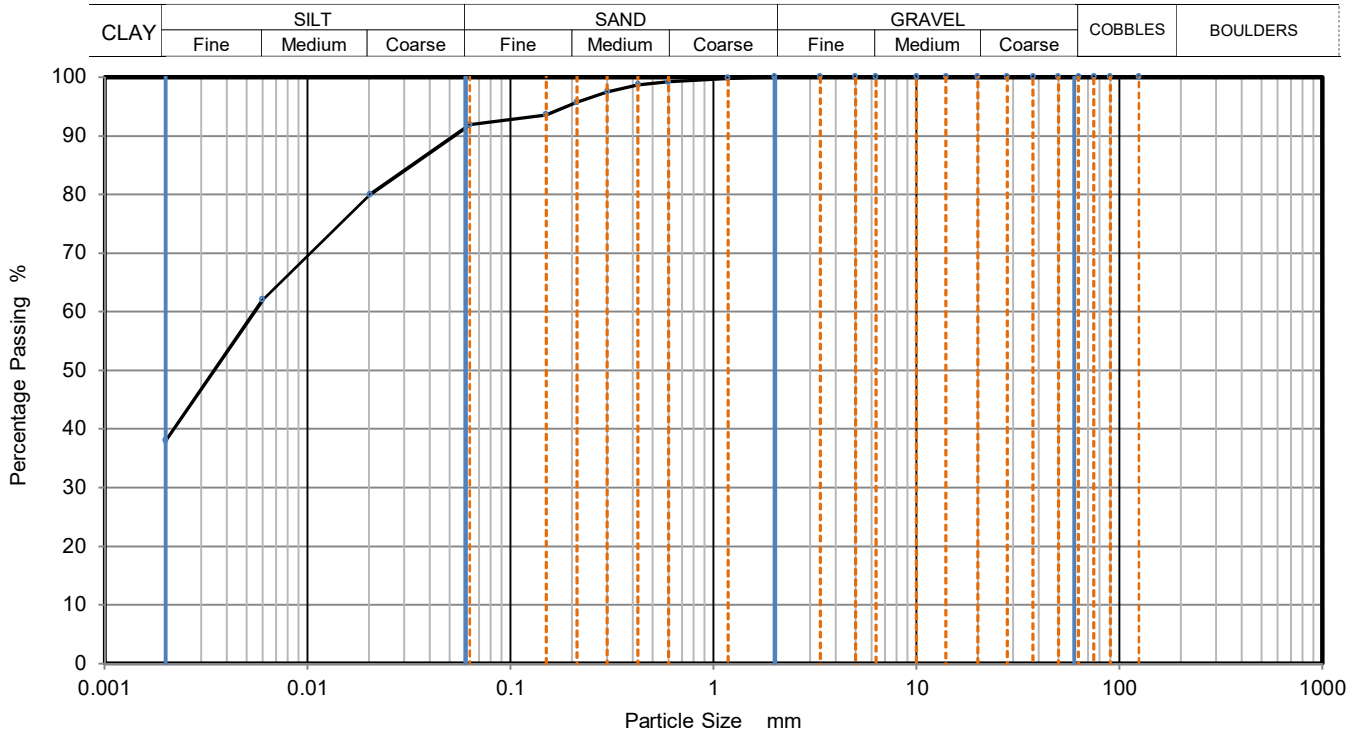




DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH13A
Sample Description:	Grey slightly sandy silty CLAY	Sample Depth (m)	30.00
		Sample Reference	B80



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	80
90	100	0.0060	62
75	100	0.0020	38
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99	Particle density (assumed) 2.65 Mg/m3	
0.3	98		
0.212	96		
0.15	94		
0.063	92		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	8
Silt	54
Clay	38

Grading Analysis		
D100	mm	
D60	mm	0.006
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks	Approved	Date	Sheet No.:
	MW	03/07/2018	1 of 1

Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS1180320004-610
Our Project No PZ1522D1
Your Sample Ref 84
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 4-Jul-18

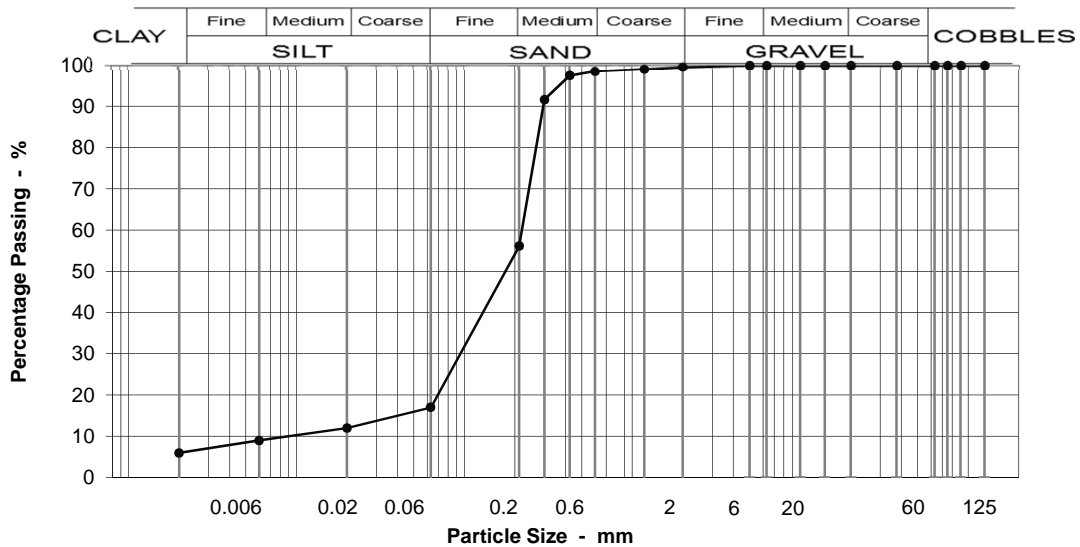
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13A @ 32 - 32.5m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 2A/2B, 2A/2B.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	1
14	100		Medium SAND	42
10	100		Fine SAND	39
6.3	100		Silt & Clay	17
5	100			
2	100			
1.18	99			
0.600	99			
0.425	97			
0.300	92			
0.212	56			
0.063	17			
0.020	12			
0.006	9			
0.002	6			
Moisture content %		23		

Grading Analysis	
D100	2
D60	0.22
D10	0.05
Uniformity Coefficient	5*

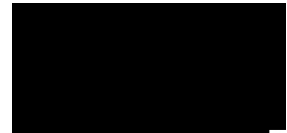
Description	
Grey slightly clayey silty fine and medium SAND, some shell fragments.	

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1180320008-610**
Our Project No. PZ1522D1
Your Sample Ref. 88
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 14-Jun-18

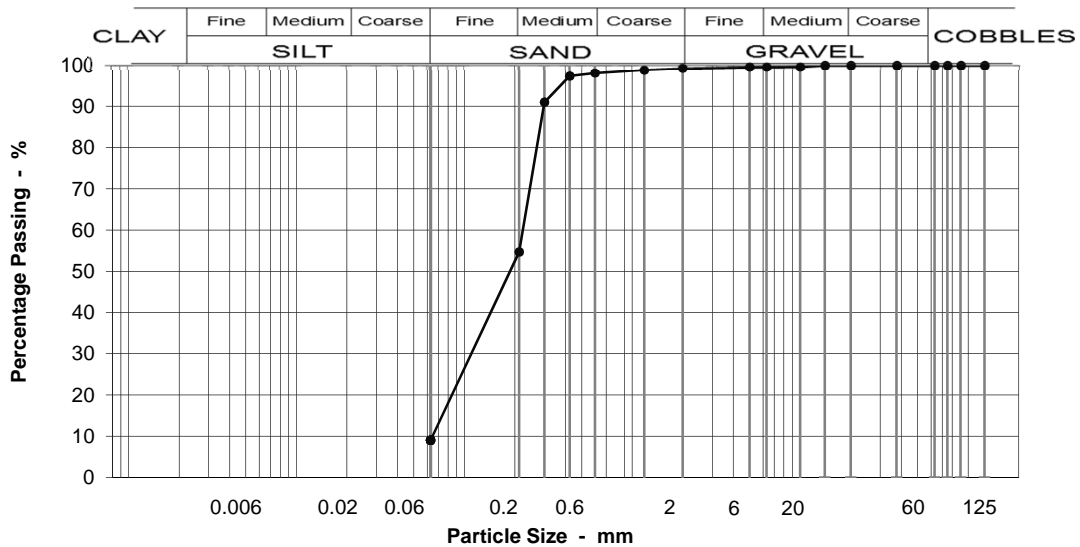
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13A @ 35 - 35.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	99
0.600	98
0.425	97
0.300	91
0.212	55
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 26

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	1
Medium SAND	43
Fine SAND	46
Silt & Clay	9

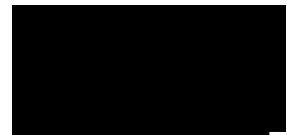
Grading Analysis	
D100	10
D60	0.22
D10	0.07
Uniformity Coefficient	3

Description	
Grey fine and medium SAND with laminae of soft grey clay.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS1180320015-610
Our Project No PZ1522D1
Your Sample Ref 94
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 14-Jun-18

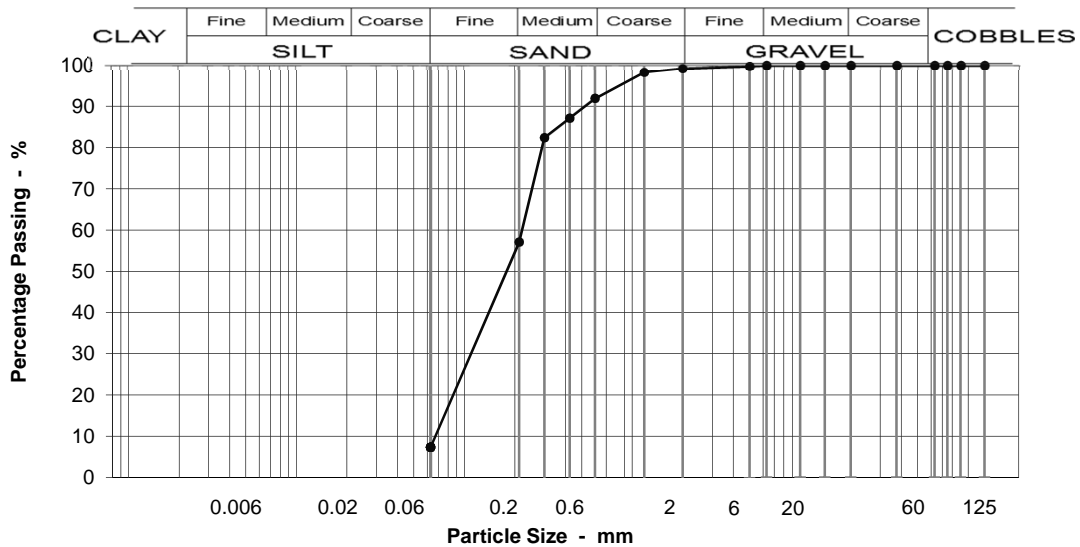
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13A @ 39 - 39.5m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R, 6M.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	1
20	100		Coarse SAND	7
14	100		Medium SAND	35
10	100		Fine SAND	50
6.3	100		Silt & Clay	7
5	100			
2	99			
1.18	98			
0.600	92			
0.425	87			
0.300	82			
0.212	57			
0.063	7			
Moisture content %		22		

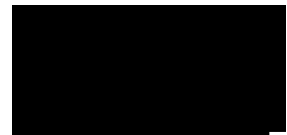
Grading Analysis	
D100	5
D60	0.22
D10	0.07
Uniformity Coefficient	3

Description
Grey fine and medium SAND with laminae of soft grey clay.

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS1180320018-610**
Our Project No. PZ1522D1
Your Sample Ref. 96
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 14-Jun-18

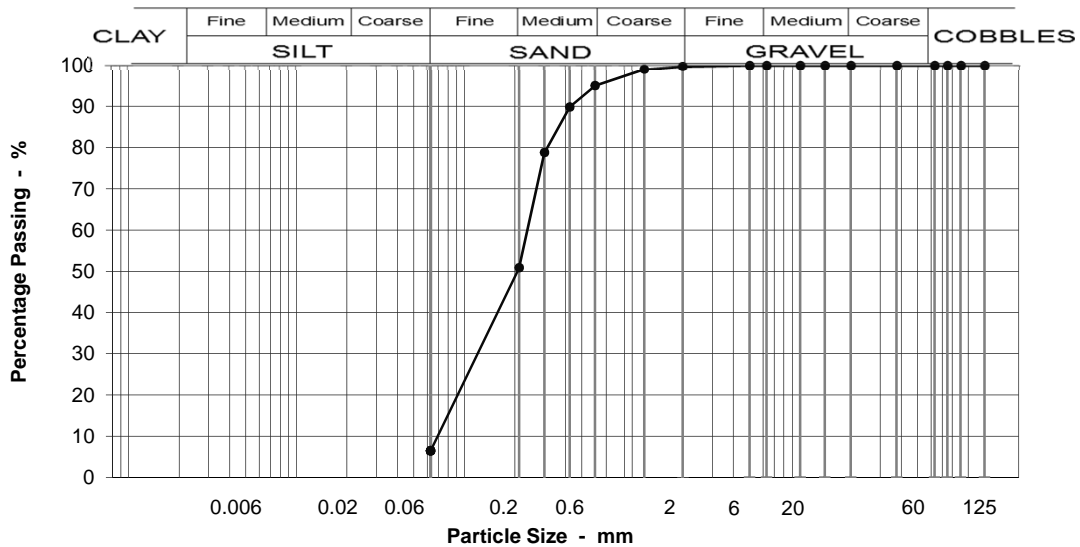
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13A @ 40 - 40.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample

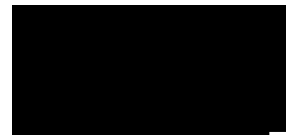


Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	<p>This material complies with the following material classes 1B, 6E/6R, 6M.</p>	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	5
14	100		Medium SAND	44
10	100		Fine SAND	44
6.3	100		Silt & Clay	7
5	100		Grading Analysis	
2	100		D100	2
1.18	99		D60	0.24
0.600	95		D10	0.07
0.425	90		Uniformity Coefficient	3
0.300	79		Description	
0.212	51	Grey fine and medium SAND with laminae of soft grey clay.		
0.063	7	Moisture content % 23		

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS1180320021-610
Our Project No PZ1522D1
Your Sample Ref 99
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 14-Jun-18

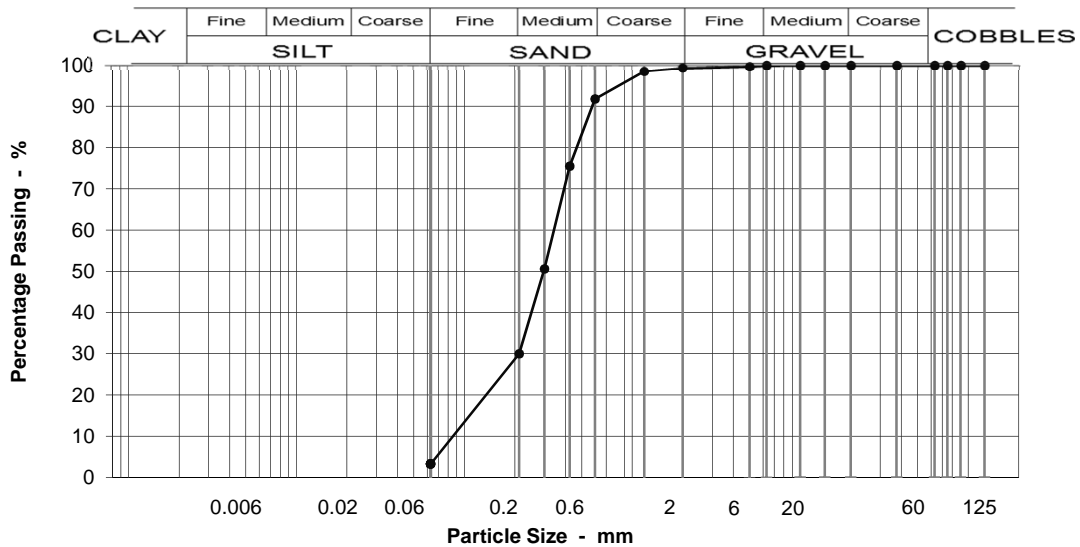
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13A @ 42 - 42.5m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R, 6M.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	1
20	100		Coarse SAND	8
14	100		Medium SAND	62
10	100		Fine SAND	27
6.3	100		Silt & Clay	3
5	100			
2	99			
1.18	99			
0.600	92			
0.425	75			
0.300	51			
0.212	30			
0.063	3			
Moisture content %		20		

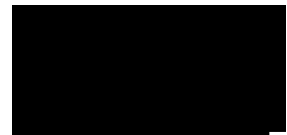
Grading Analysis	
D100	6
D60	0.35
D10	0.10
Uniformity Coefficient	3

Description	
Grey fine and medium SAND with laminae of soft grey clay.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS1180321003-610
Our Project No PZ1522D1
Your Sample Ref 102
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 12-Jun-18

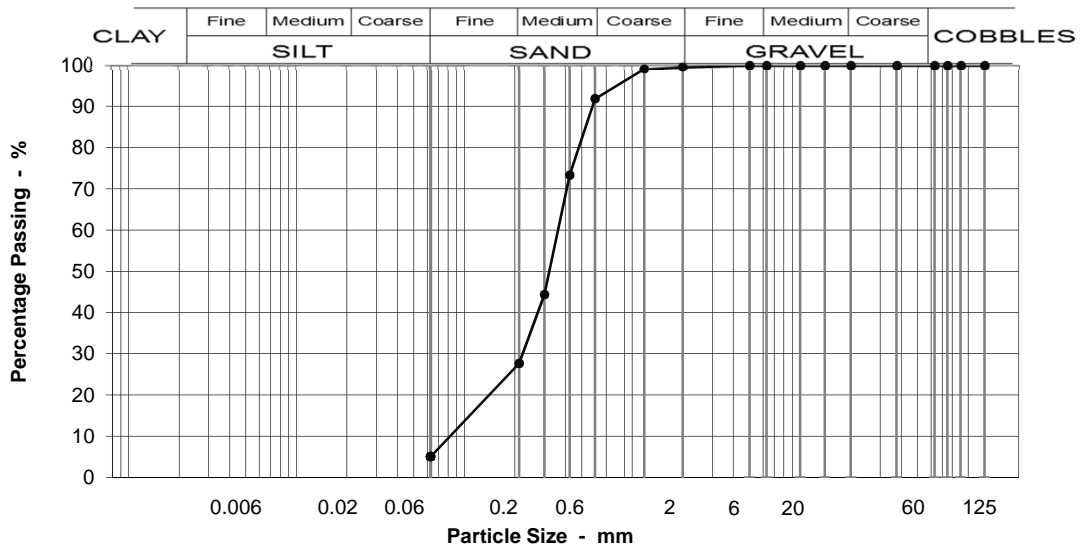
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13A @ 44 - 44.5m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	99
0.600	92
0.425	73
0.300	44
0.212	28
0.063	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 19

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	8
Medium SAND	64
Fine SAND	23
Silt & Clay	5

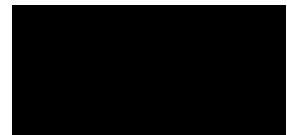
Grading Analysis	
D100	2
D60	0.37
D10	0.10
Uniformity Coefficient	4

Description	
Grey medium SAND with laminae of soft light grey and dark grey CLAY, some shell fragments.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. GTS1180321004-610
Our Project No PZ1522D1
Your Sample Ref 103
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 14-Jun-18

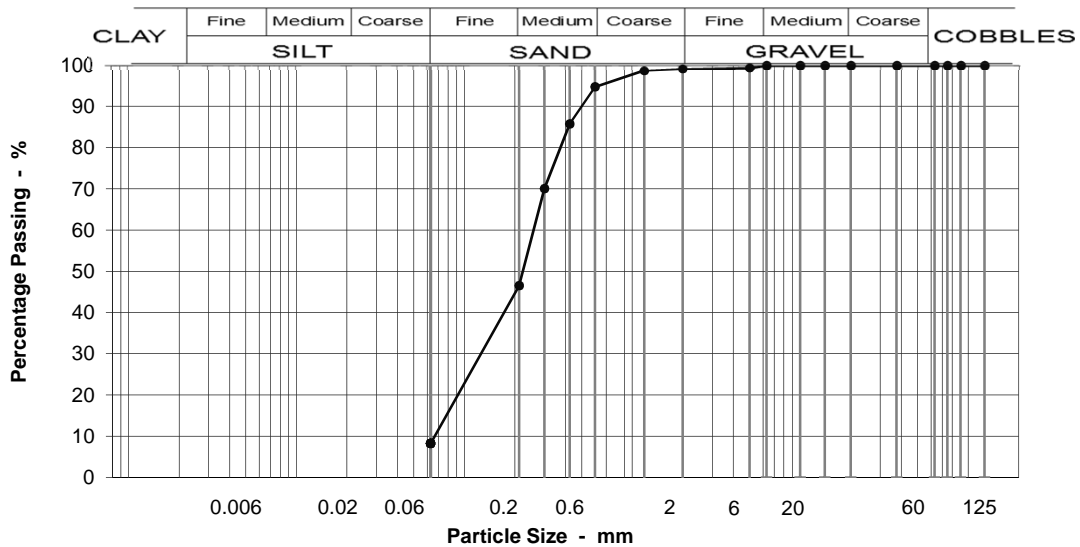
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH13A @ 45 - 45.5m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample

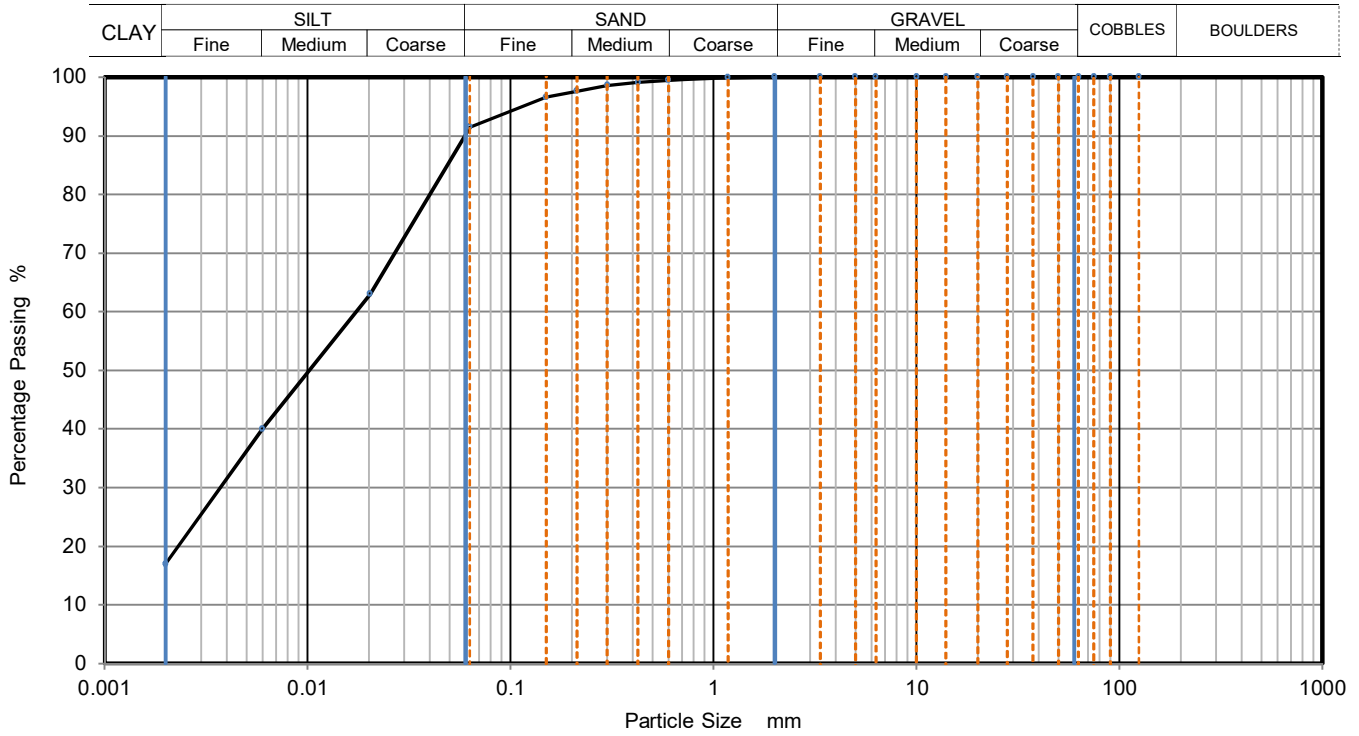




DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH13A
Sample Description:	Brown and dark grey slightly sandy very silty CLAY	Sample Depth (m)	45.70
		Sample Reference	B104



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	63
90	100	0.0060	40
75	100	0.0020	17
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	99	Particle density (assumed) 2.65 Mg/m3	
0.3	99		
0.212	98		
0.15	97		
0.063	92		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	9
Silt	75
Clay	17

Grading Analysis		
D100	mm	
D60	mm	0.017
D30	mm	0.004
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

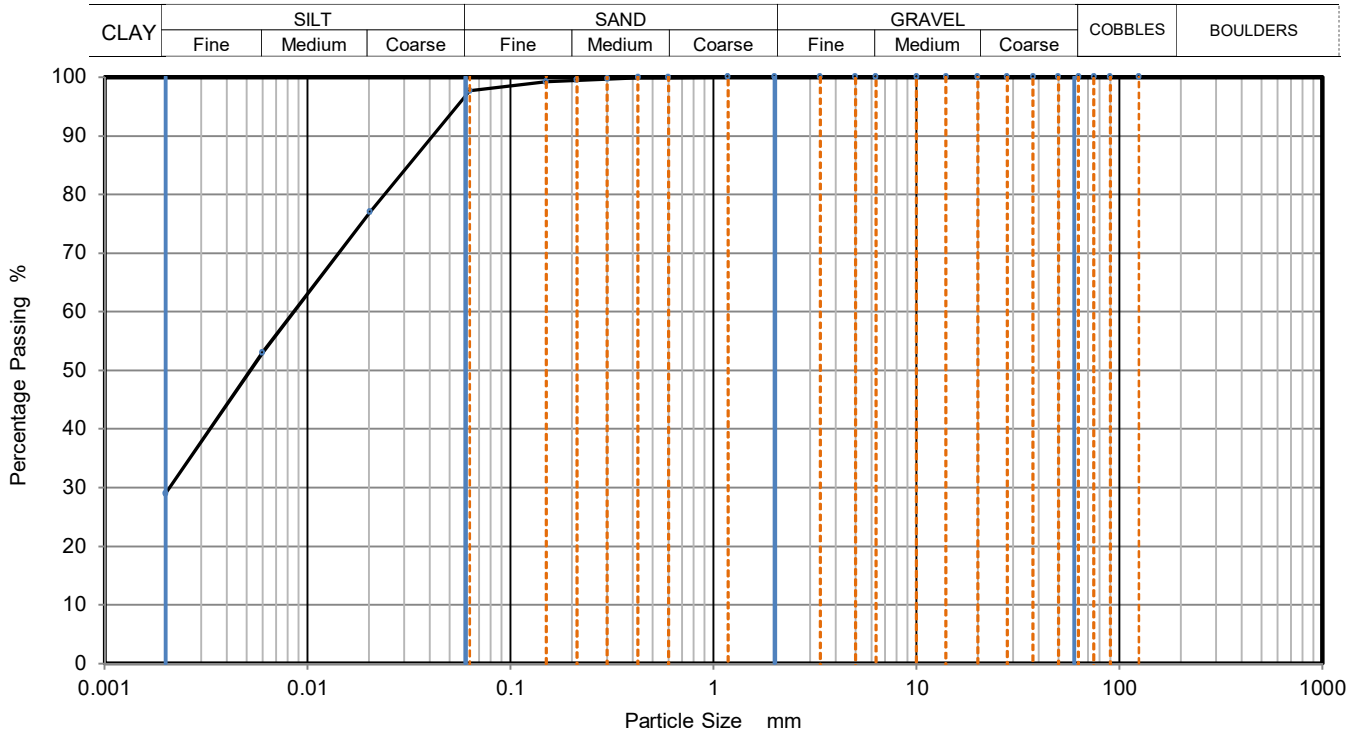
Remarks	Approved	Date	Sheet No.:
	MW	03/07/2018	1 of 1



DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH13A
Sample Description:	Dark grey brown slightly sandy very silty CLAY	Sample Depth (m)	46.50
		Sample Reference	B107



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	77
90	100	0.0060	53
75	100	0.0020	29
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100	Particle density (assumed) 2.65 Mg/m3	
0.3	100		
0.212	100		
0.15	99		
0.063	98		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	2
Silt	69
Clay	29

Grading Analysis		
D100	mm	
D60	mm	0.009
D30	mm	0.002
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

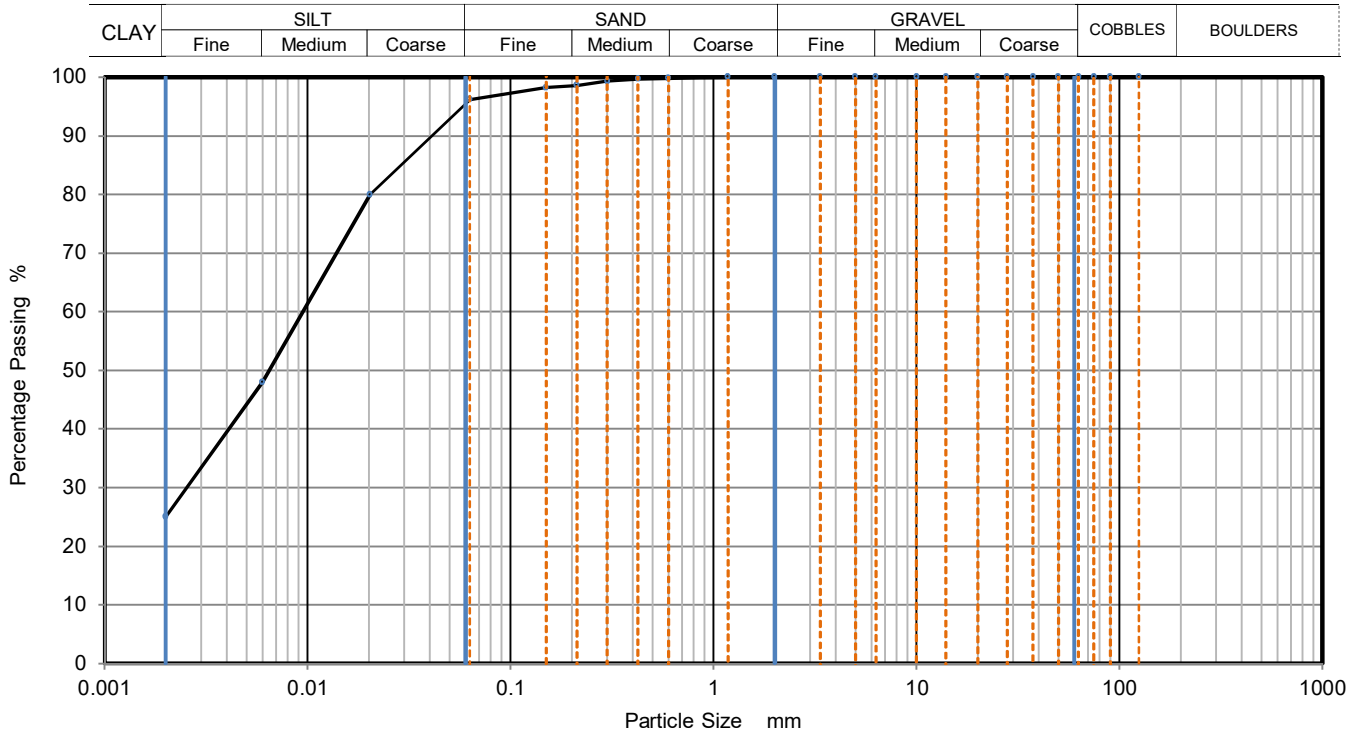
Remarks	Approved	Date	Sheet No.:
	MW	03/07/2018	1 of 1



DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH13A
Sample Description:	Brown slightly sandy very silty CLAY	Sample Depth (m)	49.00
		Sample Reference	B114



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	80
90	100	0.0060	48
75	100	0.0020	25
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100	Particle density (assumed) 2.65 Mg/m3	
0.3	99		
0.212	99		
0.15	98		
0.063	96		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	4
Silt	71
Clay	26

Grading Analysis		
D100	mm	
D60	mm	0.010
D30	mm	0.003
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks	Approved	Date	Sheet No.:
	MW	03/07/2018	1 of 1

Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL201711293-613**
Our Project No. **PZ1522D1**
Your Sample Ref **1**
Your Project or Order No. **PZ1522**
Date Tested **05/12/2017**
Date Report Issued **12-Jan-18**

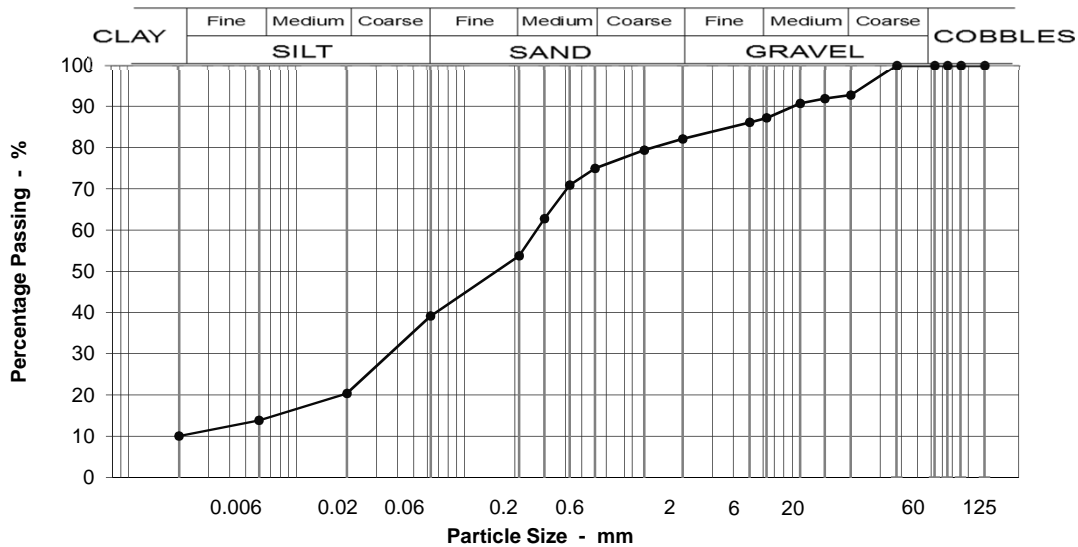
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH14 @ 0.6 - 1m Specimen: 2

Location and orientation within sample not applicable

Bulk disturbed sample



Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	93
14	92
10	91
6.3	87
5	86
2	82
1.18	79
0.600	75
0.425	71
0.300	63
0.212	54
0.063	39
0.020	20
0.006	14
0.002	10

Specification for Highway Works Classification
Table 6/2

Moisture content % 29

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	7
Medium GRAVEL	6
Fine GRAVEL	5
Coarse SAND	7
Medium SAND	21
Fine SAND	15
Silt & Clay	39

Grading Analysis	
D100	20
D60	0.27
D10	0.00
Uniformity Coefficient	>10*

Description
MADE GROUND comprising fine to coarse concrete, wood, flint and brick in a matrix of orangey brown and dark grey, clayey, silty sand.

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)

Norfolk Partnership Laboratory

 Email: civil.laboratory@norfolk.gov.uk
Gt Yarmouth 3rd River Crossing
 Community & Environmental Services
 County Hall
 Martineau Lane
 Norwich
 Norfolk
 NR1 2DH

Our Project No PZ1522D1

Our Report and sample No NCCL201711294-612

Your Sample Ref D9

Your Project or Order No PZ1522

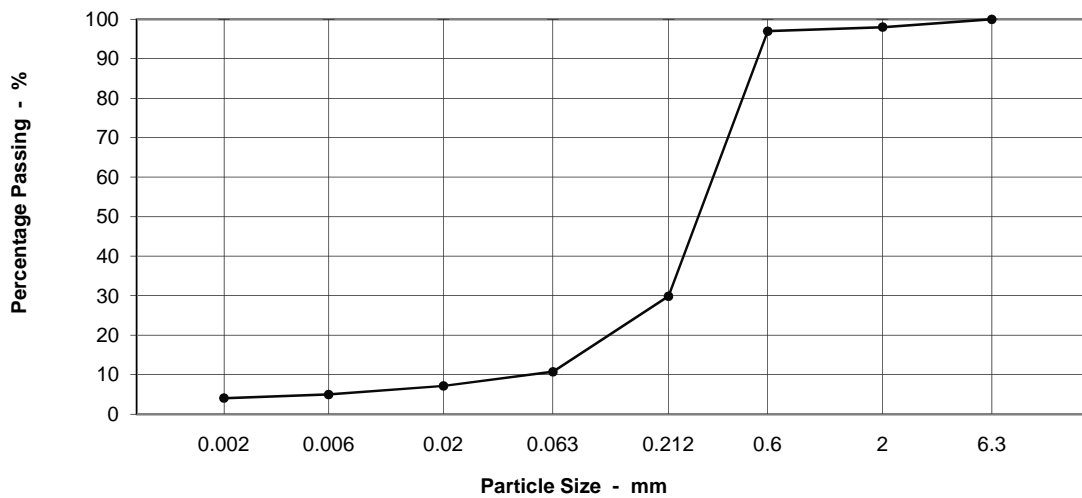
Date Report Issued 03-Jan-18

Date Tested 15-Dec-17

Page 1 of 1

Particle Size Distribution to BS 1377 : Part 2 : 1990
Sedimentation Method Section 9.4
Scheme: Gt Yarmouth 3rd River Crossing

Location: BH14 D9 3.8m

Particle Size Distribution


Sieving & Sed.		Sample Proportions		Description
Particle Size mm	% Passing		%	
6.3	*See note	Coarse SAND	1	Dark greyish brown, clayey, silty, fine and medium SAND, weathering to brown.
2.0	98	Medium SAND	67	
0.6	97	Fine SAND	19	
0.212	30	Coarse SILT	4	
0.063	11	Medium SILT	2	
0.02	7	Fine SILT	1	
0.006	5	CLAY	4	
0.002	4	Moisture content	22	

Test carried out on a disturbed sample prepared in accordance with BS1377 Part 1 clause 7.4.5, "in its natural state".
 Moisture content in accordance with BS1377 Part 2 clause 3.2, Oven-drying method. No pre-treatment was carried out.
 Location and orientation are not applicable.

* This test determines the particle size distribution from the coarse sand size to the clay size.

Test Code = 612



Peter Hardiment (Operations Manager)



CES Highways Projects
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL201710115-610**
Our Project No. **PZ1522D1**
Your Sample Ref **12**
Your Project or Order No. **PZ1522**
Date Tested **19/10/2017**
Date Report Issued **21-Nov-17**

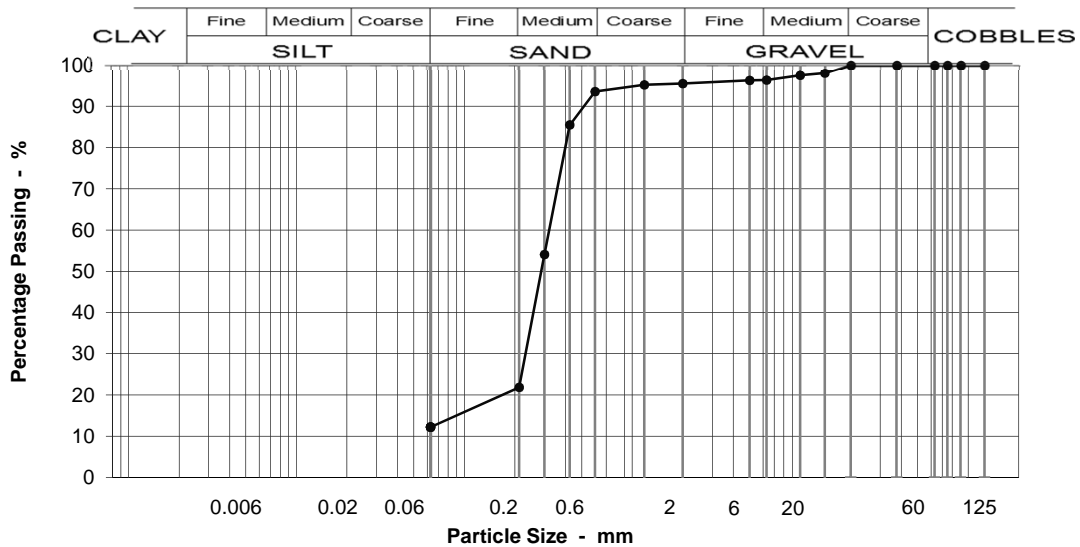
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH14 @ 5.6 - 6.1m

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	98
10	98
6.3	96
5	96
2	96
1.18	95
0.600	94
0.425	85
0.300	54
0.212	22
0.063	12

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R.

Moisture content % 21

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	4
Fine GRAVEL	1
Coarse SAND	2
Medium SAND	72
Fine SAND	10
Silt & Clay	12

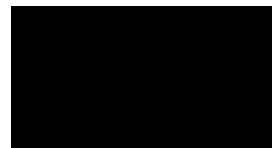
Grading Analysis	
D100	14
D60	0.32
D10	0.09
Uniformity Coefficient	4

Description
Brown, silty, slightly gravelly, fine, medium and coarse SAND. Gravel is sub-angular, medium flint.

Test Code = 610



Peter Hardiment (Operations Manager)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL201711295-610**
Our Project No. **PZ1522D1**
Your Sample Ref **14**
Your Project or Order No. **PZ1522**
Date Tested **05/12/2017**
Date Report Issued **9-Jan-18**

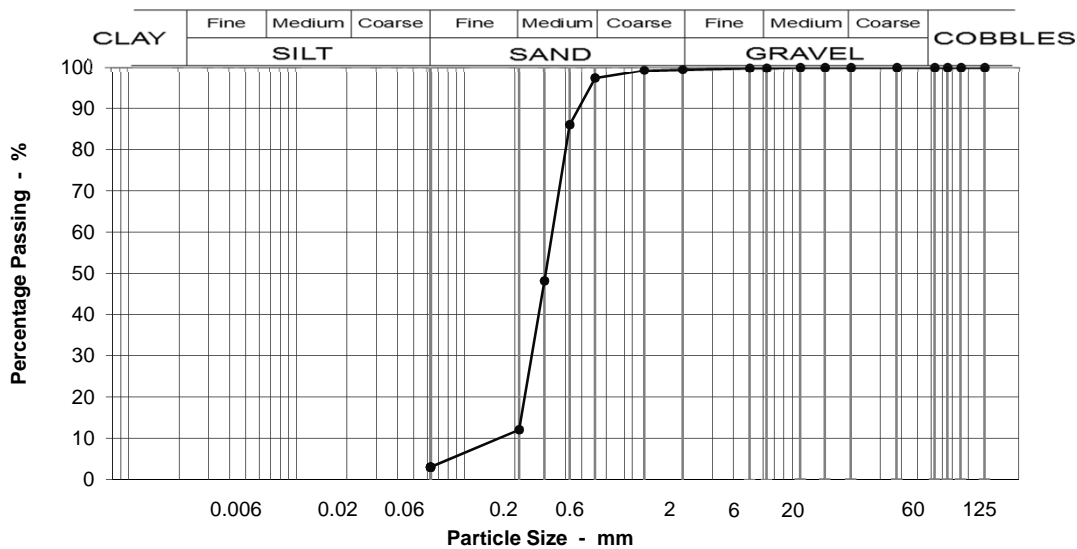
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH14 @ 6.6 - 7m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	99
0.600	97
0.425	86
0.300	48
0.212	12
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 22

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	2
Medium SAND	85
Fine SAND	9
Silt & Clay	3

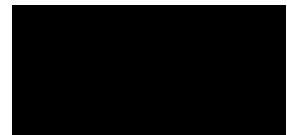
Grading Analysis	
D100	6
D60	0.34
D10	0.18
Uniformity Coefficient	2

Description	
Yellowish brown medium SAND.	

Test Code = 610



Simon Holden (Project Technician)



CES Highways Projects
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL201710116-610**
Our Project No. **PZ1522D1**
Your Sample Ref **20**
Your Project or Order No. **PZ1522**
Date Tested **19/10/2017**
Date Report Issued **21-Nov-17**

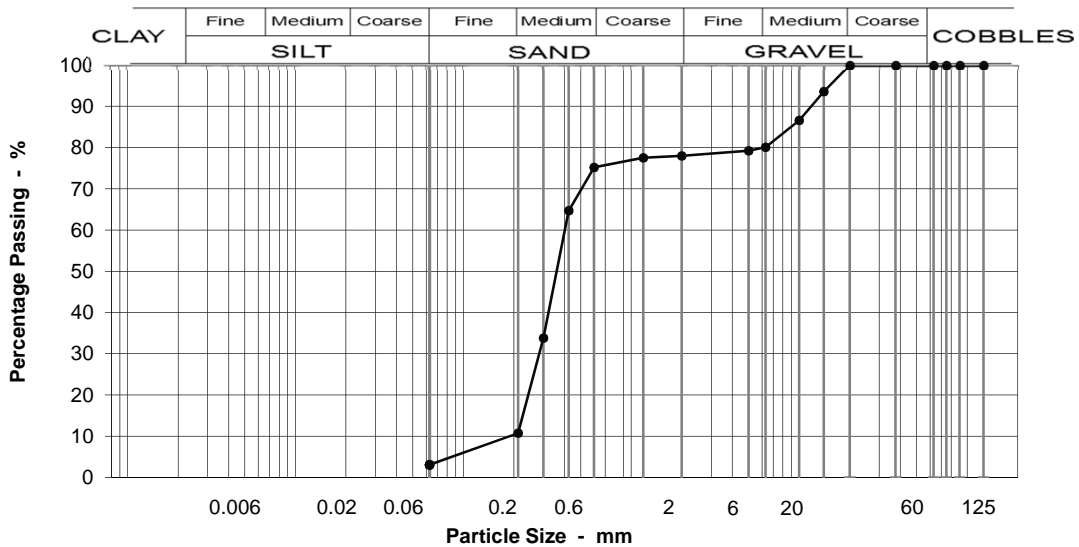
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH14 @ 9.7 - 10m

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	94
10	87
6.3	80
5	79
2	78
1.18	77
0.600	75
0.425	65
0.300	34
0.212	11
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 17

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	20
Fine GRAVEL	2
Coarse SAND	3
Medium SAND	64
Fine SAND	8
Silt & Clay	3

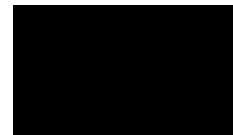
Grading Analysis	
D100	14
D60	0.41
D10	0.20
Uniformity Coefficient	2

Description	
Dark grey and brown, silty, fine, medium and coarse, gravelly SAND. Gravel is fine and medium, sub-angular to sub-rounded, flint.	

Test Code = 610



Peter Hardiment (Operations Manager)



CES Highways Projects
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL201710117-610**
Our Project No. **PZ1522D1**
Your Sample Ref. **23**
Your Project or Order No. **PZ1522**
Date Tested **19/10/2017**
Date Report Issued **21-Nov-17**

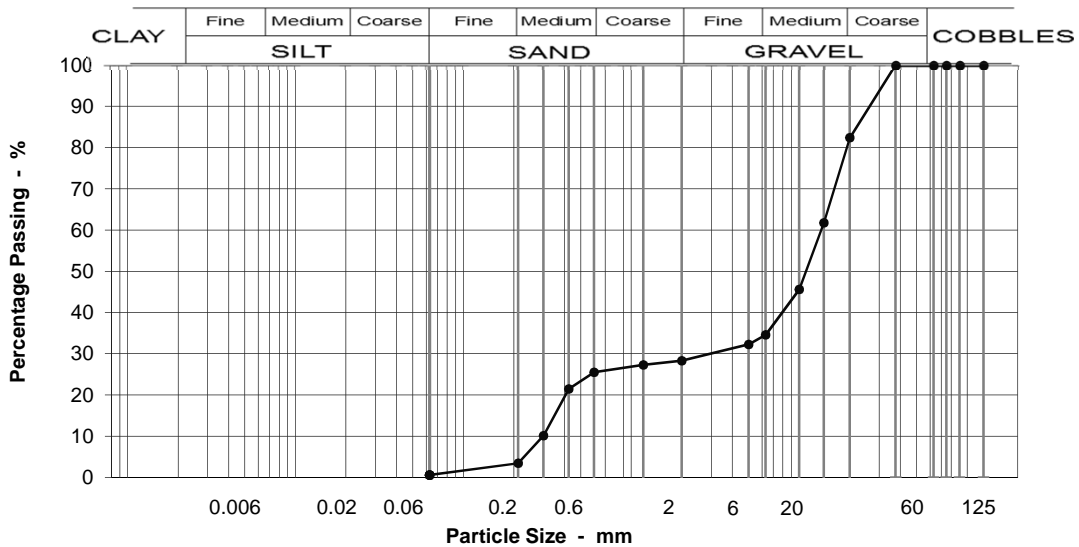
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH14 @ 10.9m

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	82
14	62
10	46
6.3	35
5	32
2	28
1.18	27
0.600	26
0.425	21
0.300	10
0.212	3
0.063	1

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6A, 6E/6R, 6F1, 6I, 6M, 6N.

Moisture content % 4.2

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	18
Medium GRAVEL	48
Fine GRAVEL	6
Coarse SAND	3
Medium SAND	22
Fine SAND	3
Silt & Clay	1

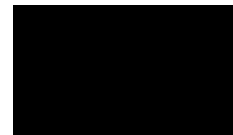
Grading Analysis	
D100	20
D60	13.57
D10	0.30
Uniformity Coefficient	46

Description	
Dark grey and brown, very sandy, fine, medium and coarse GRAVEL. Gravel is sub-rounded to sub-angular flint.	

Test Code = 610



Peter Hardiment (Operations Manager)



CES Highways Projects
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL201710118-610**
Our Project No. **PZ1522D1**
Your Sample Ref. **27**
Your Project or Order No. **PZ1522**
Date Tested **19/10/2017**
Date Report Issued **21-Nov-17**

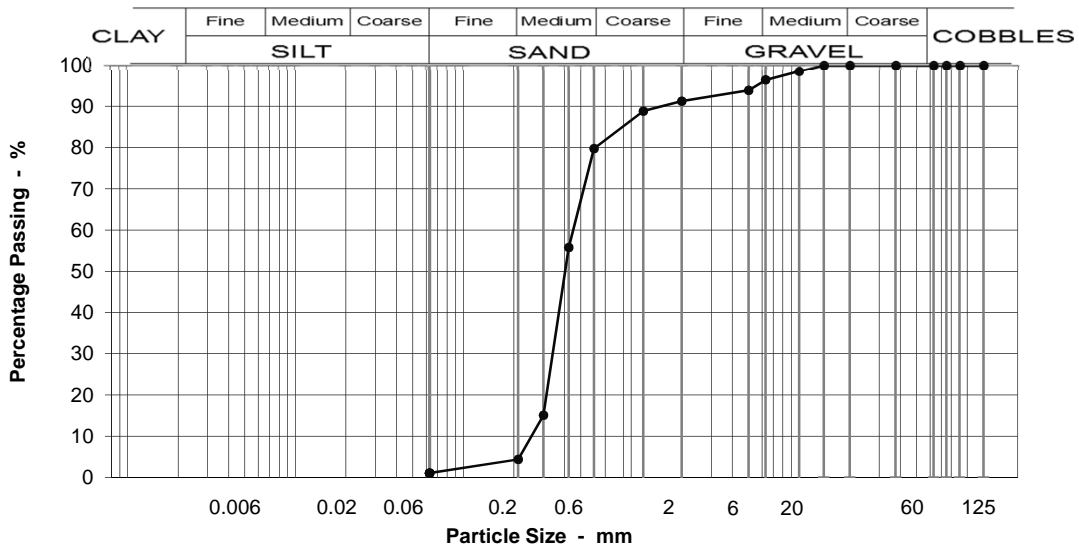
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH14 @ 12.6 - 13.1m

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	98
6.3	96
5	94
2	91
1.18	89
0.600	80
0.425	56
0.300	15
0.212	4
0.063	1

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 11

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	4
Fine GRAVEL	5
Coarse SAND	11
Medium SAND	75
Fine SAND	3
Silt & Clay	1

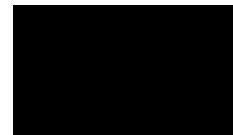
Grading Analysis	
D100	10
D60	0.46
D10	0.26
Uniformity Coefficient	2

Description	
Dark yellowish brown, gravelly, fine, medium and coarse SAND. Gravel is fine and medium, sub-rounded to sub-angular, flint, quartz and limestone.	

Test Code = 610



Peter Hardiment (Operations Manager)



CES Highways Projects
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL201710119-610**
Our Project No. **PZ1522D1**
Your Sample Ref **31**
Your Project or Order No. **PZ1522**
Date Tested **20/10/2017**
Date Report Issued **21-Nov-17**

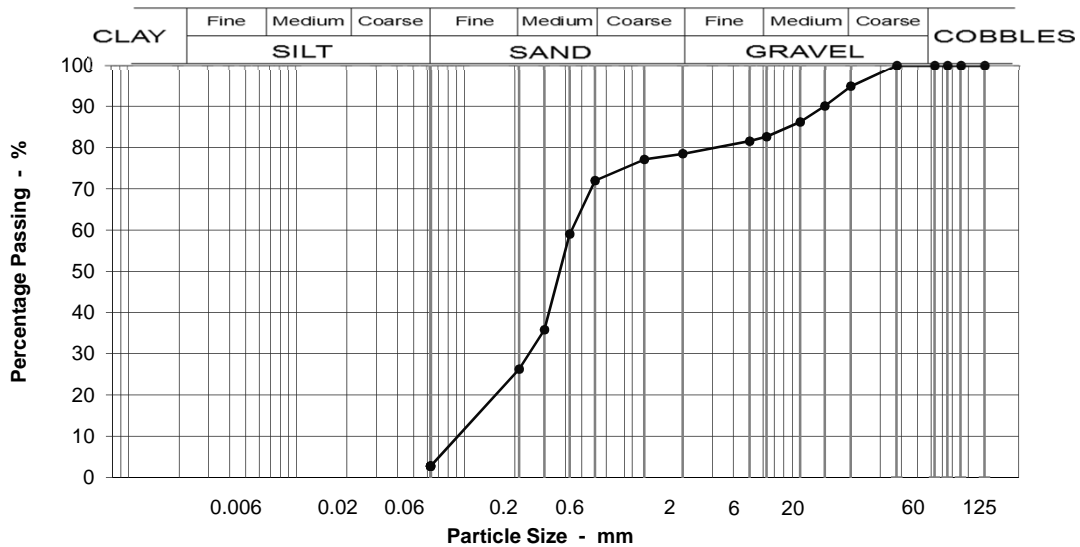
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH14 @ 14.7 - 15m

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	95
14	90
10	86
6.3	83
5	82
2	78
1.18	77
0.600	72
0.425	59
0.300	36
0.212	26
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 17

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	5
Medium GRAVEL	12
Fine GRAVEL	4
Coarse SAND	7
Medium SAND	46
Fine SAND	23
Silt & Clay	3

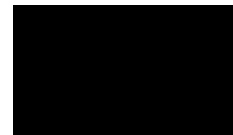
Grading Analysis	
D100	20
D60	0.44
D10	0.11
Uniformity Coefficient	4

Description	
Dark yellowish brown, very gravelly, slightly clayey, fine, medium and coarse SAND. Gravel is fine, medium and coarse, sub-rounded to sub-angular, flint, quartz and limestone.	

Test Code = 610



Peter Hardiment (Operations Manager)



CES Highways Projects
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. NCCL2017101110-610
Our Project No PZ1522D1
Your Sample Ref 35
Your Project or Order No. PZ1522
Date Tested 19/10/2017
Date Report Issued 21-Nov-17

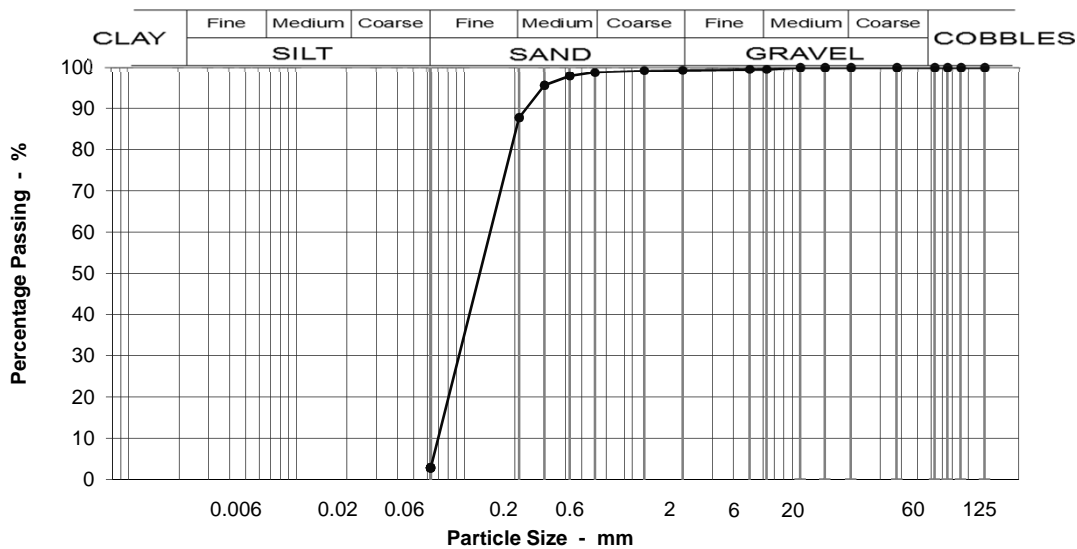
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH14 @ 16.6 - 17m

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	99
0.600	99
0.425	98
0.300	96
0.212	88
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 22

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	1
Medium SAND	11
Fine SAND	85
Silt & Clay	3

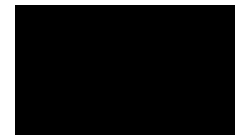
Grading Analysis	
D100	6
D60	0.16
D10	0.08
Uniformity Coefficient	2

Description	
Light yellowish brown, slightly silty, fine and medium SAND.	

Test Code = 610



Peter Hardiment (Operations Manager)



CES Highways Projects
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. NCCL2017101111-610
Our Project No PZ1522D1
Your Sample Ref 41
Your Project or Order No. PZ1522
Date Tested 19/10/2017
Date Report Issued 21-Nov-17

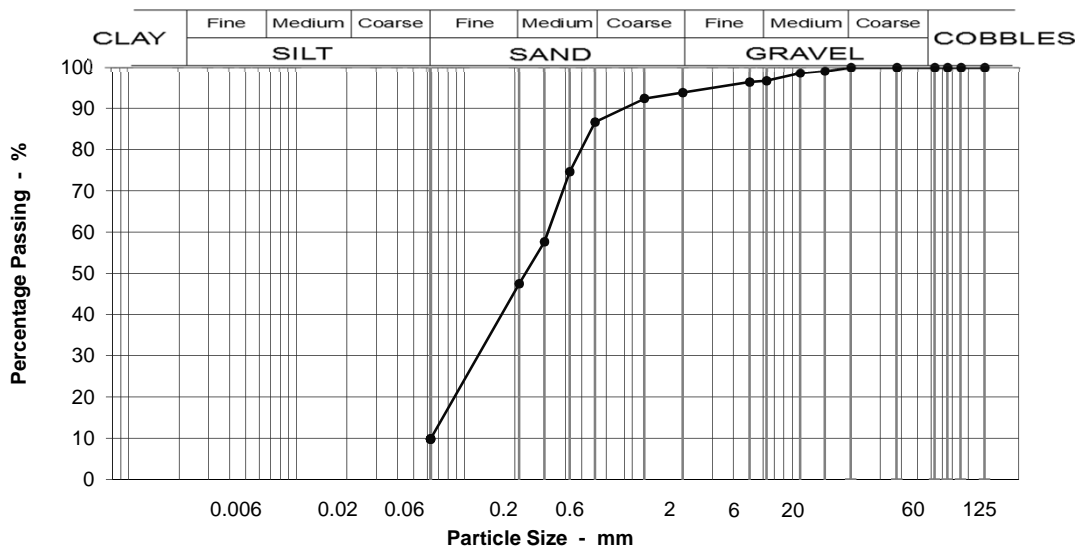
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH14 @ 19.6 - 20m

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	99
10	99
6.3	97
5	96
2	94
1.18	92
0.600	87
0.425	75
0.300	58
0.212	47
0.063	10

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 24

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	3
Fine GRAVEL	3
Coarse SAND	7
Medium SAND	39
Fine SAND	38
Silt & Clay	10

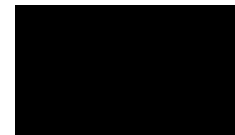
Grading Analysis	
D100	14
D60	0.32
D10	0.06
Uniformity Coefficient	5

Description
Greyish brown, slightly gravelly, fine, medium and coarse SAND with lenses of soft, light grey CLAY.

Test Code = 610



Peter Hardiment (Operations Manager)



Norfolk Partnership Laboratory

Email: civil.laboratory@norfolk.gov.uk

Great Yarmouth Third River Crossing

Norfolk County Council
 County Hall
 Martineau Lane
 Norwich
 Norfolk
 NR1 2DH

Our Project No PZ1522D1

Our Report and sample No NCCL201710113-612

Your Sample Ref B43

Your Project or Order No PZ1522

Date Report Issued 28-Nov-17

Date Tested 25-Oct-17

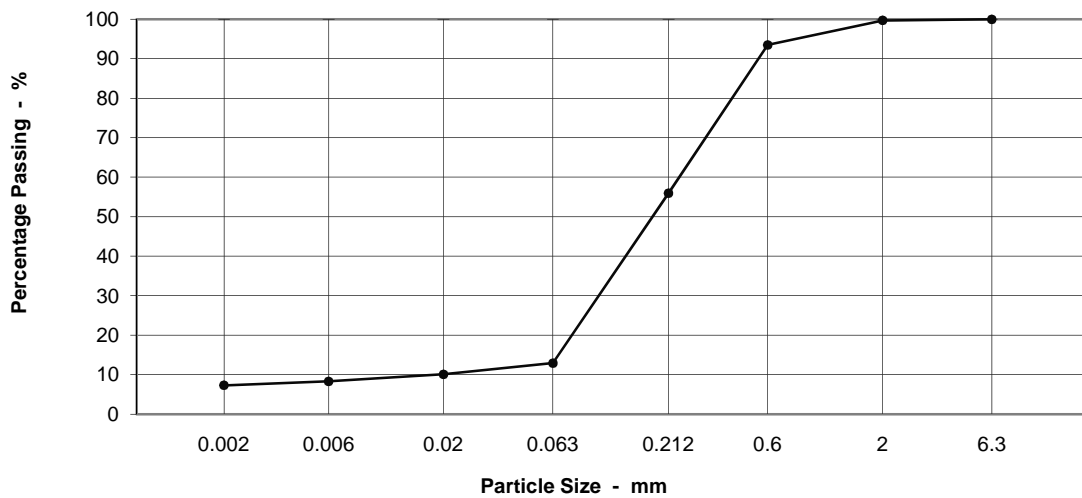
Page 1 of 1

Particle Size Distribution to BS 1377 : Part 2 : 1990 Sedimentation Method Section 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH14 B43 21m

Particle Size Distribution



Sieving & Sed.		Sample Proportions		Description
Particle Size mm	% Passing		%	
6.3	*See note	Coarse SAND	6	Greyish brown, clayey, silty, fine, medium and coarse SAND, with occasional fine, sub-rounded flint gravel.
2.0	100	Medium SAND	38	
0.6	93	Fine SAND	43	
0.212	56	Coarse SILT	3	
0.063	13	Medium SILT	2	
0.02	10	Fine SILT	1	
0.006	8	CLAY	7	
0.002	7	Moisture content	27	

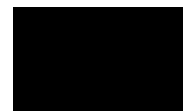
Test carried out on a disturbed sample prepared in accordance with BS1377 Part 1 clause 7.4.5, "in its natural state".
 Moisture content in accordance with BS1377 Part 2 clause 3.2, Oven-drying method. No pre-treatment was carried out.
 Location and orientation are not applicable.

* This test determines the particle size distribution from the coarse sand size to the clay size.

Test Code = 612



Peter Hardiment (Operations Manager)



CES Highways Projects
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL2017101112-610**
Our Project No. **PZ1522D1**
Your Sample Ref **45**
Your Project or Order No. **PZ1522**
Date Tested **19/10/2017**
Date Report Issued **21-Nov-17**

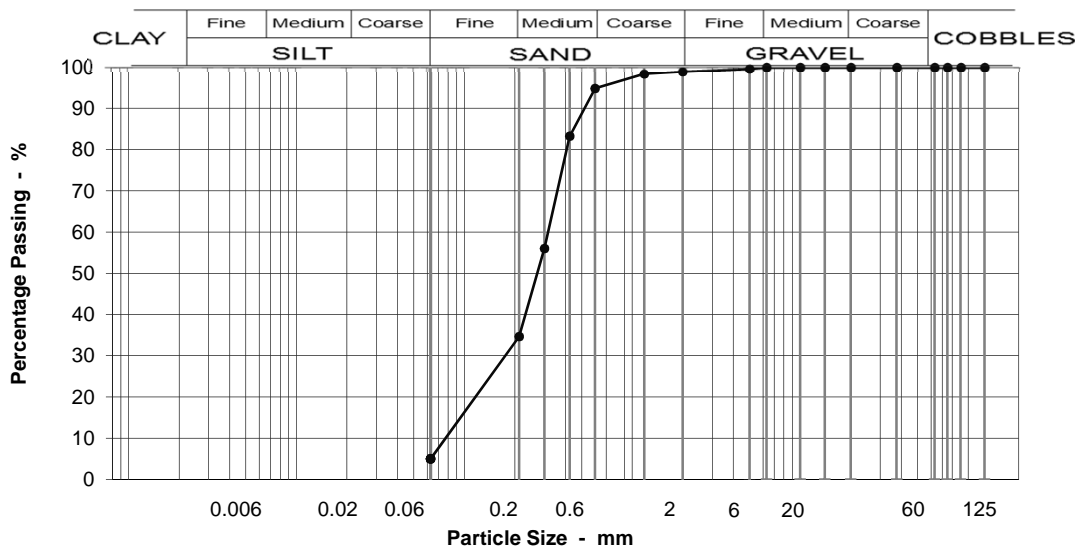
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH14 @ 23 - 23.5m

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	98
0.600	95
0.425	83
0.300	56
0.212	35
0.063	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 22

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	4
Medium SAND	60
Fine SAND	30
Silt & Clay	5

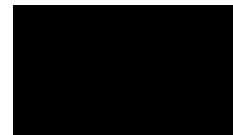
Grading Analysis	
D100	5
D60	0.32
D10	0.09
Uniformity Coefficient	4

Description
Light yellowish grey, silty, fine, medium and coarse SAND.

Test Code = 610



Peter Hardiment (Operations Manager)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL201711296-613**
Our Project No. **PZ1522D1**
Your Sample Ref **49**
Your Project or Order No. **PZ1522**
Date Tested **06/12/2017**
Date Report Issued **12-Jan-18**

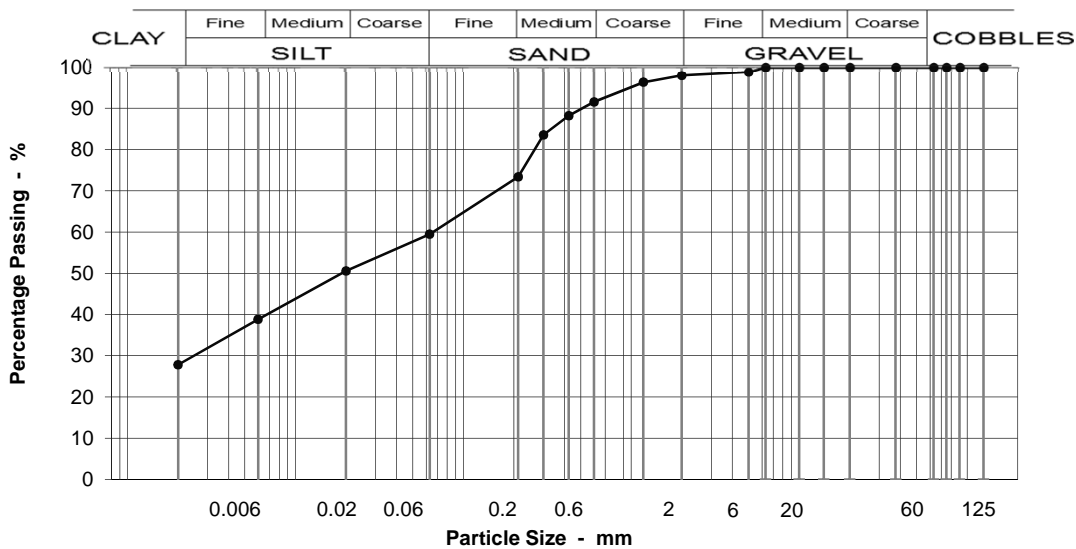
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: **Gt Yarmouth 3rd River Crossing**

Location: **BH14 @ 27.5 - 28m Specimen: 1**

Location and orientation within sample not applicable

Bulk disturbed sample



Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	99
2	98
1.18	96
0.600	92
0.425	88
0.300	84
0.212	73
0.063	59
0.020	51
0.006	39
0.002	28

Specification for Highway Works Classification
Table 6/2

Moisture content % 34

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	2
Coarse SAND	6
Medium SAND	18
Fine SAND	14
Silt & Clay	59

Grading Analysis	
D100	5
D60	0.07
D10	0.00
Uniformity Coefficient	>10*

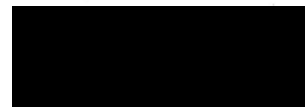
Description	
Firm, laminated, light greyish brown, very clayey, very sandy SILT.	

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)



Norfolk Partnership Laboratory

Email: civil.laboratory@norfolk.gov.uk

Gt Yarmouth 3rd River Crossing
 CES Highways Projects
 County Hall
 Martineau Lane
 Norwich
 Norfolk
 NR1 2DH

Our Project No PZ1522D1

Our Report and sample No NCCL201710114-612

Your Sample Ref D51

Your Project or Order No PZ1522

Date Report Issued 21-Nov-17

Date Tested 31-Oct-17

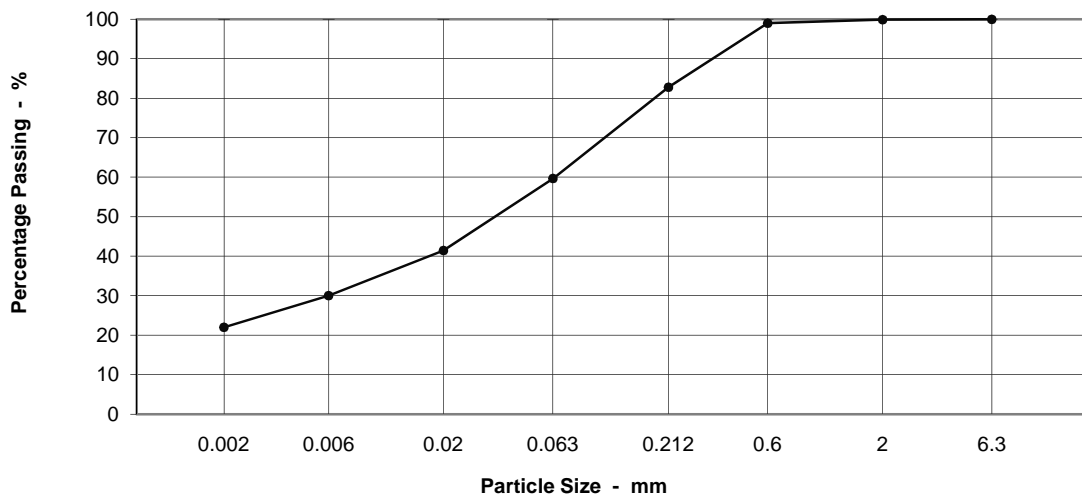
Page 1 of 1

Particle Size Distribution to BS 1377 : Part 2 : 1990 Sedimentation Method Section 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH14 D51 31m

Particle Size Distribution



Sieving & Sed.		Sample Proportions		Description
Particle Size mm	% Passing		%	
6.3	*See note	Coarse SAND	1	Firm light grey, very clayey, very silty, fine, medium and coarse SAND with a trace of shell fragments.
2.0	100	Medium SAND	16	
0.6	99	Fine SAND	23	
0.212	83	Coarse SILT	18	
0.063	60	Medium SILT	11	
0.02	41	Fine SILT	8	
0.006	30	CLAY	22	
0.002	22	Moisture content	21	

Test carried out on a disturbed sample prepared in accordance with BS1377 Part 1 clause 7.4.5, "in its natural state".
 Moisture content in accordance with BS1377 Part 2 clause 3.2, Oven-drying method. No pre-treatment was carried out.
 Location and orientation are not applicable.

* This test determines the particle size distribution from the coarse sand size to the clay size.

Test Code = 612



Peter Hardiment (Operations Manager)



Norfolk Partnership Laboratory

Email: civil.laboratory@norfolk.gov.uk

Gt Yarmouth 3rd River Crossing
 Community & Environmental Services
 County Hall
 Martineau Lane
 Norwich
 Norfolk
 NR1 2DH

Our Project No PZ1522D1

Our Report and sample No NCCL201710114-612

Your Sample Ref D51

Your Project or Order No PZ1522

Date Report Issued 12-Jan-18

Date Tested 31-Oct-17

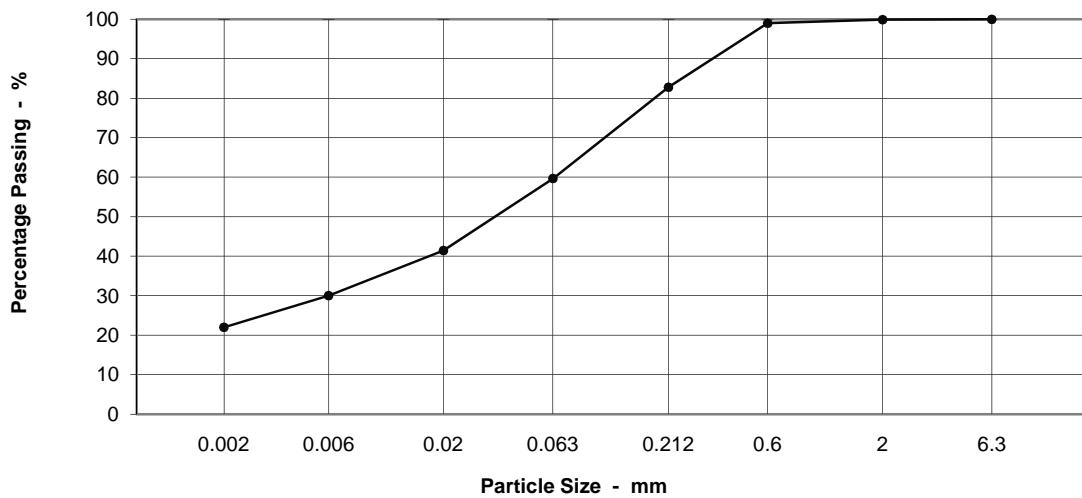
Page 1 of 1

Particle Size Distribution to BS 1377 : Part 2 : 1990 Sedimentation Method Section 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH14 D51 31.45m

Particle Size Distribution



Sieving & Sed.		Sample Proportions		Description
Particle Size mm	% Passing		%	
6.3	*See note	Coarse SAND	1	Firm light grey, very clayey, very silty, fine, medium and coarse SAND with a trace of shell fragments.
2.0	100	Medium SAND	16	
0.6	99	Fine SAND	23	
0.212	83	Coarse SILT	18	
0.063	60	Medium SILT	11	
0.02	41	Fine SILT	8	
0.006	30	CLAY	22	
0.002	22	Moisture content	21	

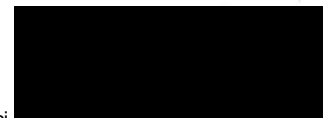
Test carried out on a disturbed sample prepared in accordance with BS1377 Part 1 clause 7.4.5, "in its natural state".
 Moisture content in accordance with BS1377 Part 2 clause 3.2, Oven-drying method. No pre-treatment was carried out.
 Location and orientation are not applicable.

* This test determines the particle size distribution from the coarse sand size to the clay size.

Test Code = 612



Simon Holden (Project Technici



CES Highways Projects
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL2017101113-610**
Our Project No. **PZ1522D1**
Your Sample Ref **57**
Your Project or Order No. **PZ1522**
Date Tested **19/10/2017**
Date Report Issued **21-Nov-17**

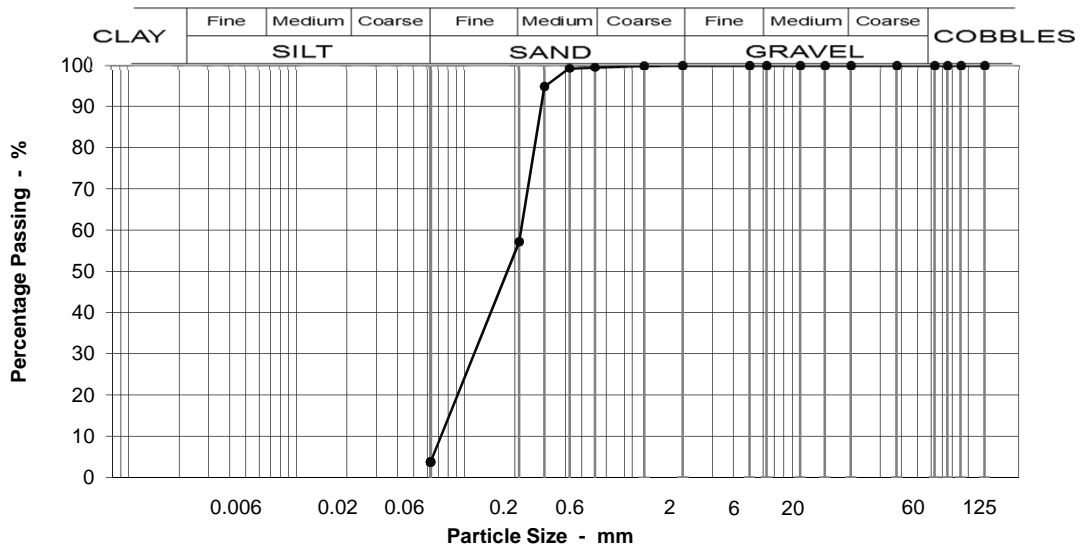
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH14 @ 36 - 36.5m

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	100
0.600	100
0.425	99
0.300	95
0.212	57
0.063	4

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 18

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	0
Medium SAND	42
Fine SAND	53
Silt & Clay	4

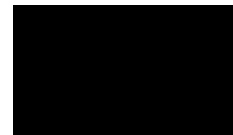
Grading Analysis	
D100	1
D60	0.22
D10	0.08
Uniformity Coefficient	3

Description	
Brownish grey, slightly silty, fine and medium SAND.	

Test Code = 610



Peter Hardiment (Operations Manager)

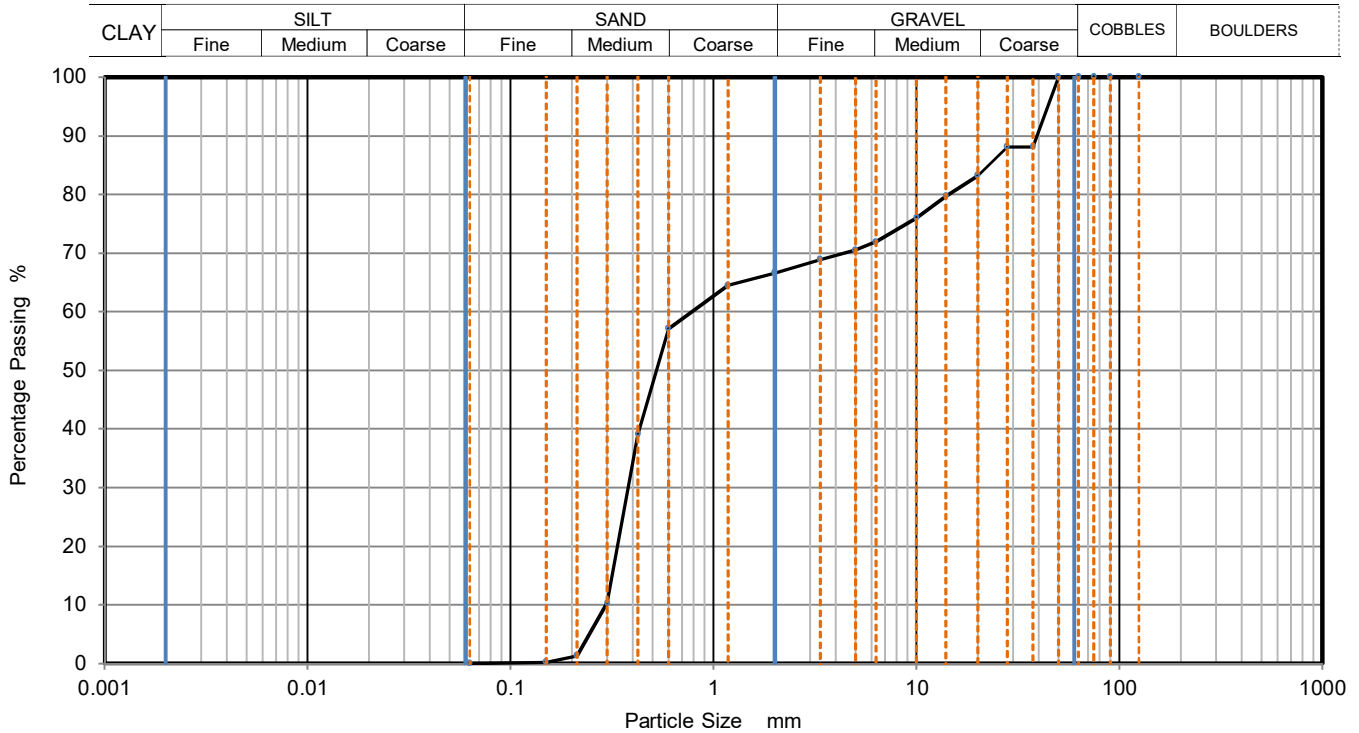




DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH15
Sample Description:	Light brown very gravelly SAND. Gravel is of flint	Sample Depth (m)	0.40
		Sample Reference	B1



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	88		
28	88		
20	83		
14	80		
10	76		
6.3	72		
5	71		
3.35	69		
2	67		
1.18	65		
0.6	57		
0.425	39		
0.3	10		
0.212	1		
0.15	0		
0.063	0		

Sample Proportions	% dry mass
Very coarse	0
Gravel	33
Sand	67
Fines <0.063mm	0

Grading Analysis		
D100	mm	
D60	mm	0.781
D30	mm	0.381
D10	mm	0.296
Uniformity Coefficient		2.6
Curvature Coefficient		0.63

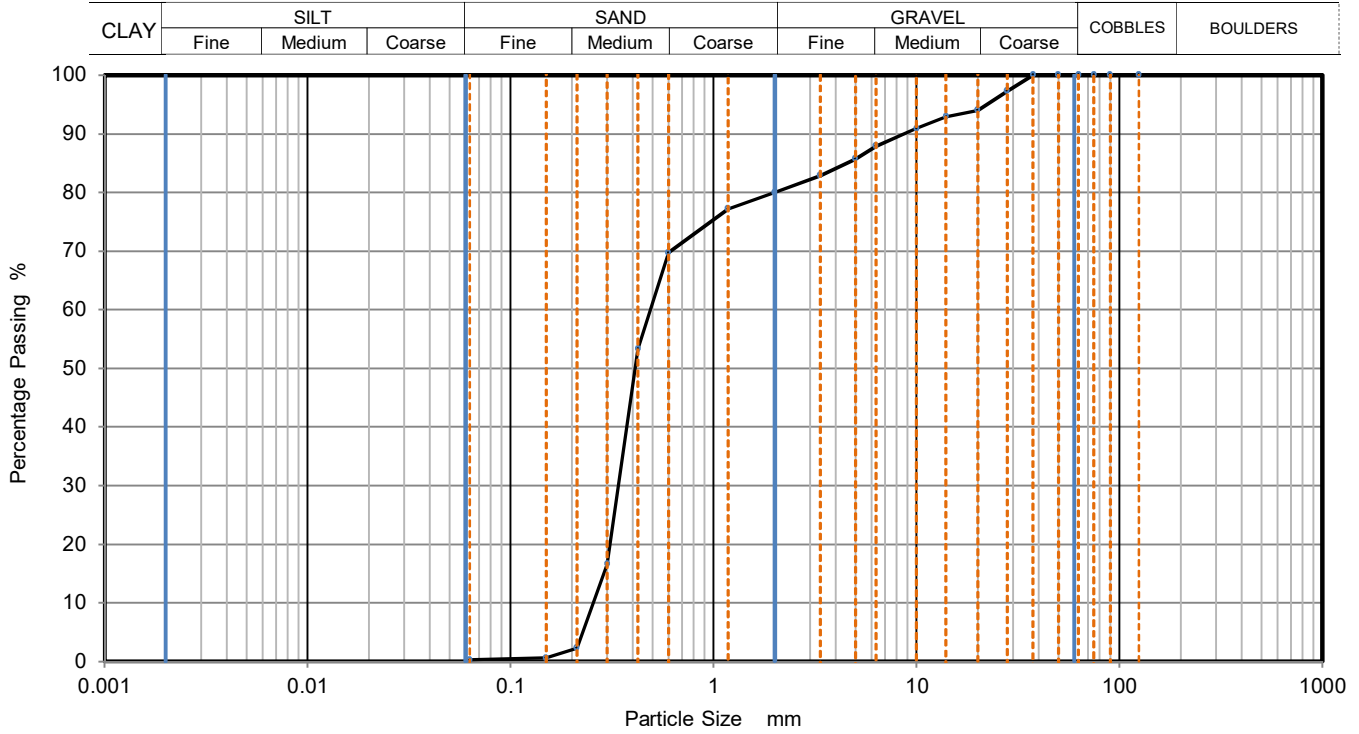
Remarks	Approved	Date	Sheet No.:
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH15
Sample Description:	Light grey very gravelly SAND. Gravel is of flint and quartzite	Sample Depth (m)	1.00
		Sample Reference	B3



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	97		
20	94		
14	93		
10	91		
6.3	88		
5	86		
3.35	83		
2	80		
1.18	77		
0.6	70		
0.425	53		
0.3	17		
0.212	2		
0.15	1		
0.063	0		

Sample Proportions	% dry mass
Very coarse	0
Gravel	20
Sand	80
Fines <0.063mm	0

Grading Analysis		
D100	mm	
D60	mm	0.489
D30	mm	0.341
D10	mm	0.255
Uniformity Coefficient		1.9
Curvature Coefficient		0.93

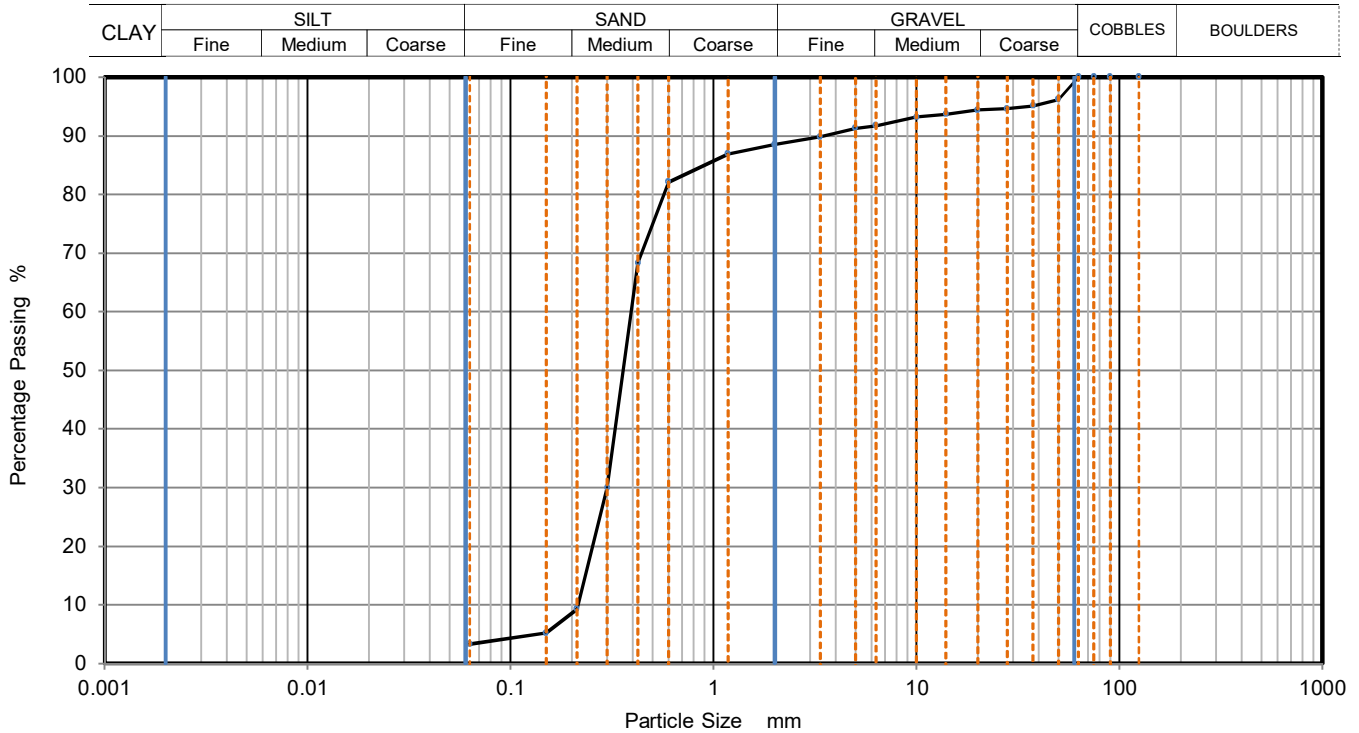
Remarks	Approved	Date	Sheet No.:
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH15
Sample Description:	Brown slightly silty gravelly SAND. Gravel is of flint	Sample Depth (m)	1.20
		Sample Reference	B6



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	96		
37.5	95		
28	95		
20	94		
14	94		
10	93		
6.3	92		
5	91		
3.35	90		
2	89		
1.18	87		
0.6	82		
0.425	68		
0.3	30		
0.212	9		
0.15	5		
0.063	3		

Sample Proportions	% dry mass
Very coarse	0
Gravel	12
Sand	85
Fines <0.063mm	3

Grading Analysis		
D100	mm	
D60	mm	0.394
D30	mm	0.300
D10	mm	0.214
Uniformity Coefficient		1.8
Curvature Coefficient		1.1

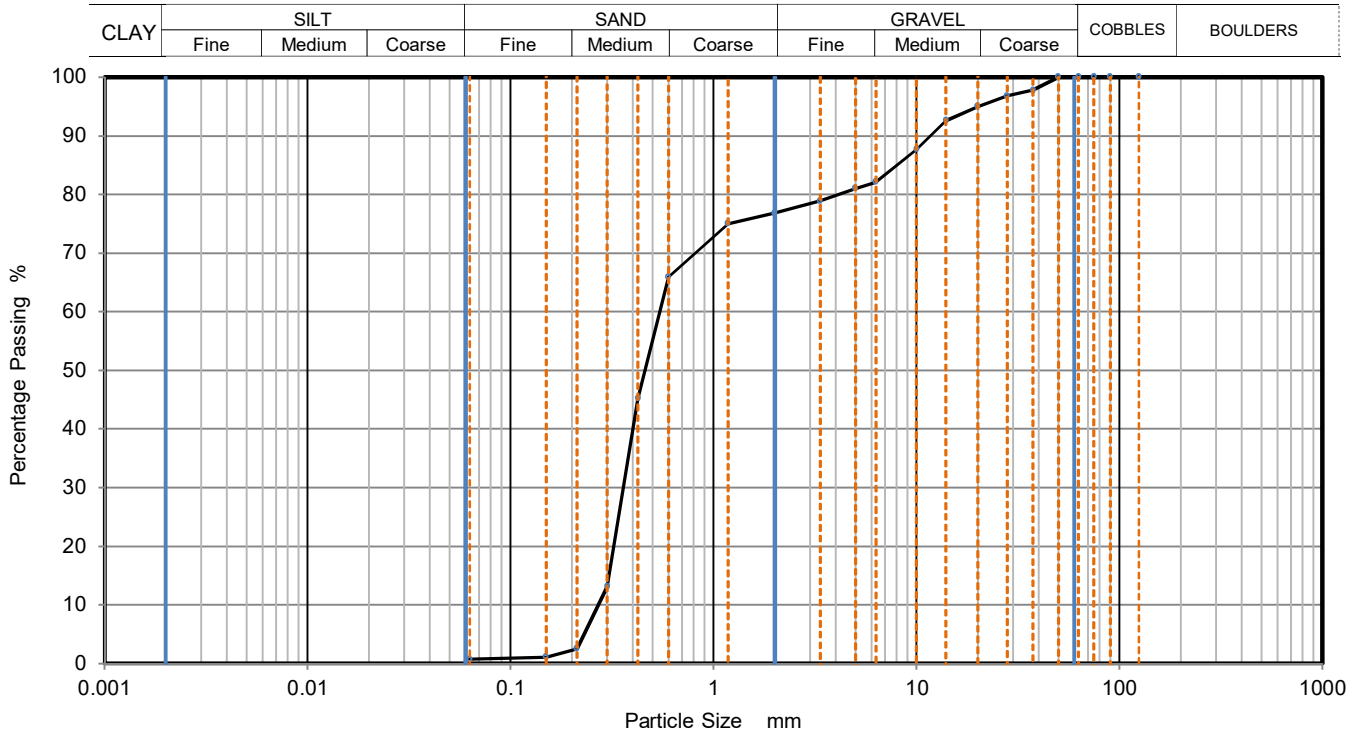
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH15
Sample Description:	Brown slightly silty very gravelly SAND. Gravel is of flint and quartzite	Sample Depth (m)	2.00
		Sample Reference	B9



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	98		
28	97		
20	95		
14	93		
10	88		
6.3	82		
5	81		
3.35	79		
2	77		
1.18	75		
0.6	66		
0.425	45		
0.3	13		
0.212	3		
0.15	1		
0.063	1		

Sample Proportions	% dry mass
Very coarse	0
Gravel	23
Sand	76
Fines <0.063mm	1

Grading Analysis		
D100	mm	
D60	mm	0.544
D30	mm	0.360
D10	mm	0.271
Uniformity Coefficient		2
Curvature Coefficient		0.88

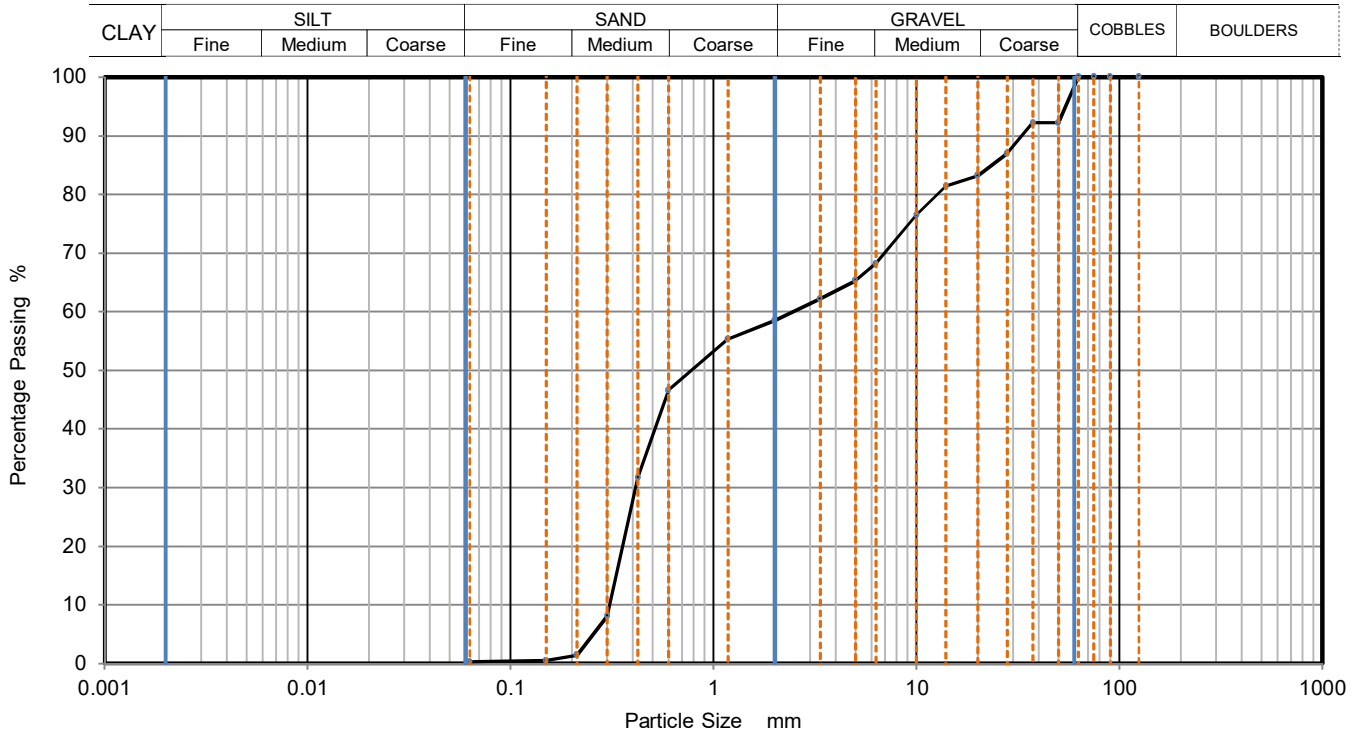
Remarks	Approved	Date	Sheet No.:
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH15
Sample Description:	Light brown very gravelly SAND. Gravel is of flint and quartzite	Sample Depth (m)	4.00
		Sample Reference	B15



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	92		
37.5	92		
28	87		
20	83		
14	81		
10	77		
6.3	68		
5	65		
3.35	62		
2	59		
1.18	55		
0.6	47		
0.425	32		
0.3	8		
0.212	1		
0.15	1		
0.063	0		

Sample Proportions	% dry mass
Very coarse	0
Gravel	42
Sand	58
Fines <0.063mm	0

Grading Analysis		
D100	mm	
D60	mm	2.470
D30	mm	0.414
D10	mm	0.308
Uniformity Coefficient		8
Curvature Coefficient		0.23

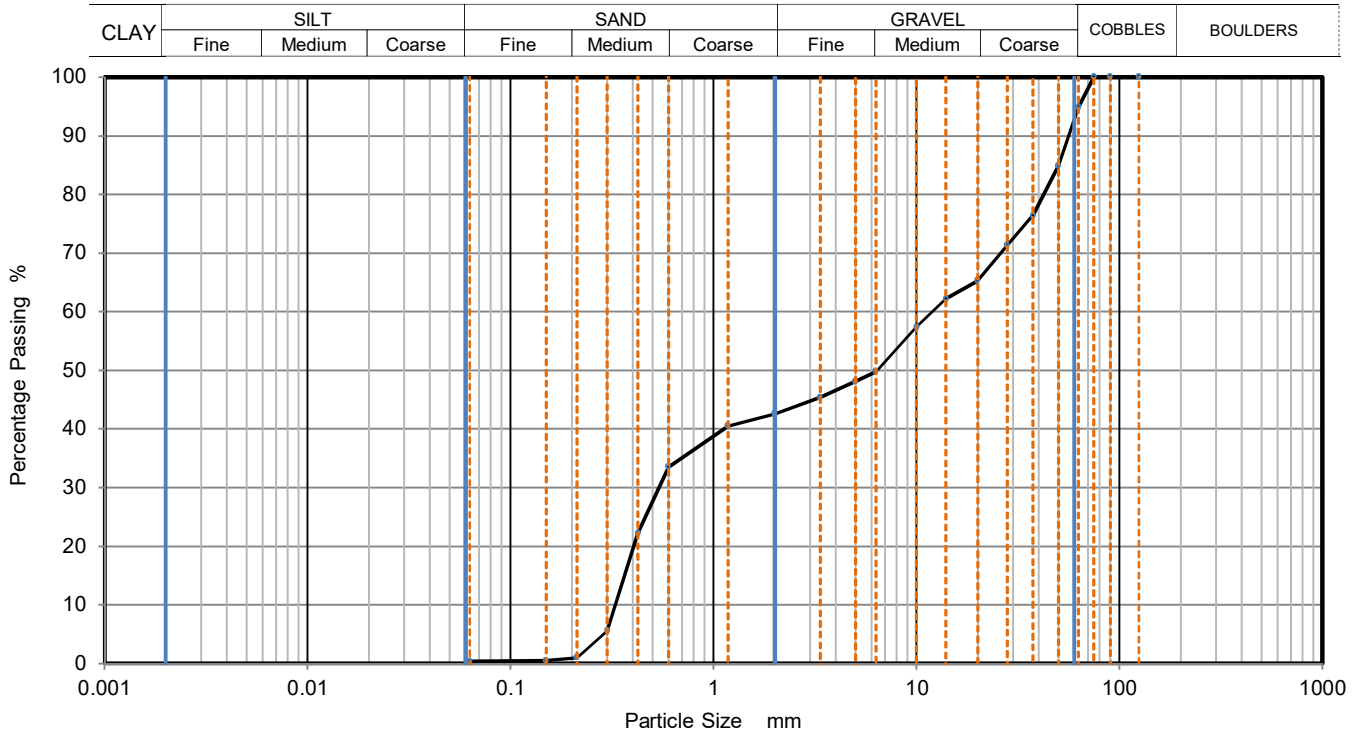
Remarks	Approved	Date	Sheet No.:
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH15
Sample Description:	Brown very sandy GRAVEL with low cobble content. Cobbles are of flint. Gravel is of flint and quartzite	Sample Depth (m)	5.00
		Sample Reference	B18



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	95		
50	85		
37.5	76		
28	71		
20	65		
14	62		
10	57		
6.3	50		
5	48		
3.35	45		
2	43		
1.18	41		
0.6	34		
0.425	22		
0.3	6		
0.212	1		
0.15	1		
0.063	0		

Sample Proportions	% dry mass
Very coarse	5
Gravel	52
Sand	42
Fines <0.063mm	0

Grading Analysis		
D100	mm	
D60	mm	12.000
D30	mm	0.540
D10	mm	0.329
Uniformity Coefficient		36
Curvature Coefficient		0.074

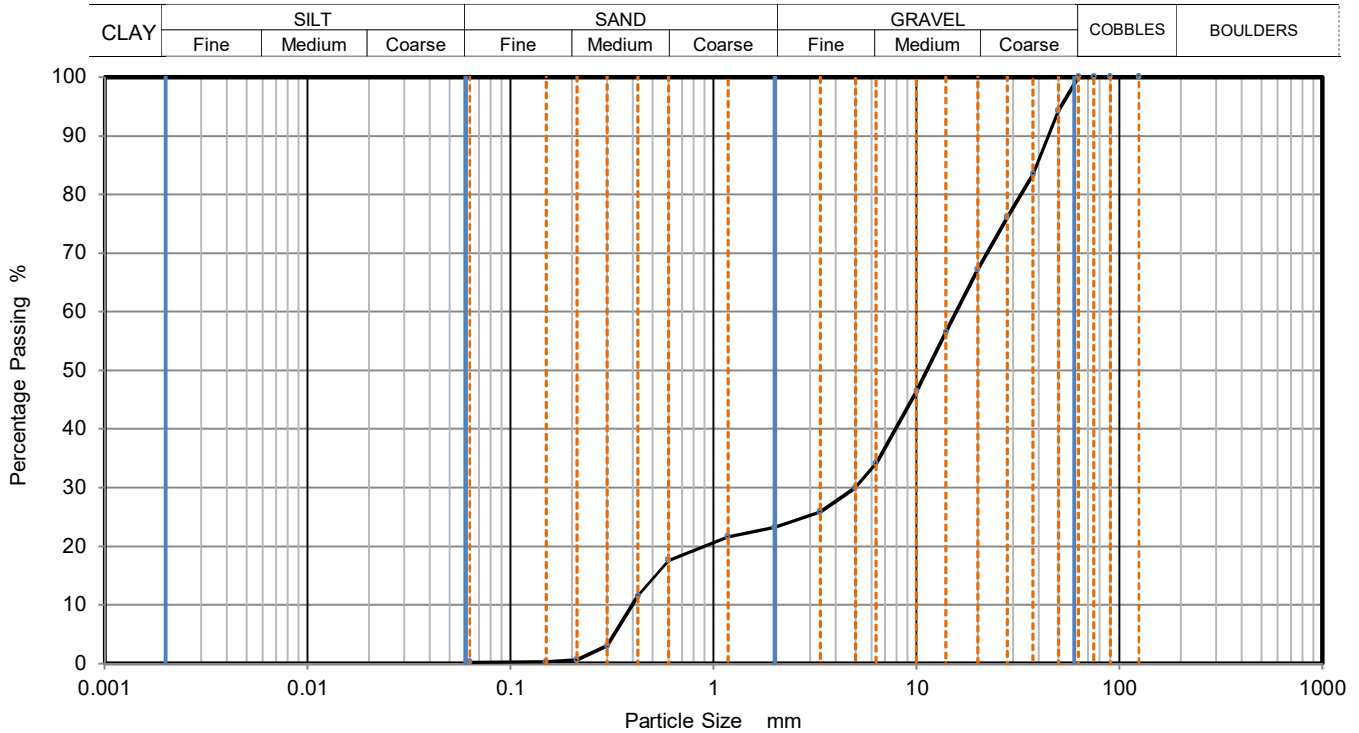
Remarks Insufficient sample to test in full accordance with BS 1377	Approved	Date	Sheet No.:
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH15
Sample Description:	Brown very sandy GRAVEL. Gravel is of flint and quartzite	Sample Depth (m)	6.00
		Sample Reference	B21



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	94		
37.5	83		
28	76		
20	67		
14	57		
10	46		
6.3	34		
5	30		
3.35	26		
2	23		
1.18	22		
0.6	18		
0.425	12		
0.3	3		
0.212	1		
0.15	0		
0.063	0		

Sample Proportions	% dry mass
Very coarse	0
Gravel	77
Sand	23
Fines <0.063mm	0

Grading Analysis		
D100	mm	
D60	mm	15.700
D30	mm	4.990
D10	mm	0.399
Uniformity Coefficient		39
Curvature Coefficient		4

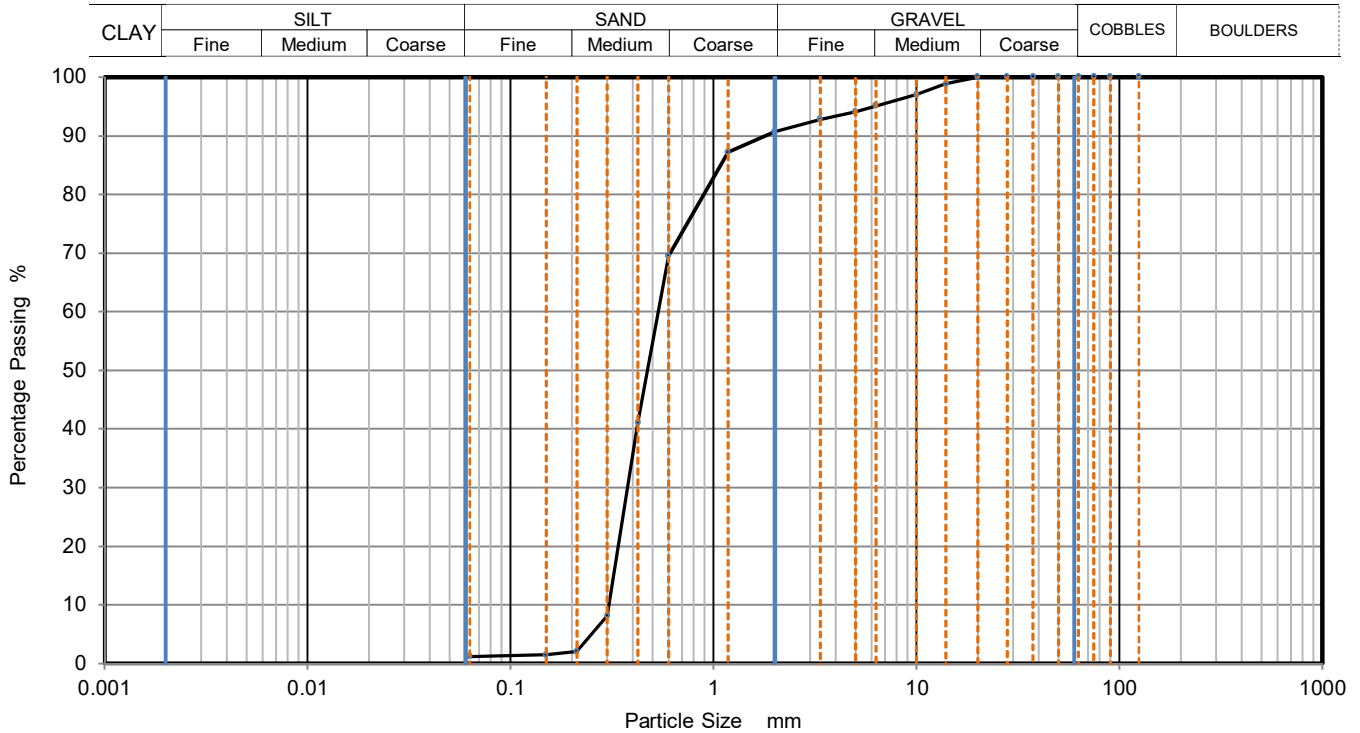
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH15
Sample Description:	Brown slightly silty gravelly SAND. Gravel is of flint and quartzite	Sample Depth (m)	7.00
		Sample Reference	B24



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	99		
10	97		
6.3	95		
5	94		
3.35	93		
2	91		
1.18	87		
0.6	70		
0.425	41		
0.3	8		
0.212	2		
0.15	2		
0.063	1		

Sample Proportions	% dry mass
Very coarse	0
Gravel	9
Sand	90
Fines <0.063mm	1

Grading Analysis		
D100	mm	
D60	mm	0.534
D30	mm	0.378
D10	mm	0.306
Uniformity Coefficient		1.7
Curvature Coefficient		0.87

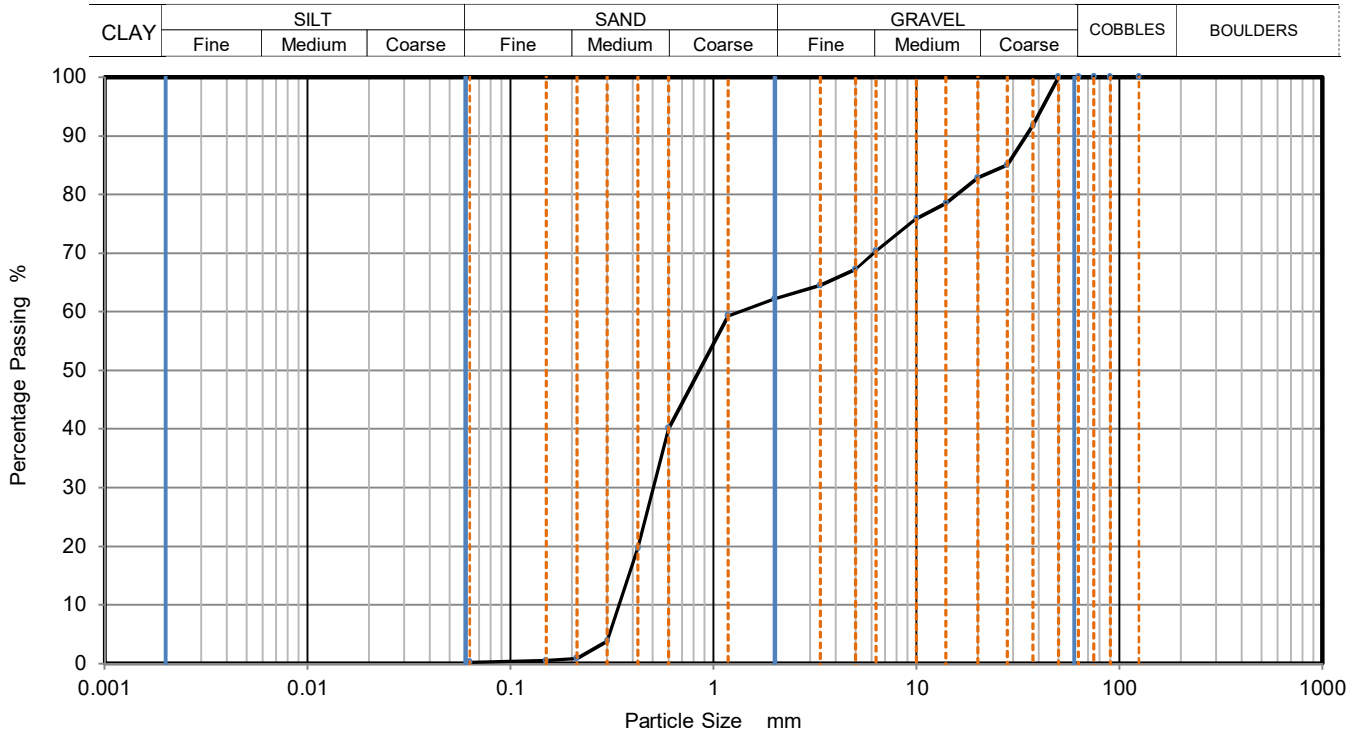
Remarks	Approved	Date	Sheet No.:
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH15
Sample Description:	Brown and dark grey very gravelly SAND. Gravel is of flint, quartzite and occasional shell fragments	Sample Depth (m)	9.00
		Sample Reference	B30



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	92		
28	85		
20	83		
14	79		
10	76		
6.3	70		
5	67		
3.35	65		
2	62		
1.18	59		
0.6	40		
0.425	20		
0.3	4		
0.212	1		
0.15	1		
0.063	0		

Sample Proportions	% dry mass
Very coarse	0
Gravel	38
Sand	62
Fines <0.063mm	0

Grading Analysis		
D100	mm	
D60	mm	1.330
D30	mm	0.506
D10	mm	0.344
Uniformity Coefficient		3.9
Curvature Coefficient		0.56

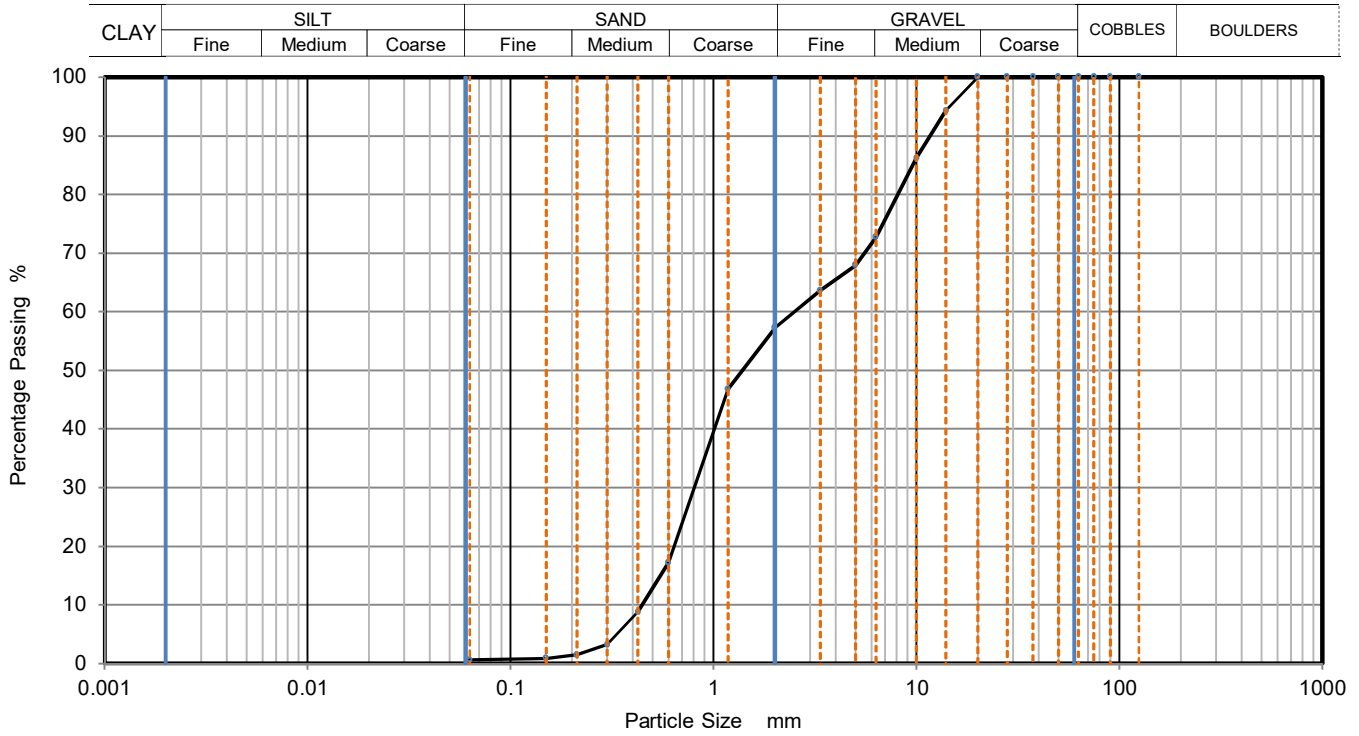
Remarks	Approved	Date	Sheet No.:
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH15
Sample Description:	Brown slightly silty very gravelly SAND. Gravel is of flint, quartzite and occasional shell fragments	Sample Depth (m)	10.00
		Sample Reference	B33



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	94		
10	86		
6.3	73		
5	68		
3.35	64		
2	57		
1.18	47		
0.6	17		
0.425	9		
0.3	3		
0.212	2		
0.15	1		
0.063	1		

Sample Proportions	% dry mass
Very coarse	0
Gravel	43
Sand	57
Fines <0.063mm	1

Grading Analysis		
D100	mm	
D60	mm	2.510
D30	mm	0.804
D10	mm	0.446
Uniformity Coefficient		5.6
Curvature Coefficient		0.58

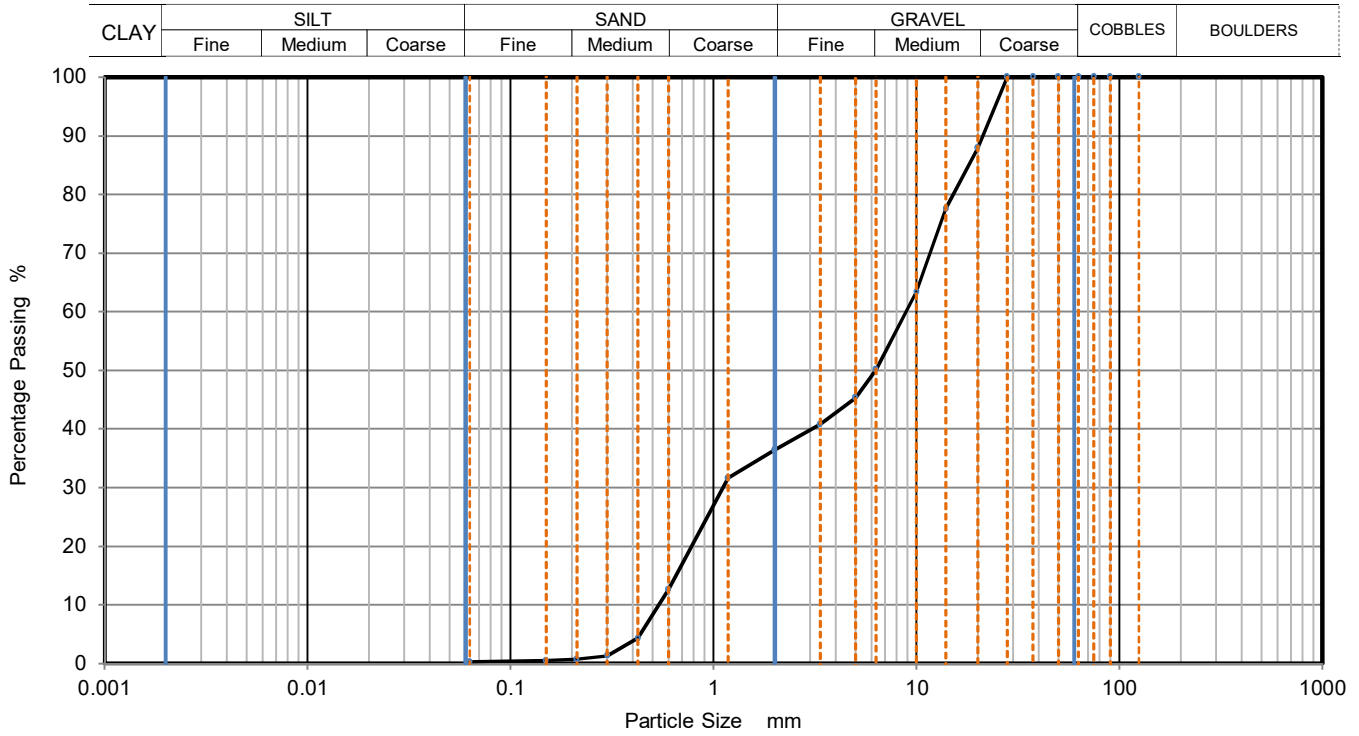
Remarks	Approved	Date	Sheet No.:
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH15
Sample Description:	Brown very sandy GRAVEL. Gravel is of flint and quartzite	Sample Depth (m)	13.00
		Sample Reference	B41



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	88		
14	78		
10	63		
6.3	50		
5	45		
3.35	41		
2	36		
1.18	32		
0.6	13		
0.425	4		
0.3	1		
0.212	1		
0.15	1		
0.063	0		

Sample Proportions	% dry mass
Very coarse	0
Gravel	64
Sand	36
Fines <0.063mm	0

Grading Analysis		
D100	mm	
D60	mm	8.880
D30	mm	1.120
D10	mm	0.539
Uniformity Coefficient		16
Curvature Coefficient		0.26

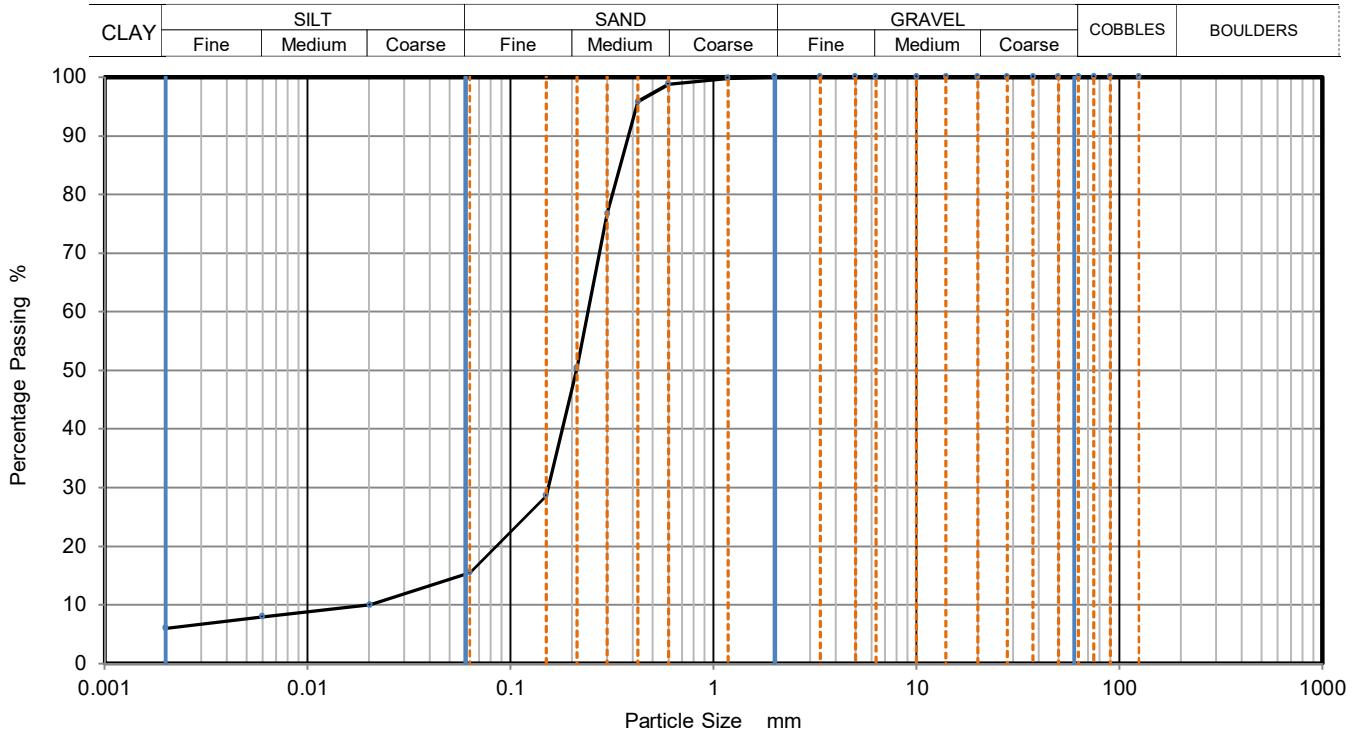
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH15
Sample Description:	Light brown clayey silty SAND	Sample Depth (m)	14.30
		Sample Reference	B43



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	10
90	100	0.0060	8
75	100	0.0020	6
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99	Particle density (assumed)	
0.425	96	2.65	Mg/m3
0.3	77		
0.212	50		
0.15	29		
0.063	16		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	85
Silt	9
Clay	6

Grading Analysis		
D100	mm	
D60	mm	0.241
D30	mm	0.153
D10	mm	0.021
Uniformity Coefficient		12
Curvature Coefficient		4.7

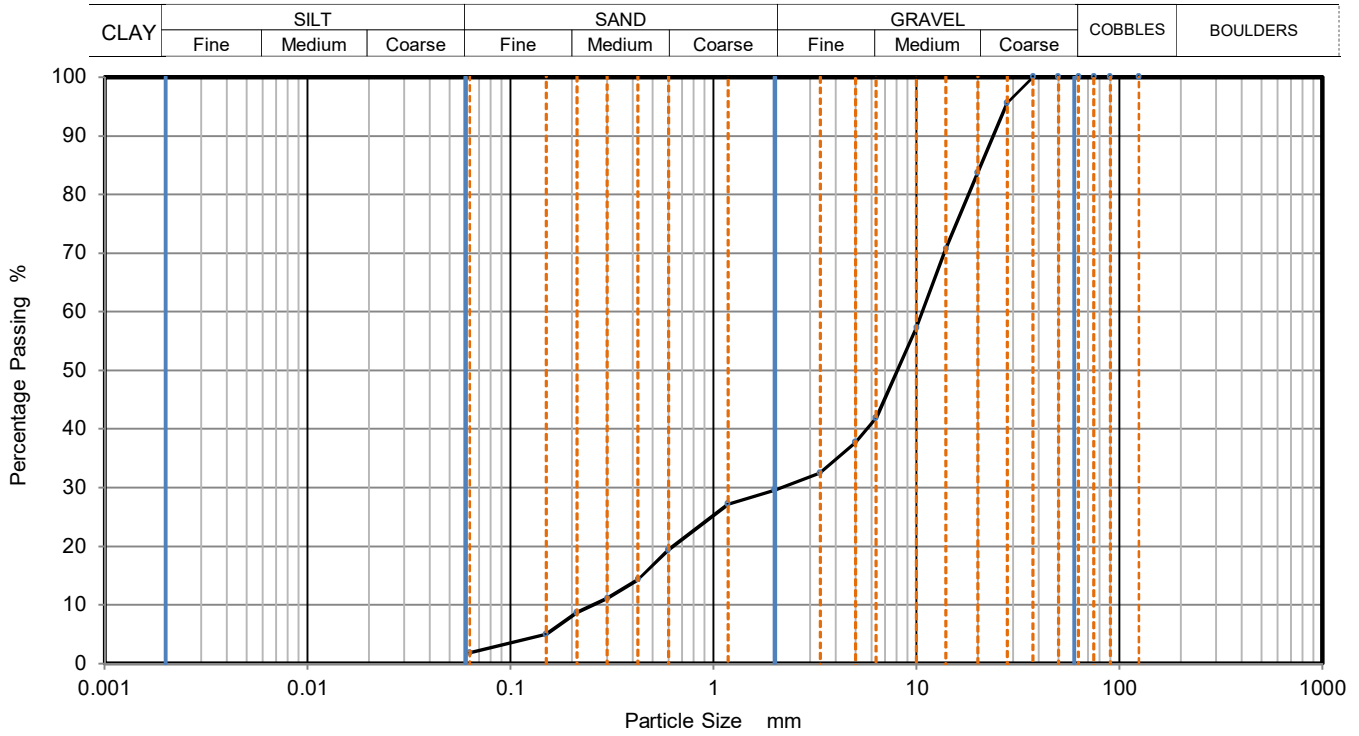
Remarks	Approved	Date	Sheet No.:
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH15
Sample Description:	Brown slightly silty very sandy GRAVEL. Gravel is of flint, quartzite and shell fragments	Sample Depth (m)	14.60
		Sample Reference	B44



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	96		
20	84		
14	71		
10	57		
6.3	42		
5	38		
3.35	33		
2	30		
1.18	27		
0.6	19		
0.425	14		
0.3	11		
0.212	9		
0.15	5		
0.063	2		

Sample Proportions	% dry mass
Very coarse	0
Gravel	70
Sand	28
Fines <0.063mm	2

Grading Analysis		
D100	mm	
D60	mm	10.700
D30	mm	2.130
D10	mm	0.255
Uniformity Coefficient		42
Curvature Coefficient		1.7

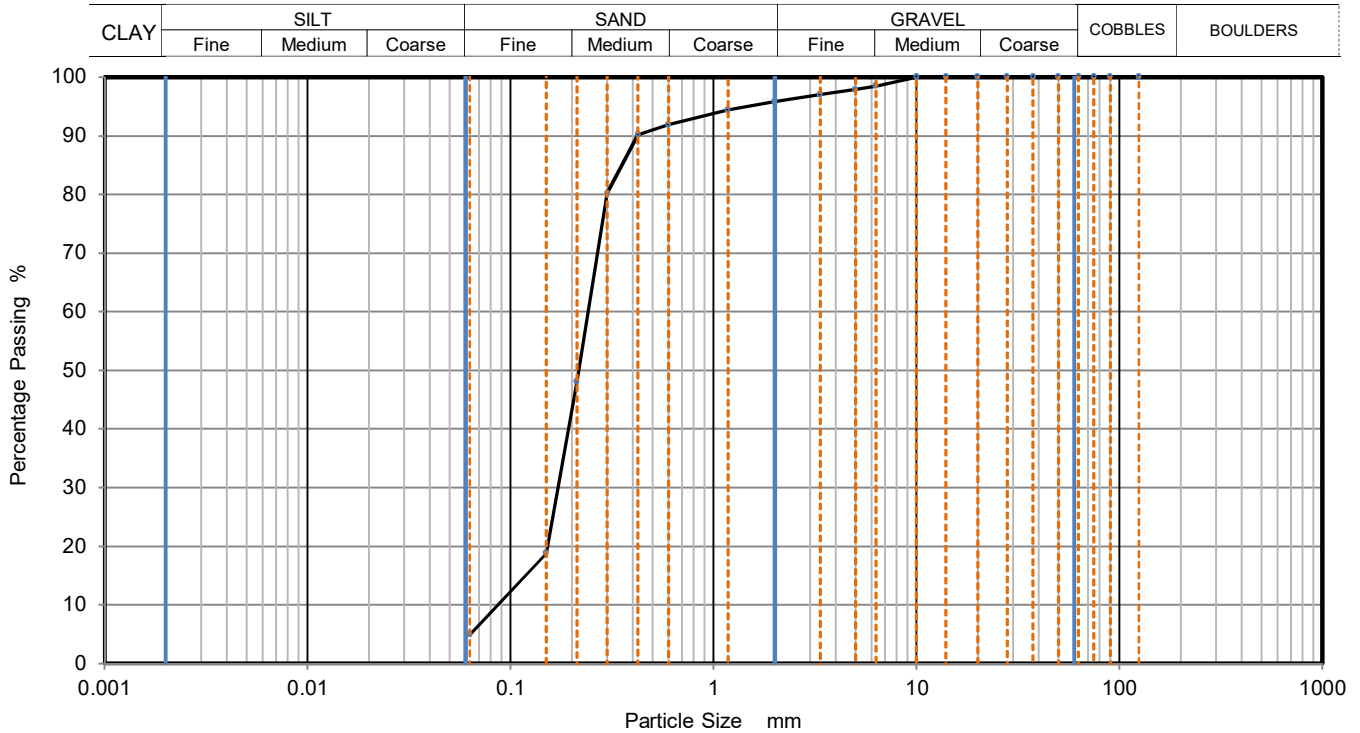
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH15
Sample Description:	Brown slightly silty slightly gravelly SAND. Gravel is of flint	Sample Depth (m)	15.40
		Sample Reference	B46



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5	98		
3.35	97		
2	96		
1.18	94		
0.6	92		
0.425	90		
0.3	80		
0.212	48		
0.15	19		
0.063	5		

Sample Proportions	% dry mass
Very coarse	0
Gravel	4
Sand	91
Fines <0.063mm	5

Grading Analysis		
D100	mm	
D60	mm	0.241
D30	mm	0.171
D10	mm	0.087
Uniformity Coefficient		2.8
Curvature Coefficient		1.4

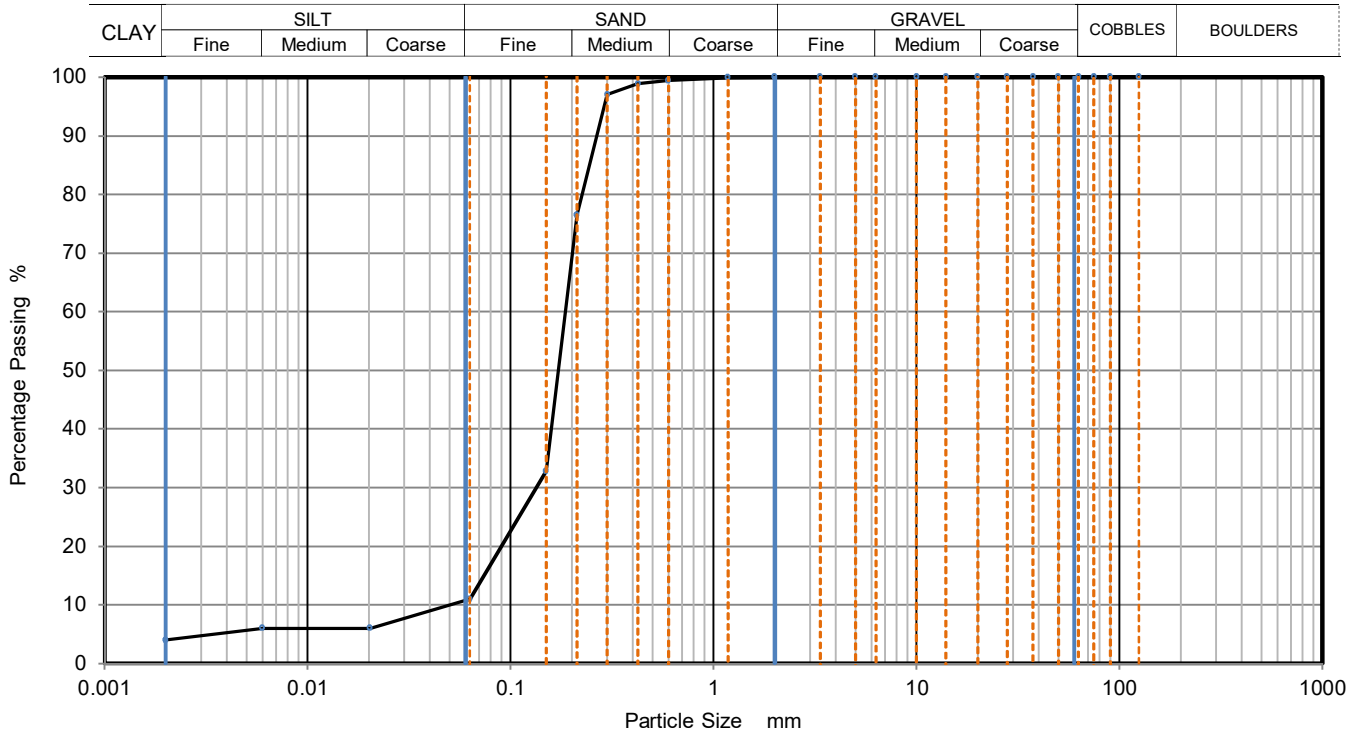
Remarks	Approved	Date	Sheet No.:
	MW	30/01/2018	1 of 1



DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH15
Sample Description:	Brown slightly clayey silty SAND	Sample Depth (m)	18.00
		Sample Reference	B53



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	6
90	100	0.0060	6
75	100	0.0020	4
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99	Particle density (assumed)	
0.425	99	2.65	Mg/m3
0.3	97		
0.212	77		
0.15	33		
0.063	11		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	89
Silt	7
Clay	4

Grading Analysis		
D100	mm	
D60	mm	0.186
D30	mm	0.134
D10	mm	0.049
Uniformity Coefficient		3.8
Curvature Coefficient		2

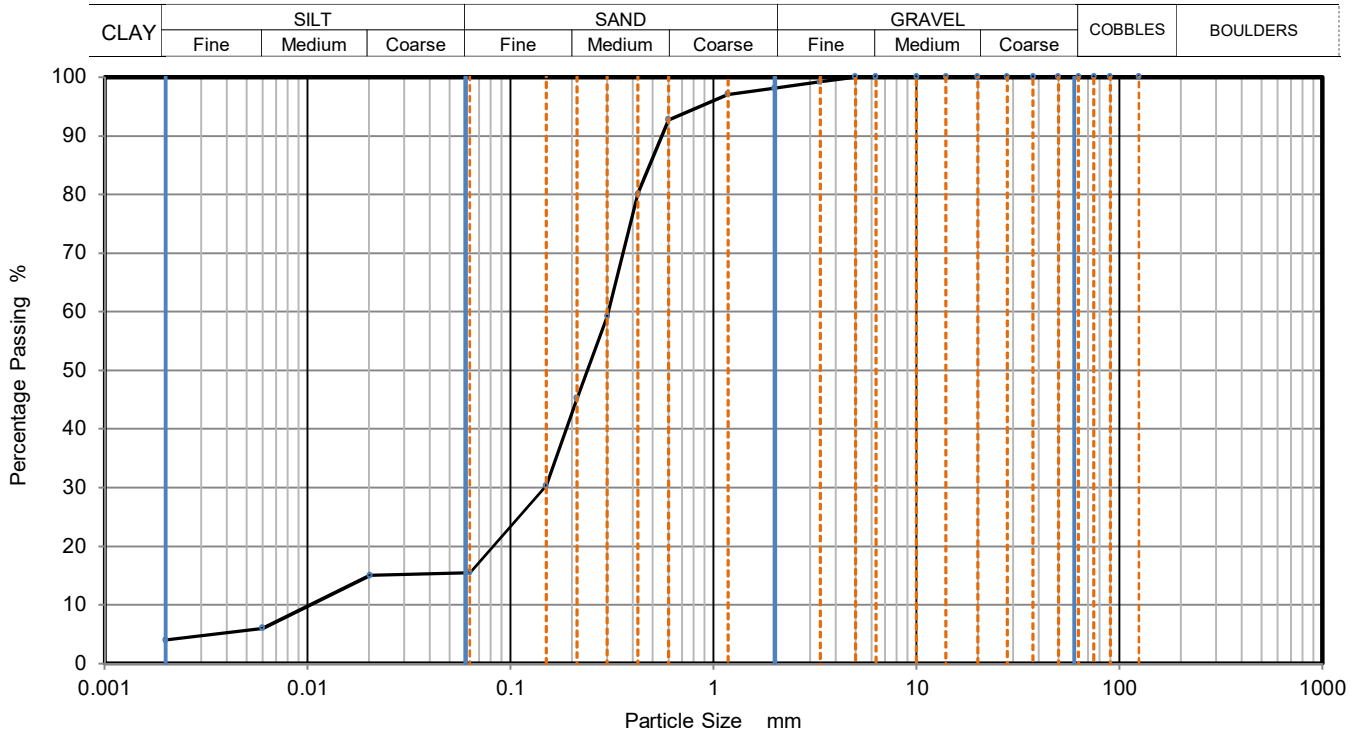
Remarks	Approved	Date	Sheet No.:
	MW	30/01/2018	1 of 1



DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH15
Sample Description:	Grey slightly clayey silty slightly gravelly SAND. Gravel is of flint	Sample Depth (m)	21.00
		Sample Reference	B59



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	15
90	100	0.0060	6
75	100	0.0020	4
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	99		
2	98		
1.18	97		
0.6	93		
0.425	80	Particle density (assumed) 2.65 Mg/m3	
0.3	59		
0.212	45		
0.15	30		
0.063	16		

Sample Proportions	% dry mass
Very coarse	0
Gravel	2
Sand	83
Silt	12
Clay	4

Grading Analysis		
D100	mm	
D60	mm	0.304
D30	mm	0.147
D10	mm	0.011
Uniformity Coefficient		29
Curvature Coefficient		6.7

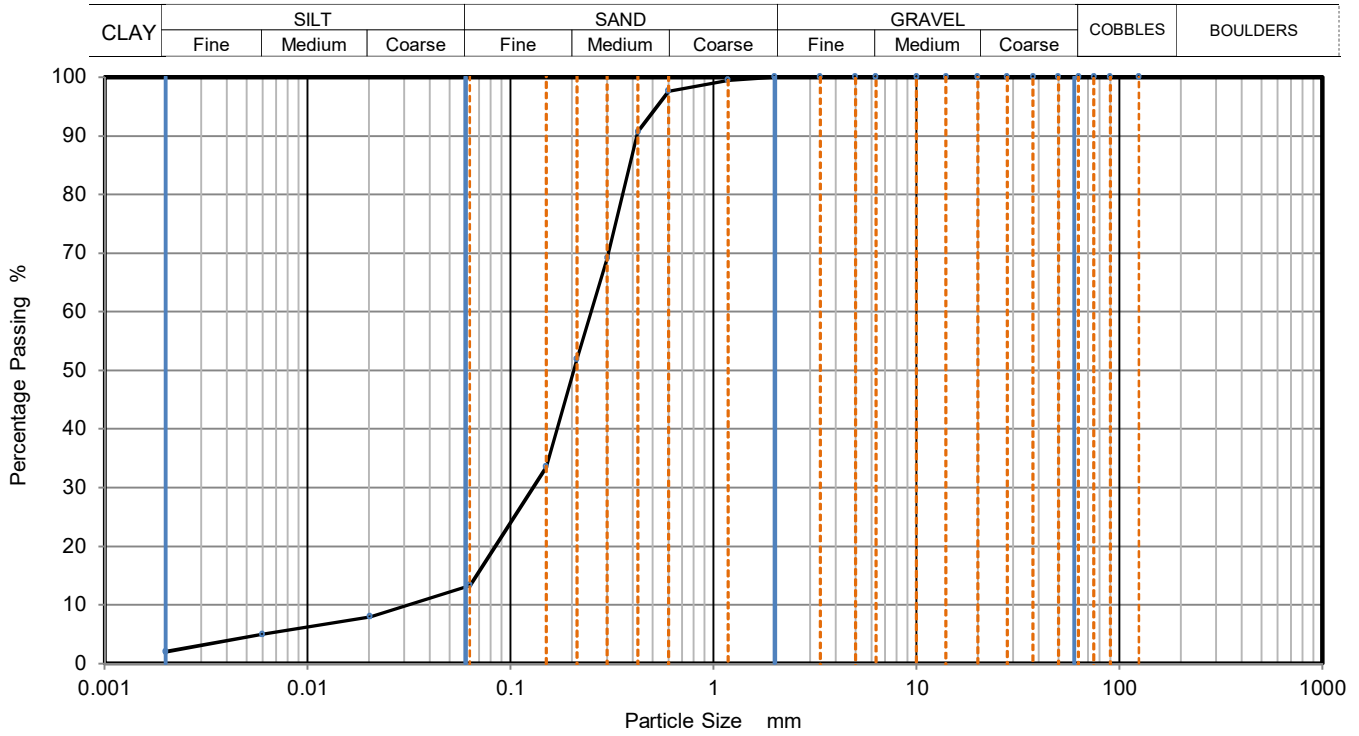
Remarks	Approved	Date	Sheet No.:
	MW	30/01/2018	1 of 1



DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH15
Sample Description:	Grey slightly clayey silty SAND	Sample Depth (m)	22.00
		Sample Reference	B61



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	8
90	100	0.0060	5
75	100	0.0020	2
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	98	Particle density (assumed)	
0.425	91	2.65	Mg/m3
0.3	69		
0.212	52		
0.15	34		
0.063	13		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	87
Silt	11
Clay	2

Grading Analysis		
D100	mm	
D60	mm	0.250
D30	mm	0.129
D10	mm	0.031
Uniformity Coefficient		8.2
Curvature Coefficient		2.2

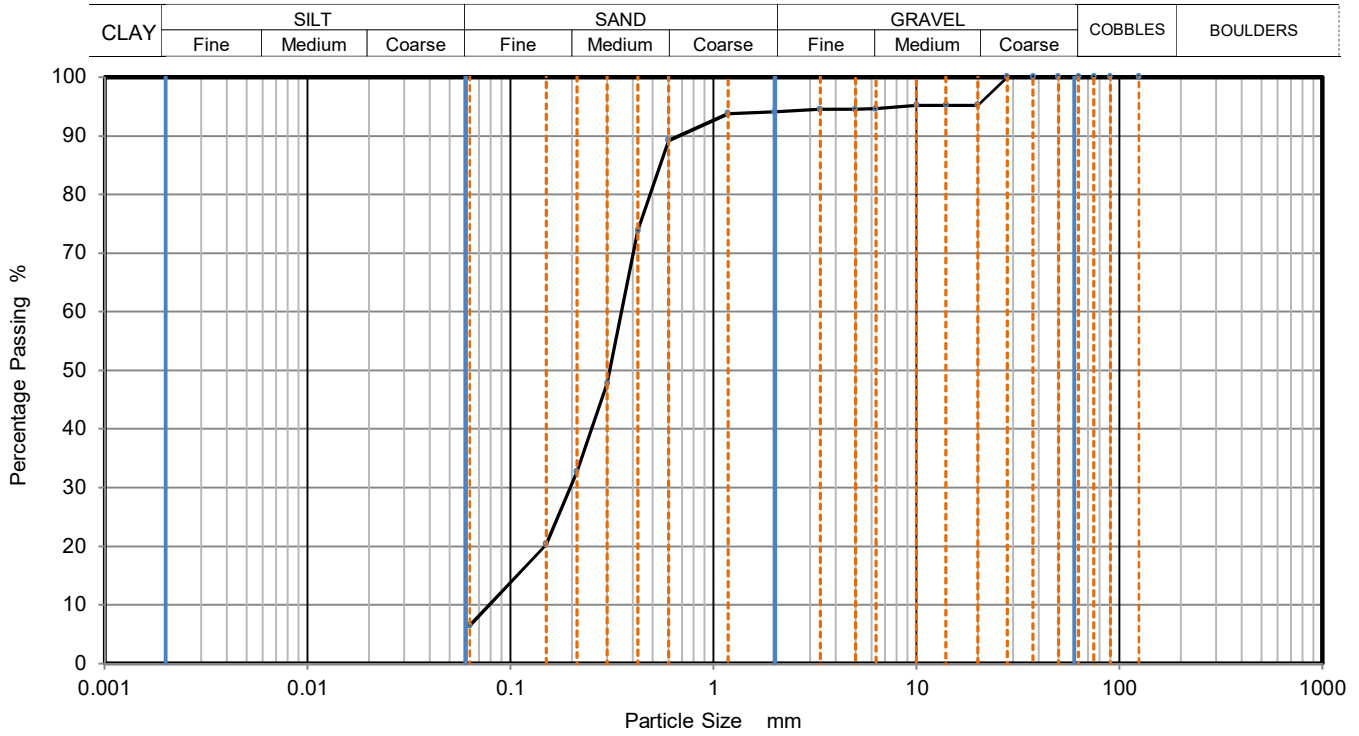
Remarks	Approved	Date	Sheet No.:
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH15
Sample Description:	Grey silty gravelly SAND. Gravel is of flint	Sample Depth (m)	23.00
		Sample Reference	B62



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	95		
14	95		
10	95		
6.3	95		
5	95		
3.35	95		
2	94		
1.18	94		
0.6	89		
0.425	74		
0.3	48		
0.212	33		
0.15	20		
0.063	7		

Sample Proportions	% dry mass
Very coarse	0
Gravel	6
Sand	88
Fines <0.063mm	7

Grading Analysis		
D100	mm	
D60	mm	0.353
D30	mm	0.197
D10	mm	0.078
Uniformity Coefficient		4.5
Curvature Coefficient		1.4

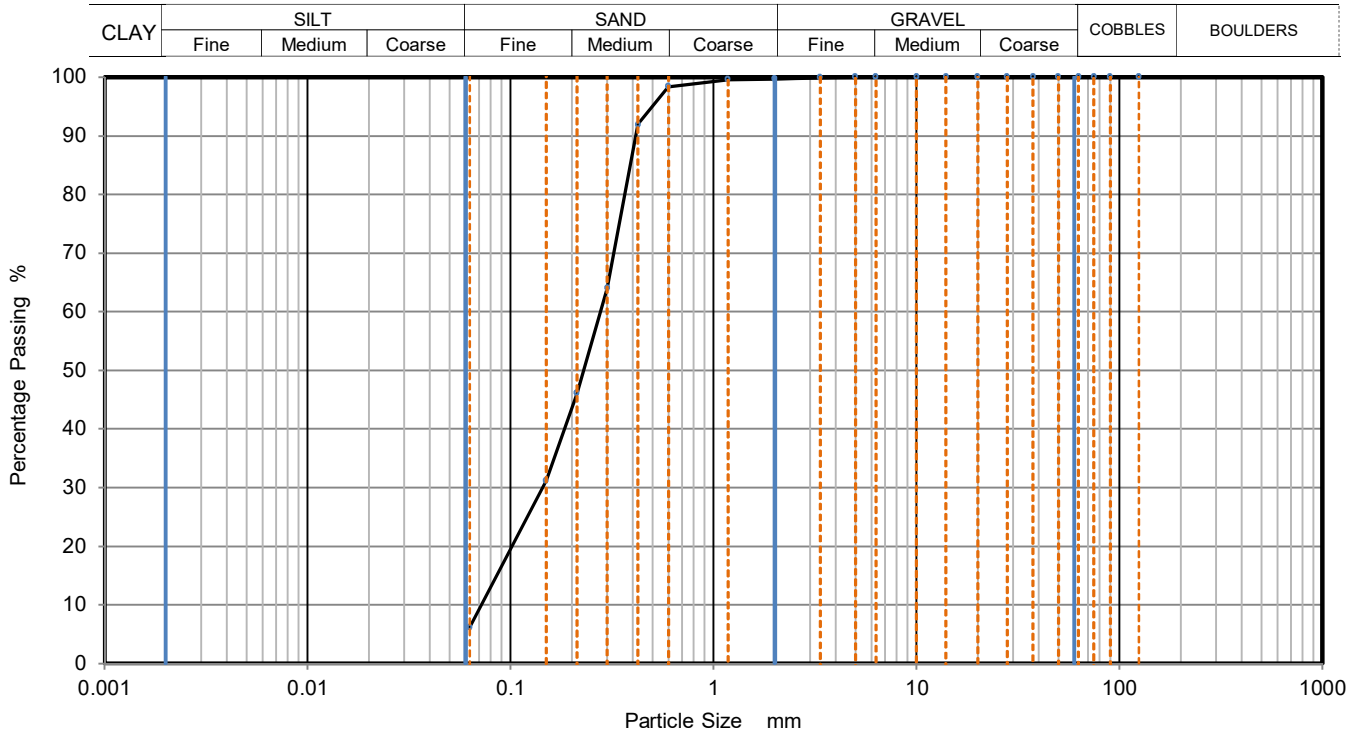
Remarks	Approved	Date	Sheet No.:
	MW	30/01/2018	1 of 1



DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clause 9.2

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH15
Sample Description:	Grey silty SAND	Sample Depth (m)	26.00
		Sample Reference	B68



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	98		
0.425	92		
0.3	64		
0.212	46		
0.15	31		
0.063	6		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	94
Fines <0.063mm	6

Grading Analysis		
D100	mm	
D60	mm	0.278
D30	mm	0.144
D10	mm	0.072
Uniformity Coefficient		3.9
Curvature Coefficient		1

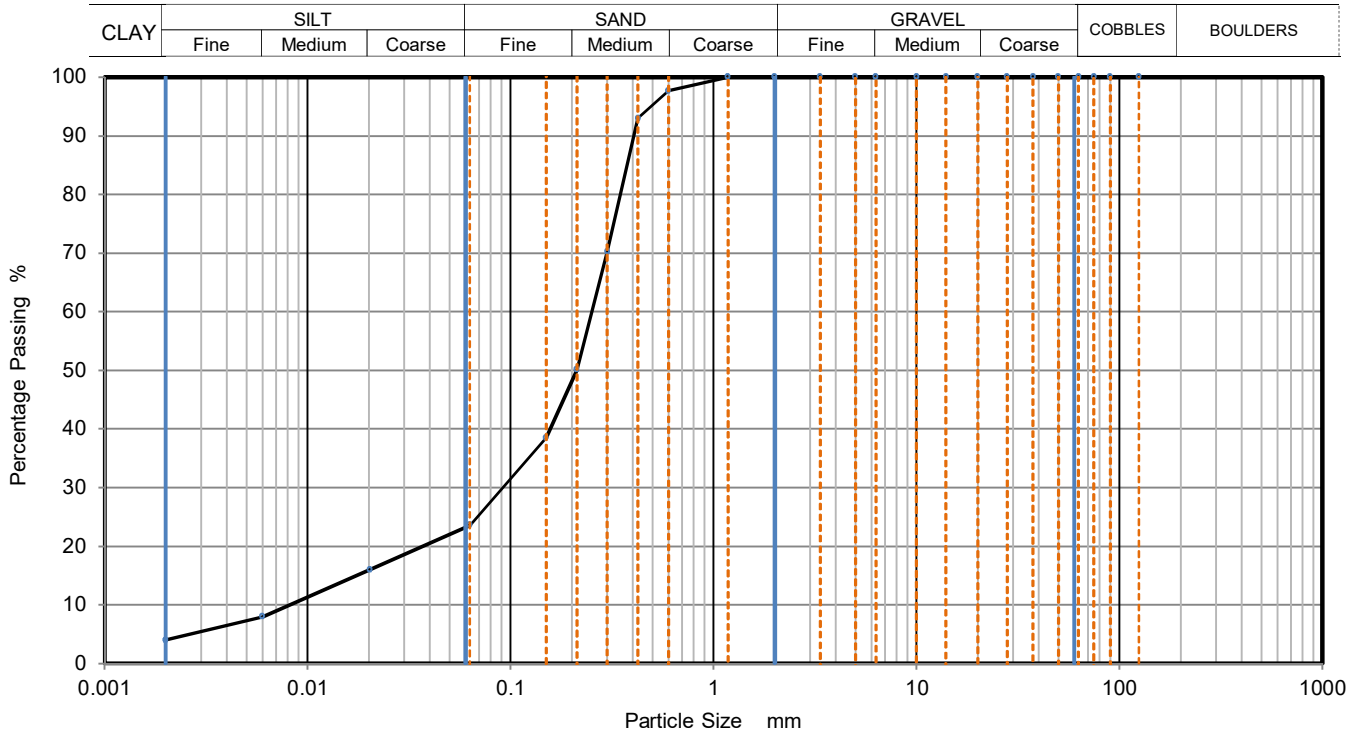
Remarks	Approved	Date	Sheet No.:
	MW	30/01/2018	1 of 1



DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH15
Sample Description:	Dark grey slightly clayey silty SAND	Sample Depth (m)	28.00
		Sample Reference	B72



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	16
90	100	0.0060	8
75	100	0.0020	4
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	98	Particle density (assumed)	
0.425	93	2.65	Mg/m3
0.3	70		
0.212	50		
0.15	39		
0.063	24		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	76
Silt	20
Clay	4

Grading Analysis		
D100	mm	
D60	mm	0.251
D30	mm	0.091
D10	mm	0.008
Uniformity Coefficient		31
Curvature Coefficient		4.1

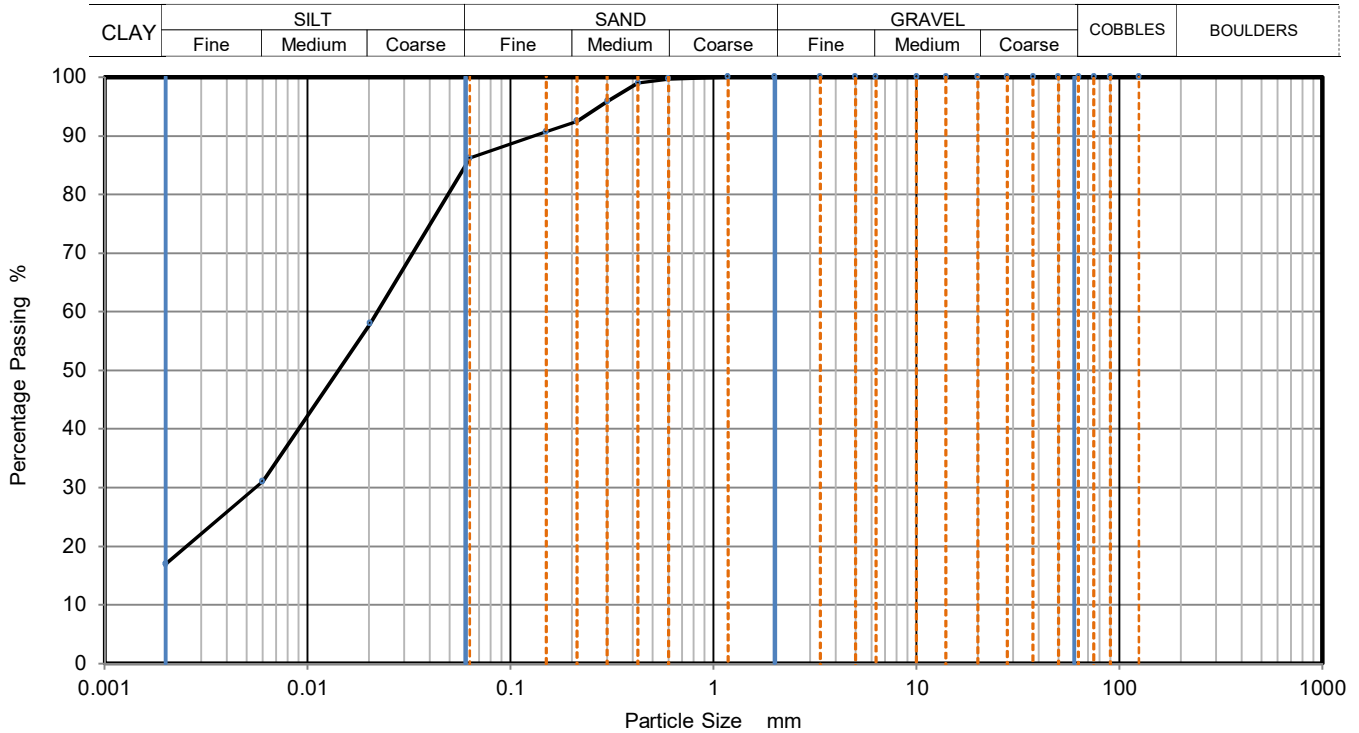
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DETERMINATION OF PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990, clauses 9.2 and 9.4

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH15
Sample Description:	Grey mottled dark grey slightly sandy very silty CLAY	Sample Depth (m)	30.00
		Sample Reference	D74



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	58
90	100	0.0060	31
75	100	0.0020	17
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	99	Particle density (assumed) 2.65 Mg/m3	
0.3	96		
0.212	93		
0.15	91		
0.063	86		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	14
Silt	70
Clay	17

Grading Analysis		
D100	mm	
D60	mm	0.022
D30	mm	0.005
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks	Approved	Date	Sheet No.:
	MW	30/01/2018	1 of 1

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County Hall
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Our reference No. **NCCL201711297-610**
Our Project No. **PZ1522D1**
Your Sample Ref **1**
Your Project or Order No. **PZ1522**
Date Tested **04/12/2017**
Date Report Issued **9-Jan-18**

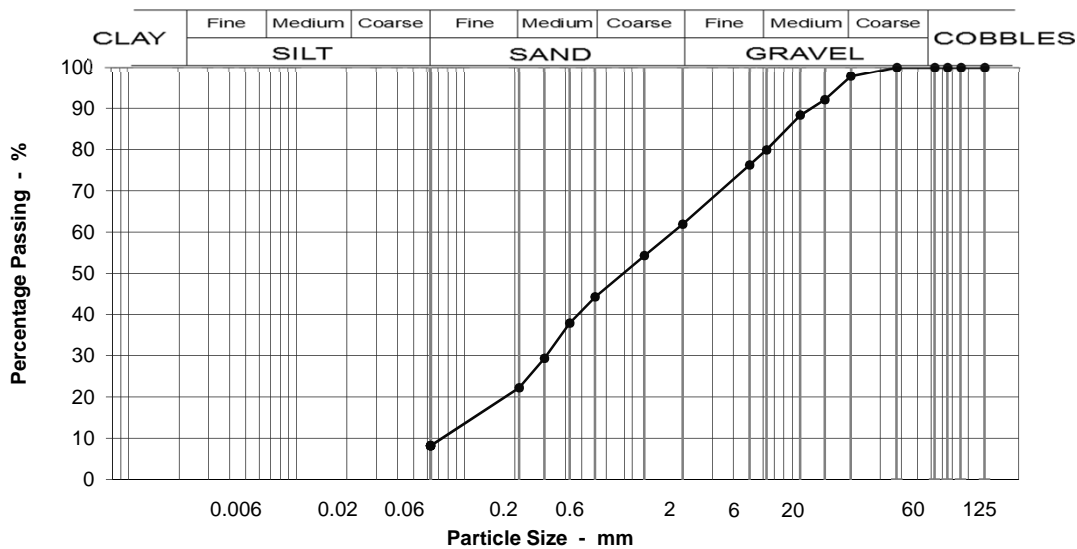
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH16 @ 0.5 - 1m Specimen: 2

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	98
14	92
10	88
6.3	80
5	76
2	62
1.18	54
0.600	44
0.425	38
0.300	29
0.212	22
0.063	8

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6E/6R, 6F1, 6I, 6M, 6N.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	2
Medium GRAVEL	18
Fine GRAVEL	18
Coarse SAND	18
Medium SAND	22
Fine SAND	14
Silt & Clay	8

Grading Analysis	
D100	20
D60	1.79
D10	0.08
Uniformity Coefficient	22

Description
MADE GROUND: comprising grey fine to coarse sand and light grey fine to medium concrete gravel

Moisture content % 9.5

Test Code = 610



Simon Holden (Project Technician)



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NR1 2DH

Our reference No. **NCCL201710270-610**
Our Project No. **PZ1522D1**
Your Sample Ref **10270**
Your Project or Order No. **PZ1522**
Date Tested **20/10/2017**
Date Report Issued **15-Nov-17**

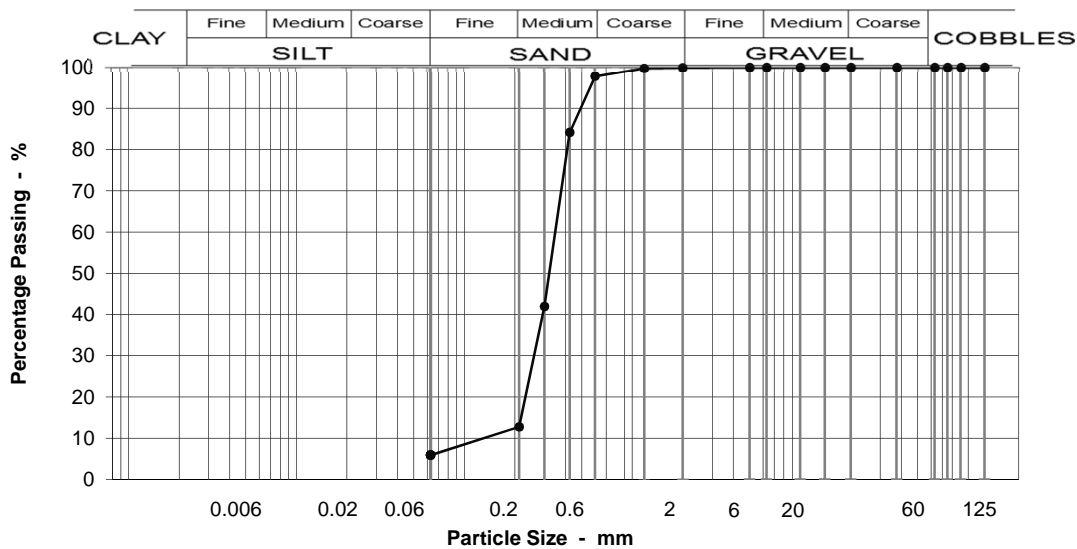
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH16 @ 3 - 3.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	100
0.600	98
0.425	84
0.300	42
0.212	13
0.063	6

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	2
Medium SAND	85
Fine SAND	7
Silt & Clay	6

Grading Analysis	
D100	2
D60	0.35
D10	0.15
Uniformity Coefficient	2

Description
Brownish-grey slightly silty medium SAND.

Moisture content % 23

Test Code = 610



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NR1 2DH

Our reference No. **NCCL201711298-610**
Our Project No. **PZ1522D1**
Your Sample Ref **7**
Your Project or Order No. **PZ1522**
Date Tested **06/12/2017**
Date Report Issued **9-Jan-18**

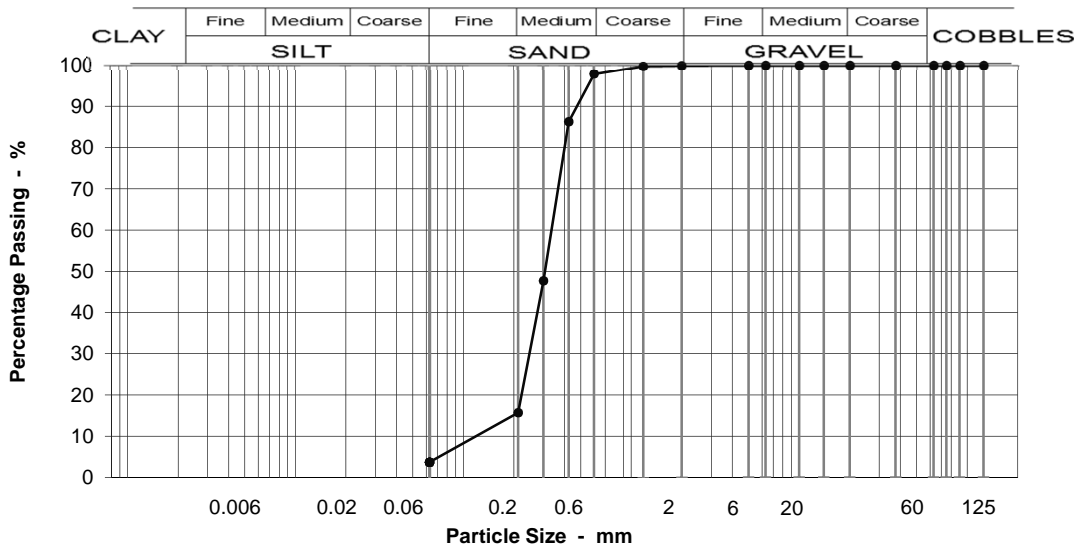
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH16 @ 4 - 4.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	100
0.600	98
0.425	86
0.300	48
0.212	16
0.063	4

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 17

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	2
Medium SAND	82
Fine SAND	12
Silt & Clay	4

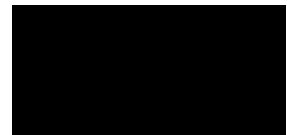
Grading Analysis	
D100	2
D60	0.34
D10	0.14
Uniformity Coefficient	2

Description	
Brownish grey medium SAND.	

Test Code = 610



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Our reference No. **NCCL201710271-610**
Our Project No. **PZ1522D1**
Your Sample Ref **10271**
Your Project or Order No. **PZ1522**
Date Tested **06/11/2017**
Date Report Issued **15-Nov-17**

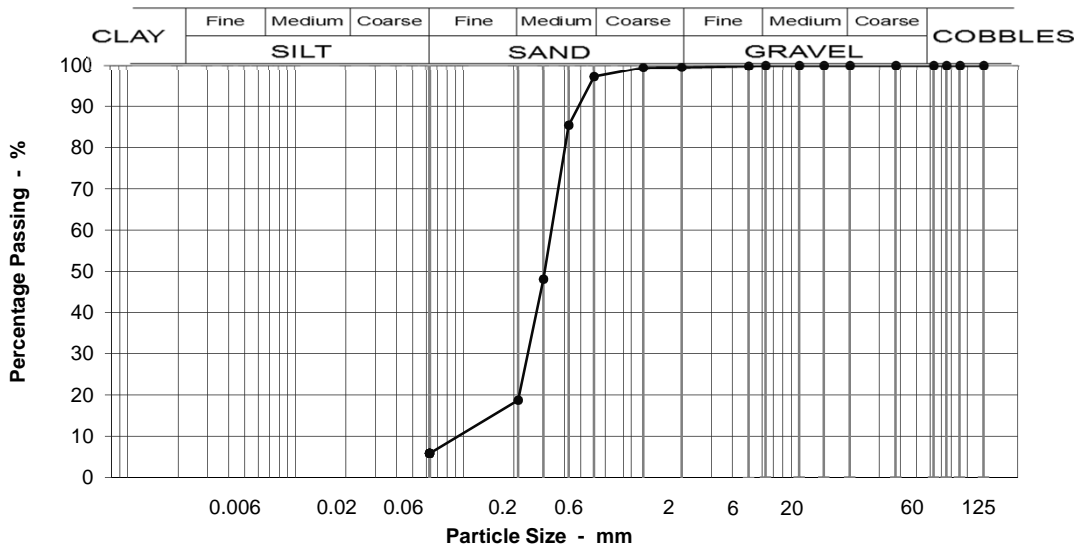
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH16 @ 7 - 7.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	99
0.600	97
0.425	85
0.300	48
0.212	19
0.063	6

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 24

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	2
Medium SAND	78
Fine SAND	13
Silt & Clay	6

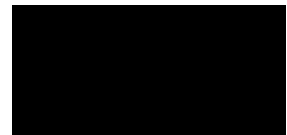
Grading Analysis	
D100	5
D60	0.34
D10	0.11
Uniformity Coefficient	3

Description	
Brownish-grey slightly silty medium SAND.	

Test Code = 610



Simon Holden (Project Technician)



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NR1 2DH

Our reference No. **NCCL201710272-610**
Our Project No. **PZ1522D1**
Your Sample Ref **10272**
Your Project or Order No. **PZ1522**
Date Tested **02/11/2017**
Date Report Issued **15-Nov-17**

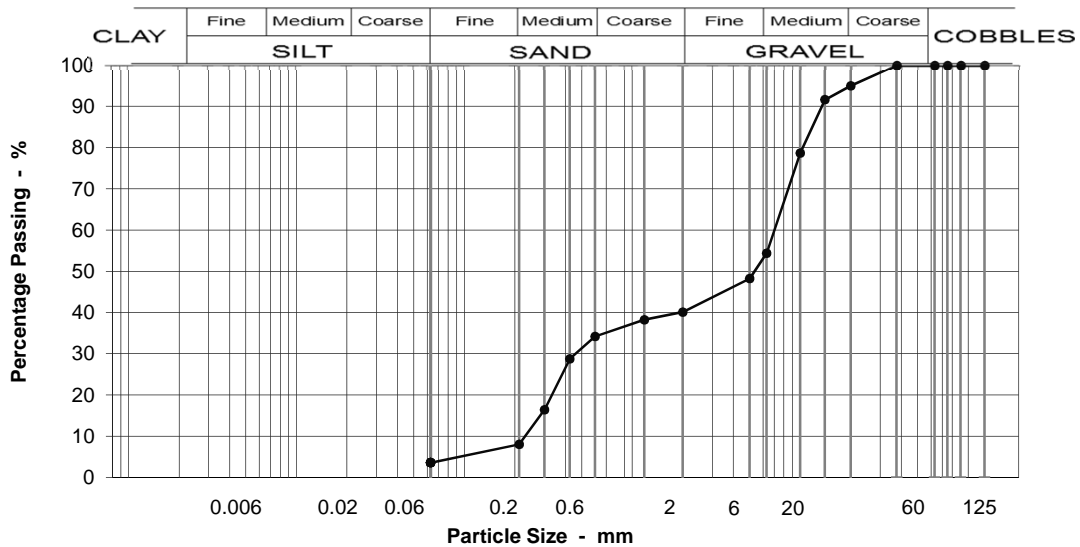
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH16 @ 10 - 10.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	95
14	92
10	79
6.3	54
5	48
2	40
1.18	38
0.600	34
0.425	29
0.300	16
0.212	8
0.063	4

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6A, 6E/6R, 6F1, 6I, 6M, 6N.

Moisture content % 13

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	5
Medium GRAVEL	41
Fine GRAVEL	14
Coarse SAND	6
Medium SAND	26
Fine SAND	4
Silt & Clay	4

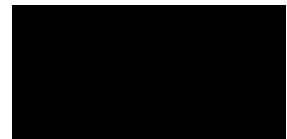
Grading Analysis	
D100	20
D60	7.16
D10	0.23
Uniformity Coefficient	31

Description	
Dark grey very sandy fine to medium subangular to subrounded flint and quartz GRAVEL.	

Test Code = 610



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Our reference No. **NCCL201711299-610**
Our Project No. **PZ1522D1**
Your Sample Ref **18**
Your Project or Order No. **PZ1522**
Date Tested **05/12/2017**
Date Report Issued **9-Jan-18**

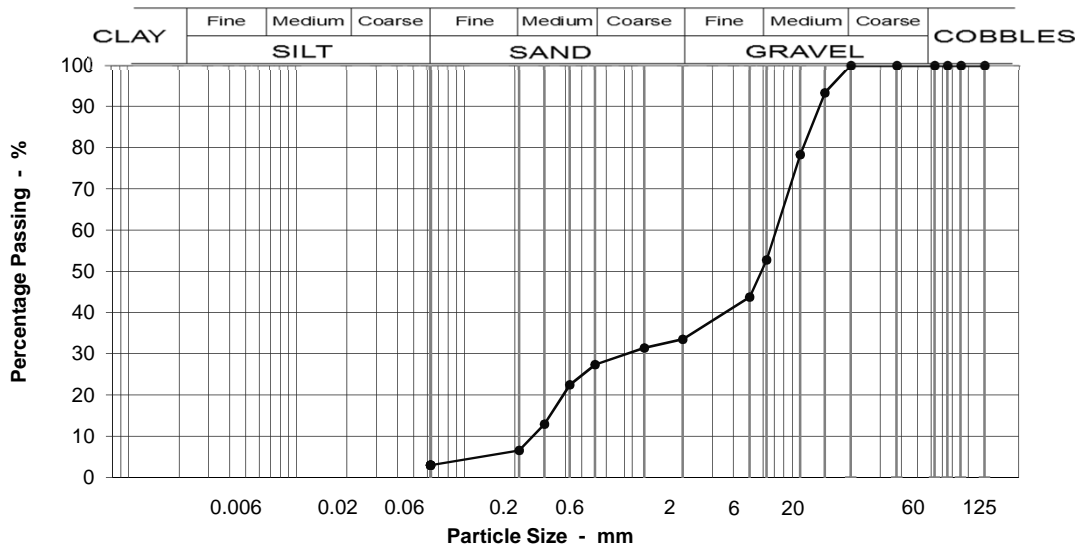
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH16 @ 12 - 12.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	93
10	78
6.3	53
5	44
2	33
1.18	31
0.600	27
0.425	23
0.300	13
0.212	7
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6A, 6E/6R, 6F1, 6I, 6K, 6M, 6N.

Moisture content % 12

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	47
Fine GRAVEL	19
Coarse SAND	6
Medium SAND	21
Fine SAND	4
Silt & Clay	3

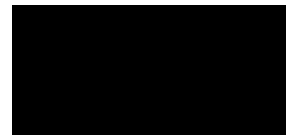
Grading Analysis	
D100	14
D60	7.35
D10	0.26
Uniformity Coefficient	28

Description	
Grey and orangey brown very sandy fine to medium sub-rounded to angular flint GRAVEL.	

Test Code = 610



Simon Holden (Project Technician)



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NR1 2DH

Our reference No. **NCCL201710273-610**
Our Project No. PZ1522D1
Your Sample Ref. 10273
Your Project or Order No. PZ1522
Date Tested 06/11/2017
Date Report Issued 6-Aug-18

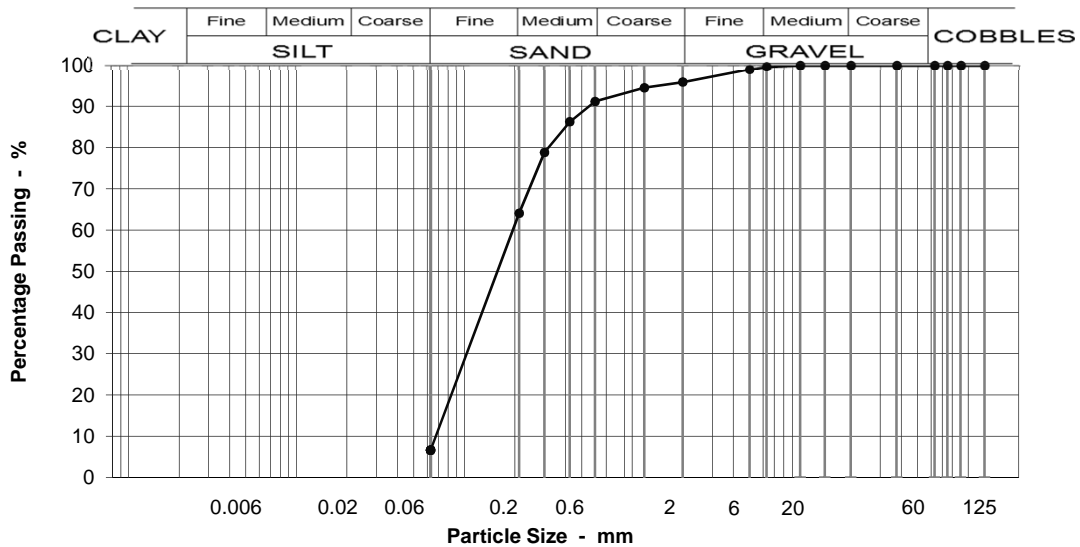
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH16 @ 15 - 15.45m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	99
2	96
1.18	94
0.600	91
0.425	86
0.300	79
0.212	64
0.063	7

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	4
Coarse SAND	5
Medium SAND	27
Fine SAND	57
Silt & Clay	7

Grading Analysis	
D100	6
D60	0.20
D10	0.07
Uniformity Coefficient	3

Description
Greyish-brown slightly silty fine to medium SAND.

Moisture content % 25

Test Code = 610



Simon Holden (Project Technician)

CES Highways Projects
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL201710274-610**
Our Project No. **PZ1522D1**
Your Sample Ref **10274**
Your Project or Order No. **PZ1522**
Date Tested **02/11/2017**
Date Report Issued **15-Nov-17**

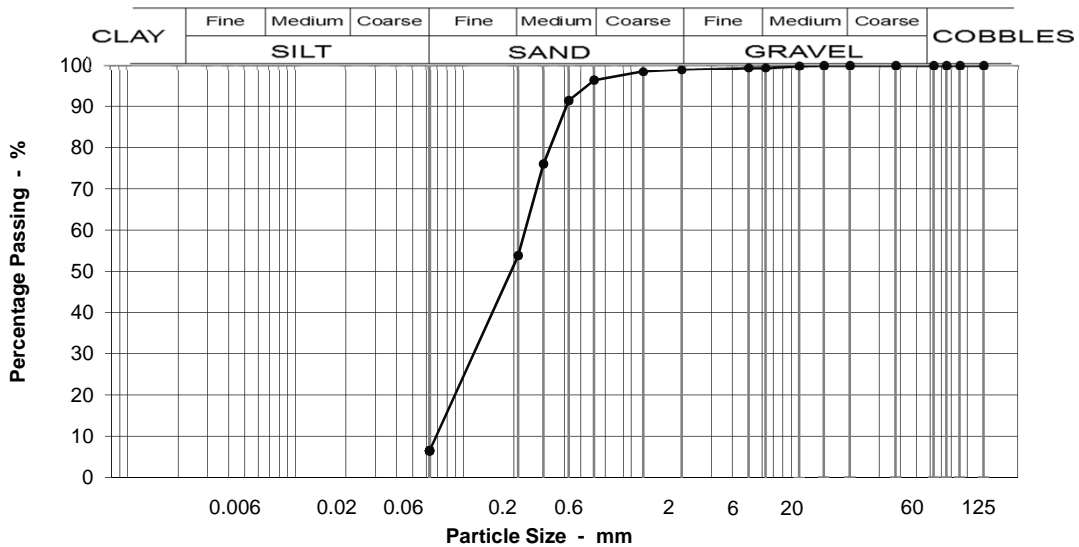
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH16 @ 21 - 21.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	99
5	99
2	99
1.18	98
0.600	96
0.425	91
0.300	76
0.212	54
0.063	6

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 20

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	1
Fine GRAVEL	0
Coarse SAND	3
Medium SAND	43
Fine SAND	47
Silt & Clay	6

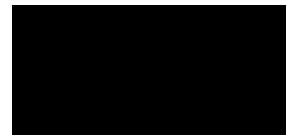
Grading Analysis	
D100	10
D60	0.24
D10	0.07
Uniformity Coefficient	3

Description	
Dark brownish-grey slightly silty fine to medium SAND.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL2017112910-610**
Our Project No. **PZ1522D1**
Your Sample Ref **32**
Your Project or Order No. **PZ1522**
Date Tested **05/12/2017**
Date Report Issued **9-Jan-18**

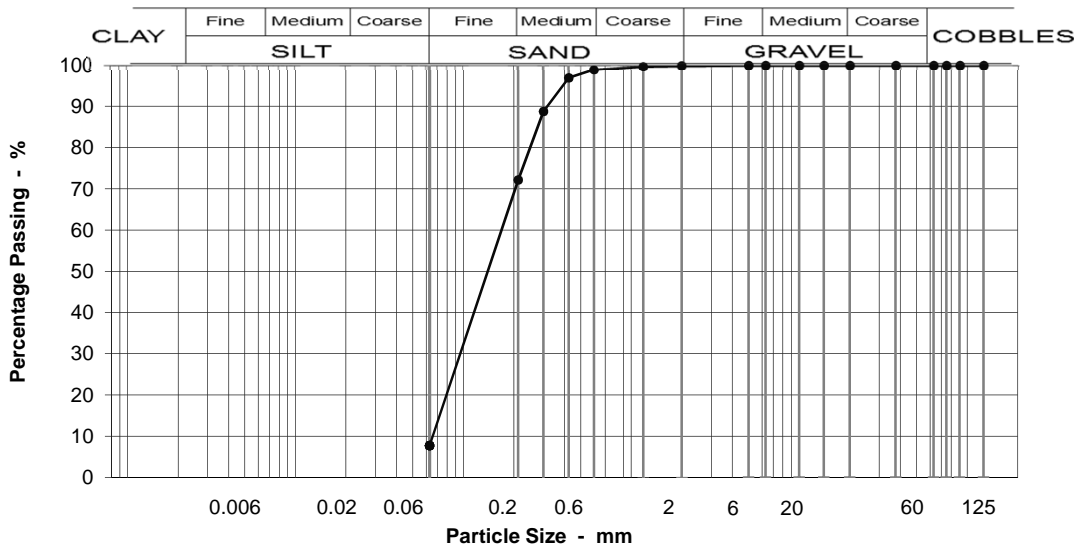
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH16 @ 25 - 25.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	100
0.600	99
0.425	97
0.300	89
0.212	72
0.063	8

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 22

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	1
Medium SAND	27
Fine SAND	64
Silt & Clay	8

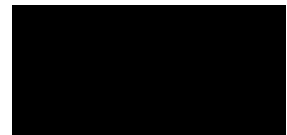
Grading Analysis	
D100	2
D60	0.18
D10	0.07
Uniformity Coefficient	3

Description	
Dark brownish grey slightly silty fine to medium SAND.	

Test Code = 610



Simon Holden (Project Technician)



CES Highways Projects
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL201710276-610**
Our Project No. **PZ1522D1**
Your Sample Ref **10276**
Your Project or Order No. **PZ1522**
Date Tested **06/11/2017**
Date Report Issued **15-Nov-17**

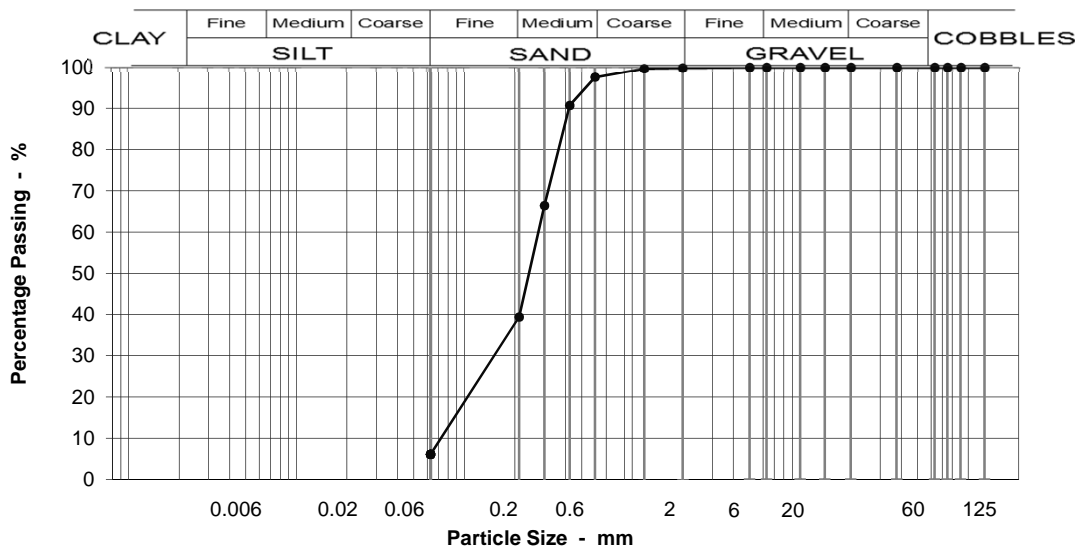
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH16 @ 31 - 31.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



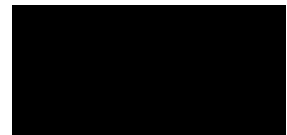
Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R, 6M.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	2
14	100		Medium SAND	58
10	100		Fine SAND	33
6.3	100		Silt & Clay	6
5	100		Grading Analysis	
2	100		D100	2
1.18	100		D60	0.28
0.600	98		D10	0.08
0.425	91		Uniformity Coefficient	3
0.300	66		Description	
0.212	39	Dark grey slightly silty fine to medium SAND.		
0.063	6			

Moisture content % 23

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
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NR1 2DH

Our reference No. NCCL2017112911-610
Our Project No PZ1522D1
Your Sample Ref 40
Your Project or Order No. PZ1522
Date Tested 04/12/2017
Date Report Issued 9-Jan-18

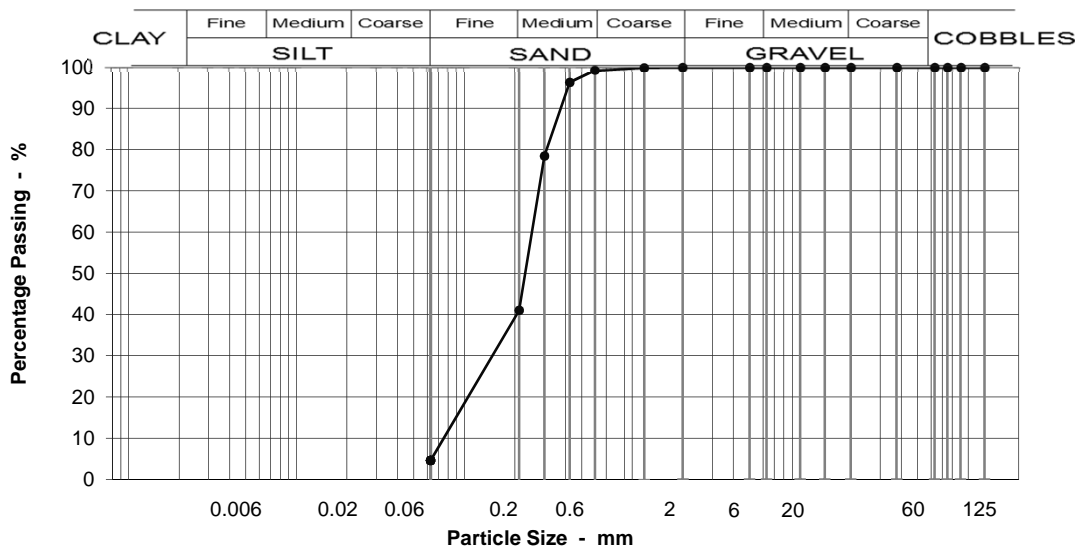
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH16 @ 35 - 35.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	100
0.600	99
0.425	96
0.300	78
0.212	41
0.063	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	1
Medium SAND	58
Fine SAND	36
Silt & Clay	5

Grading Analysis	
D100	1
D60	0.26
D10	0.08
Uniformity Coefficient	3

Description
Greyish brown fine to medium SAND.

Moisture content % 20

Test Code = 610



Simon Holden (Project Technician)



Norfolk Partnership Laboratory

Email: civil.laboratory@norfolk.gov.uk

Great Yarmouth Third River Crossing

Norfolk County Council
 County Hall
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 Norwich
 Norfolk
 NR1 2DH

Our Project No PZ1522D1

Our Report and sample No NCCL201710275-612

Your Sample Ref B10275

Your Project or Order No PZ1522

Date Report Issued 28-Nov-17

Date Tested 20-Nov-17

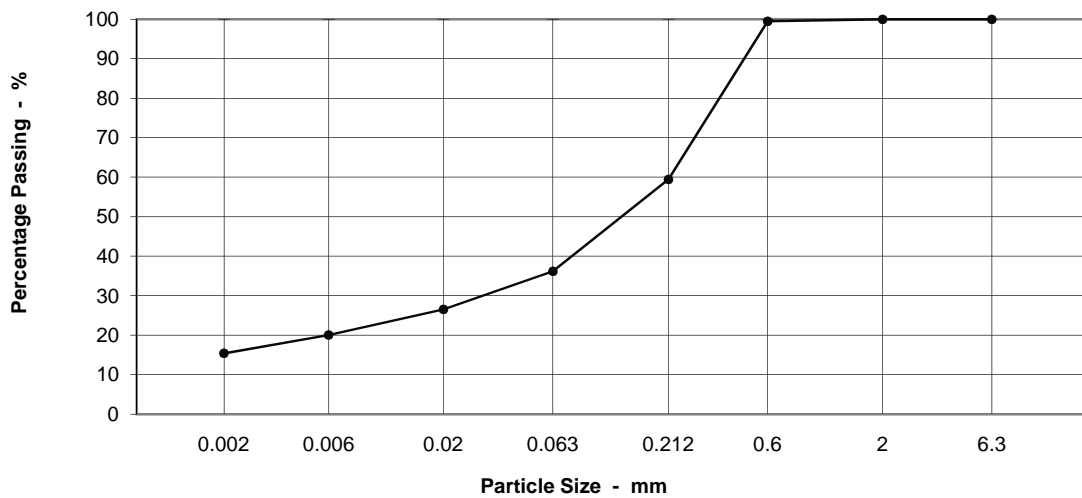
Page 1 of 1

Particle Size Distribution to BS 1377 : Part 2 : 1990 Sedimentation Method Section 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH16 B10275 37-37.5m

Particle Size Distribution



Sieving & Sed.		Sample Proportions		Description
Particle Size mm	% Passing		%	
6.3	*See note	Coarse SAND	0	Soft, dark grey, clayey, silty, fine and medium SAND with some shell fragments.
2.0	100	Medium SAND	40	
0.6	100	Fine SAND	23	
0.212	59	Coarse SILT	10	
0.063	36	Medium SILT	7	
0.02	27	Fine SILT	5	
0.006	20	CLAY	15	
0.002	15	Moisture content	29	

Test carried out on a disturbed sample prepared in accordance with BS1377 Part 1 clause 7.4.5, "in its natural state".
 Moisture content in accordance with BS1377 Part 2 clause 3.2, Oven-drying method. No pre-treatment was carried out.
 Location and orientation are not applicable.

* This test determines the particle size distribution from the coarse sand size to the clay size.

Test Code = 612



Peter Hardiment (Operations Manager)



CES Highways Projects
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. NCCL2017102626-610
Our Project No PZ1522D1
Your Sample Ref 102626
Your Project or Order No. PZ1522
Date Tested 03/11/2017
Date Report Issued 15-Nov-17

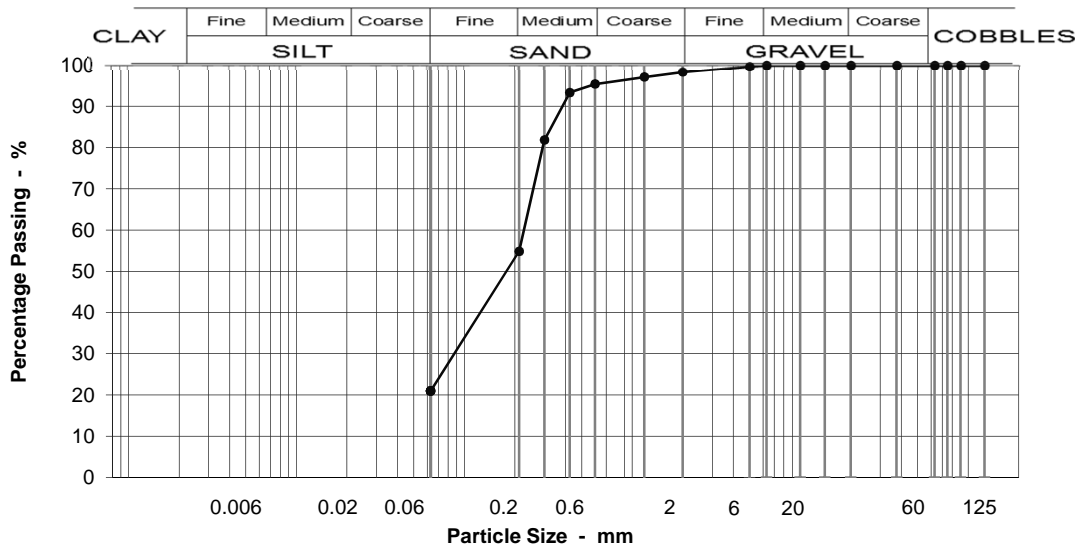
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH16 @ 39 - 39.5m Specimen: 1

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	98
1.18	97
0.600	95
0.425	93
0.300	82
0.212	55
0.063	21

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 2A/2B, 2A/2B.

Moisture content % 28

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	2
Coarse SAND	3
Medium SAND	41
Fine SAND	34
Silt & Clay	21

Grading Analysis	
D100	5
D60	0.23
D10	0.04
Uniformity Coefficient	6

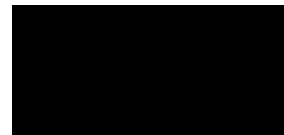
Description	
Grey silty fine to medium SAND with lenses of soft grey clay and some shell fragments.	

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL2017112912-613**
Our Project No. **PZ1522D1**
Your Sample Ref **1**
Your Project or Order No. **PZ1522**
Date Tested **05/12/2017**
Date Report Issued **12-Jan-18**

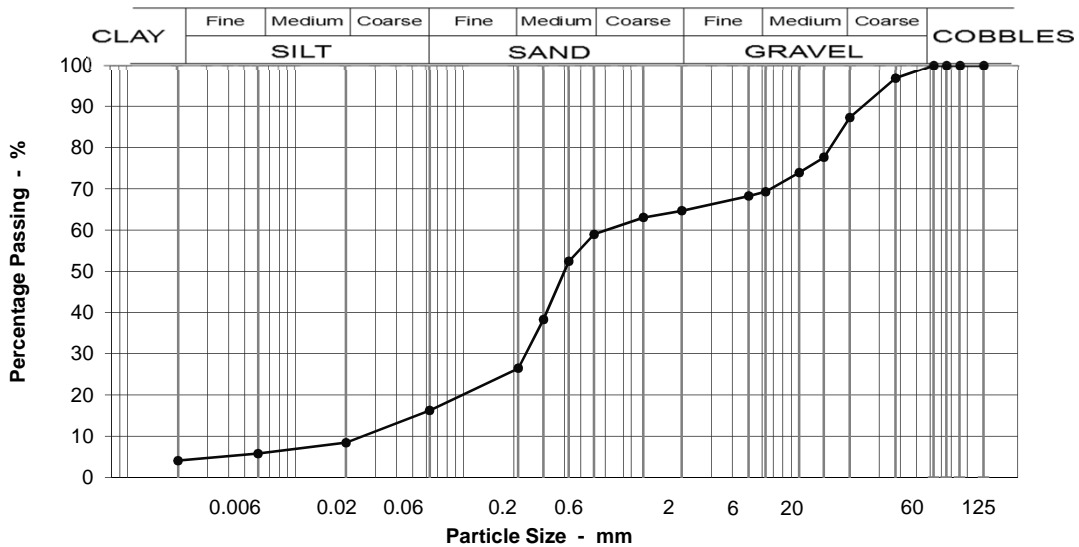
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH17 @ 0.5 - 1m Specimen: 2

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	97
20	87
14	78
10	74
6.3	69
5	68
2	65
1.18	63
0.600	59
0.425	52
0.300	38
0.212	26
0.063	16
0.020	8
0.006	6
0.002	4

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 2C.

Moisture content % 17

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	13
Medium GRAVEL	18
Fine GRAVEL	5
Coarse SAND	6
Medium SAND	32
Fine SAND	10
Silt & Clay	16

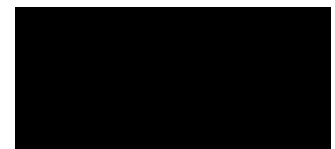
Grading Analysis	
D100	38
D60	0.75
D10	0.10
Uniformity Coefficient	8

Description
MADE GROUND: comprising medium and coarse gravel sized concrete, brick, flint and metal in a matrix of greyish brown silty fine and medium SAND

Test Code = 613



David Houseago (Lead Technician)



Norfolk Partnership Laboratory

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Gt Yarmouth 3rd River Crossing
 CES Highways Projects
 County Hall
 Martineau Lane
 Norwich
 Norfolk
 NR1 2DH

Our Project No PZ1522D1

Our Report and sample No NCCL2017100329-612

Your Sample Ref B6

Your Project or Order No PZ1522

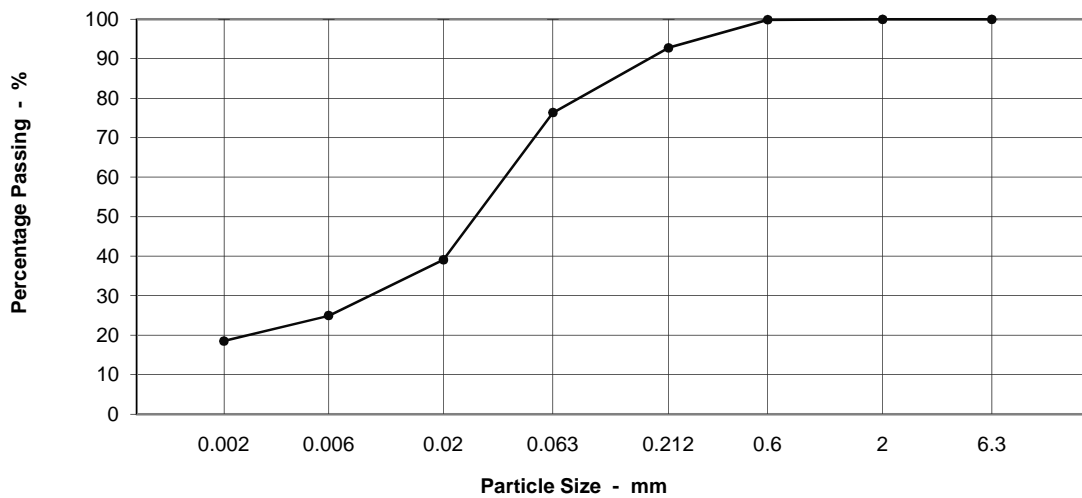
Date Report Issued 07-Nov-17

Date Tested 20-Oct-17

Page 1 of 1

Particle Size Distribution to BS 1377 : Part 2 : 1990
Sedimentation Method Section 9.4
Scheme: Gt Yarmouth 3rd River Crossing

Location: BH17 B6 2.0-2.5m

Particle Size Distribution


Sieving & Sed.		Sample Proportions		Description
Particle Size mm	% Passing		%	
6.3	*See note	Coarse SAND	0	Soft, greenish grey, clayey, very sandy, medium and coarse SILT.
2.0	100	Medium SAND	7	
0.6	100	Fine SAND	16	
0.212	93	Coarse SILT	37	
0.063	76	Medium SILT	14	
0.02	39	Fine SILT	6	
0.006	25	CLAY	19	
0.002	19	Moisture content	34	

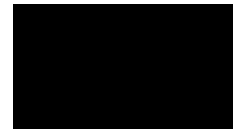
Test carried out on a disturbed sample prepared in accordance with BS1377 Part 1 clause 7.4.5, " in its natural state".
 Moisture content in accordance with BS1377 Part 2 clause 3.2, Oven-drying method. No pre-treatment was carried out.
 Location and orientation are not applicable.

* This test determines the particle size distribution from the coarse sand size to the clay size.

Test Code = 612



Peter Hardiment (Operations Manager)



CES Highways Projects
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. NCCL2017100521-610
Our Project No PZ1522D1
Your Sample Ref 10
Your Project or Order No. PZ1522
Date Tested 28/10/2017
Date Report Issued 7-Nov-17

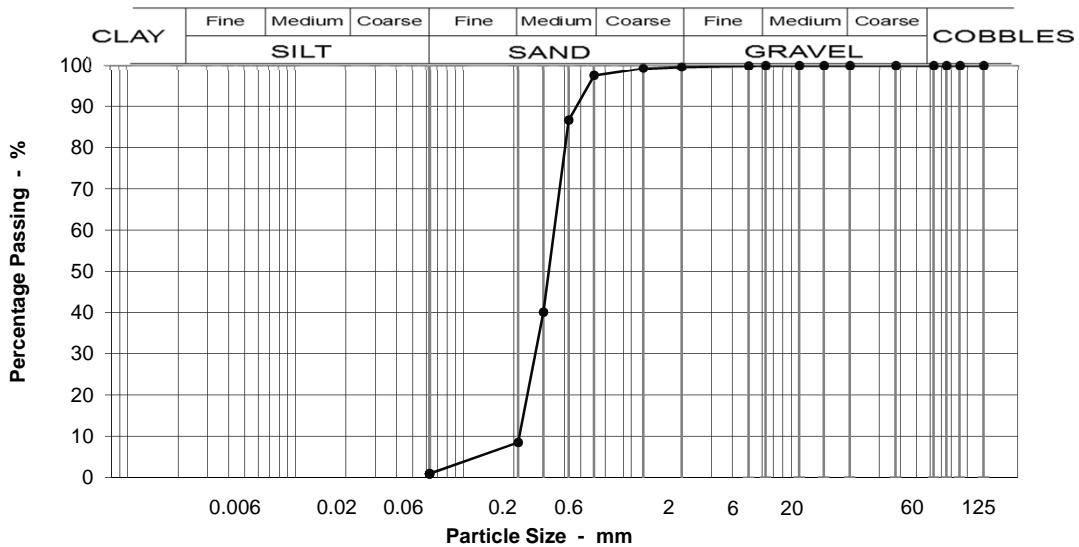
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH17 @ 4.0-4.5m

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	99
0.600	97
0.425	87
0.300	40
0.212	9
0.063	1

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 22

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	2
Medium SAND	89
Fine SAND	8
Silt & Clay	1

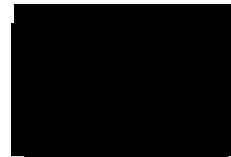
Grading Analysis	
D100	5
D60	0.35
D10	0.22
Uniformity Coefficient	2

Description	
Grey, medium SAND, rapidly weathering to brown.	

Test Code = 610



Peter Hardiment (Operations Manager)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL2017112913-610**
Our Project No. **PZ1522D1**
Your Sample Ref **14**
Your Project or Order No. **PZ1522**
Date Tested **05/12/2017**
Date Report Issued **9-Jan-18**

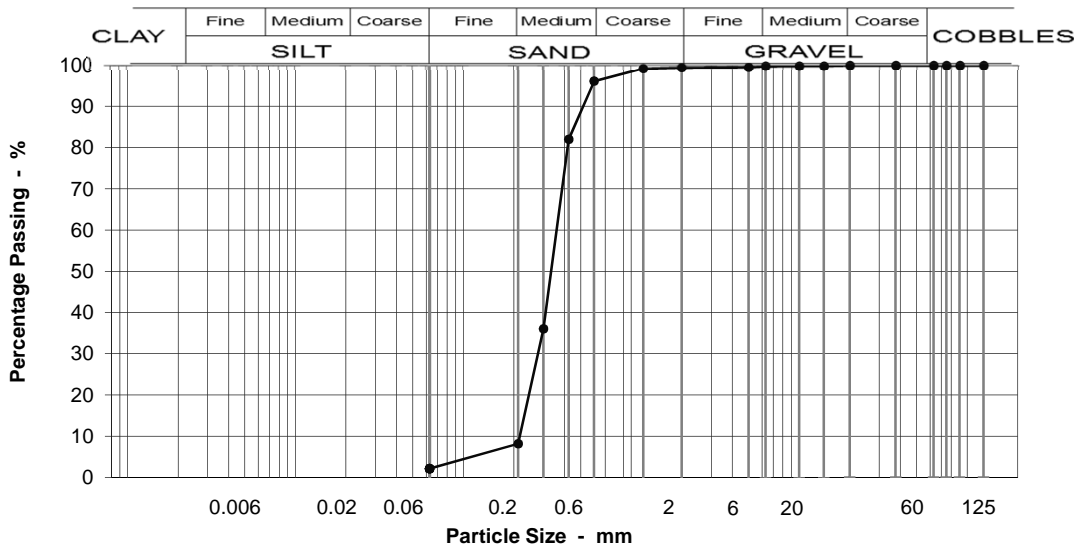
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH17 @ 6 - 6.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	99
0.600	96
0.425	82
0.300	36
0.212	8
0.063	2

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 20

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	3
Medium SAND	88
Fine SAND	6
Silt & Clay	2

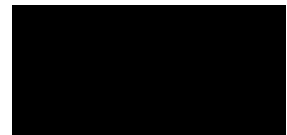
Grading Analysis	
D100	14
D60	0.37
D10	0.22
Uniformity Coefficient	2

Description	
Grey medium SAND.	

Test Code = 610



Simon Holden (Project Technician)



CES Highways Projects
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL201710032-610**
Our Project No. **PZ1522D1**
Your Sample Ref **16**
Your Project or Order No. **PZ1522**
Date Tested **28/10/2017**
Date Report Issued **7-Nov-17**

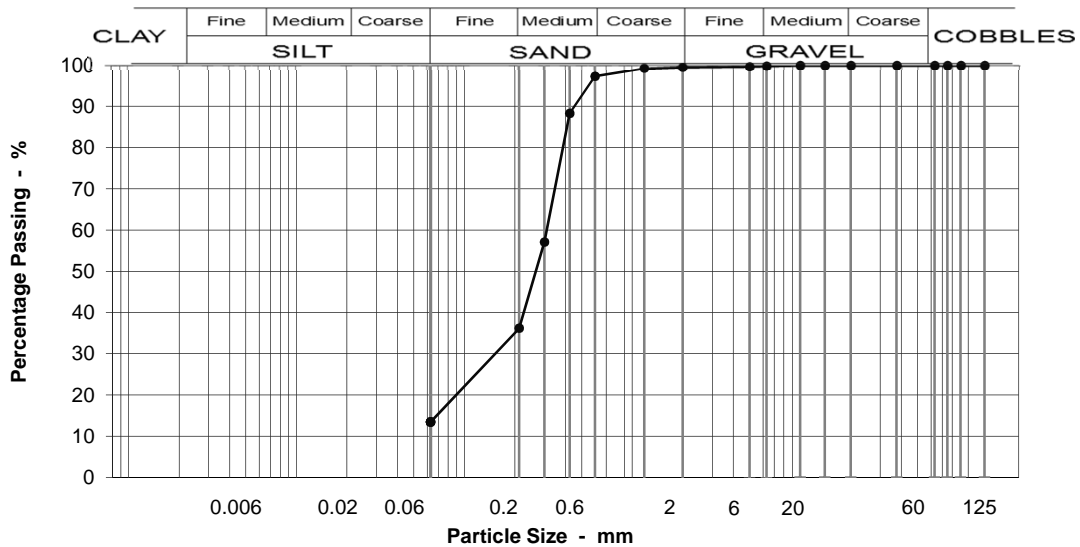
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH17 @ 8.0-8.5m

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	99
0.600	97
0.425	88
0.300	57
0.212	36
0.063	14

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J.

Moisture content % 21

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	2
Medium SAND	61
Fine SAND	23
Silt & Clay	14

Grading Analysis	
D100	6
D60	0.31
D10	0.06
Uniformity Coefficient	5*

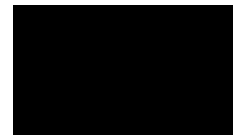
Description	
Dark grey and grey, clayey, silty, fine and medium SAND.	

* Uniformity coefficient extrapolated

Test Code = 610



Peter Hardiment (Operations Manager)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL201710032-613**
Our Project No. **PZ1522D1**
Your Sample Ref **16**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **18-Jan-18**

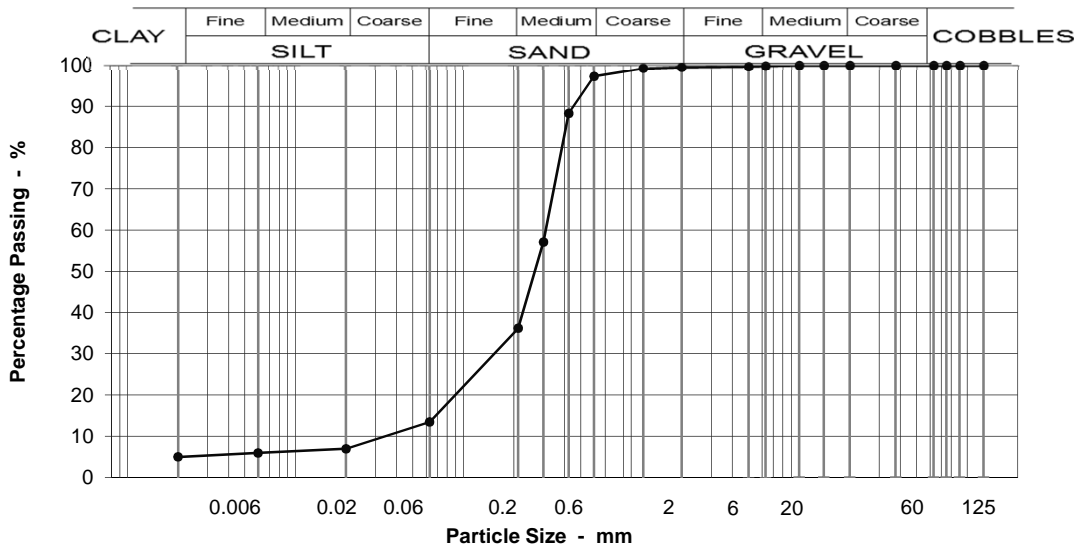
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH17 @ 8 - 8.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	99
0.600	97
0.425	88
0.300	57
0.212	36
0.063	14
0.020	7
0.006	6
0.002	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R.

Moisture content % 21

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	2
Medium SAND	61
Fine SAND	23
Silt & Clay	14

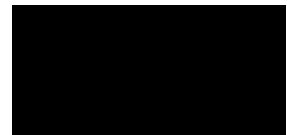
Grading Analysis	
D100	6
D60	0.31
D10	0.10
Uniformity Coefficient	3

Description	
Dark grey and light grey slightly clayey, slightly silty, fine and medium SAND.	

Test Code = 613



Simon Holden (Project Technician)



CES Highways Projects
County Hall
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NR1 2DH

Our reference No. NCCL2017100522-610
Our Project No PZ1522D1
Your Sample Ref 20
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 7-Nov-17

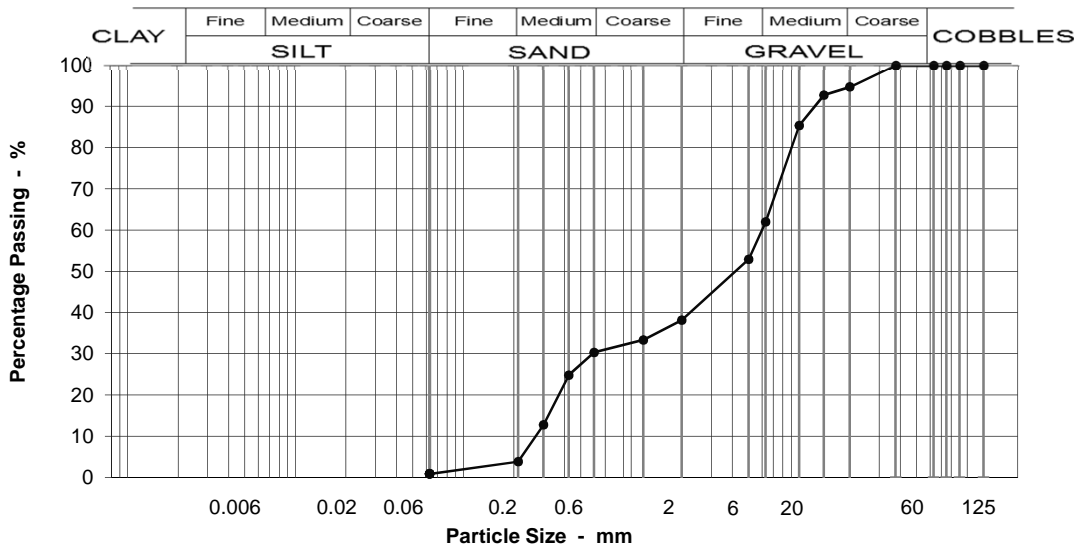
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH17 @ 11.0-11.5m

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	95
14	93
10	85
6.3	62
5	53
2	38
1.18	33
0.600	30
0.425	25
0.300	13
0.212	4
0.063	1

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6A, 6E/6R, 6F1, 6I, 6M, 6N.

Moisture content % 6.4

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	5
Medium GRAVEL	33
Fine GRAVEL	24
Coarse SAND	8
Medium SAND	26
Fine SAND	3
Silt & Clay	1

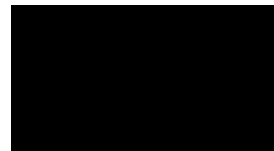
Grading Analysis	
D100	20
D60	6.01
D10	0.27
Uniformity Coefficient	22

Description	
Light grey and brown, very sandy, GRAVEL. Gravel is sub-rounded to angular, fine and medium, flint and quartz.	

Test Code = 610



Peter Hardiment (Operations Manager)



CES Highways Projects
County Hall
Martineau Lane
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Norfolk
NR1 2DH

Our reference No. NCCL2017100523-610
Our Project No PZ1522D1
Your Sample Ref 22
Your Project or Order No. PZ1522
Date Tested 20/10/2017
Date Report Issued 7-Nov-17

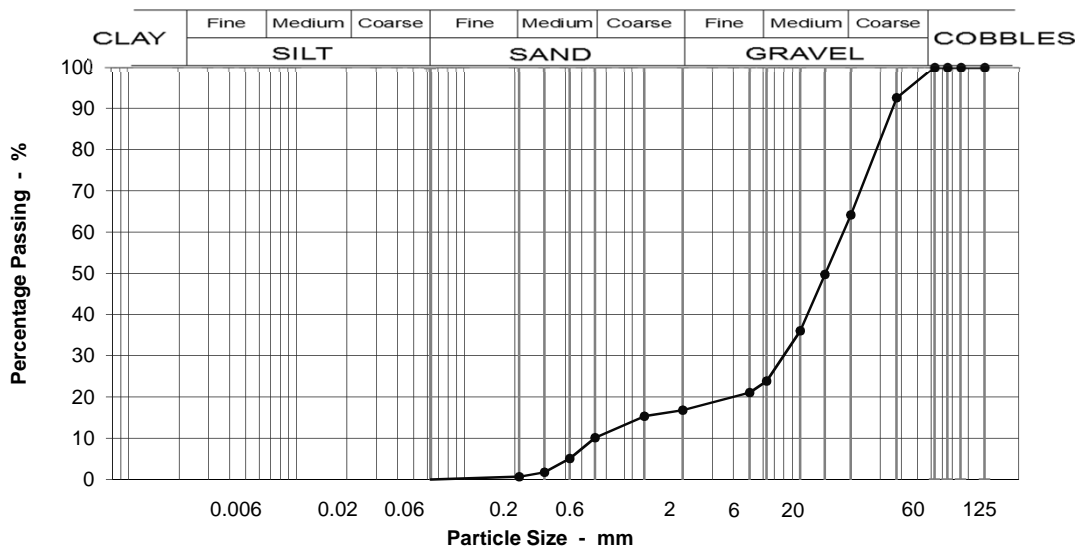
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH17 @ 13.0-13.5m

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	93
20	64
14	50
10	36
6.3	24
5	21
2	17
1.18	15
0.600	10
0.425	5
0.300	2
0.212	1
0.063	0

Specification for Highway Works Classification
Table 6/2

Moisture content % 2.1

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	36
Medium GRAVEL	40
Fine GRAVEL	7
Coarse SAND	7
Medium SAND	9
Fine SAND	1
Silt & Clay	0

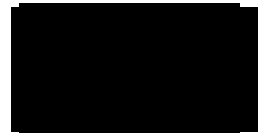
Grading Analysis	
D100	38
D60	18.28
D10	0.59
Uniformity Coefficient	31

Description
Brown and light grey, sandy, medium and coarse GRAVEL. Gravel is rounded to sub-rounded, flint and quartz.

Test Code = 610



Peter Hardiment (Operations Manager)



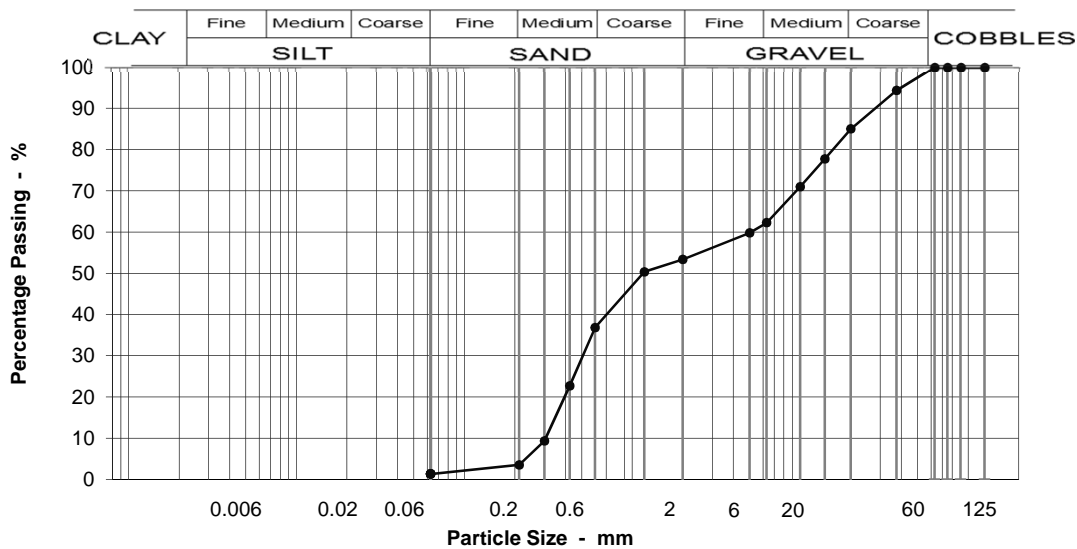
CES Highways Projects
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. NCCL2017100524-610
Our Project No PZ1522D1
Your Sample Ref 24
Your Project or Order No. PZ1522
Date Tested 19/10/2017
Date Report Issued 7-Nov-17

Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing
Location and orientation within sample not applicable

Location: BH17 @ 15.0-15.5m
Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1A, 6A, 6E/6R, 6F1, 6I, 6M, 6N.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	15
63	100		Medium GRAVEL	23
37.5	94		Fine GRAVEL	9
20	85		Coarse SAND	17
14	78		Medium SAND	33
10	71		Fine SAND	2
6.3	62		Silt & Clay	1
5	60			
2	53			
1.18	50			
0.600	37			
0.425	23			
0.300	9			
0.212	4			
0.063	1			
Moisture content %		5.5		

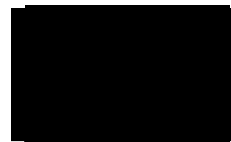
Grading Analysis	
D100	38
D60	5.11
D10	0.31
Uniformity Coefficient	17

Description	
Brown and light grey, medium to coarse SAND and rounded to sub-rounded, medium to coarse flint and quartz GRAVEL.	

Test Code = 610



Peter Hardiment (Operations Manager)



CES Highways Projects
County Hall
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Our reference No. **NCCL201711068-610**
Our Project No. **PZ1522D1**
Your Sample Ref **S26**
Your Project or Order No. **PZ1522**
Date Tested **06/11/2017**
Date Report Issued **10-Nov-17**

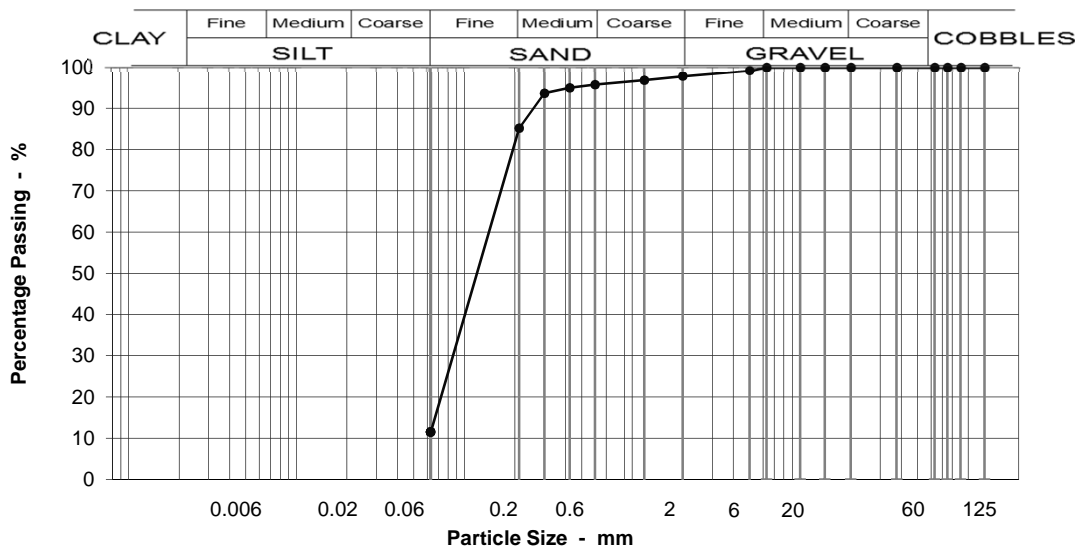
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: **Gt Yarmouth 3rd River Crossing**

Location: **BH17 @ 16 - 16.5m Specimen: 1**

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	99
2	98
1.18	97
0.600	96
0.425	95
0.300	94
0.212	85
0.063	12

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J.

Moisture content % 24

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	2
Coarse SAND	2
Medium SAND	11
Fine SAND	74
Silt & Clay	12

Grading Analysis	
D100	5
D60	0.16
D10	0.03
Uniformity Coefficient	6

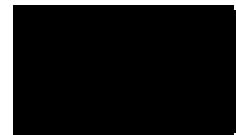
Description	
Light brown and orangey-brown silty fine SAND.	

* Uniformity coefficient extrapolated

Test Code = 610



Peter Hardiment (Operations Manager)



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Gt Yarmouth 3rd River Crossing
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Our Project No PZ1522D1

Our Report and sample No NCCL2017100330-612

Your Sample Ref D31

Your Project or Order No PZ1522

Date Report Issued 07-Nov-17

Date Tested 20-Oct-17

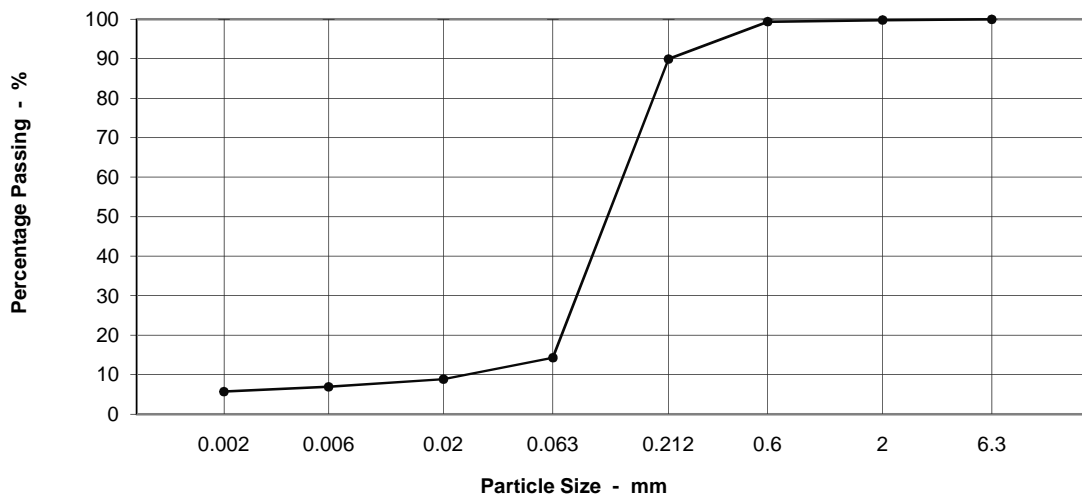
Page 1 of 1

Particle Size Distribution to BS 1377 : Part 2 : 1990 Sedimentation Method Section 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH17 D31 19m

Particle Size Distribution



Sieving & Sed.		Sample Proportions		Description
Particle Size mm	% Passing		%	
6.3	*See note	Coarse SAND	0	Light brown and grey, slightly clayey, slightly silty, fine SAND.
2.0	100	Medium SAND	9	
0.6	99	Fine SAND	76	
0.212	90	Coarse SILT	5	
0.063	14	Medium SILT	2	
0.02	9	Fine SILT	1	
0.006	7	CLAY	6	
0.002	6	Moisture content	27	

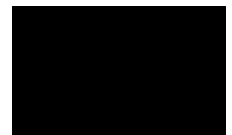
Test carried out on a disturbed sample prepared in accordance with BS1377 Part 1 clause 7.4.5, "in its natural state".
 Moisture content in accordance with BS1377 Part 2 clause 3.2, Oven-drying method. No pre-treatment was carried out.
 Location and orientation are not applicable.

* This test determines the particle size distribution from the coarse sand size to the clay size.

Test Code = 612



Peter Hardiment (Operations Manager)



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 Norwich
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 NR1 2DH

Our Project No PZ1522D1

Our Report and sample No NCCL2017112918-612

Your Sample Ref B32

Your Project or Order No PZ1522

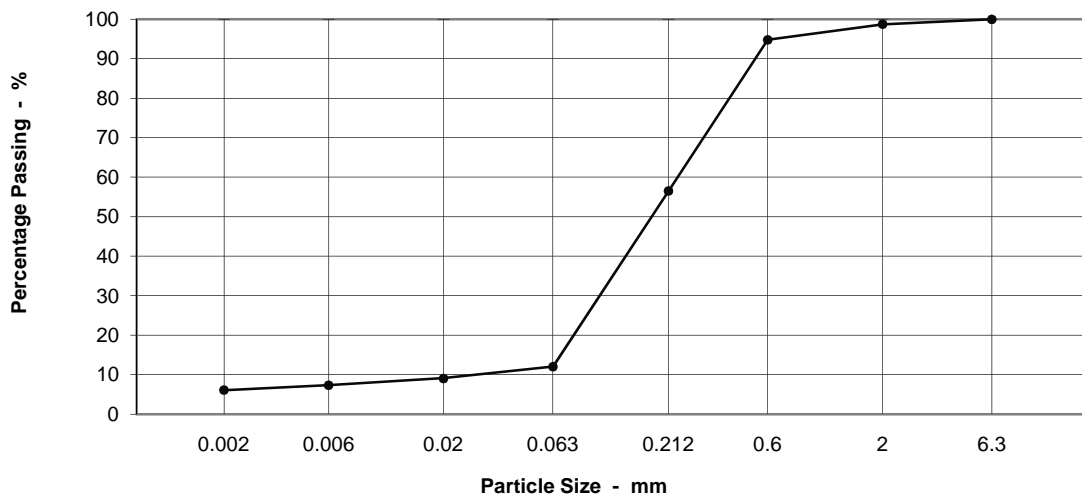
Date Report Issued 12-Jan-18

Date Tested 30-Nov-17

Page 1 of 1

Particle Size Distribution to BS 1377 : Part 2 : 1990
Sedimentation Method Section 9.4
Scheme: Gt Yarmouth 3rd River Crossing

Location: BH17 B32 20m

Particle Size Distribution


Sieving & Sed.		Sample Proportions		Description
Particle Size mm	% Passing		%	
6.3	*See note	Coarse SAND	4	Grey and orangey-brown slightly clayey slightly silty fine to medium SAND.
2.0	99	Medium SAND	38	
0.6	95	Fine SAND	44	
0.212	56	Coarse SILT	3	
0.063	12	Medium SILT	2	
0.02	9	Fine SILT	1	
0.006	7	CLAY	6	
0.002	6	Moisture content	20	

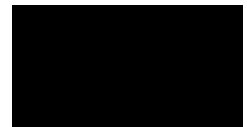
Test carried out on a disturbed sample prepared in accordance with BS1377 Part 1 clause 7.4.5, "in its natural state". Moisture content in accordance with BS1377 Part 2 clause 3.2, Oven-drying method. No pre-treatment was carried out. Location and orientation are not applicable.

* This test determines the particle size distribution from the coarse sand size to the clay size.

Test Code = 612



Simon Holden (Project Technician)



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Our reference No. NCCL2017100525-610
Our Project No PZ1522D1
Your Sample Ref 33
Your Project or Order No. PZ1522
Date Tested 28/10/2017
Date Report Issued 7-Nov-17

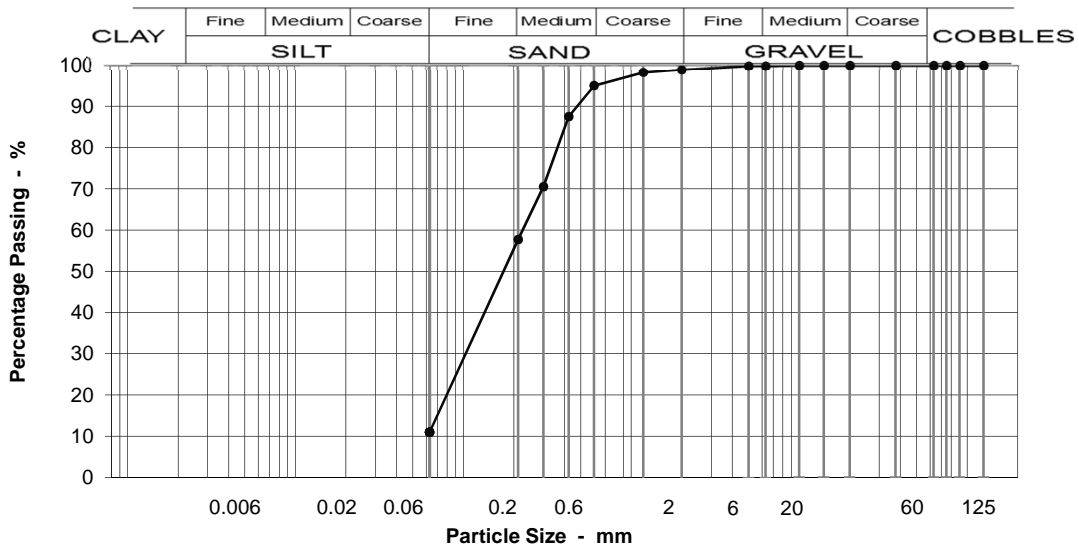
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH17 @ 21.0-21.5m

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	98
0.600	95
0.425	88
0.300	71
0.212	58
0.063	11

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J.

Moisture content % 25

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	4
Medium SAND	37
Fine SAND	47
Silt & Clay	11

Grading Analysis	
D100	6
D60	0.23
D10	0.04
Uniformity Coefficient	6

Description	
Grey and orangey brown, silty, clayey, fine to medium SAND.	

* Uniformity coefficient extrapolated

Test Code = 610



Peter Hardiment (Operations Manager)



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Martineau Lane
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NR1 2DH

Our reference No. **NCCL201711069-610**
Our Project No. **PZ1522D1**
Your Sample Ref **S38**
Your Project or Order No. **PZ1522**
Date Tested **06/11/2017**
Date Report Issued **10-Nov-17**

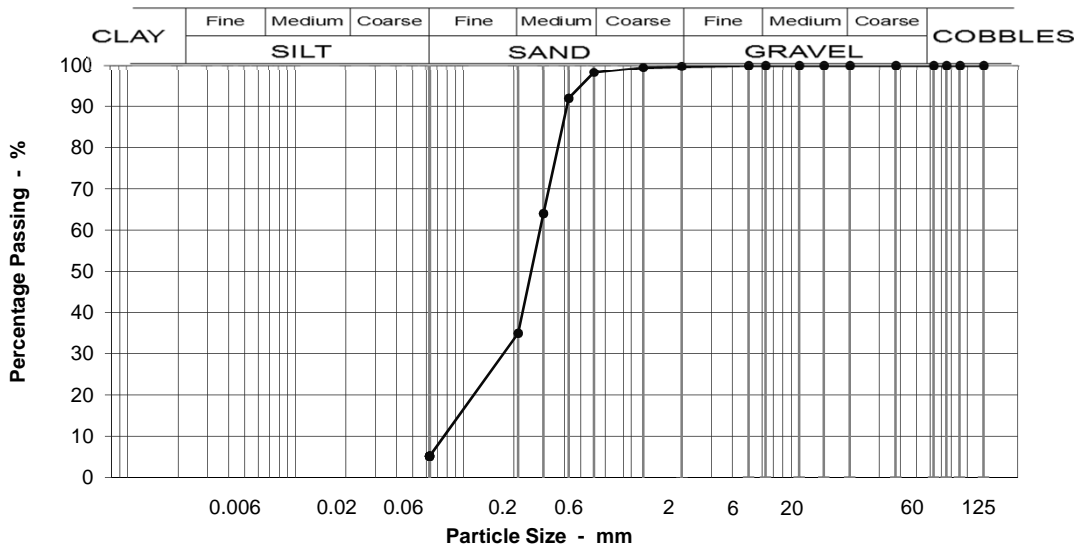
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH17 @ 24 - 24.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	99
0.600	98
0.425	92
0.300	64
0.212	35
0.063	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 18

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	1
Medium SAND	63
Fine SAND	30
Silt & Clay	5

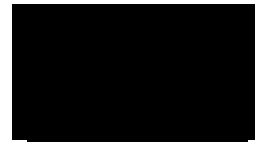
Grading Analysis	
D100	2
D60	0.29
D10	0.09
Uniformity Coefficient	3

Description	
Greyish brown slightly silty fine to medium SAND.	

Test Code = 610



Peter Hardiment (Operations Manager)



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Gt Yarmouth 3rd River Crossing

CES Highways Projects

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Our Project No PZ1522D1

Our Report and sample No NCCL2017100529-612

Your Sample Ref B40

Your Project or Order No PZ1522

Date Report Issued 07-Nov-17

Date Tested 17-Oct-17

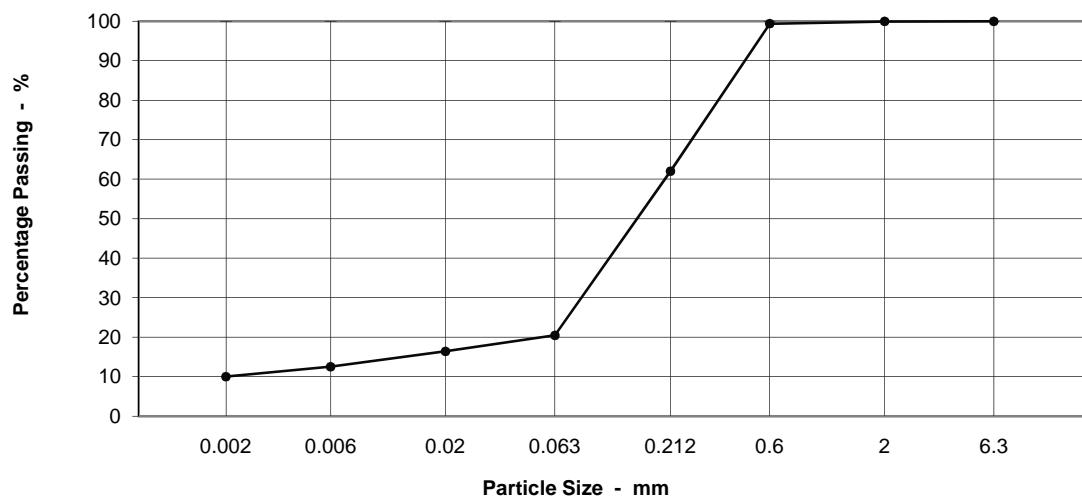
Page 1 of 1

Particle Size Distribution to BS 1377 : Part 2 : 1990 Sedimentation Method Section 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH17 B40 26.0-26.5m

Particle Size Distribution



Sieving & Sed.		Sample Proportions		Description
Particle Size mm	% Passing		%	
6.3	*See note	Coarse SAND	1	Greyish brown, clayey, silty, fine and medium SAND.
2.0	100	Medium SAND	37	
0.6	99	Fine SAND	42	
0.212	62	Coarse SILT	4	
0.063	20	Medium SILT	4	
0.02	16	Fine SILT	3	
0.006	13	CLAY	10	
0.002	10	Moisture content	26	

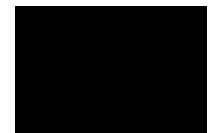
Test carried out on a disturbed sample prepared in accordance with BS1377 Part 1 clause 7.4.5, "in its natural state".
 Moisture content in accordance with BS1377 Part 2 clause 3.2, Oven-drying method. No pre-treatment was carried out.
 Location and orientation are not applicable.

* This test determines the particle size distribution from the coarse sand size to the clay size.

Test Code = 612



Peter Hardiment (Operations Manager)



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Gt Yarmouth 3rd River Crossing
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 County Hall
 Martineau Lane
 Norwich
 Norfolk
 NR1 2DH

Our Project No PZ1522D1

Our Report and sample No NCCL2017100530-612

Your Sample Ref B43

Your Project or Order No PZ1522

Date Report Issued 07-Nov-17

Date Tested 17-Oct-17

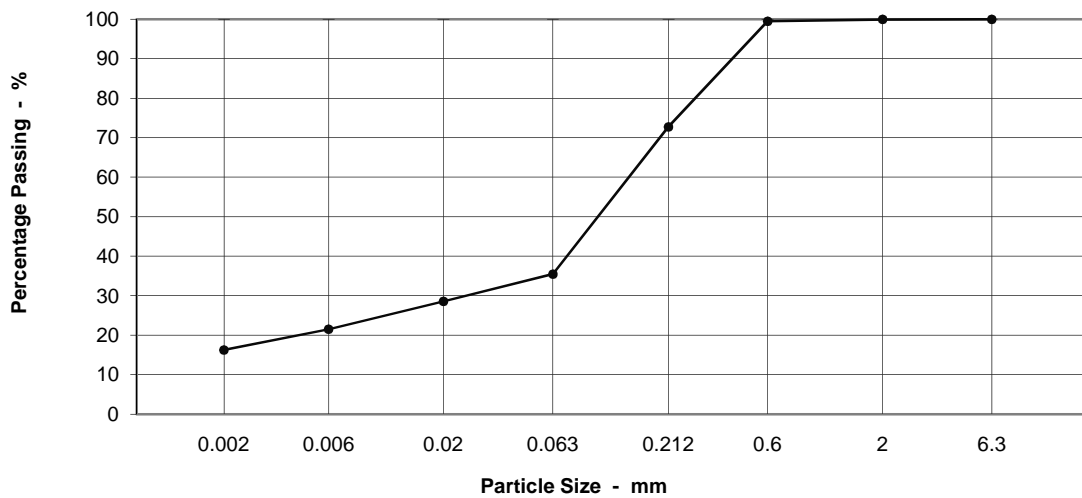
Page 1 of 1

Particle Size Distribution to BS 1377 : Part 2 : 1990 Sedimentation Method Section 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH17 B43 28.0-28.5m

Particle Size Distribution



Sieving & Sed.		Sample Proportions		Description
Particle Size mm	% Passing		%	
6.3	*See note	Coarse SAND	0	Light grey, clayey, silty, fine and medium SAND.
2.0	100	Medium SAND	27	
0.6	100	Fine SAND	37	
0.212	73	Coarse SILT	7	
0.063	35	Medium SILT	7	
0.02	29	Fine SILT	5	
0.006	22	CLAY	16	
0.002	16	Moisture content	27	

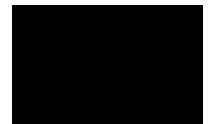
Test carried out on a disturbed sample prepared in accordance with BS1377 Part 1 clause 7.4.5, "in its natural state".
 Moisture content in accordance with BS1377 Part 2 clause 3.2, Oven-drying method. No pre-treatment was carried out.
 Location and orientation are not applicable.

* This test determines the particle size distribution from the coarse sand size to the clay size.

Test Code = 612



Peter Hardiment (Operations Manager)



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Gt Yarmouth 3rd River Crossing
 CES Highways Projects
 County Hall
 Martineau Lane
 Norwich
 Norfolk
 NR1 2DH

Our Project No PZ1522D1

Our Report and sample No NCCL2017100530-612

Your Sample Ref B43

Your Project or Order No PZ1522

Date Report Issued 03-Nov-17

Date Tested 17-Oct-17

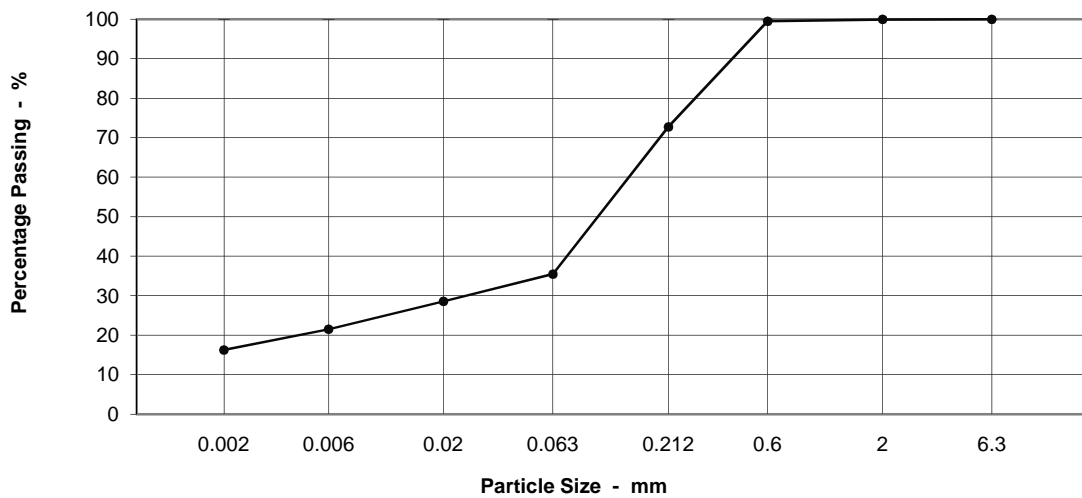
Page 1 of 1

Particle Size Distribution to BS 1377 : Part 2 : 1990 Sedimentation Method Section 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH17 B43 28.5m

Particle Size Distribution



Sieving & Sed.		Sample Proportions		Description
Particle Size mm	% Passing		%	
6.3	*See note	Coarse SAND	0	Light grey, very clayey, silty, fine and medium SAND.
2.0	100	Medium SAND	27	
0.6	100	Fine SAND	37	
0.212	73	Coarse SILT	7	
0.063	35	Medium SILT	7	
0.02	29	Fine SILT	5	
0.006	22	CLAY	16	
0.002	16	Moisture content	27	

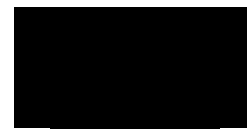
Test carried out on a disturbed sample prepared in accordance with BS1377 Part 1 clause 7.4.5, "in its natural state".
 Moisture content in accordance with BS1377 Part 2 clause 3.2, Oven-drying method. No pre-treatment was carried out.
 Location and orientation are not applicable.

* This test determines the particle size distribution from the coarse sand size to the clay size.

Test Code = 612



Peter Hardiment (Operations Manager)



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County Hall
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NR1 2DH

Our reference No. NCCL2017110610-613
Our Project No PZ1522D1
Your Sample Ref S47
Your Project or Order No. PZ1522
Date Tested 20/11/2017
Date Report Issued 28-Nov-17

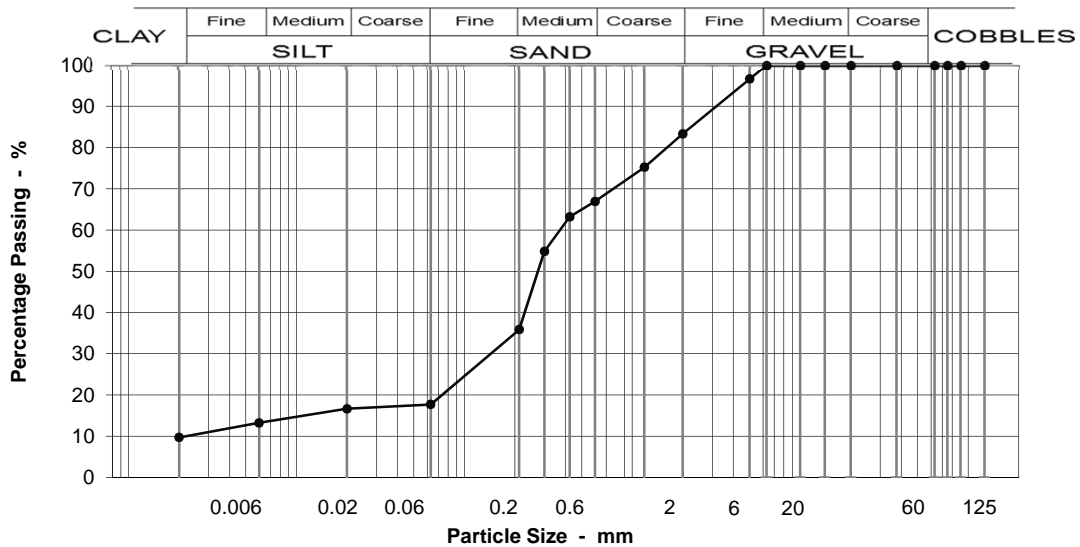
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH17 @ 31 - 31.5m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 2A/2B, 2A/2B.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	17
20	100		Coarse SAND	16
14	100		Medium SAND	31
10	100		Fine SAND	18
6.3	100		Silt & Clay	18
5	97			
2	83			
1.18	75			
0.600	67			
0.425	63			
0.300	55			
0.212	36			
0.063	18			
0.020	17			
0.006	13			
0.002	10			
Moisture content %		32		

Grading Analysis	
D100	5
D60	0.38
D10	0.06
Uniformity Coefficient	7

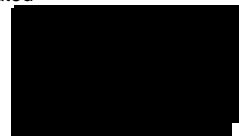
Description	
Grey clayey gravelly fine to coarse SAND. Gravel is fine rounded to subrounded flint.	

* Uniformity coefficient extrapolated

Test Code = 613



Peter Hardiment (Operations Manager)



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Great Yarmouth Third River Crossing

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 NR1 2DH

Our Project No PZ1522D1

Our Report and sample No NCCL2017110610-612

Your Sample Ref BS47

Your Project or Order No PZ1522

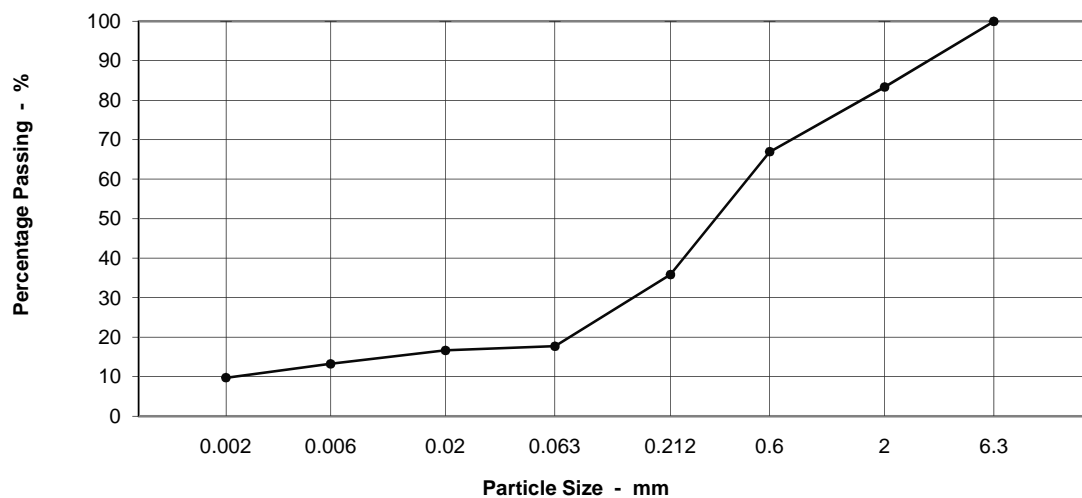
Date Report Issued 28-Nov-17

Date Tested 13-Nov-17

Page 1 of 1

**Particle Size Distribution to BS 1377 : Part 2 : 1990
 Sedimentation Method Section 9.4**
Scheme: Gt Yarmouth 3rd River Crossing

Location: BH17 BS47 31-31.5m

Particle Size Distribution


Sieving & Sed.		Sample Proportions		Description
Particle Size mm	% Passing		%	
6.3	*See note	Coarse SAND	16	Laminated, grey fine, medium and coarse SAND, stiff dark grey CLAY & thin laminae of light grey SILT.
2.0	83	Medium SAND	31	
0.6	67	Fine SAND	18	
0.212	36	Coarse SILT	1	
0.063	18	Medium SILT	3	
0.02	17	Fine SILT	3	
0.006	13	CLAY	10	
0.002	10	Moisture content	33	

Test carried out on a disturbed sample prepared in accordance with BS1377 Part 1 clause 7.4.5, "in its natural state". Moisture content in accordance with BS1377 Part 2 clause 3.2, Oven-drying method. No pre-treatment was carried out. Location and orientation are not applicable.

* This test determines the particle size distribution from the coarse sand size to the clay size.

Test Code = 612



Peter Hardiment (Operations Manager)



CES Highways Projects
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Norfolk
NR1 2DH

Our reference No. **NCCL2017100526-613**
Our Project No. **PZ1522D1**
Your Sample Ref **52**
Your Project or Order No. **PZ1522**
Date Tested **20/10/2017**
Date Report Issued **7-Nov-17**

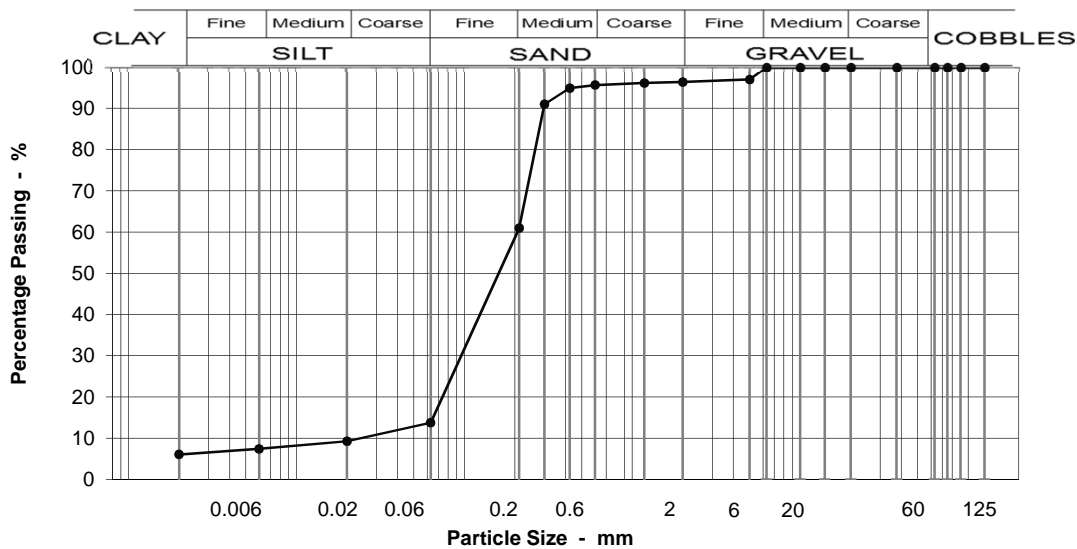
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: **Gt Yarmouth 3rd River Crossing**

Location: **BH17 @ 34.5-35.0m**

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	4
20	100		Coarse SAND	1
14	100		Medium SAND	35
10	100		Fine SAND	47
6.3	100		Silt & Clay	14
5	97			
2	96			
1.18	96			
0.600	96			
0.425	95			
0.300	91			
0.212	61			
0.063	14			
0.020	9			
0.006	7			
0.002	6			
		Moisture content %	27	

Grading Analysis	
D100	5
D60	0.21
D10	0.06
Uniformity Coefficient	3

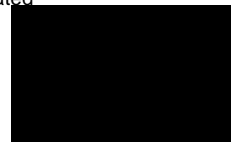
Description	
Laminated, dark grey and grey, clayey, silty, fine and medium SAND with occasional fine flint gravel.	

* Uniformity coefficient extrapolated

Test Code = 613



Peter Hardiment (Operations Manager)



CES Highways Projects
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. NCCL2017110611-610
Our Project No PZ1522D1
Your Sample Ref S55
Your Project or Order No. PZ1522
Date Tested 06/11/2017
Date Report Issued 10-Nov-17

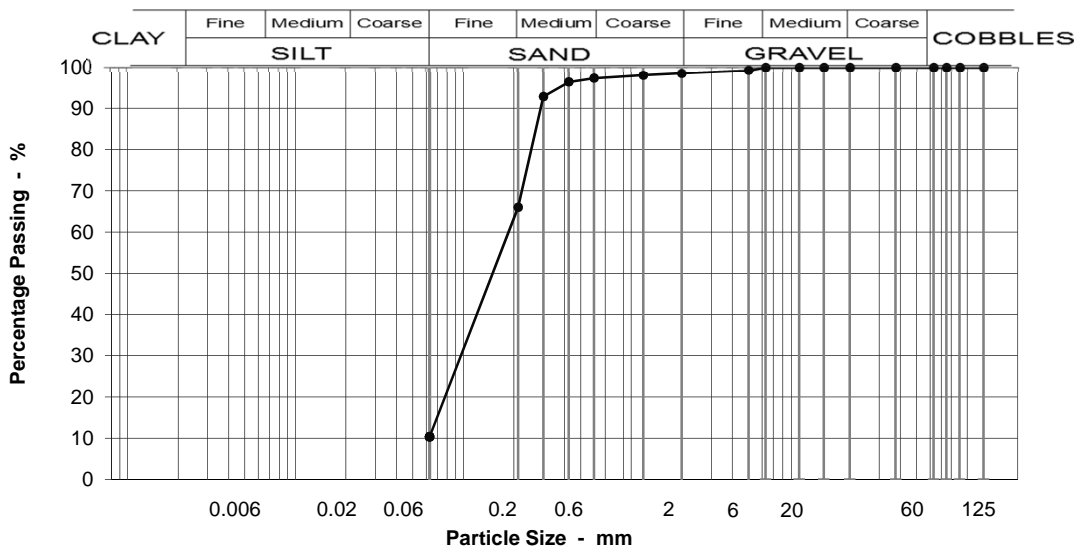
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH17 @ 36 - 36.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	99
2	99
1.18	98
0.600	97
0.425	96
0.300	93
0.212	66
0.063	10

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J.

Moisture content % 20

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	1
Medium SAND	31
Fine SAND	56
Silt & Clay	10

Grading Analysis	
D100	5
D60	0.20
D10	0.03
Uniformity Coefficient	6

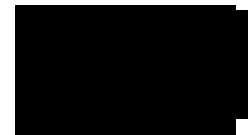
Description	
Grey slightly clayey slightly silty fine to medium SAND.	

* Uniformity coefficient extrapolated

Test Code = 610



Peter Hardiment (Operations Manager)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL2017112919-613**
Our Project No. **PZ1522D1**
Your Sample Ref. **58**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **12-Jan-18**

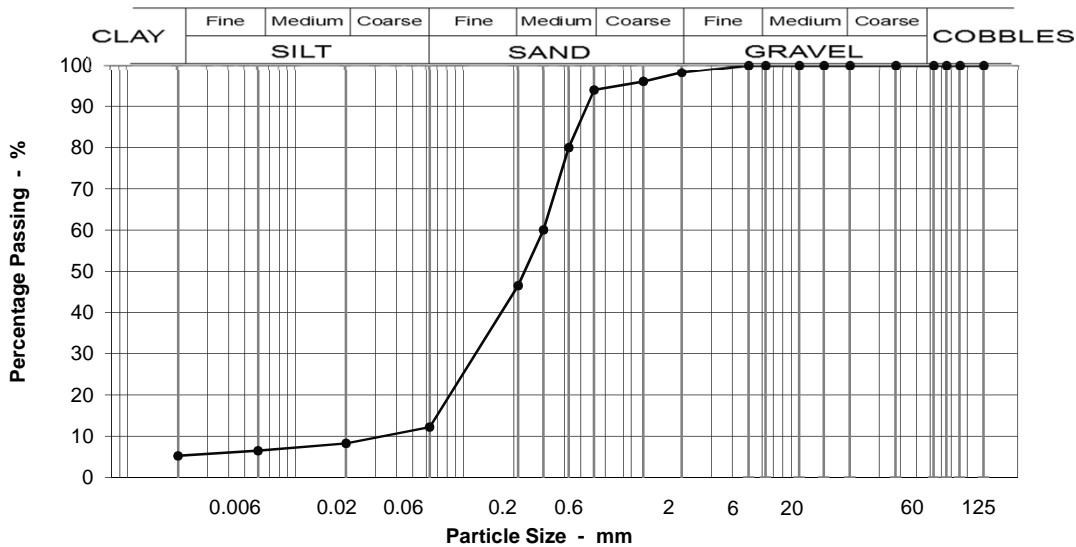
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH17 @ 38 - 38.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	98
1.18	96
0.600	94
0.425	80
0.300	60
0.212	47
0.063	12
0.020	8
0.006	7
0.002	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R.

Moisture content % 0

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	2
Coarse SAND	4
Medium SAND	47
Fine SAND	34
Silt & Clay	12

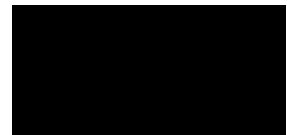
Grading Analysis	
D100	2
D60	0.30
D10	0.08
Uniformity Coefficient	4

Description
Grey silty fine to medium SAND with lenses of soft grey clay.

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL2017112920-613**
Our Project No. **PZ1522D1**
Your Sample Ref. **60**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **12-Jan-18**

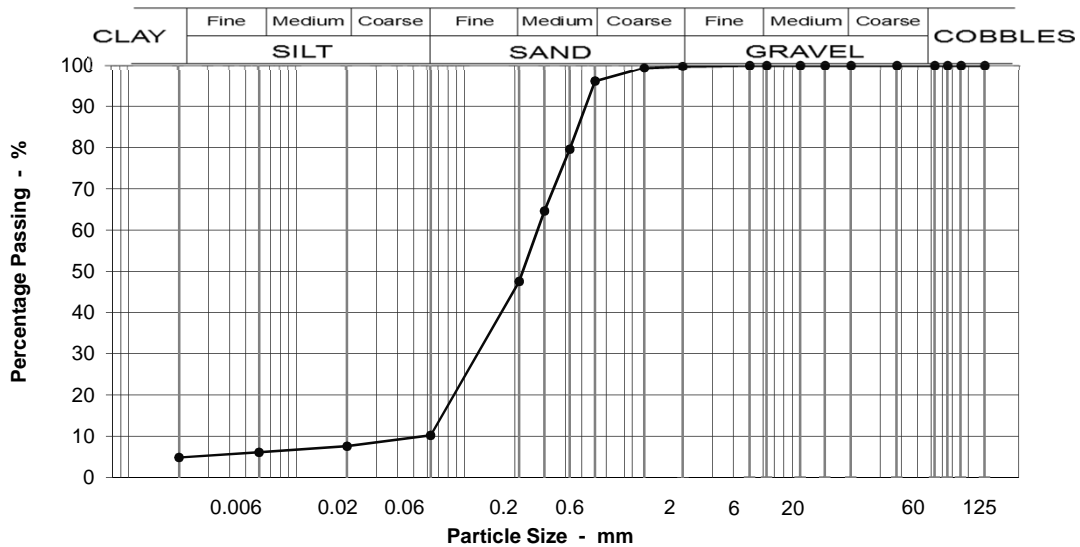
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH17 @ 40 - 40.45m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	99
0.600	96
0.425	80
0.300	65
0.212	48
0.063	10
0.020	8
0.006	6
0.002	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R.

Moisture content % 0

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	4
Medium SAND	48
Fine SAND	37
Silt & Clay	10

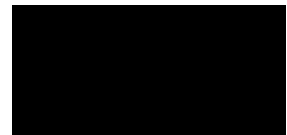
Grading Analysis	
D100	2
D60	0.28
D10	0.10
Uniformity Coefficient	3

Description	
Grey slightly silty fine to medium SAND with occasional lenses of soft grey clay.	

Test Code = 613



Simon Holden (Project Technician)



Norfolk Partnership Laboratory

Email: civil.laboratory@norfolk.gov.uk

Gt Yarmouth 3rd River Crossing
 CES Highways Projects
 County Hall
 Martineau Lane
 Norwich
 Norfolk
 NR1 2DH

Our Project No PZ1522D1

Our Report and sample No NCCL2017100329-612

Your Sample Ref B6

Your Project or Order No PZ1522

Date Report Issued 03-Nov-17

Date Tested 20-Oct-17

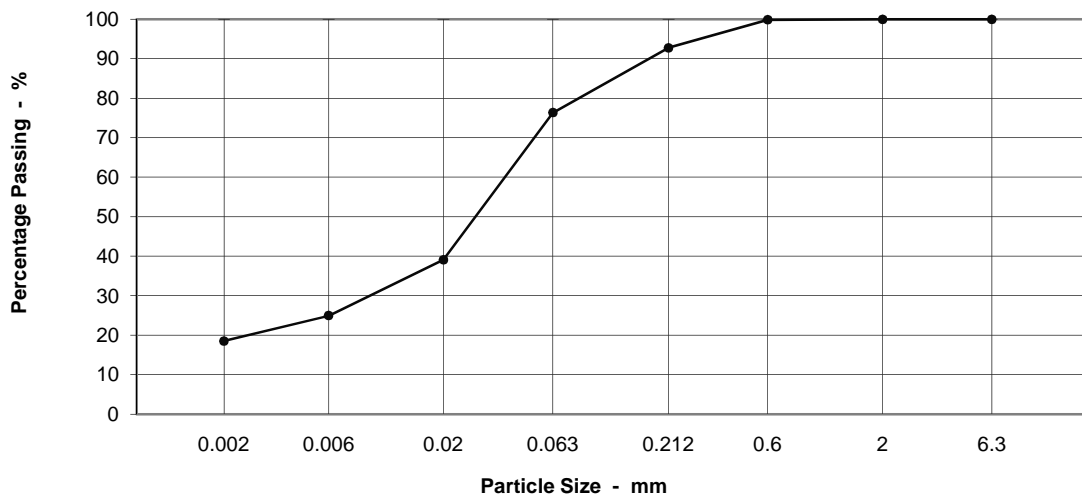
Page 1 of 1

Particle Size Distribution to BS 1377 : Part 2 : 1990 Sedimentation Method Section 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH17 B6 2.5m

Particle Size Distribution



Sieving & Sed.		Sample Proportions		Description
Particle Size mm	% Passing		%	
6.3	*See note	Coarse SAND	0	Soft, greeny grey, very clayey, sandy, fine, medium and coarse SILT.
2.0	100	Medium SAND	7	
0.6	100	Fine SAND	16	
0.212	93	Coarse SILT	37	
0.063	76	Medium SILT	14	
0.02	39	Fine SILT	6	
0.006	25	CLAY	19	
0.002	19	Moisture content	34	

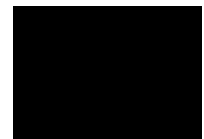
Test carried out on a disturbed sample prepared in accordance with BS1377 Part 1 clause 7.4.5, "in its natural state".
 Moisture content in accordance with BS1377 Part 2 clause 3.2, Oven-drying method. No pre-treatment was carried out.
 Location and orientation are not applicable.

* This test determines the particle size distribution from the coarse sand size to the clay size.

Test Code = 612



Peter Hardiment (Operations Manager)



CES Highways Projects
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. NCCL2017100521-610
Our Project No PZ1522D1
Your Sample Ref 10
Your Project or Order No. PZ1522
Date Tested 28/10/2017
Date Report Issued 3-Nov-17

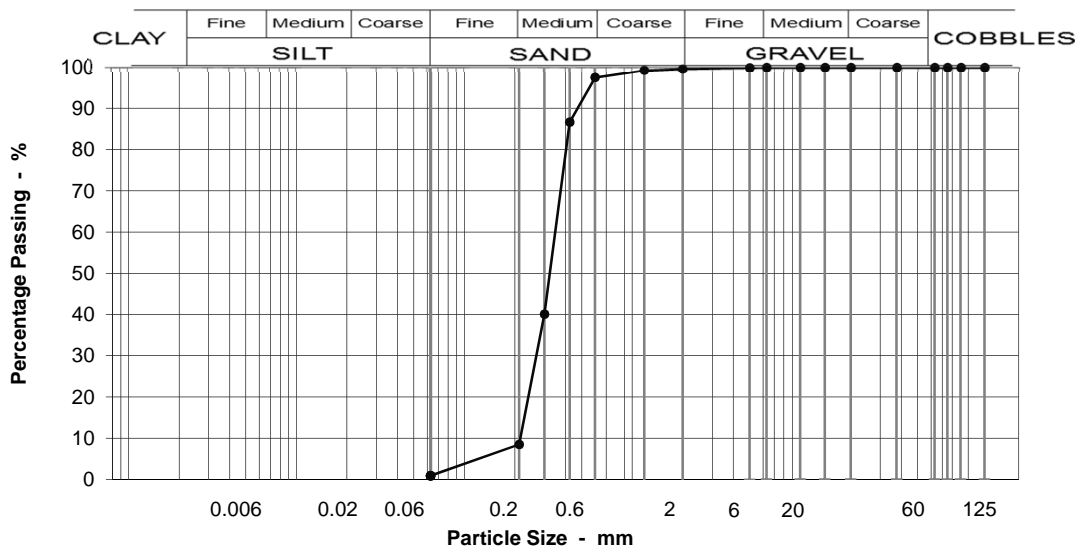
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH17 @ 4.5m

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	99
0.600	97
0.425	87
0.300	40
0.212	9
0.063	1

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 22

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	2
Medium SAND	89
Fine SAND	8
Silt & Clay	1

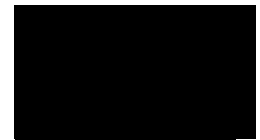
Grading Analysis	
D100	5
D60	0.35
D10	0.22
Uniformity Coefficient	2

Description	
Grey, fine, medium and coarse SAND, rapidly weathering to grey.	

Test Code = 610



Peter Hardiment (Operations Manager)



CES Highways Projects
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL201710032-610**
Our Project No. **PZ1522D1**
Your Sample Ref. **16**
Your Project or Order No. **PZ1522**
Date Tested **28/10/2017**
Date Report Issued **3-Nov-17**

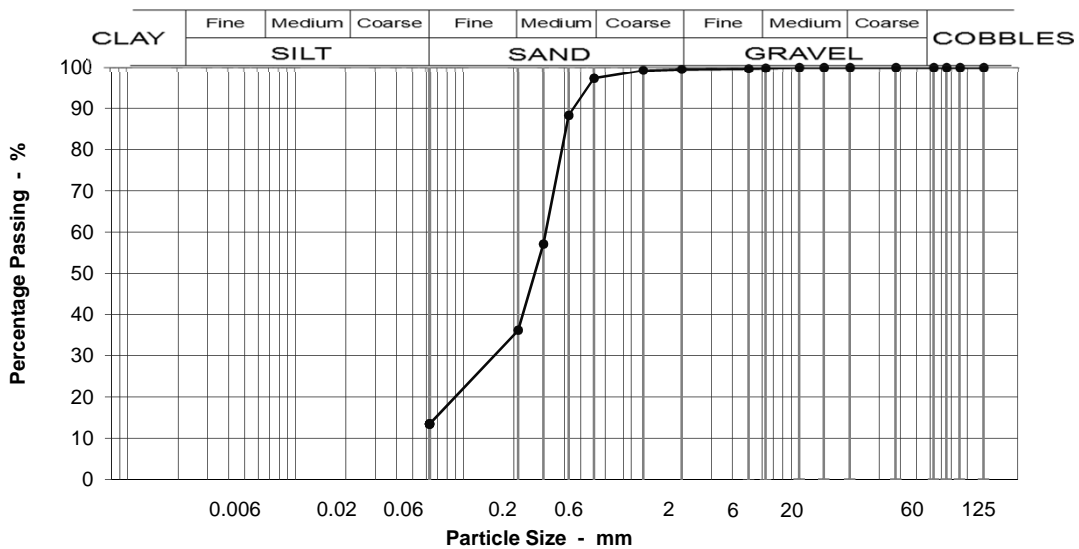
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH17 @ 8.5m

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	99
0.600	97
0.425	88
0.300	57
0.212	36
0.063	14

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J.

Moisture content % 21

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	2
Medium SAND	61
Fine SAND	23
Silt & Clay	14

Grading Analysis	
D100	6
D60	0.31
D10	0.06
Uniformity Coefficient	5*

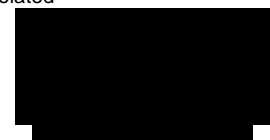
Description	
Dark grey and grey, clayey, silty, fine and medium SAND.	

* Uniformity coefficient extrapolated

Test Code = 610



Peter Hardiment (Operations Manager)



CES Highways Projects
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. NCCL2017100522-610
Our Project No PZ1522D1
Your Sample Ref 20
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 3-Nov-17

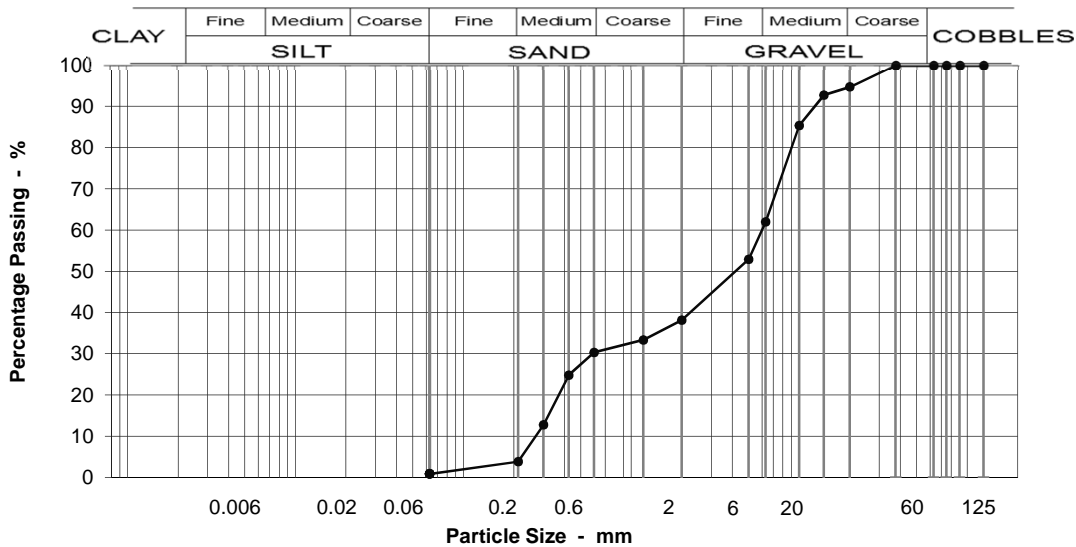
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH17 @ 11.5m

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	95
14	93
10	85
6.3	62
5	53
2	38
1.18	33
0.600	30
0.425	25
0.300	13
0.212	4
0.063	1

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6A, 6E/6R, 6F1, 6I, 6M, 6N.

Moisture content % 6.4

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	5
Medium GRAVEL	33
Fine GRAVEL	24
Coarse SAND	8
Medium SAND	26
Fine SAND	3
Silt & Clay	1

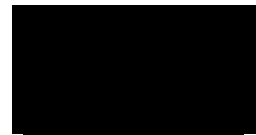
Grading Analysis	
D100	20
D60	6.01
D10	0.27
Uniformity Coefficient	22

Description	
Light grey and brown, very sandy, GRAVEL. Gravel is sub-rounded to angular, fine, medium and coarse flint and quartz.	

Test Code = 610



Peter Hardiment (Operations Manager)



CES Highways Projects
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. NCCL2017100523-610
Our Project No PZ1522D1
Your Sample Ref 22
Your Project or Order No. PZ1522
Date Tested 20/10/2017
Date Report Issued 3-Nov-17

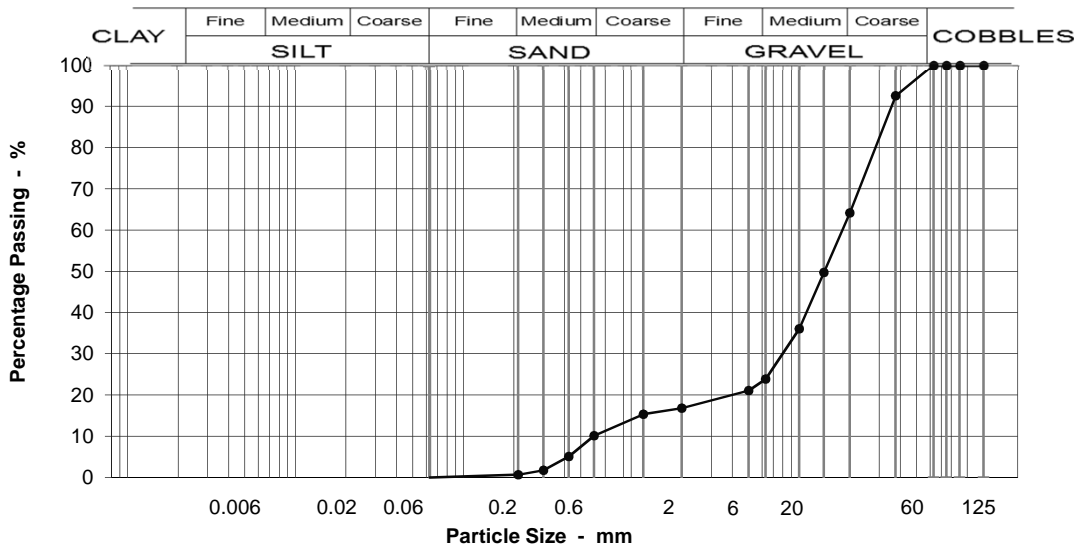
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH17 @ 13.5m

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	93
20	64
14	50
10	36
6.3	24
5	21
2	17
1.18	15
0.600	10
0.425	5
0.300	2
0.212	1
0.063	0

Specification for Highway Works Classification
Table 6/2

Moisture content % 2.1

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	36
Medium GRAVEL	40
Fine GRAVEL	7
Coarse SAND	7
Medium SAND	9
Fine SAND	1
Silt & Clay	0

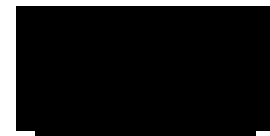
Grading Analysis	
D100	38
D60	18.28
D10	0.59
Uniformity Coefficient	31

Description
Brown and light grey, sandy, fine, medium and coarse GRAVEL. Gravel is rounded to sub-rounded, flint and quartz.

Test Code = 610



Peter Hardiment (Operations Manager)



CES Highways Projects
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. NCCL2017100524-610
Our Project No PZ1522D1
Your Sample Ref 24
Your Project or Order No. PZ1522
Date Tested 19/10/2017
Date Report Issued 3-Nov-17

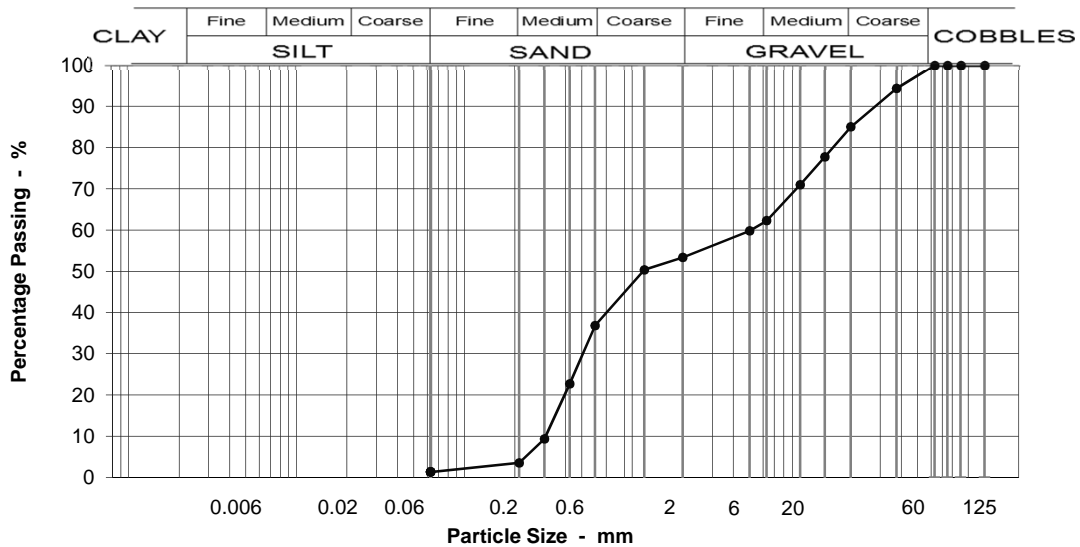
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH17 @ 15.5m

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	94
20	85
14	78
10	71
6.3	62
5	60
2	53
1.18	50
0.600	37
0.425	23
0.300	9
0.212	4
0.063	1

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6A, 6E/6R, 6F1, 6I, 6M, 6N.

Moisture content % 5.5

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	15
Medium GRAVEL	23
Fine GRAVEL	9
Coarse SAND	17
Medium SAND	33
Fine SAND	2
Silt & Clay	1

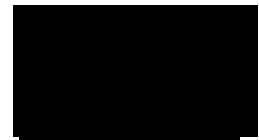
Grading Analysis	
D100	38
D60	5.11
D10	0.31
Uniformity Coefficient	17

Description	
Brown and light grey, very gravelly, medium and coarse SAND. Gravel is rounded to sub-rounded, fine, medium and coarse flint and quartz.	

Test Code = 610



Peter Hardiment (Operations Manager)



Norfolk Partnership Laboratory

Email: civil.laboratory@norfolk.gov.uk

Gt Yarmouth 3rd River Crossing
 CES Highways Projects
 County Hall
 Martineau Lane
 Norwich
 Norfolk
 NR1 2DH

Our Project No PZ1522D1

Our Report and sample No NCCL2017100330-612

Your Sample Ref D31

Your Project or Order No PZ1522

Date Report Issued 03-Nov-17

Date Tested 20-Oct-17

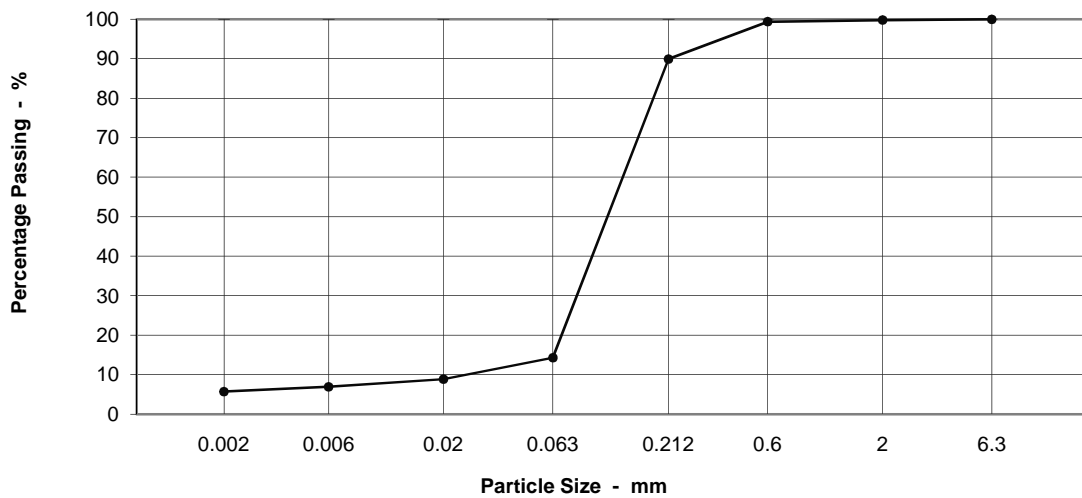
Page 1 of 1

Particle Size Distribution to BS 1377 : Part 2 : 1990 Sedimentation Method Section 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH17 D31 19.45m

Particle Size Distribution



Sieving & Sed.		Sample Proportions		Description
Particle Size mm	% Passing		%	
6.3	*See note	Coarse SAND	0	Light brown and grey, clayey, silty, fine and medium SAND.
2.0	100	Medium SAND	9	
0.6	99	Fine SAND	76	
0.212	90	Coarse SILT	5	
0.063	14	Medium SILT	2	
0.02	9	Fine SILT	1	
0.006	7	CLAY	6	
0.002	6	Moisture content	27	

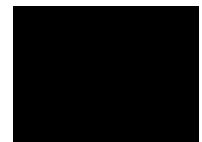
Test carried out on a disturbed sample prepared in accordance with BS1377 Part 1 clause 7.4.5, "in its natural state".
 Moisture content in accordance with BS1377 Part 2 clause 3.2, Oven-drying method. No pre-treatment was carried out.
 Location and orientation are not applicable.

* This test determines the particle size distribution from the coarse sand size to the clay size.

Test Code = 612



Peter Hardiment (Operations Manager)



CES Highways Projects
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL2017100525-610**
Our Project No. PZ1522D1
Your Sample Ref. 33
Your Project or Order No. PZ1522
Date Tested 28/10/2017
Date Report Issued 3-Nov-17

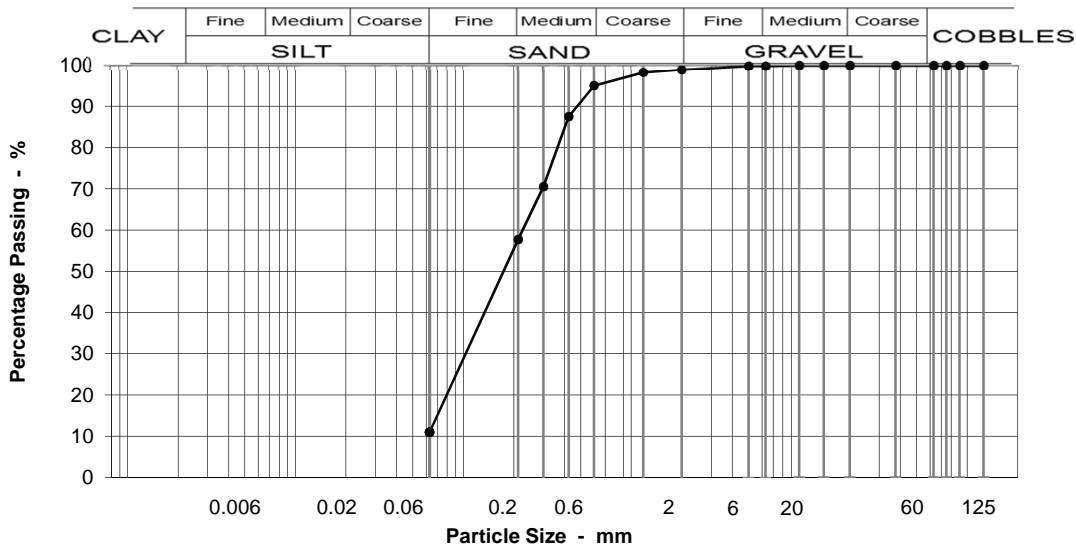
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH17 @ 21.5m

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	98
0.600	95
0.425	88
0.300	71
0.212	58
0.063	11

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J.

Moisture content % 25

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	4
Medium SAND	37
Fine SAND	47
Silt & Clay	11

Grading Analysis	
D100	6
D60	0.23
D10	0.04
Uniformity Coefficient	6

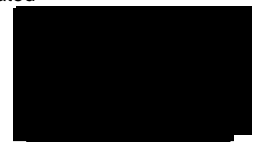
Description	
Grey and orangey brown, silty, layey, fine, medium and coarse SAND.	

* Uniformity coefficient extrapolated

Test Code = 610



Peter Hardiment (Operations Manager)



Norfolk Partnership Laboratory

Email: civil.laboratory@norfolk.gov.uk

Gt Yarmouth 3rd River Crossing
 CES Highways Projects
 County Hall
 Martineau Lane
 Norwich
 Norfolk
 NR1 2DH

Our Project No PZ1522D1

Our Report and sample No NCCL2017100529-612

Your Sample Ref B40

Your Project or Order No PZ1522

Date Report Issued 03-Nov-17

Date Tested 17-Oct-17

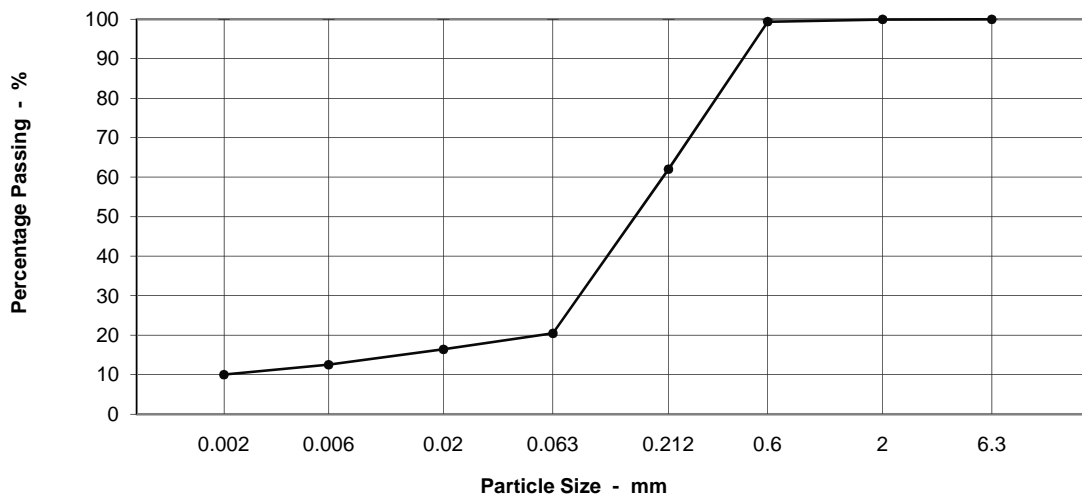
Page 1 of 1

Particle Size Distribution to BS 1377 : Part 2 : 1990 Sedimentation Method Section 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH17 B40 26.5m

Particle Size Distribution



Sieving & Sed.		Sample Proportions		Description
Particle Size mm	% Passing		%	
6.3	*See note	Coarse SAND	1	Greyish brown, slightly clayey, silty, fine and medium SAND.
2.0	100	Medium SAND	37	
0.6	99	Fine SAND	42	
0.212	62	Coarse SILT	4	
0.063	20	Medium SILT	4	
0.02	16	Fine SILT	3	
0.006	13	CLAY	10	
0.002	10	Moisture content	26	

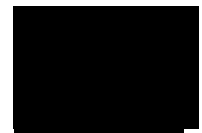
Test carried out on a disturbed sample prepared in accordance with BS1377 Part 1 clause 7.4.5, "in its natural state".
 Moisture content in accordance with BS1377 Part 2 clause 3.2, Oven-drying method. No pre-treatment was carried out.
 Location and orientation are not applicable.

* This test determines the particle size distribution from the coarse sand size to the clay size.

Test Code = 612



Peter Hardiment (Operations Manager)



Norfolk Partnership Laboratory

Email: civil.laboratory@norfolk.gov.uk

Gt Yarmouth 3rd River Crossing

CES Highways Projects

County Hall
 Martineau Lane
 Norwich
 Norfolk
 NR1 2DH

Our Project No PZ1522D1

Our Report and sample No NCCL2017100530-612

Your Sample Ref B43

Your Project or Order No PZ1522

Date Report Issued 03-Nov-17

Date Tested 17-Oct-17

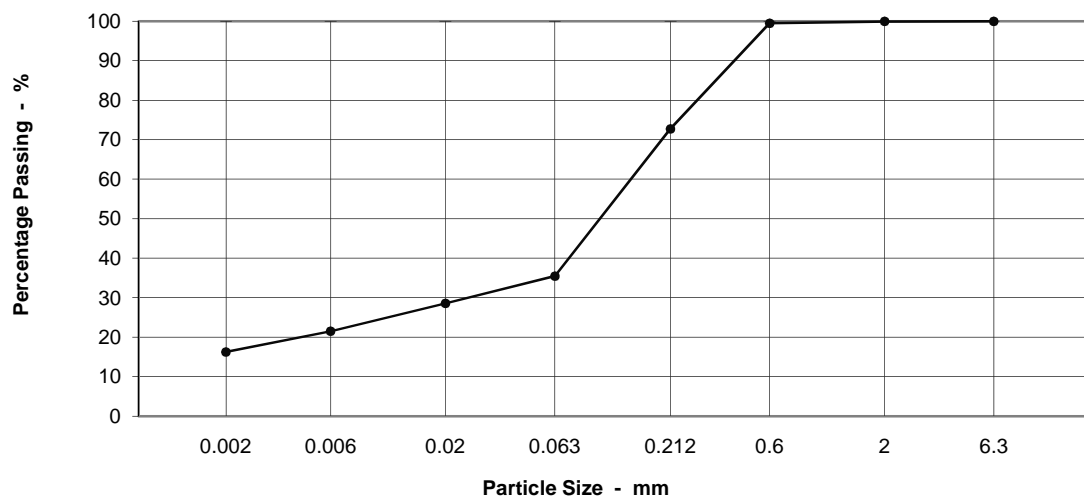
Page 1 of 1

Particle Size Distribution to BS 1377 : Part 2 : 1990 Sedimentation Method Section 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH17 B43 28.5m

Particle Size Distribution



Sieving & Sed.		Sample Proportions		Description
Particle Size mm	% Passing		%	
6.3	*See note	Coarse SAND	0	Light grey, very clayey, silty, fine and medium SAND.
2.0	100	Medium SAND	27	
0.6	100	Fine SAND	37	
0.212	73	Coarse SILT	7	
0.063	35	Medium SILT	7	
0.02	29	Fine SILT	5	
0.006	22	CLAY	16	
0.002	16	Moisture content	27	

Test carried out on a disturbed sample prepared in accordance with BS1377 Part 1 clause 7.4.5, "in its natural state".
 Moisture content in accordance with BS1377 Part 2 clause 3.2, Oven-drying method. No pre-treatment was carried out.
 Location and orientation are not applicable.

* This test determines the particle size distribution from the coarse sand size to the clay size.

Test Code = 612



Peter Hardiment (Operations Manager)



CES Highways Projects
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. NCCL2017100526-613
Our Project No PZ1522D1
Your Sample Ref 52
Your Project or Order No. PZ1522
Date Tested 20/10/2017
Date Report Issued 3-Nov-17

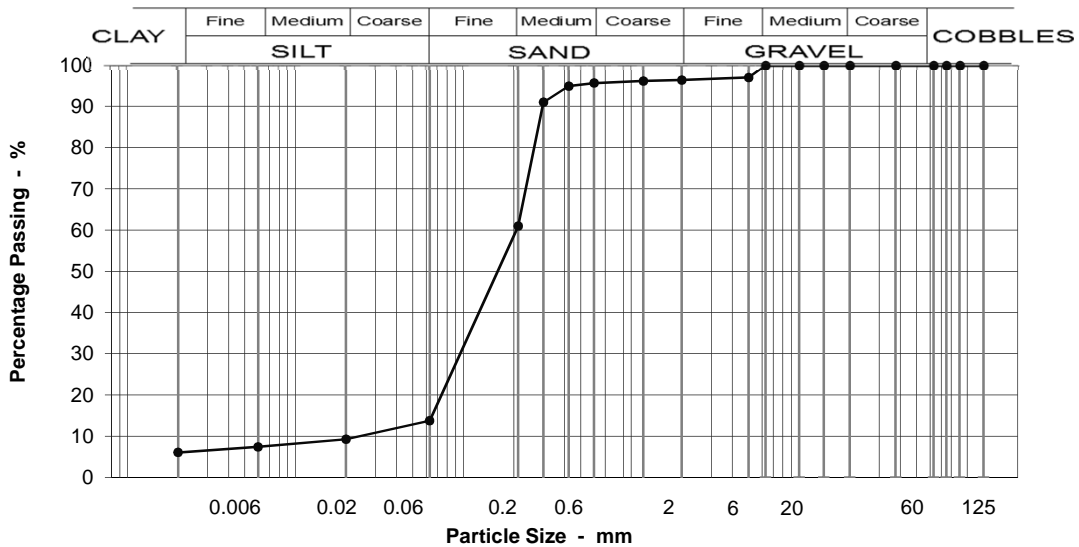
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH17 @ 35m

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	97
2	96
1.18	96
0.600	96
0.425	95
0.300	91
0.212	61
0.063	14
0.020	9
0.006	7
0.002	6

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R.

Moisture content % 27

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	4
Coarse SAND	1
Medium SAND	35
Fine SAND	47
Silt & Clay	14

Grading Analysis	
D100	5
D60	0.21
D10	0.06
Uniformity Coefficient	3

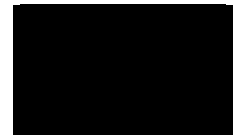
Description
Firm to stiff, laminated, dark grey and grey, clayey, silty, fine and medium SAND with occasional flint gravel.

* Uniformity coefficient extrapolated

Test Code = 613



Peter Hardiment (Operations Manager)



CES Highways Projects
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. NCCL2017100527-610
Our Project No PZ1522D1
Your Sample Ref 57
Your Project or Order No. PZ1522
Date Tested 20/10/2017
Date Report Issued 3-Nov-17

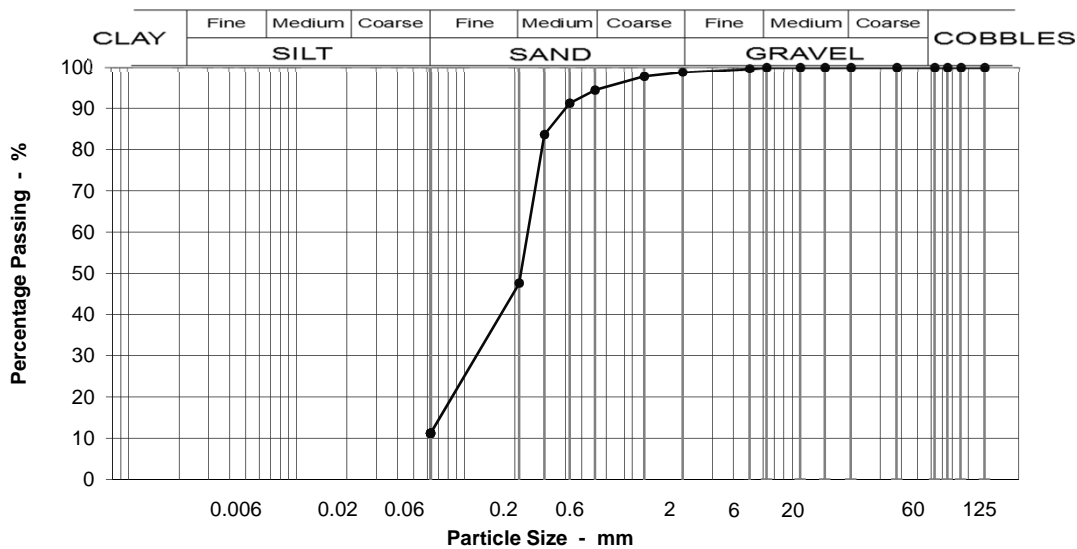
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH17 @ 38m

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	98
0.600	94
0.425	91
0.300	84
0.212	48
0.063	11

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	4
Medium SAND	47
Fine SAND	36
Silt & Clay	11

Grading Analysis	
D100	5
D60	0.24
D10	0.05
Uniformity Coefficient	5

Description
Grey, fine, medium and coarse SAND with lenses of soft grey clay.

Moisture content % 24

* Uniformity coefficient extrapolated

Test Code = 610



Peter Hardiment (Operations Manager)



CES Highways Projects
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. NCCL2017100528-610
Our Project No PZ1522D1
Your Sample Ref 60
Your Project or Order No. PZ1522
Date Tested 20/10/2017
Date Report Issued 3-Nov-17

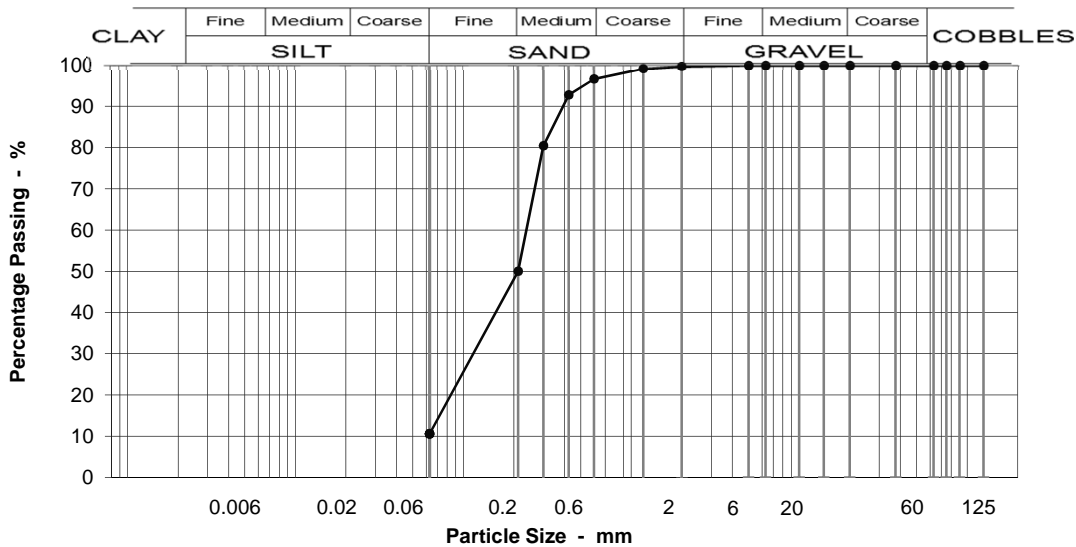
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH17 @ 40m

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	99
0.600	97
0.425	93
0.300	80
0.212	50
0.063	11

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J.

Moisture content % 24

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	3
Medium SAND	47
Fine SAND	39
Silt & Clay	11

Grading Analysis	
D100	2
D60	0.24
D10	0.04
Uniformity Coefficient	6

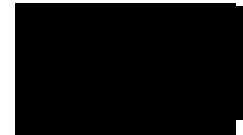
Description	
Grey, fine, medium and coarse SAND with lenses of soft grey clay.	

* Uniformity coefficient extrapolated

Test Code = 610



Peter Hardiment (Operations Manager)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL2017112921-613**
Our Project No. **PZ1522D1**
Your Sample Ref **1**
Your Project or Order No. **PZ1522**
Date Tested **12/12/2017**
Date Report Issued **22-Jan-18**

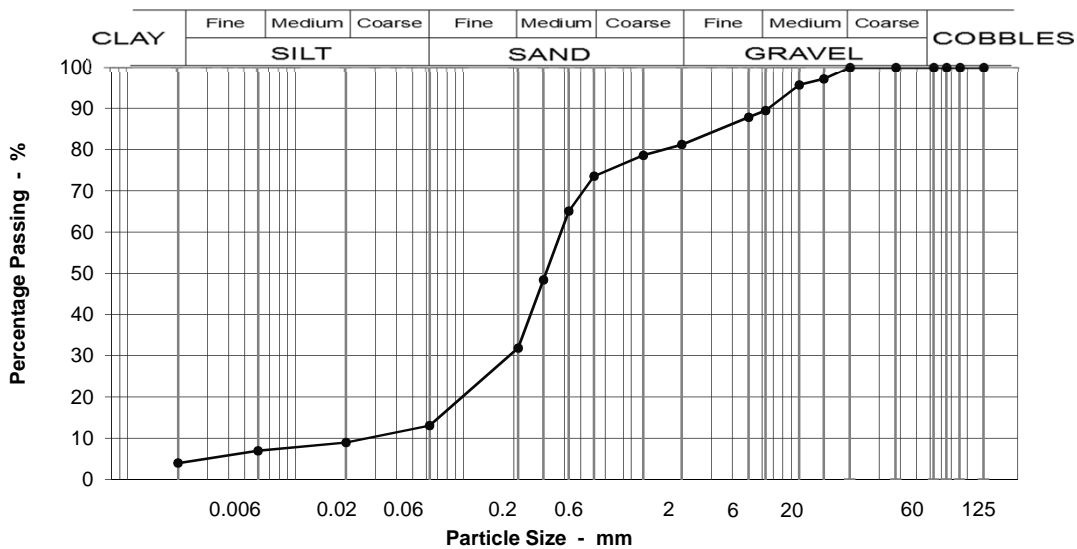
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH18 @ 0.8m Specimen: 2

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	97
10	96
6.3	89
5	88
2	81
1.18	79
0.600	74
0.425	65
0.300	48
0.212	32
0.063	13
0.020	9
0.006	7
0.002	4

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R.

Moisture content % 16

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	11
Fine GRAVEL	8
Coarse SAND	8
Medium SAND	42
Fine SAND	19
Silt & Clay	13

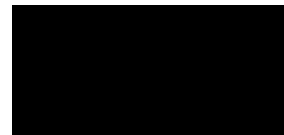
Grading Analysis	
D100	14
D60	0.39
D10	0.09
Uniformity Coefficient	4

Description
MADE GROUND: comprising dark brown very gravelly slightly silty fine to medium SAND. Gravel is fine to medium angular concrete, flint, chalk and some shell fragments.

Test Code = 613



Simon Holden (Project Technician)



CES Highways Projects
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL2017101729-610**
Our Project No. **PZ1522D1**
Your Sample Ref **5**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **22-Nov-17**

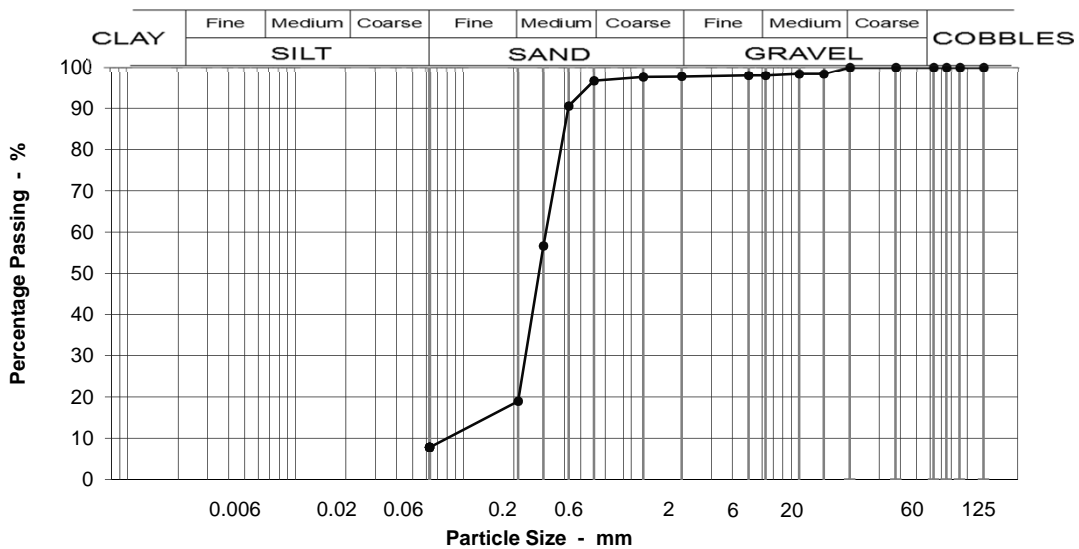
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH18 @ 2.6 - 3m

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	98
10	98
6.3	98
5	98
2	98
1.18	98
0.600	97
0.425	91
0.300	57
0.212	19
0.063	8

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 17

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	2
Fine GRAVEL	0
Coarse SAND	1
Medium SAND	78
Fine SAND	11
Silt & Clay	8

Grading Analysis	
D100	14
D60	0.31
D10	0.09
Uniformity Coefficient	3

Description
Dark grey, slightly clayey, fine, medium and coarse SAND with numerous shell fragments.

Test Code = 610



Peter Hardiment (Operations Manager)



CES Highways Projects
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL2017101730-610**
Our Project No. **PZ1522D1**
Your Sample Ref **9**
Your Project or Order No. **PZ1522**
Date Tested **20/10/2017**
Date Report Issued **22-Nov-17**

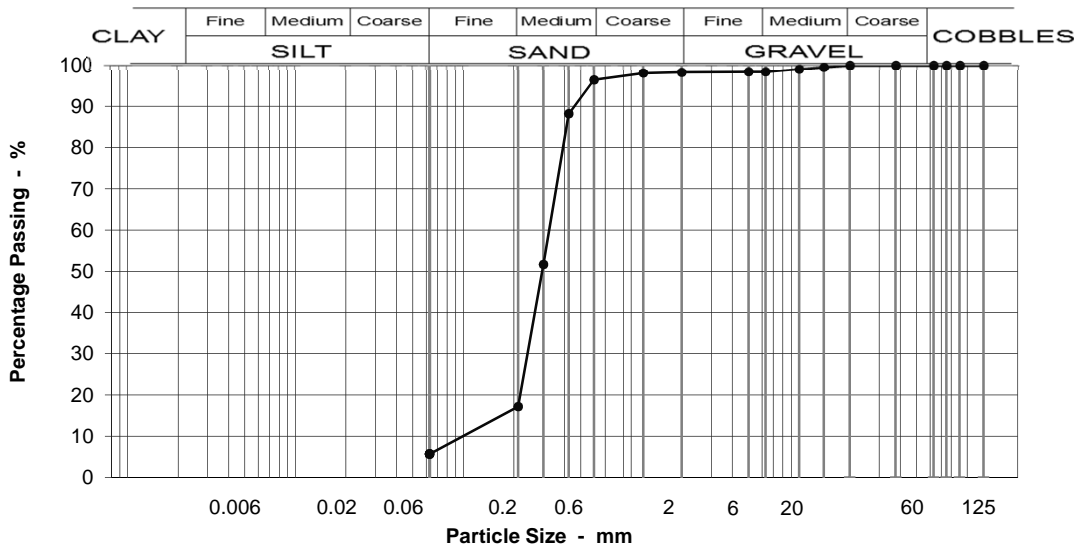
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH18 @ 4.7 - 5m

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	99
6.3	98
5	98
2	98
1.18	98
0.600	96
0.425	88
0.300	52
0.212	17
0.063	6

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 23

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	2
Fine GRAVEL	0
Coarse SAND	2
Medium SAND	79
Fine SAND	11
Silt & Clay	6

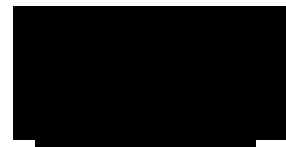
Grading Analysis	
D100	14
D60	0.33
D10	0.12
Uniformity Coefficient	3

Description	
Dark grey, fine, medium and coarse SAND with some lenses of dark grey, SILT.	

Test Code = 610



Peter Hardiment (Operations Manager)



CES Highways Projects
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. NCCL2017101731-610
Our Project No PZ1522D1
Your Sample Ref 14
Your Project or Order No. PZ1522
Date Tested 20/10/2017
Date Report Issued 22-Nov-17

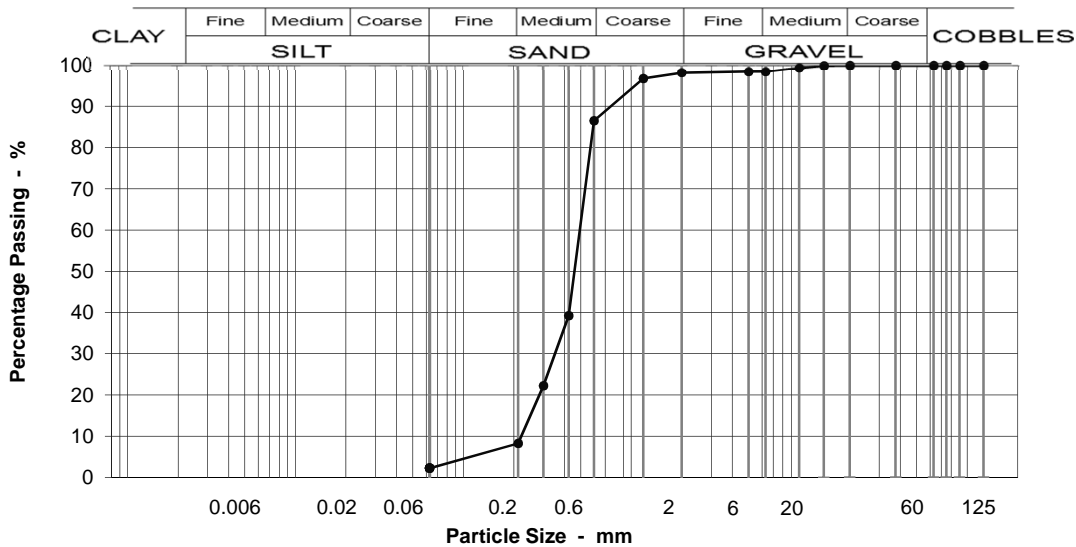
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH18 @ 7.6 - 7.9m

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	99
6.3	98
5	98
2	98
1.18	97
0.600	87
0.425	39
0.300	22
0.212	8
0.063	2

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 22

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	2
Fine GRAVEL	0
Coarse SAND	12
Medium SAND	78
Fine SAND	6
Silt & Clay	2

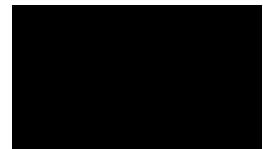
Grading Analysis	
D100	14
D60	0.50
D10	0.22
Uniformity Coefficient	2

Description	
Dark grey, fine, medium and coarse SAND.	

Test Code = 610



Peter Hardiment (Operations Manager)



Norfolk Partnership Laboratory

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Great Yarmouth Third River Crossing

Norfolk County Council
 County Hall
 Martineau Lane
 Norwich
 Norfolk
 NR1 2DH

Our Project No PZ1522D1

Our Report and sample No NCCL2017101725-612

Your Sample Ref B17

Your Project or Order No PZ1522

Date Report Issued 28-Nov-17

Date Tested 31-Oct-17

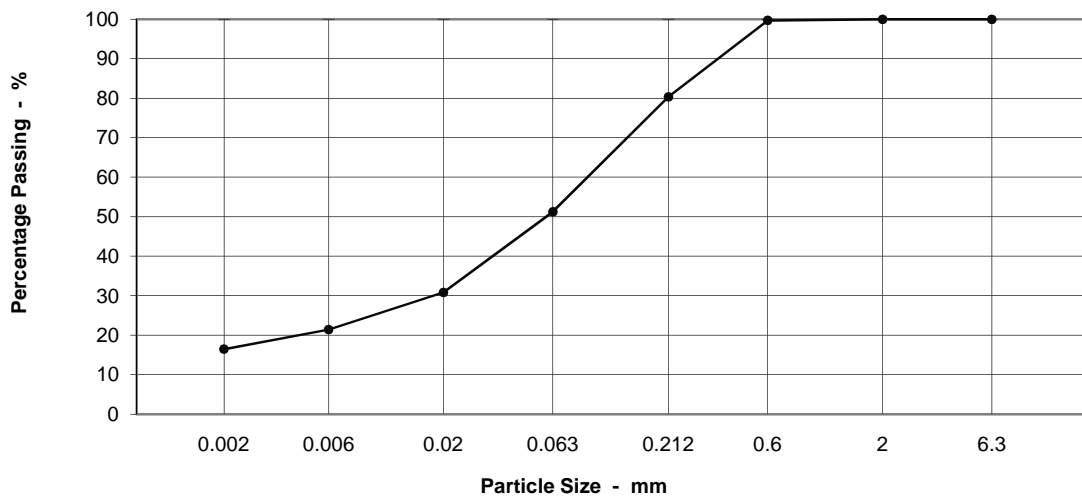
Page 1 of 1

Particle Size Distribution to BS 1377 : Part 2 : 1990 Sedimentation Method Section 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH18 B17 9.6-10.0m

Particle Size Distribution



Sieving & Sed.		Sample Proportions		Description
Particle Size mm	% Passing		%	
6.3	*See note	Coarse SAND	0	Dark grey, clayey, very silty fine and medium SAND, weathering to brown.
2.0	100	Medium SAND	19	
0.6	100	Fine SAND	29	
0.212	80	Coarse SILT	20	
0.063	51	Medium SILT	9	
0.02	31	Fine SILT	5	
0.006	21	CLAY	16	
0.002	16	Moisture content	38	

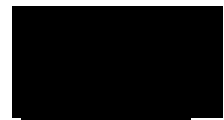
Test carried out on a disturbed sample prepared in accordance with BS1377 Part 1 clause 7.4.5, "in its natural state".
 Moisture content in accordance with BS1377 Part 2 clause 3.2, Oven-drying method. No pre-treatment was carried out.
 Location and orientation are not applicable.

* This test determines the particle size distribution from the coarse sand size to the clay size.

Test Code = 612



Peter Hardiment (Operations Manager)



CES Highways Projects
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. NCCL2017101732-610
Our Project No PZ1522D1
Your Sample Ref 22
Your Project or Order No. PZ1522
Date Tested 20/10/2017
Date Report Issued 22-Nov-17

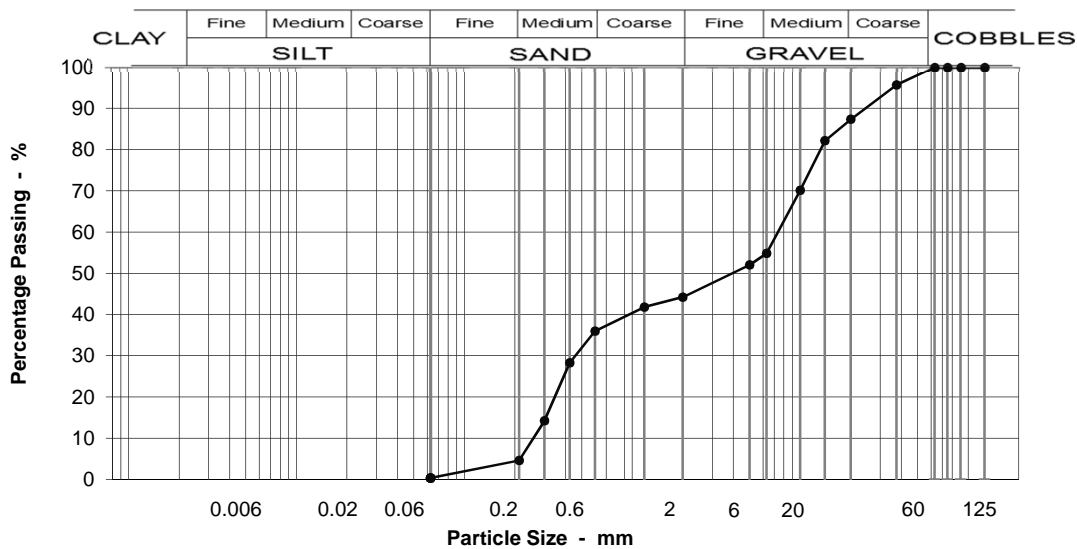
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH18 @ 12.6 - 13m

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	96
20	87
14	82
10	70
6.3	55
5	52
2	44
1.18	42
0.600	36
0.425	28
0.300	14
0.212	5
0.063	0

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6A, 6E/6R, 6F1, 6I, 6M, 6N.

Moisture content % 8.1

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	13
Medium GRAVEL	32
Fine GRAVEL	11
Coarse SAND	8
Medium SAND	31
Fine SAND	4
Silt & Clay	0

Grading Analysis	
D100	38
D60	7.55
D10	0.26
Uniformity Coefficient	29

Description
Orangey grey, fine, medium and coarse SAND and greyish brown, fine, medium and coarse, angular to sub-angular, flint and quartz GRAVEL.

Test Code = 610



Peter Hardiment (Operations Manager)



CES Highways Projects
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL2017101733-610**
Our Project No. **PZ1522D1**
Your Sample Ref. **28**
Your Project or Order No. **PZ1522**
Date Tested **20/10/2017**
Date Report Issued **22-Nov-17**

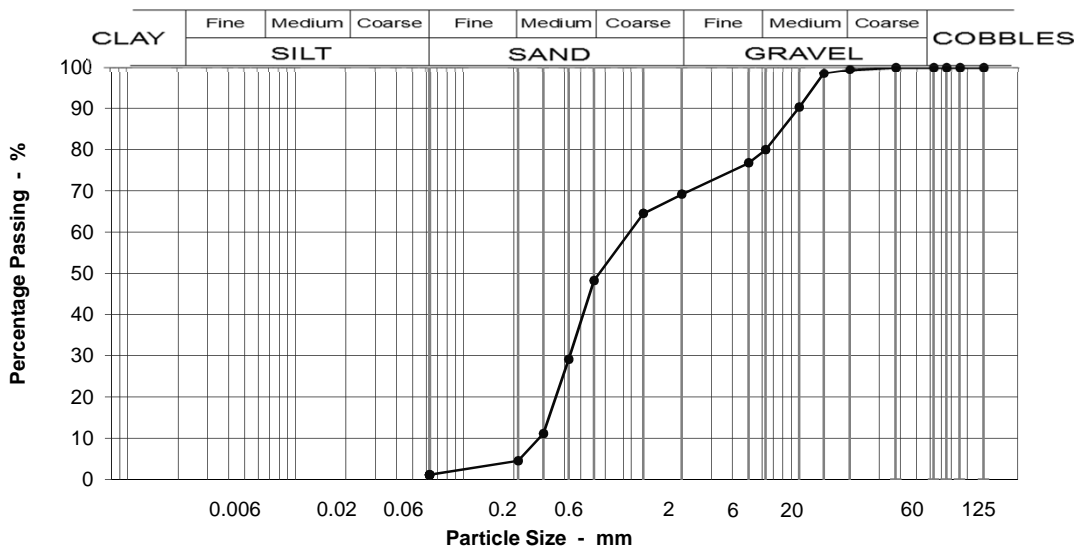
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH18 @ 16.8 - 17m

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	99
14	99
10	90
6.3	80
5	77
2	69
1.18	64
0.600	48
0.425	29
0.300	11
0.212	5
0.063	1

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6F1, 6M.

Moisture content % 5

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	1
Medium GRAVEL	19
Fine GRAVEL	11
Coarse SAND	21
Medium SAND	44
Fine SAND	3
Silt & Clay	1

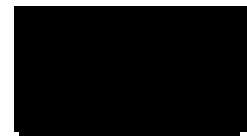
Grading Analysis	
D100	20
D60	1.02
D10	0.28
Uniformity Coefficient	4

Description
Yellowy grey, very gravelly, fine, medium and coarse SAND. Gravel is rounded to sub-rounded, fine and medium, flint and quartz.

Test Code = 610



Peter Hardiment (Operations Manager)



CES Highways Projects
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL2017101734-610**
Our Project No. **PZ1522D1**
Your Sample Ref. **33**
Your Project or Order No. **PZ1522**
Date Tested **28/10/2017**
Date Report Issued **22-Nov-17**

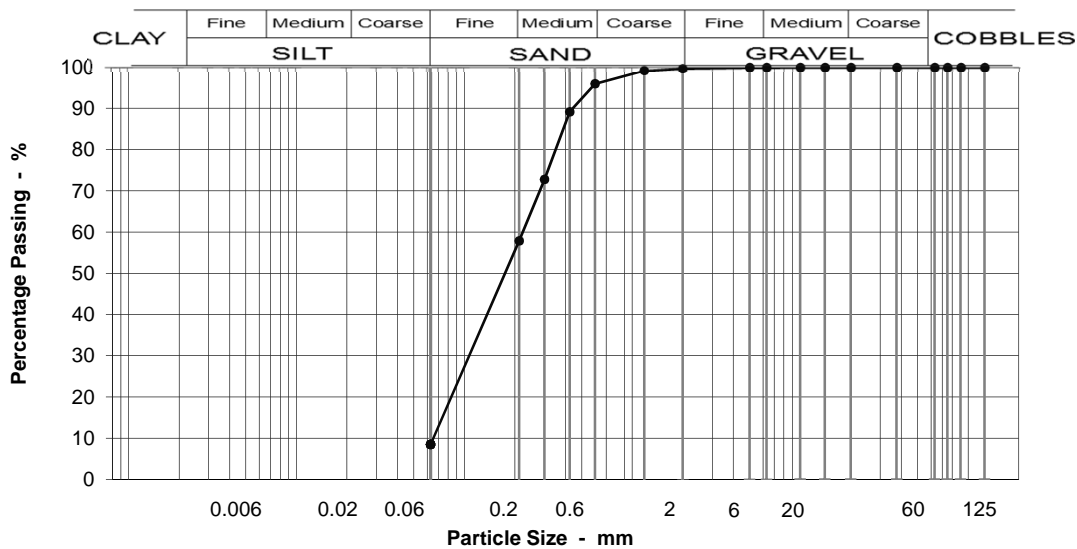
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH18 @ 19.6 - 19.9m

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	99
0.600	96
0.425	89
0.300	73
0.212	58
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 29

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	4
Medium SAND	38
Fine SAND	49
Silt & Clay	9

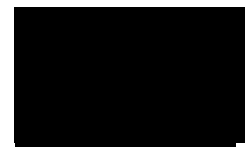
Grading Analysis	
D100	6
D60	0.22
D10	0.07
Uniformity Coefficient	3

Description	
Yellowish brown, silty, fine and medium SAND.	

Test Code = 610



Peter Hardiment (Operations Manager)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL2017112922-613**
Our Project No. **PZ1522D1**
Your Sample Ref **35**
Your Project or Order No. **PZ1522**
Date Tested **05/12/2017**
Date Report Issued **22-Jan-18**

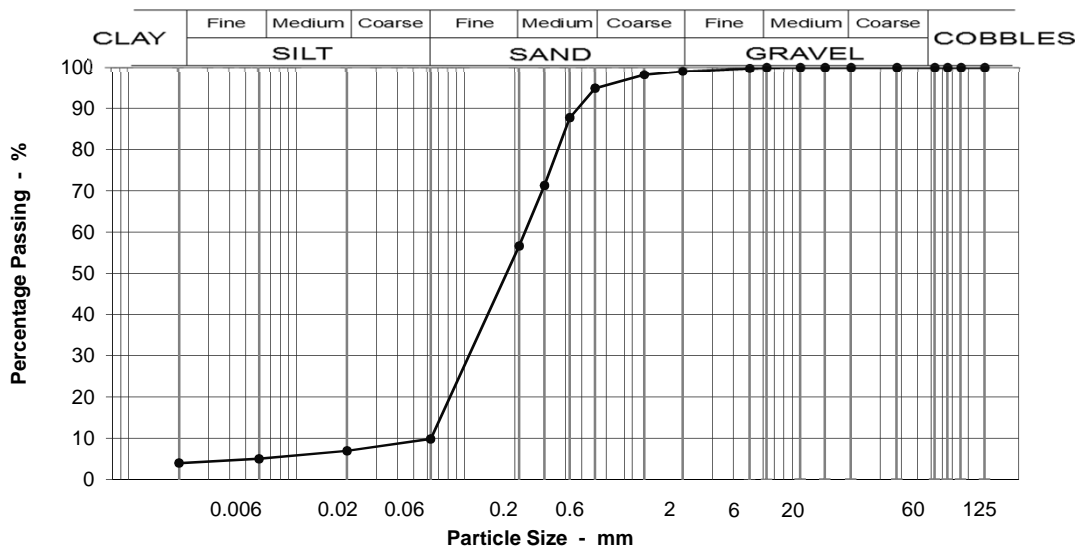
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH18 @ 21 - 21.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample

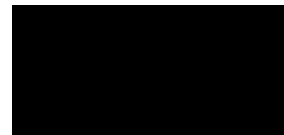


Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R, 6M.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	1
20	100		Coarse SAND	4
14	100		Medium SAND	38
10	100		Fine SAND	47
6.3	100		Silt & Clay	10
5	100		Grading Analysis	
2	99		D100	6
1.18	98		D60	0.23
0.600	95		D10	0.06
0.425	88		Uniformity Coefficient	4
0.300	71		Description	
0.212	57	Yellowish brown slightly silty fine to medium SAND.		
0.063	10			
0.020	7			
0.006	5			
0.002	4	Moisture content %	22	

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL2017112923-610**
Our Project No. **PZ1522D1**
Your Sample Ref **38**
Your Project or Order No. **PZ1522**
Date Tested **05/12/2017**
Date Report Issued **9-Jan-18**

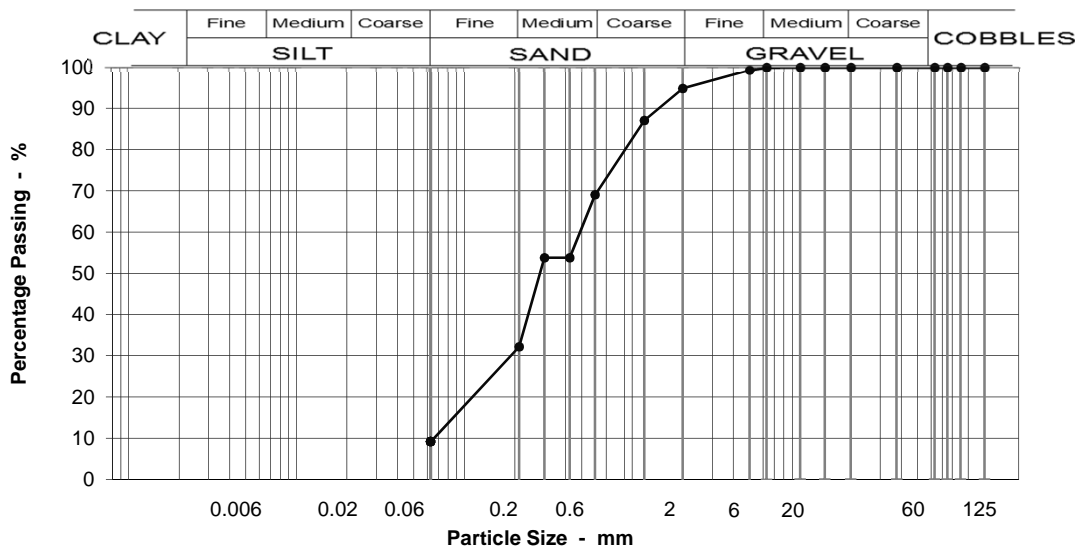
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH18 @ 25 - 25.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	99
2	95
1.18	87
0.600	69
0.425	54
0.300	54
0.212	32
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J, 6K, 6M.

Moisture content % 23

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	5
Coarse SAND	26
Medium SAND	37
Fine SAND	23
Silt & Clay	9

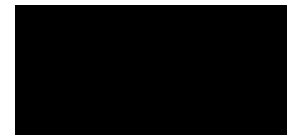
Grading Analysis	
D100	6
D60	0.50
D10	0.07
Uniformity Coefficient	7

Description	
Greyish brown slightly silty fine to coarse SAND.	

Test Code = 610



Simon Holden (Project Technician)



CES Highways Projects
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. NCCL2017101735-610
Our Project No PZ1522D1
Your Sample Ref 43
Your Project or Order No. PZ1522
Date Tested 20/10/2017
Date Report Issued 22-Nov-17

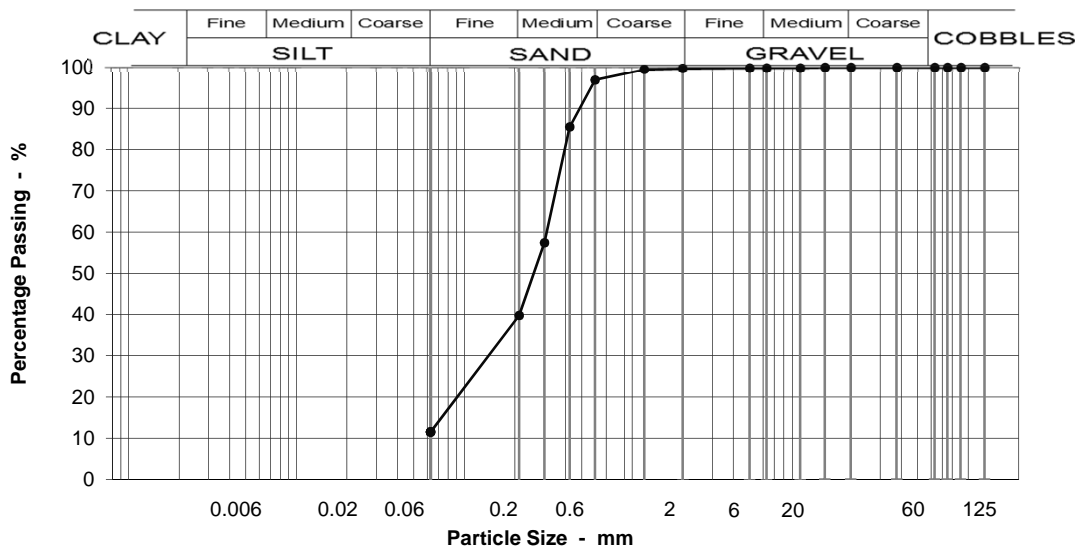
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH18 @ 32m

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	99
0.600	97
0.425	86
0.300	57
0.212	40
0.063	12

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	3
Medium SAND	57
Fine SAND	28
Silt & Clay	12

Grading Analysis	
D100	10
D60	0.31
D10	0.05
Uniformity Coefficient	6

Description
Greyish brown, silty, fine, and medium SAND.

Moisture content % 24

* Uniformity coefficient extrapolated

Test Code = 610



Peter Hardiment (Operations Manager)



Norfolk Partnership Laboratory

Email: civil.laboratory@norfolk.gov.uk

Great Yarmouth Third River Crossing

Norfolk County Council
 County Hall
 Martineau Lane
 Norwich
 Norfolk
 NR1 2DH

Our Project No PZ1522D1

Our Report and sample No NCCL2017101726-612

Your Sample Ref B45

Your Project or Order No PZ1522

Date Report Issued 28-Nov-17

Date Tested 20-Nov-17

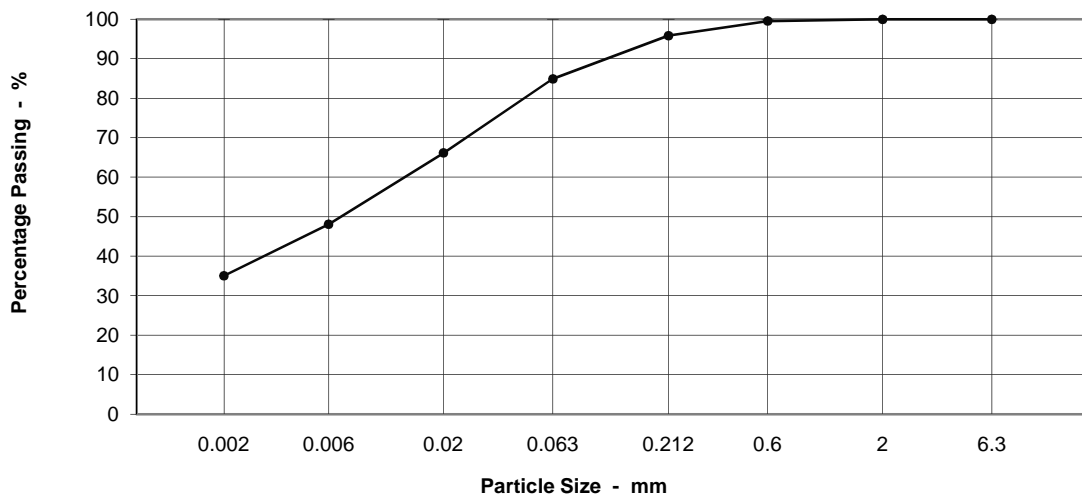
Page 1 of 1

Particle Size Distribution to BS 1377 : Part 2 : 1990 Sedimentation Method Section 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH18 B45 34.8-35.0m

Particle Size Distribution



Sieving & Sed.		Sample Proportions		Description
Particle Size mm	% Passing		%	
6.3	*See note	Coarse SAND	0	Firm dark grey, sandy, very silty CLAY weathering to brown.
2.0	100	Medium SAND	4	
0.6	100	Fine SAND	11	
0.212	96	Coarse SILT	19	
0.063	85	Medium SILT	18	
0.02	66	Fine SILT	13	
0.006	48	CLAY	35	
0.002	35	Moisture content	26	

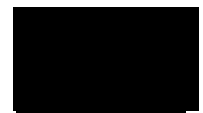
Test carried out on a disturbed sample prepared in accordance with BS1377 Part 1 clause 7.4.5, "in its natural state".
 Moisture content in accordance with BS1377 Part 2 clause 3.2, Oven-drying method. No pre-treatment was carried out.
 Location and orientation are not applicable.

* This test determines the particle size distribution from the coarse sand size to the clay size.

Test Code = 612



Peter Hardiment (Operations Manager)



Norfolk Partnership Laboratory

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Great Yarmouth Third River Crossing

Norfolk County Council
 County Hall
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 Norwich
 Norfolk
 NR1 2DH

Our Project No PZ1522D1

Our Report and sample No NCCL2017101727-612

Your Sample Ref D48

Your Project or Order No PZ1522

Date Report Issued 28-Nov-17

Date Tested 13-Nov-17

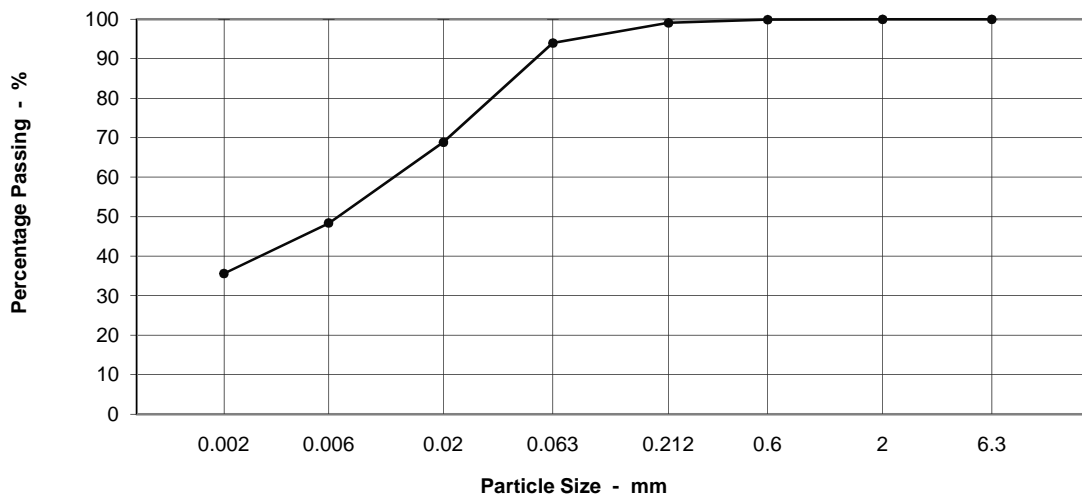
Page 1 of 1

Particle Size Distribution to BS 1377 : Part 2 : 1990 Sedimentation Method Section 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: BH18 D48 38m

Particle Size Distribution



Sieving & Sed.		Sample Proportions		Description
Particle Size mm	% Passing		%	
6.3	*See note	Coarse SAND	0	Firm to stiff, dark grey, very clayey, fine, medium and coarse SILT.
2.0	100	Medium SAND	1	
0.6	100	Fine SAND	5	
0.212	99	Coarse SILT	25	
0.063	94	Medium SILT	20	
0.02	69	Fine SILT	13	
0.006	48	CLAY	36	
0.002	36	Moisture content	26	

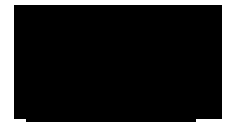
Test carried out on a disturbed sample prepared in accordance with BS1377 Part 1 clause 7.4.5, "in its natural state". Moisture content in accordance with BS1377 Part 2 clause 3.2, Oven-drying method. No pre-treatment was carried out. Location and orientation are not applicable.

* This test determines the particle size distribution from the coarse sand size to the clay size.

Test Code = 612



Peter Hardiment (Operations Manager)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL201803235-610**
Our Project No. **PZ1522D1**
Your Sample Ref **3**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **15-May-18**

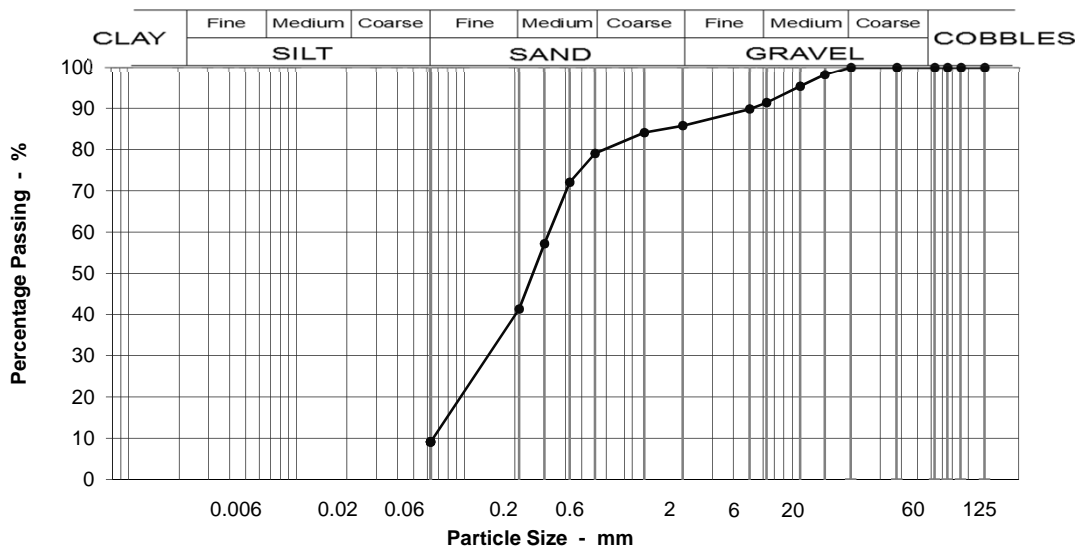
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: CPT1 @ 0.42 - 1.2m Specimen: 1

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	98
10	95
6.3	91
5	90
2	86
1.18	84
0.600	79
0.425	72
0.300	57
0.212	41
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	9
Fine GRAVEL	6
Coarse SAND	7
Medium SAND	38
Fine SAND	32
Silt & Clay	9

Grading Analysis	
D100	14
D60	0.32
D10	0.07
Uniformity Coefficient	5

Description
Brown gravelly slightly silty fine and medium SAND. Gravel is fine and medium, angular to sub-rounded flint and quartz.

Moisture content % 13

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL201803236-610**
Our Project No. **PZ1522D1**
Your Sample Ref **2**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **15-May-18**

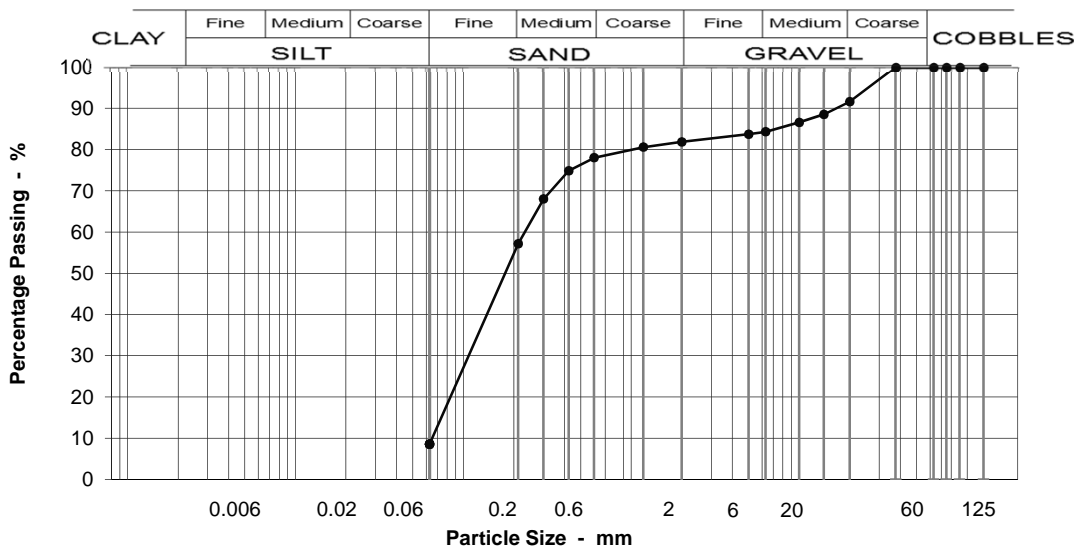
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: CPT2 @ 0.47 - 0.96m Specimen: 1

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	92
14	88
10	87
6.3	84
5	84
2	82
1.18	81
0.600	78
0.425	75
0.300	68
0.212	57
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 12

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	8
Medium GRAVEL	7
Fine GRAVEL	2
Coarse SAND	4
Medium SAND	21
Fine SAND	49
Silt & Clay	9

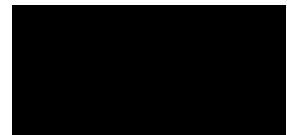
Grading Analysis	
D100	20
D60	0.23
D10	0.07
Uniformity Coefficient	3

Description
Brown gravelly slightly silty fine SAND. Gravel is medium and coarse angular to rounded flint, quartz, brick and slate (MADE GROUND)

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL201803237-610**
Our Project No. **PZ1522D1**
Your Sample Ref **3**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **12-Jun-18**

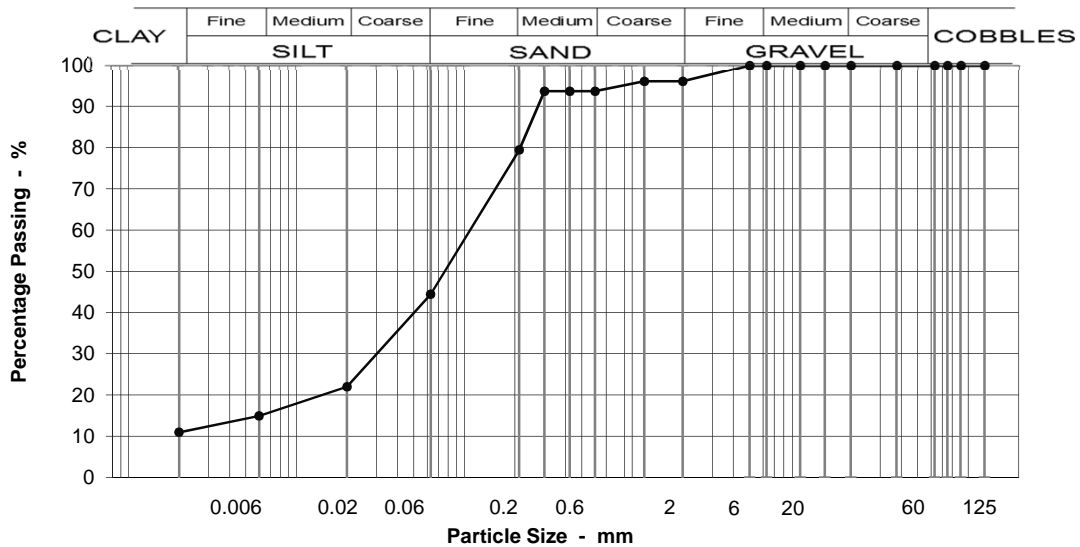
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: CPT2 @ 0.96 - 1.2m Specimen: 1

Location and orientation within sample not applicable

Disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100		BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	4
20	100		Coarse SAND	2
14	100		Medium SAND	14
10	100		Fine SAND	35
6.3	100		Silt & Clay	44
5	100			
2	96			
1.18	96			
0.600	94			
0.425	94			
0.300	94			
0.212	79			
0.063	44			
0.020	22			
0.006	15			
0.002	11			
		Moisture content %		14

Grading Analysis	
D100	2
D60	0.13
D10	0.00
Uniformity Coefficient	>10*

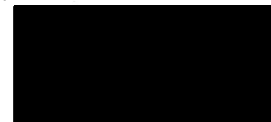
Description	
Dark grey very sandy clayey SILT.	

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL201803238-610**
Our Project No. PZ1522D1
Your Sample Ref. 2
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 12-Jun-18

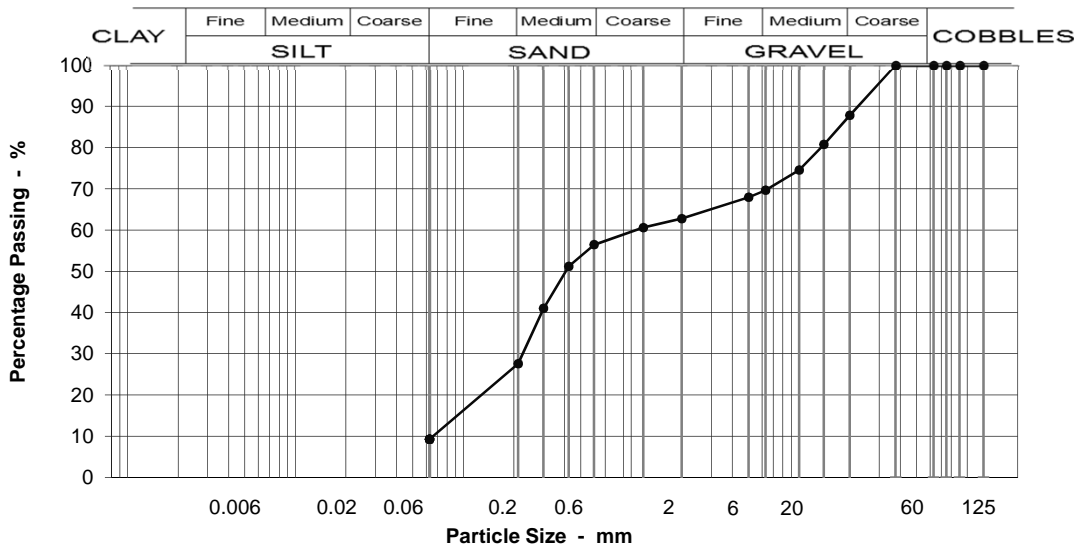
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: CPT3 @ 0.67 - 0.9m Specimen: 1

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	88
14	81
10	75
6.3	70
5	68
2	63
1.18	61
0.600	56
0.425	51
0.300	41
0.212	28
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6E/6R, 6I, 6M, 6N.

Moisture content % 14

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	12
Medium GRAVEL	18
Fine GRAVEL	7
Coarse SAND	6
Medium SAND	29
Fine SAND	18
Silt & Clay	9

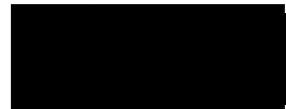
Grading Analysis	
D100	20
D60	1.10
D10	0.07
Uniformity Coefficient	16

Description
Dark grey organic very gravelly slightly silty fine and medium SAND. Gravel is fine to coarse angular flint.

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL201803239-610**
Our Project No. **PZ1522D1**
Your Sample Ref **2**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **15-May-18**

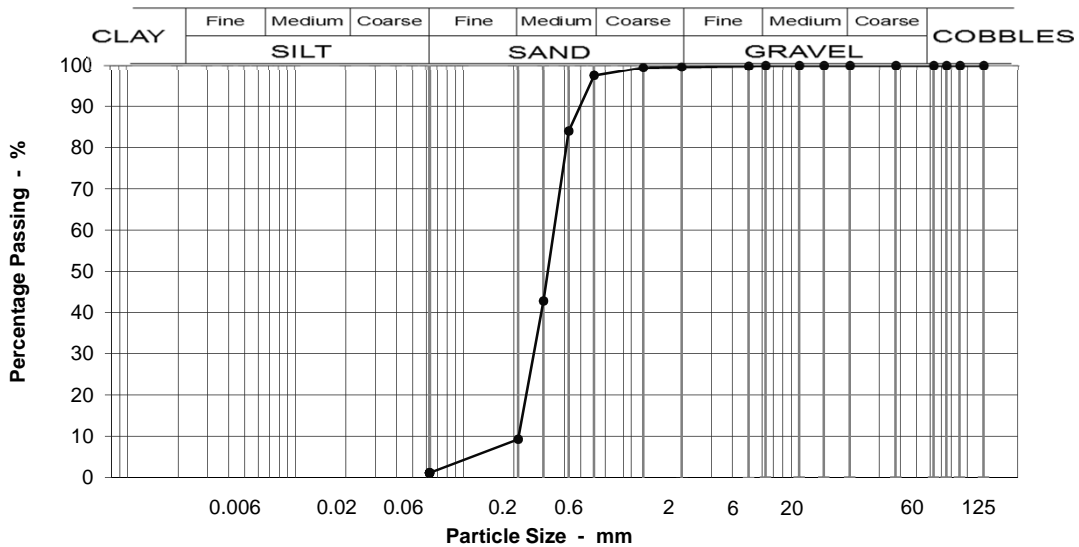
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: CPT4 @ 0.25 - 0.6m Specimen: 1

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	99
0.600	97
0.425	84
0.300	43
0.212	9
0.063	1

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 8.2

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	2
Medium SAND	88
Fine SAND	8
Silt & Clay	1

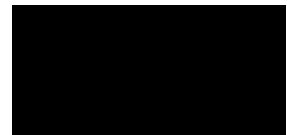
Grading Analysis	
D100	5
D60	0.35
D10	0.21
Uniformity Coefficient	2

Description	
Brown medium SAND.	

Test Code = 610



Simon Holden (Project Technician)



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County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL2018032310-610**
Our Project No. PZ1522D1
Your Sample Ref. 4
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 12-Jun-18

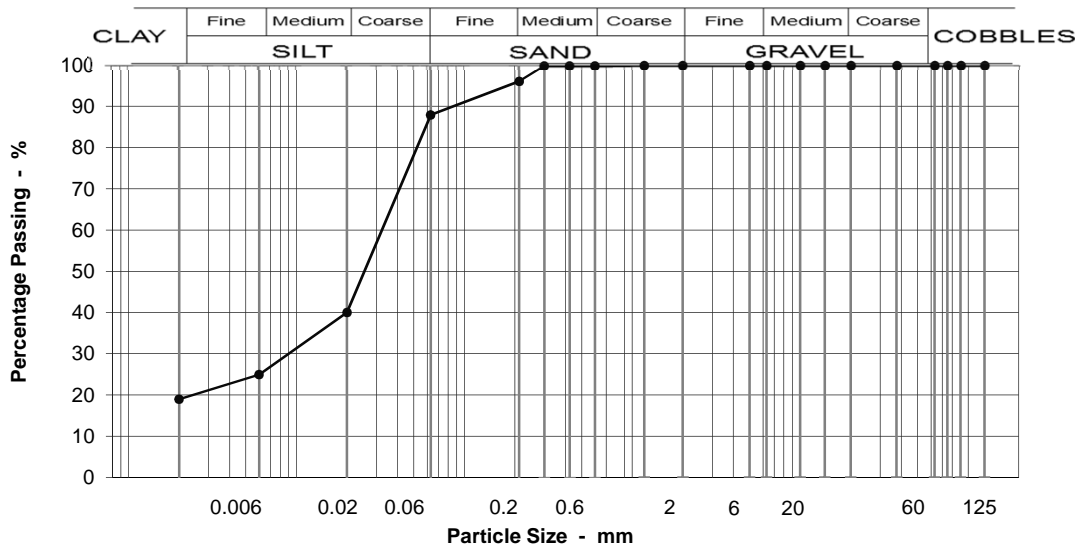
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: CPT4 @ 0.82 - 1.2m Specimen: 1

Location and orientation within sample not applicable

Disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100		BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	0
14	100		Medium SAND	4
10	100		Fine SAND	8
6.3	100		Silt & Clay	88
5	100			
2	100			
1.18	100			
0.600	100			
0.425	100			
0.300	100			
0.212	96			
0.063	88			
0.020	40			
0.006	25			
0.002	19			
		Moisture content %	14	

Grading Analysis	
D100	1
D60	0.04
D10	0.00
Uniformity Coefficient	>10*

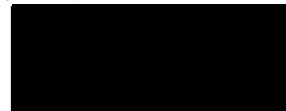
Description
Firm grey sandy clayey SILT.

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL2018032311-610**
Our Project No. **PZ1522D1**
Your Sample Ref **1**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **15-May-18**

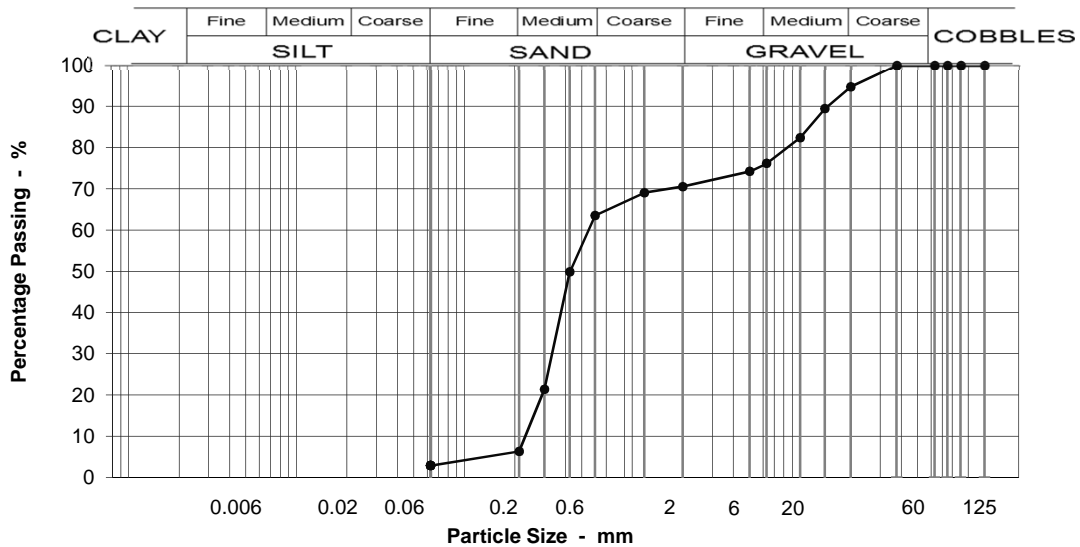
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: CPT5 @ 0.18 - 0.85m Specimen: 1

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	95
14	89
10	82
6.3	76
5	74
2	71
1.18	69
0.600	64
0.425	50
0.300	21
0.212	6
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 9

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	5
Medium GRAVEL	19
Fine GRAVEL	6
Coarse SAND	7
Medium SAND	57
Fine SAND	3
Silt & Clay	3

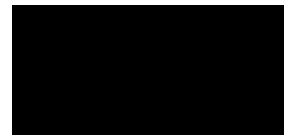
Grading Analysis	
D100	20
D60	0.56
D10	0.23
Uniformity Coefficient	2

Description
Brown very gravely medium SAND. Gravel is medium rounded to sub-angular flint and quartz.

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL2018032312-610**
Our Project No. **PZ1522D1**
Your Sample Ref. **2**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **15-May-18**

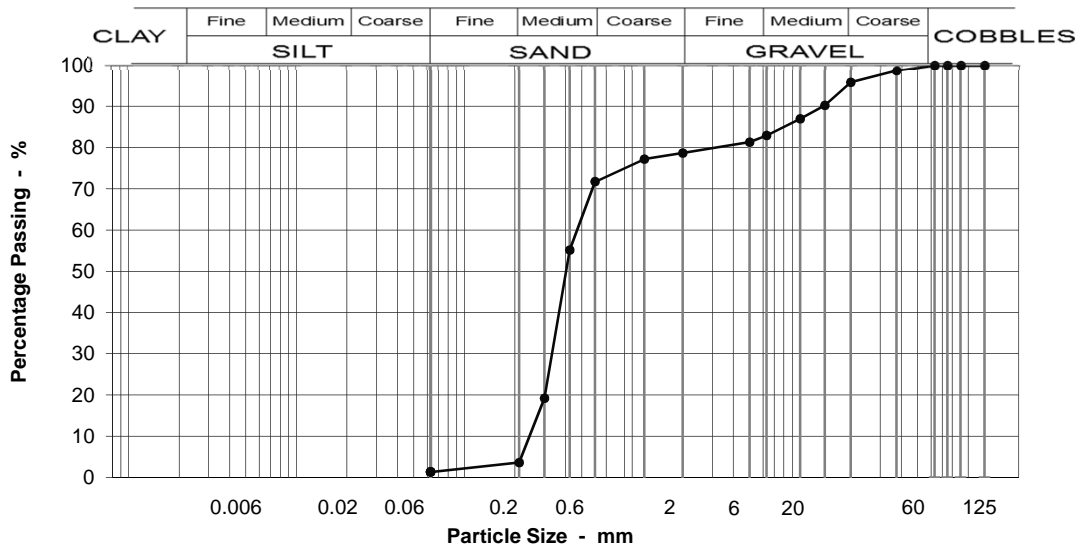
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: CPT5 @ 0.85 - 1.3m Specimen: 1

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	99
20	96
14	90
10	87
6.3	83
5	81
2	79
1.18	77
0.600	72
0.425	55
0.300	19
0.212	4
0.063	1

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 11

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	4
Medium GRAVEL	13
Fine GRAVEL	4
Coarse SAND	7
Medium SAND	68
Fine SAND	2
Silt & Clay	1

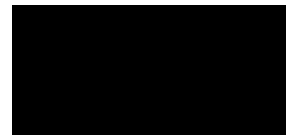
Grading Analysis	
D100	38
D60	0.48
D10	0.25
Uniformity Coefficient	2

Description	
Brown very gravelly medium SAND. Gravel is medium rounded to angular flint and quartz.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS2171207003-610**
Our Project No. PZ1522D1
Your Sample Ref. 2
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 25-Jun-18

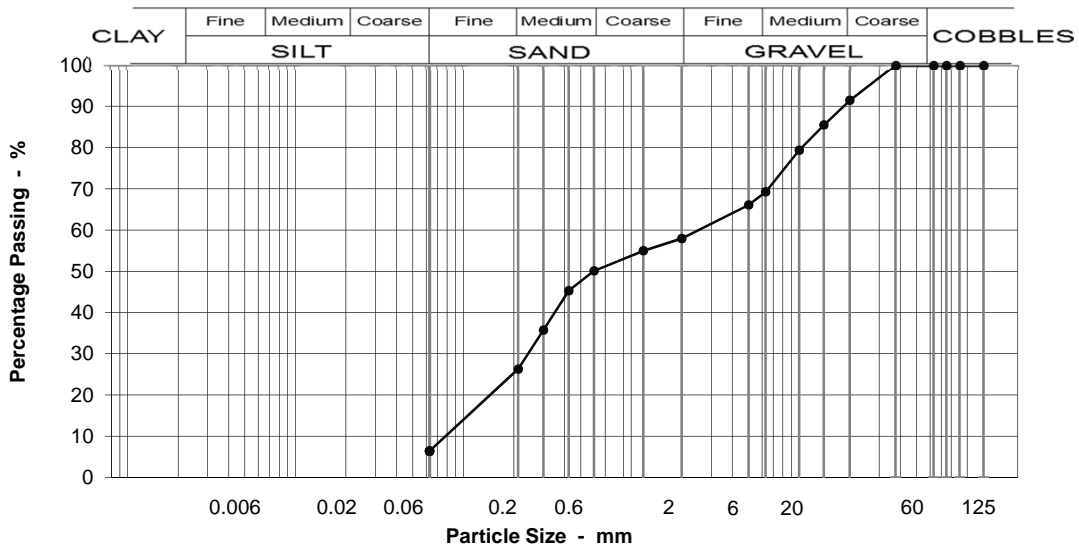
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: TP1 @ 0.5 - 0.8m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	91
14	85
10	79
6.3	69
5	66
2	58
1.18	55
0.600	50
0.425	45
0.300	36
0.212	26
0.063	6

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6E/6R, 6I, 6M, 6N.

Moisture content % 22

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	9
Medium GRAVEL	22
Fine GRAVEL	11
Coarse SAND	8
Medium SAND	24
Fine SAND	20
Silt & Clay	6

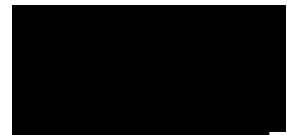
Grading Analysis	
D100	20
D60	2.75
D10	0.09
Uniformity Coefficient	31

Description
MADE GROUND: comprising up to cobble size angular to rounded brick, concrete, asphalt and wood in a matrix of reddish brown fine and medium sand.

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
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Norfolk
NR1 2DH

Our reference No. GTS2171207004-610
Our Project No PZ1522D1
Your Sample Ref 3
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 25-Jun-18

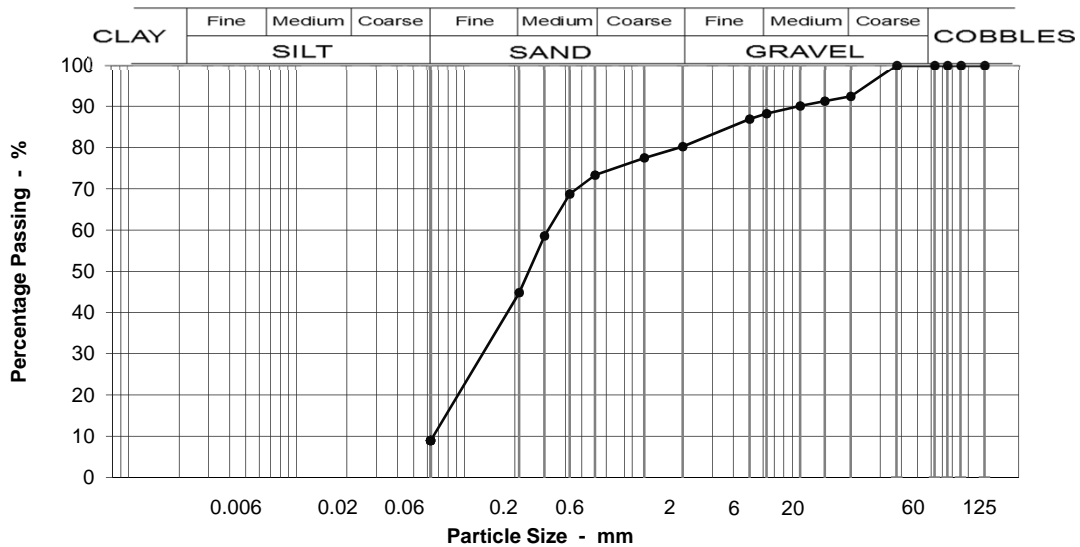
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: TP1 @ 0.9 - 1.2m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



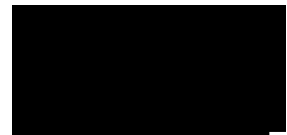
Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R, 6M.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	8
63	100		Medium GRAVEL	4
37.5	100		Fine GRAVEL	8
20	92		Coarse SAND	7
14	91		Medium SAND	29
10	90		Fine SAND	36
6.3	88		Silt & Clay	9
5	87		Grading Analysis	
2	80		D100	20
1.18	77		D60	0.32
0.600	73		D10	0.07
0.425	69		Uniformity Coefficient	5
0.300	59	Description		
0.212	45	Dark brown gravelly slightly silty fine and medium SAND. Gravel is fine and medium subangular to subrounded flint.		
0.063	9			

Moisture content % 18

Test Code = 610



Simon Holden (Project Technician)



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County Hall
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Norfolk
NR1 2DH

Our reference No. **GTS2171207007-**
Our Project No **PZ1522D1**
Your Sample Ref **6**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

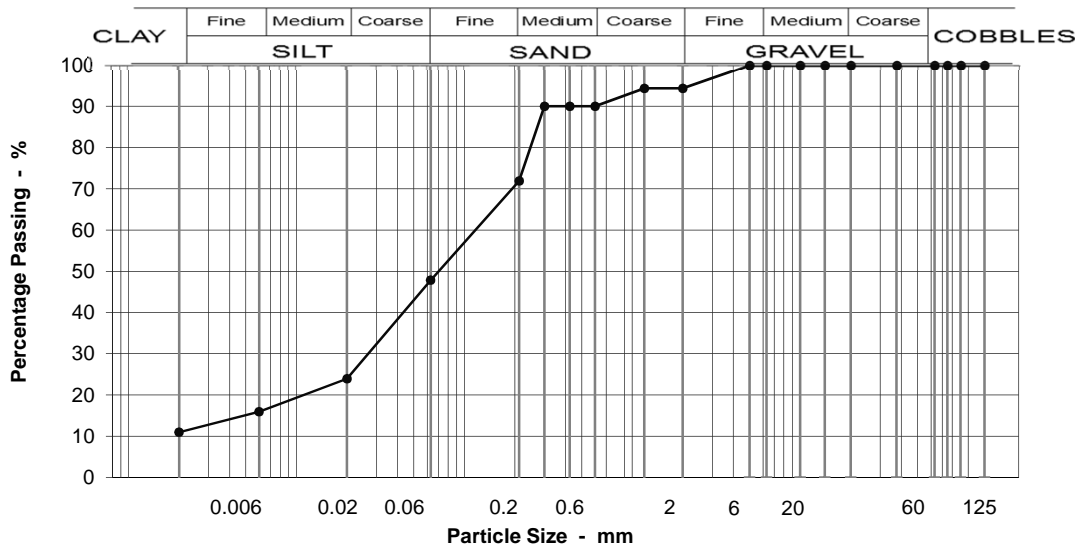
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: TP1 @ 1.2 - 2m Specimen: 2 @ 1.3m

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	94
1.18	94
0.600	90
0.425	90
0.300	90
0.212	72
0.063	48
0.020	24
0.006	16
0.002	11

Specification for Highway Works Classification
Table 6/2

Moisture content % 0

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	6
Coarse SAND	4
Medium SAND	18
Fine SAND	24
Silt & Clay	48

Grading Analysis	
D100	2
D60	0.14
D10	0.00
Uniformity Coefficient	>10*

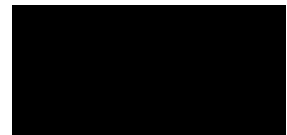
Description	
Firm to stiff dark grey very sandy clayey SILT.	

* Uniformity coefficient extrapolated

Test Code =



Simon Holden (Project Technician)



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NR1 2DH

Our reference No. **GTS2171207007-**
Our Project No **PZ1522D1**
Your Sample Ref **6**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

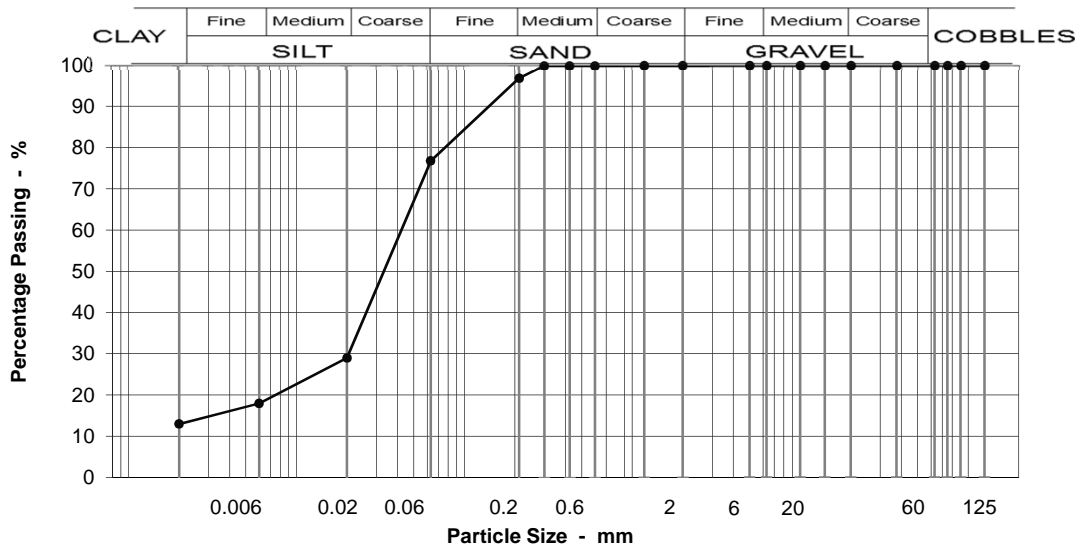
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: TP1 @ 1.2 - 2m Specimen: 3 @ 1.5m

Location and orientation within sample not applicable

Disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100		BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	0
14	100		Medium SAND	3
10	100		Fine SAND	20
6.3	100		Silt & Clay	77
5	100			
2	100			
1.18	100			
0.600	100			
0.425	100			
0.300	100			
0.212	97			
0.063	77			
0.020	29			
0.006	18			
0.002	13			
		Moisture content %	0	

Grading Analysis	
D100	2
D60	0.05
D10	0.00
Uniformity Coefficient	>10*

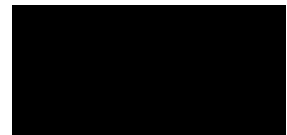
Description	
Firm to stiff dark grey very sandy clayey SILT.	

* Uniformity coefficient extrapolated

Test Code =



Simon Holden (Project Technician)



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County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS2171207008-**
Our Project No **PZ1522D1**
Your Sample Ref **7**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

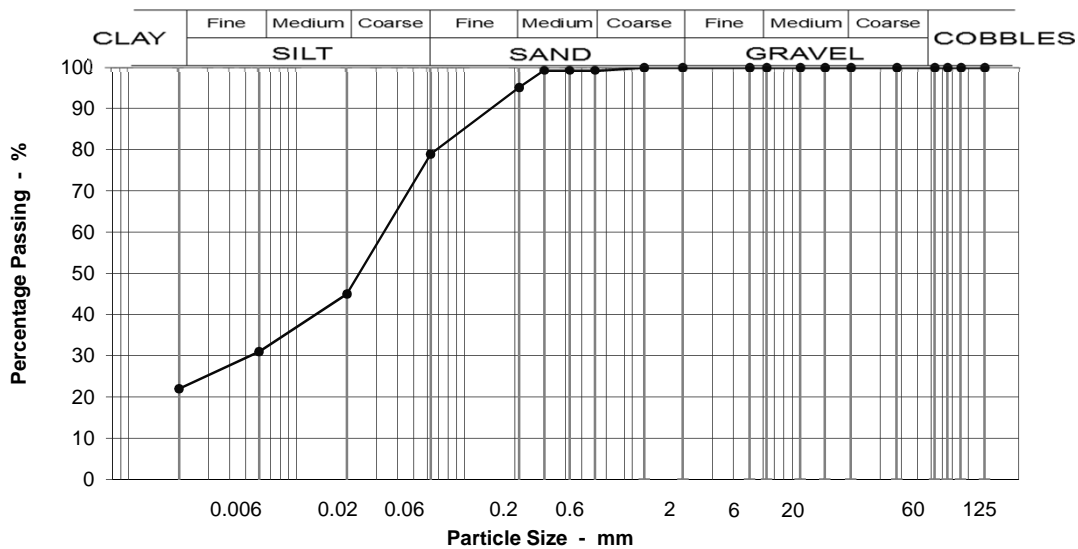
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: TP1 @ 2.3 - 3m Specimen: 3 @ 2.3m

Location and orientation within sample not applicable

Disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100		BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	1
14	100		Medium SAND	4
10	100		Fine SAND	16
6.3	100		Silt & Clay	79
5	100			
2	100			
1.18	100			
0.600	99			
0.425	99			
0.300	99			
0.212	95			
0.063	79			
0.020	45			
0.006	31			
0.002	22			
		Moisture content %		0

Grading Analysis	
D100	1
D60	0.04
D10	0.00
Uniformity Coefficient	>10*

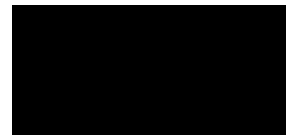
Description	
Soft to firm grey very sandy very clayey SILT with numerous lenses of brown, fibrous peat. Trace of fine flint gravel.	

* Uniformity coefficient extrapolated

Test Code =



Simon Holden (Project Technician)



Community & Environmental Services
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Norwich
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NR1 2DH

Our reference No. **GTS2171207010-610**
Our Project No. PZ1522D1
Your Sample Ref. 9
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 4-Jul-18

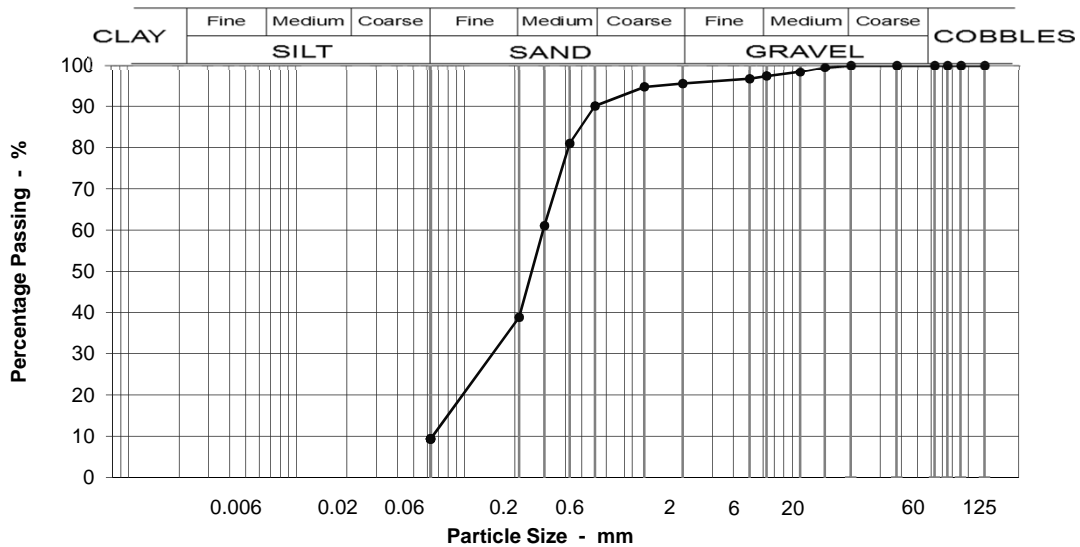
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: TP1 @ 4 - 5m Specimen: 1 @ 4.6m

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	99
10	98
6.3	97
5	97
2	95
1.18	95
0.600	90
0.425	81
0.300	61
0.212	39
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 16

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	3
Fine GRAVEL	2
Coarse SAND	5
Medium SAND	51
Fine SAND	29
Silt & Clay	9

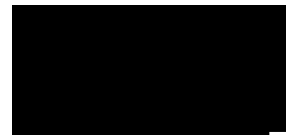
Grading Analysis	
D100	14
D60	0.30
D10	0.07
Uniformity Coefficient	4

Description
Grey slightly silty slightly gravelly fine and medium SAND. Gravel is fine and medium subangular to rounded flint and quartz.

Test Code = 610



Not approved



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NR1 2DH

Our reference No. **GTS2171207011-610**
Our Project No. **PZ1522D1**
Your Sample Ref **10**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **17-Apr-18**

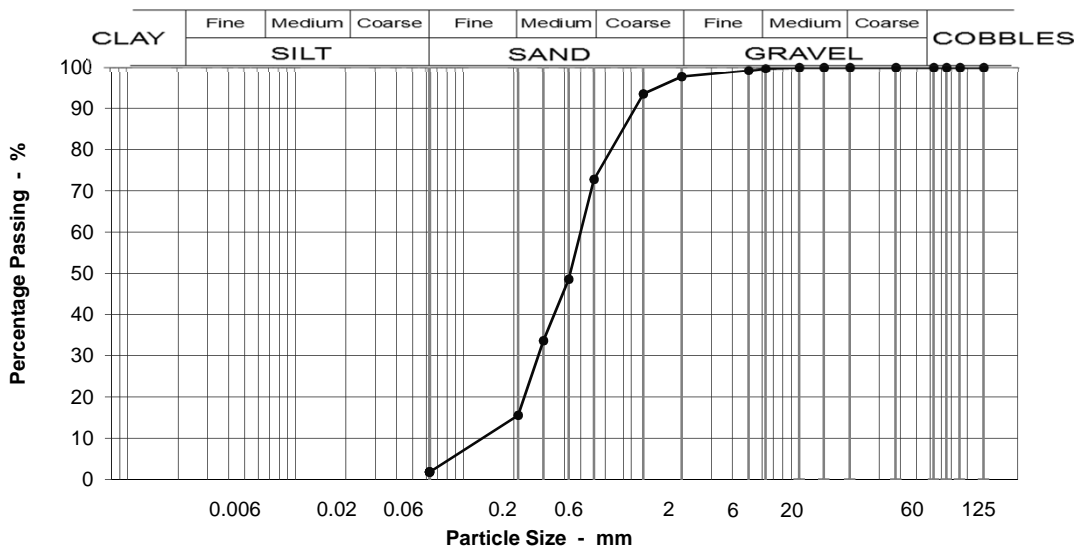
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: TP1 @ 5 - 6m Specimen: 1 @ 5.1m

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	99
2	98
1.18	93
0.600	73
0.425	49
0.300	34
0.212	16
0.063	2

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 15

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	2
Coarse SAND	25
Medium SAND	57
Fine SAND	14
Silt & Clay	2

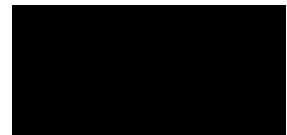
Grading Analysis	
D100	6
D60	0.51
D10	0.15
Uniformity Coefficient	3

Description	
Brown medium and coarse SAND.	

Source : General: @ 6m Sand blown up
Test Code = 610



Simon Holden (Project Technician)



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Norfolk
NR1 2DH

Our reference No. **GTS2171213011-610**
Our Project No. **PZ1522D1**
Your Sample Ref **1**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **25-Jun-18**

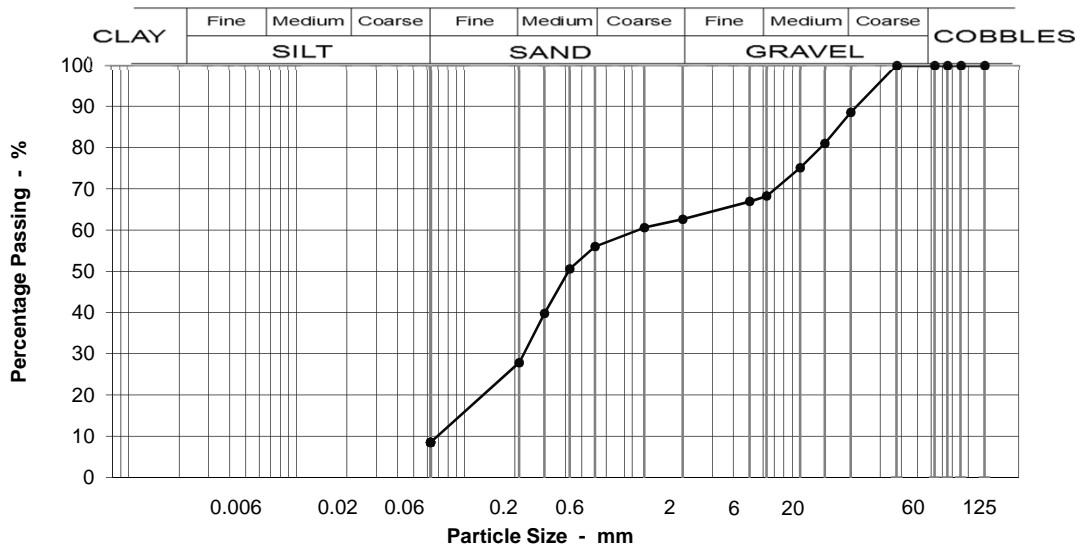
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: TP1B @ 0.1 - 0.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample

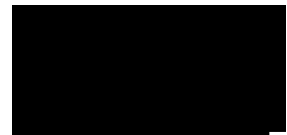


Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1A, 6E/6R, 6I, 6M, 6N.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	11
63	100		Medium GRAVEL	20
37.5	100		Fine GRAVEL	6
20	89		Coarse SAND	7
14	81		Medium SAND	28
10	75		Fine SAND	19
6.3	68		Silt & Clay	9
5	67		Grading Analysis	
2	63		D100	20
1.18	61		D60	1.11
0.600	56		D10	0.07
0.425	51		Uniformity Coefficient	15
0.300	40		Description	
0.212	28	MADE GROUND: comprising fine to coarse gravel size angular to rounded flint, concrete, and brick in a matrix of slightly silty fine to medium SAND.		
0.063	9	Moisture content % 8.6		

Test Code = 610



Simon Holden (Project Technician)



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NR1 2DH

Our reference No. GTS2171213013-610
Our Project No PZ1522D1
Your Sample Ref 3
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 25-Jun-18

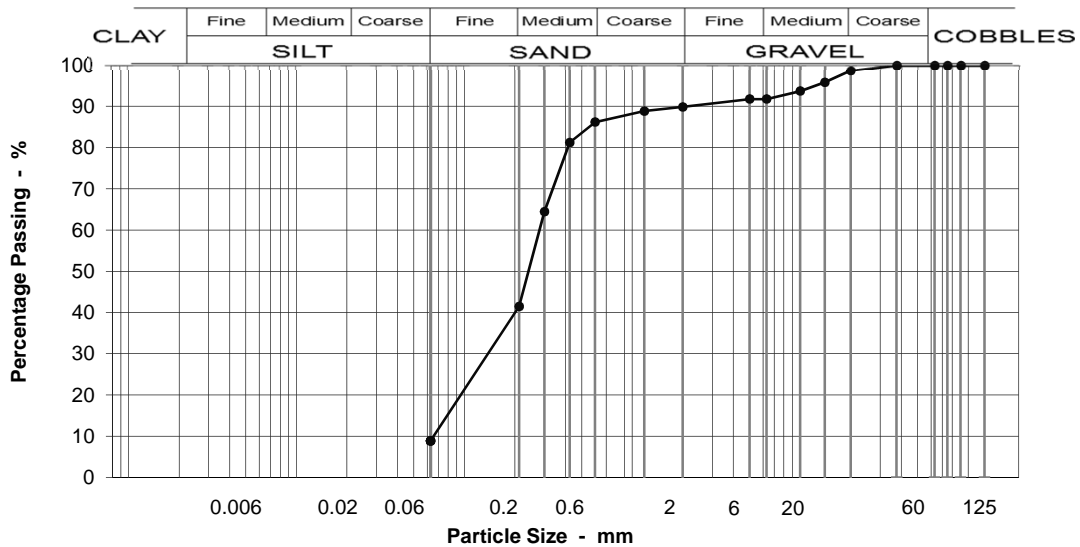
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: TP1B @ 0.5 - 1m **Specimen:** 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	99
14	96
10	94
6.3	92
5	92
2	90
1.18	89
0.600	86
0.425	81
0.300	64
0.212	42
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 4.9

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	1
Medium GRAVEL	7
Fine GRAVEL	2
Coarse SAND	4
Medium SAND	45
Fine SAND	33
Silt & Clay	9

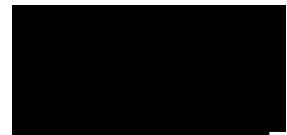
Grading Analysis	
D100	20
D60	0.28
D10	0.07
Uniformity Coefficient	4

Description
MADE GROUND: comprising loose gravelly fine and medium SAND. Gravel is medium, angular brick and concrete.

Test Code = 610



Simon Holden (Project Technician)



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Norwich
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NR1 2DH

Our reference No. **GTS2171214012-610**
Our Project No. **PZ1522D1**
Your Sample Ref **6**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **17-Apr-18**

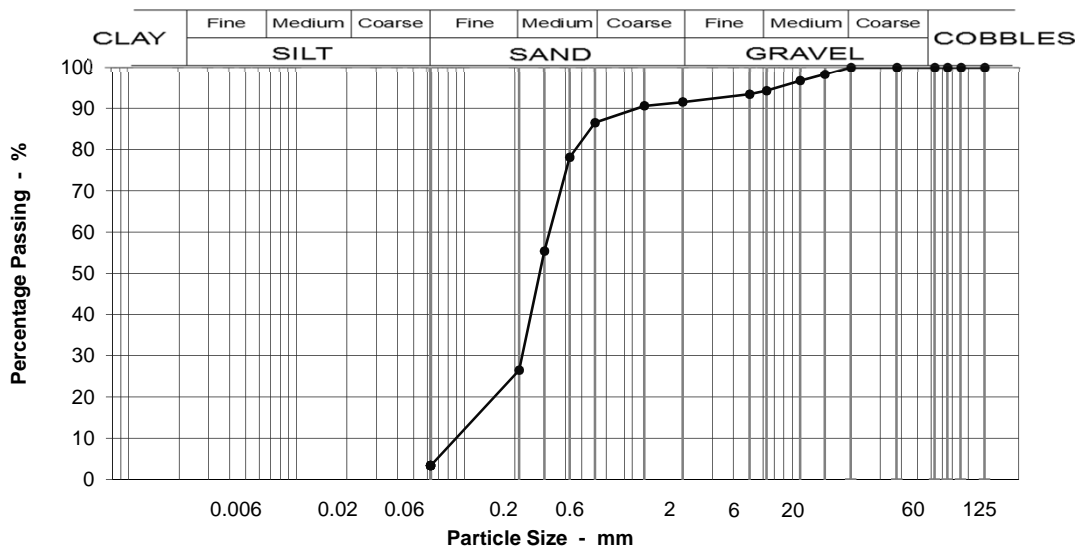
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: TP1B @ 1.2 - 2m Specimen: 3 @ 1.5m

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	98
10	97
6.3	94
5	93
2	92
1.18	91
0.600	87
0.425	78
0.300	55
0.212	27
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	6
Fine GRAVEL	3
Coarse SAND	5
Medium SAND	60
Fine SAND	23
Silt & Clay	3

Grading Analysis	
D100	14
D60	0.33
D10	0.11
Uniformity Coefficient	3

Description
Orangey brown medium SAND.

Moisture content % 16

Source : General: 1 liners 4 and 5 in hull
Test Code = 610



Simon Holden (Project Technician)



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Our reference No. **GTS2171214012-**
Our Project No **PZ1522D1**
Your Sample Ref **6**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

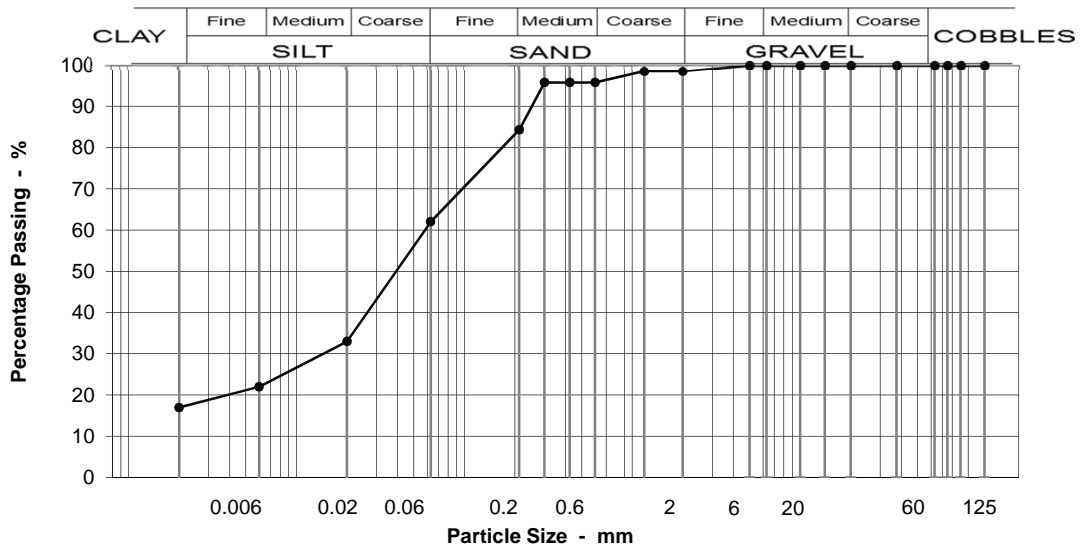
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: TP1B @ 1.8 - 2m Specimen: 5 @ 1.8m

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	99
0.600	96
0.425	96
0.300	96
0.212	84
0.063	62
0.020	33
0.006	22
0.002	17

Specification for Highway Works Classification
Table 6/2

Moisture content % 0

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	3
Medium SAND	11
Fine SAND	22
Silt & Clay	62

Grading Analysis	
D100	2
D60	0.06
D10	0.00
Uniformity Coefficient	>10*

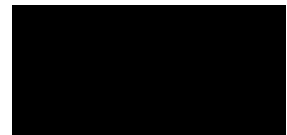
Description	
Stiff dark grey slightly organic very sandy clayey SILT.	

* Uniformity coefficient extrapolated

Test Code =



Simon Holden (Project Technician)



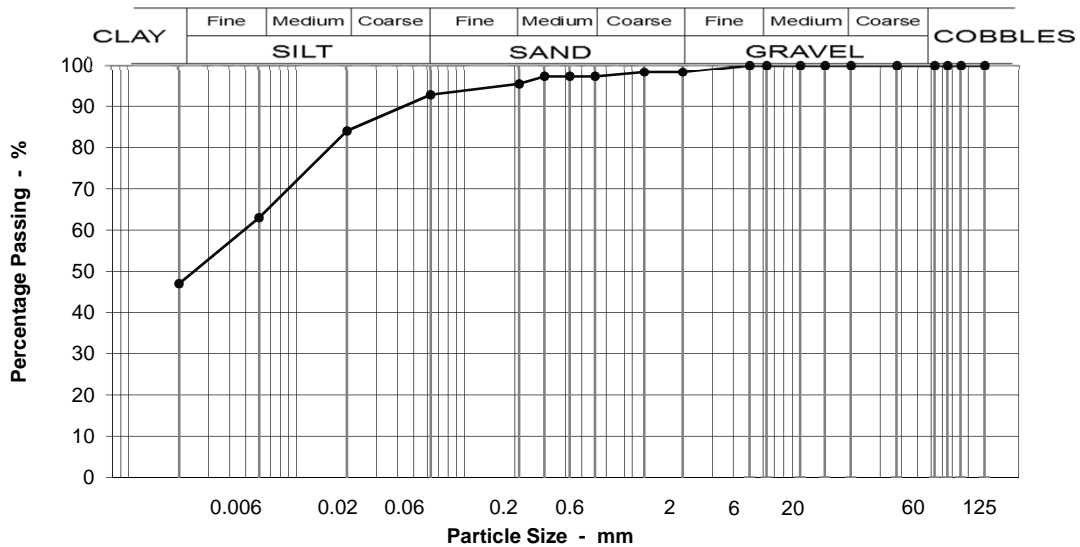
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NR1 2DH

Our reference No. **GTS2171214013-**
Our Project No **PZ1522D1**
Your Sample Ref **7**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **11-Jun-18**

Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing
Location and orientation within sample not applicable

Location: TP1B @ 2 - 3m Specimen: 2 @ 2.8m
Disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100		BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	2
20	100		Coarse SAND	1
14	100		Medium SAND	2
10	100		Fine SAND	3
6.3	100		Silt & Clay	93
5	100			
2	98			
1.18	98			
0.600	97			
0.425	97			
0.300	97			
0.212	95			
0.063	93			
0.020	84			
0.006	63			
0.002	47			
		Moisture content %		0

Grading Analysis	
D100	2
D60	0.01
D10	0.00
Uniformity Coefficient	>10*

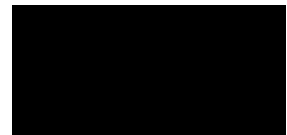
Description
Soft grey SILT:CLAY

* Uniformity coefficient extrapolated

Test Code =



Simon Holden (Project Technician)



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Norfolk
NR1 2DH

Our reference No. **GTS2171214014-610**
Our Project No. **PZ1522D1**
Your Sample Ref **8**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **4-Jul-18**

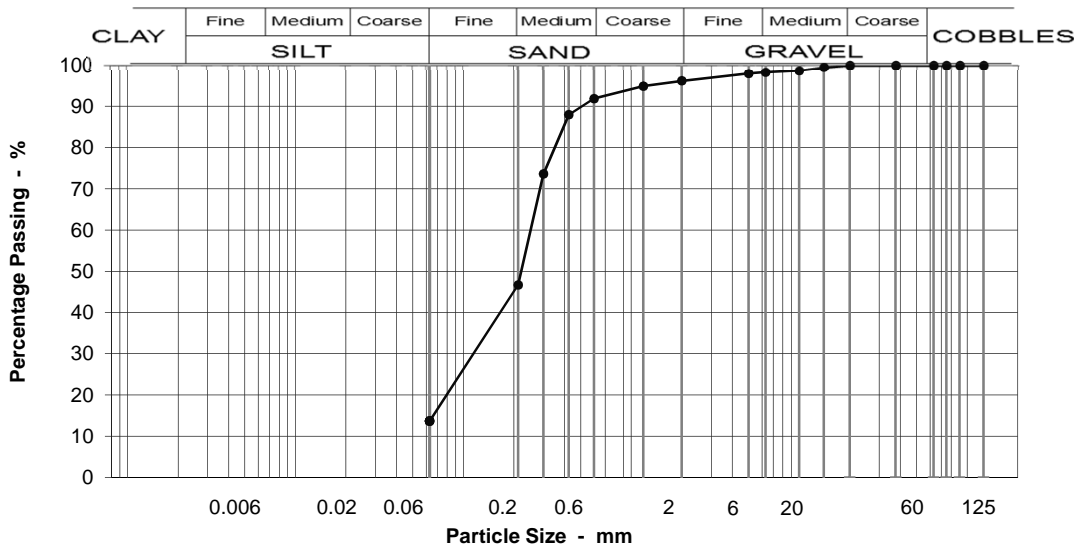
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: TP1B @ 3 - 4m Specimen: 1

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	99
10	99
6.3	98
5	98
2	96
1.18	95
0.600	92
0.425	88
0.300	74
0.212	47
0.063	14

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J.

Moisture content % 18

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	2
Fine GRAVEL	2
Coarse SAND	4
Medium SAND	45
Fine SAND	33
Silt & Clay	14

Grading Analysis	
D100	14
D60	0.26
D10	0.05
Uniformity Coefficient	6

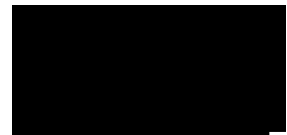
Description	
Grery laminated silty fine and medium SAND with occasional lenses of dark grey organic material, some roots.	

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS2171214014-610**
Our Project No. **PZ1522D1**
Your Sample Ref **8**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **17-Apr-18**

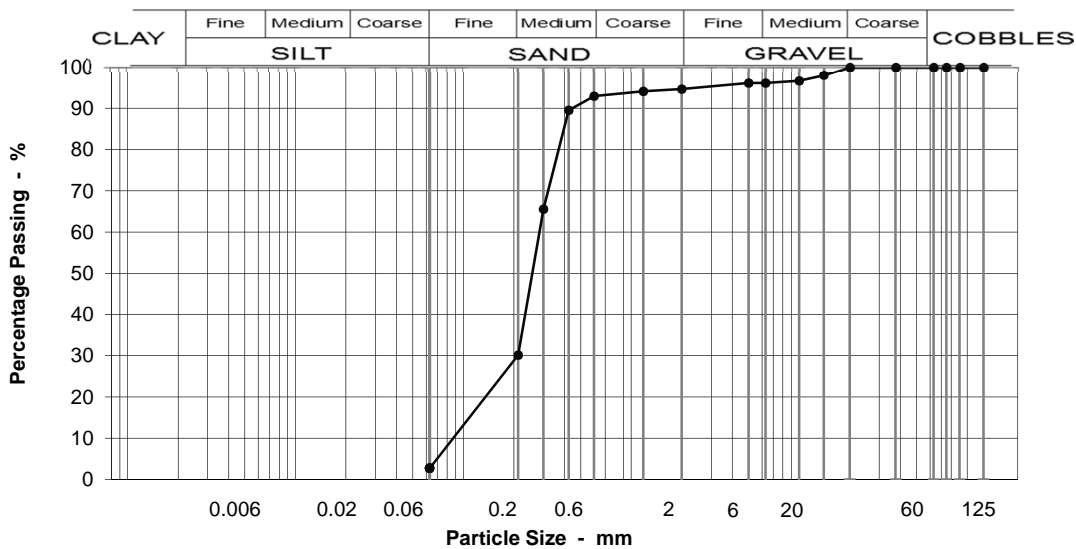
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: TP1B @ 3 - 4m Specimen: 2 @ 3.6m

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	98
10	97
6.3	96
5	96
2	95
1.18	94
0.600	93
0.425	90
0.300	66
0.212	30
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 21

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	4
Fine GRAVEL	1
Coarse SAND	2
Medium SAND	63
Fine SAND	27
Silt & Clay	3

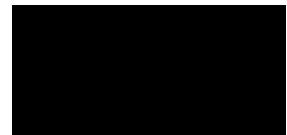
Grading Analysis	
D100	14
D60	0.29
D10	0.10
Uniformity Coefficient	3

Description
Grey medium SAND.

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS2171214015-610**
Our Project No. **PZ1522D1**
Your Sample Ref **9**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **25-Jun-18**

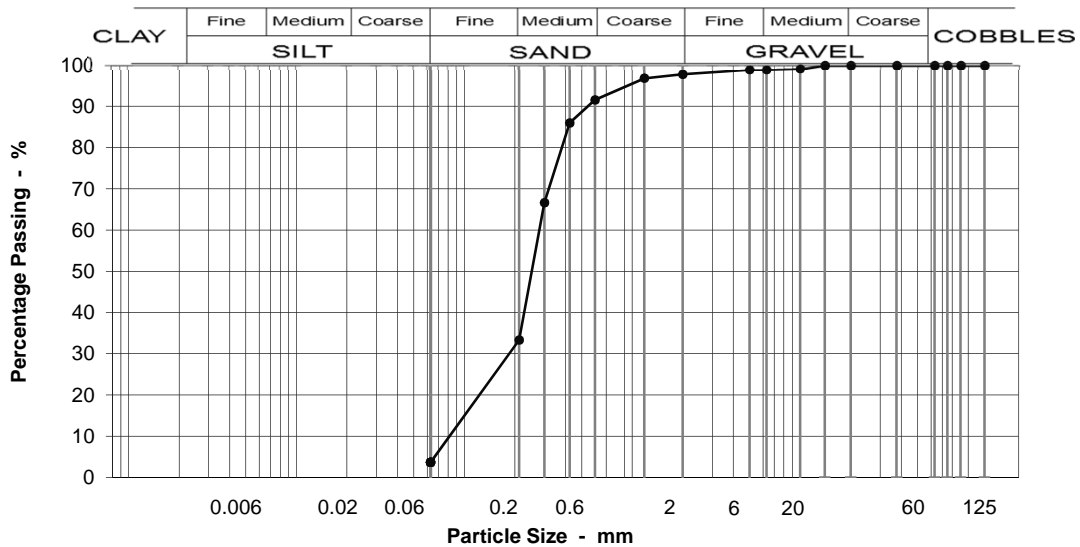
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: TP1B @ 4 - 5m Specimen: 1

Location and orientation within sample not applicable

Disturbed sample



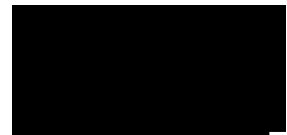
Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R, 6M.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	1
37.5	100		Fine GRAVEL	1
20	100		Coarse SAND	6
14	100		Medium SAND	58
10	99		Fine SAND	30
6.3	99		Silt & Clay	4
5	99		Grading Analysis	
2	98		D100	10
1.18	97		D60	0.28
0.600	92		D10	0.09
0.425	86		Uniformity Coefficient	3
0.300	67		Description	
0.212	33	Grey fine and medium SAND.		
0.063	4			

Moisture content % 21

Test Code = 610



Simon Holden (Project Technician)



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Norfolk
NR1 2DH

Our reference No. **GTS2171214016-610**
Our Project No. PZ1522D1
Your Sample Ref 10
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 25-Jun-18

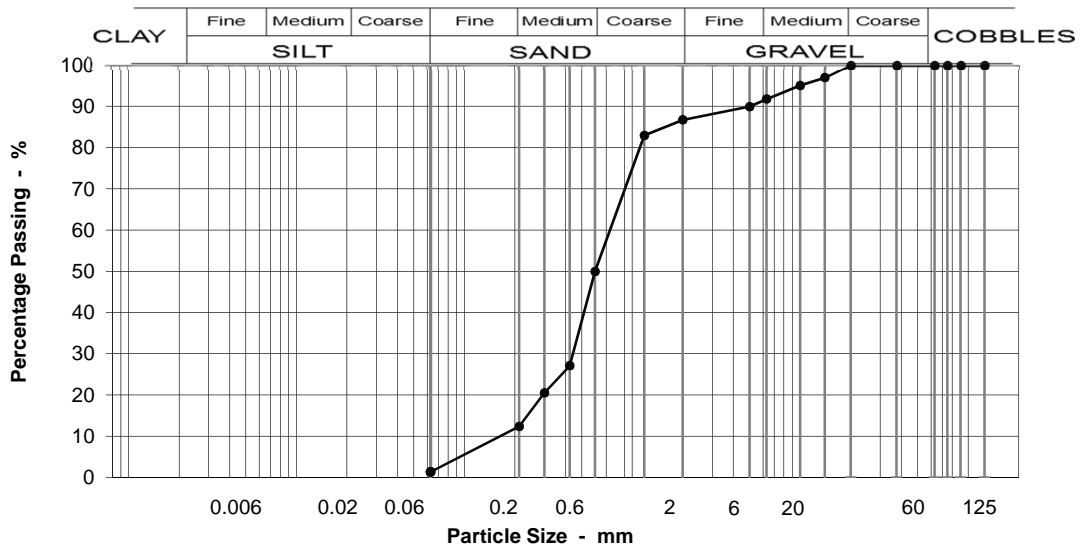
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: TP1B @ 5 - 6m Specimen: 1

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	97
10	95
6.3	92
5	90
2	87
1.18	83
0.600	50
0.425	27
0.300	21
0.212	12
0.063	1

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	8
Fine GRAVEL	5
Coarse SAND	37
Medium SAND	38
Fine SAND	11
Silt & Clay	1

Grading Analysis	
D100	14
D60	0.78
D10	0.18
Uniformity Coefficient	4

Description
Grey gravelly medium and coarse SAND. Gravel is fine and medium subrounded to subangular flint and quartz.

Moisture content % 15

Test Code = 610



Simon Holden (Project Technician)



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County Hall
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Norwich
Norfolk
NR1 2DH

Our reference No. **GTS2171205024-610**
Our Project No. **PZ1522D1**
Your Sample Ref **3**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **25-Jun-18**

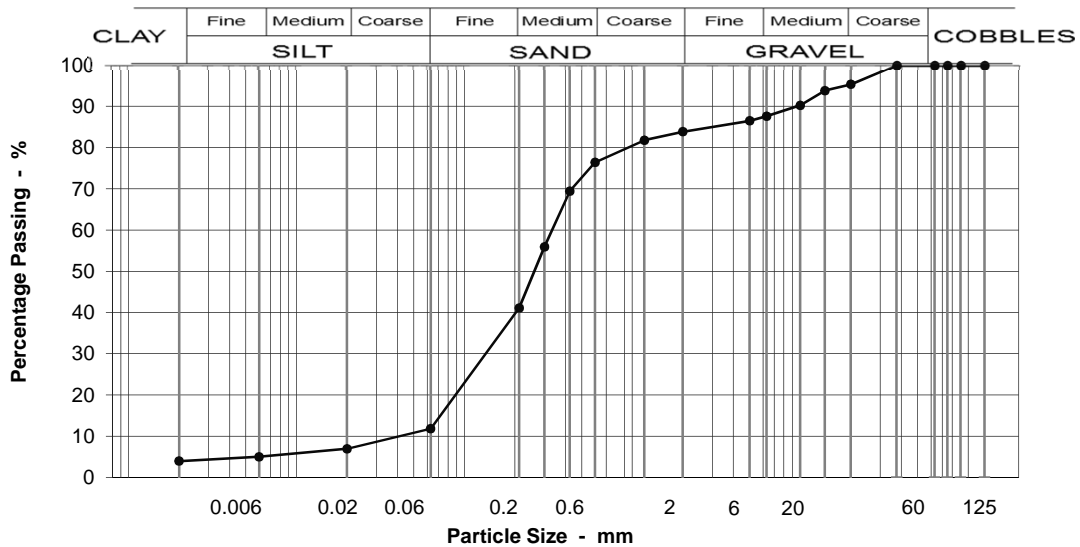
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS1 @ 0.8 - 1.1m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	95
14	94
10	90
6.3	88
5	86
2	84
1.18	82
0.600	76
0.425	69
0.300	56
0.212	41
0.063	12
0.020	7
0.006	5
0.002	4

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R.

Moisture content % 12

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	5
Medium GRAVEL	8
Fine GRAVEL	4
Coarse SAND	7
Medium SAND	35
Fine SAND	29
Silt & Clay	12

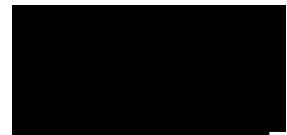
Grading Analysis	
D100	20
D60	0.34
D10	0.10
Uniformity Coefficient	3

Description
Brown slightly silty gravelly fine and medium SAND. Gravel is fine and medium subangular to subrounded flint and quartz.

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS2171205028-610**
Our Project No. PZ1522D1
Your Sample Ref 7
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 23-Apr-18

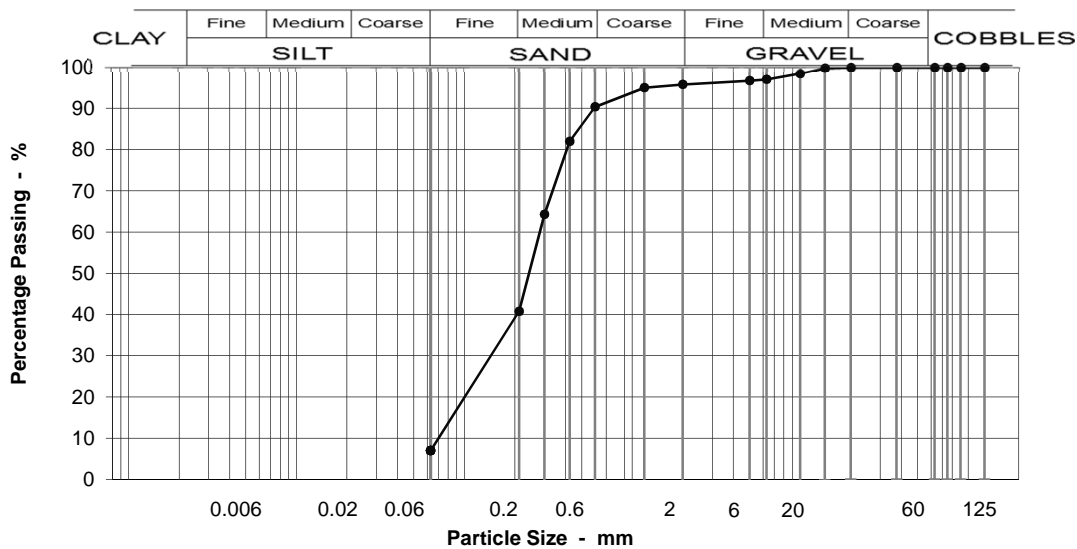
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS1 @ 2 - 3m Specimen: 1 @ 1.6m

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	98
6.3	97
5	97
2	96
1.18	95
0.600	90
0.425	82
0.300	64
0.212	41
0.063	7

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 16

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	3
Fine GRAVEL	1
Coarse SAND	5
Medium SAND	50
Fine SAND	34
Silt & Clay	7

Grading Analysis	
D100	14
D60	0.28
D10	0.08
Uniformity Coefficient	4

Description
Grey slightly silty fine and medium SAND.

Test Code = 610



Simon Holden (Project Technician)



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County Hall
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NR1 2DH

Our reference No. **GTS2171205029-610**
Our Project No. **PZ1522D1**
Your Sample Ref **8**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **23-Apr-18**

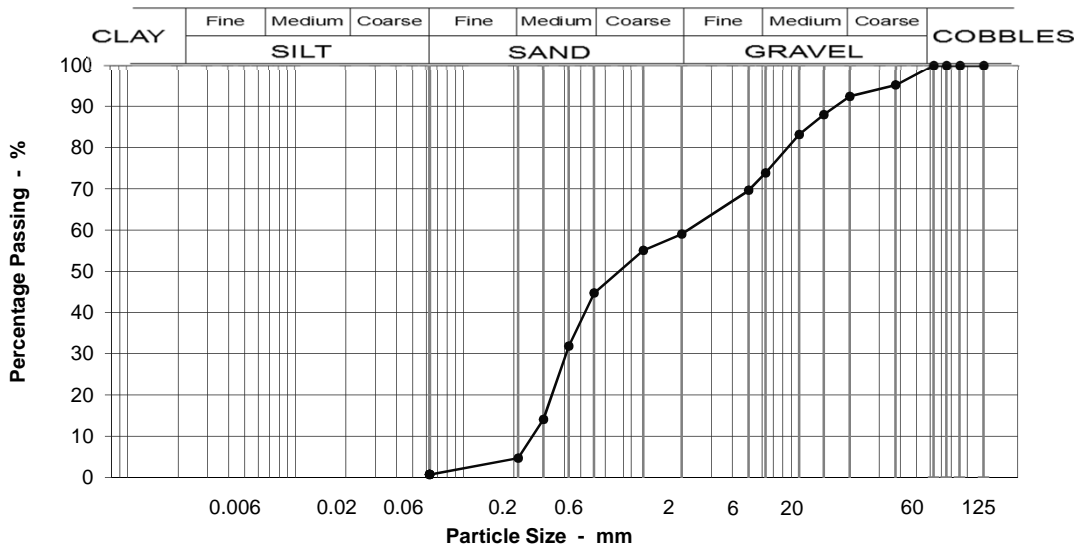
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS1 @ 3 - 4m Specimen: 1 @ 3m

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	95
20	92
14	88
10	83
6.3	74
5	70
2	59
1.18	55
0.600	45
0.425	32
0.300	14
0.212	5
0.063	1

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6F1, 6J, 6M.

Moisture content % 7.5

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	8
Medium GRAVEL	19
Fine GRAVEL	15
Coarse SAND	14
Medium SAND	40
Fine SAND	4
Silt & Clay	1

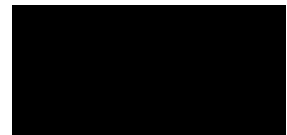
Grading Analysis	
D100	38
D60	2.27
D10	0.26
Uniformity Coefficient	9

Description	
Grey medium and coarse SAND and fine and medium sub-rounded flint gravel.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS2171205030-613**
Our Project No. **PZ1522D1**
Your Sample Ref **9**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **23-Apr-18**

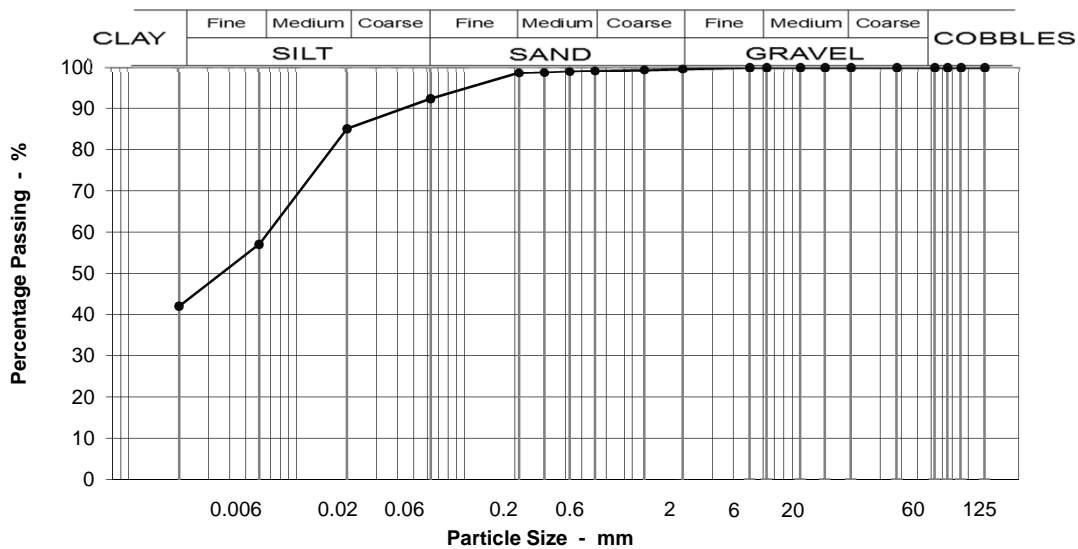
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS1 @ 4 - 5m Specimen: 2 @ 4.2m

Location and orientation within sample not applicable

Disturbed sample



Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	99
0.600	99
0.425	99
0.300	99
0.212	99
0.063	92
0.020	85
0.006	57
0.002	42

Specification for Highway Works Classification
Table 6/2

Moisture content % 0

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	0
Medium SAND	0
Fine SAND	6
Silt & Clay	92

Grading Analysis	
D100	2
D60	0.01
D10	0.00
Uniformity Coefficient	>10*

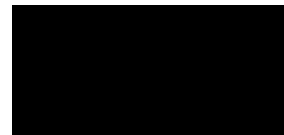
Description	
Soft laminated grey silty CLAY, with numerous lenses & laminae of black organic material.	

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS2171206010-610**
Our Project No. **PZ1522D1**
Your Sample Ref **1**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **23-Apr-18**

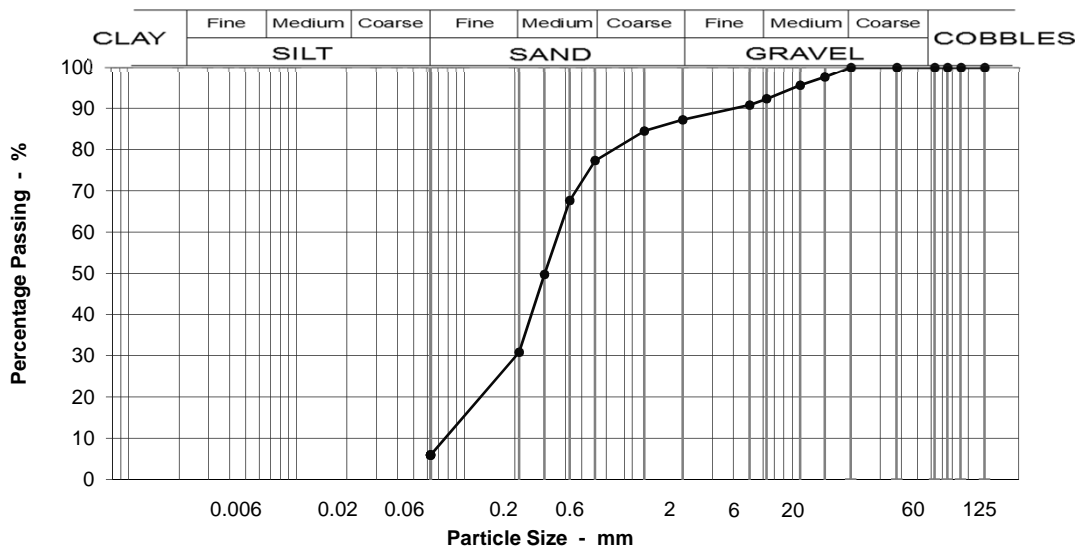
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS2 @ 0.1 - 0.3m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	98
10	96
6.3	92
5	91
2	87
1.18	84
0.600	77
0.425	68
0.300	50
0.212	31
0.063	6

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 8.9

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	8
Fine GRAVEL	5
Coarse SAND	10
Medium SAND	46
Fine SAND	25
Silt & Clay	6

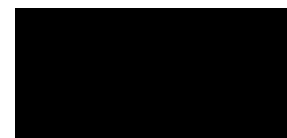
Grading Analysis	
D100	14
D60	0.37
D10	0.09
Uniformity Coefficient	4

Description	
Orangey brown gravelly fine and medium SAND. Gravel is fine and medium, rounded to sub-angular flint and quartz.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS2171206011-610**
Our Project No. PZ1522D1
Your Sample Ref. 2
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 23-Apr-18

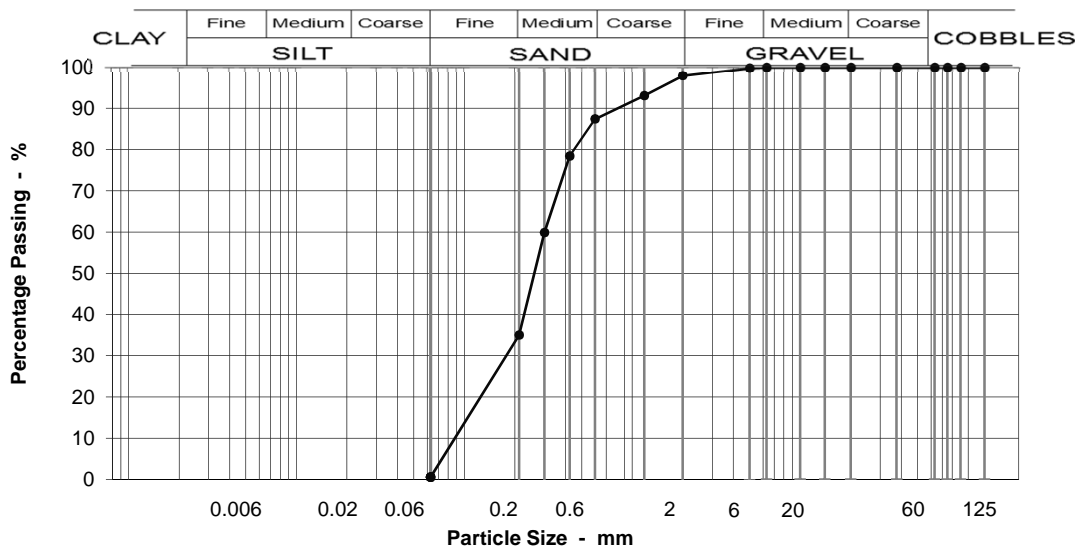
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS2 @ 0.5 - 0.8m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	98
1.18	93
0.600	87
0.425	78
0.300	60
0.212	35
0.063	1

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	2
Coarse SAND	11
Medium SAND	52
Fine SAND	34
Silt & Clay	1

Grading Analysis	
D100	5
D60	0.30
D10	0.10
Uniformity Coefficient	3

Description
Yellowish brown fine and medium SAND.

Moisture content % 4.2

Test Code = 610



Simon Holden (Project Technician)



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Norwich
Norfolk
NR1 2DH

Our reference No. **GTS2171206012-610**
Our Project No. **PZ1522D1**
Your Sample Ref **3**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **22-May-18**

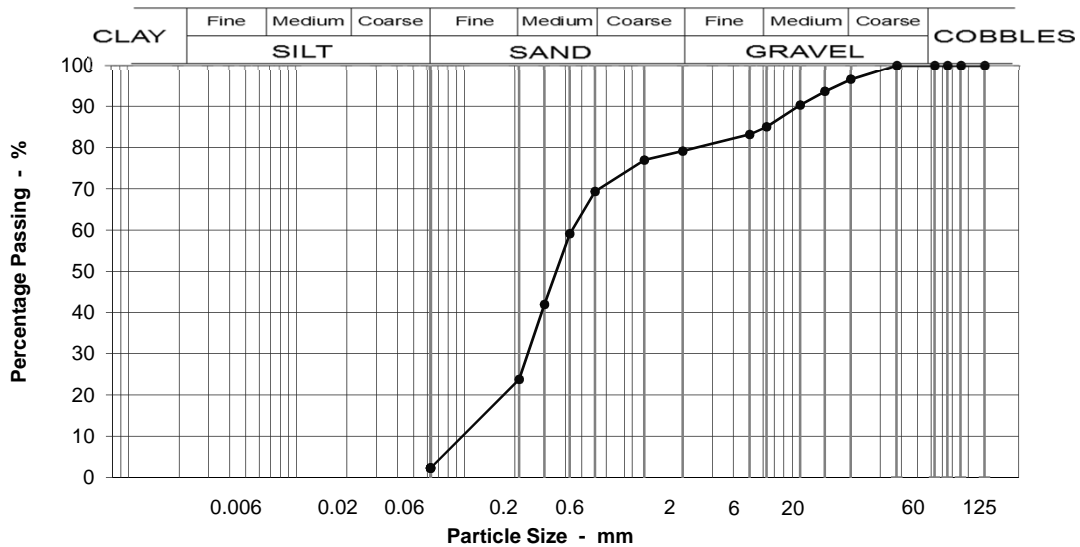
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS2 @ 0.9 - 1.2m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	97
14	94
10	90
6.3	85
5	83
2	79
1.18	77
0.600	69
0.425	59
0.300	42
0.212	24
0.063	2

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 3

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	3
Medium GRAVEL	12
Fine GRAVEL	6
Coarse SAND	10
Medium SAND	46
Fine SAND	21
Silt & Clay	2

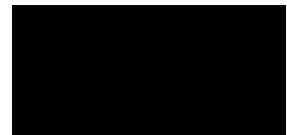
Grading Analysis	
D100	20
D60	0.44
D10	0.12
Uniformity Coefficient	4

Description
Brown very gravelly medium SAND. Gravel is fine and medium, rounded to sub-angular flint and quartz. Occasional shell fragments.

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
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Norfolk
NR1 2DH

Our reference No. **GTS2171206015-610**
Our Project No. **PZ1522D1**
Your Sample Ref **6**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **23-Apr-18**

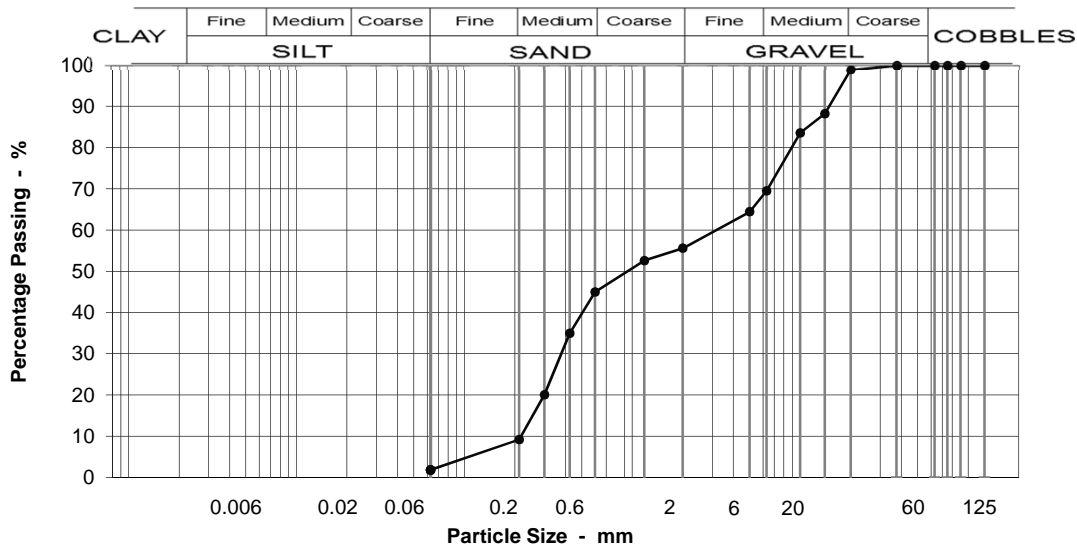
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS2 @ 1.2 - 2m Specimen: 1

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	99
14	88
10	84
6.3	70
5	64
2	56
1.18	53
0.600	45
0.425	35
0.300	20
0.212	9
0.063	2

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6A, 6E/6R, 6F1, 6I, 6M, 6N.

Moisture content % 11

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	1
Medium GRAVEL	29
Fine GRAVEL	14
Coarse SAND	11
Medium SAND	36
Fine SAND	7
Silt & Clay	2

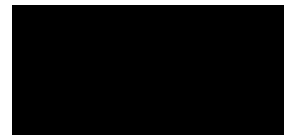
Grading Analysis	
D100	20
D60	3.50
D10	0.22
Uniformity Coefficient	16

Description
Grey slightly organic medium SAND and fine to medium angular to sub-rounded flint and quartz GRAVEL.

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS2171206003-610**
Our Project No. PZ1522D1
Your Sample Ref. 3
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 25-Jun-18

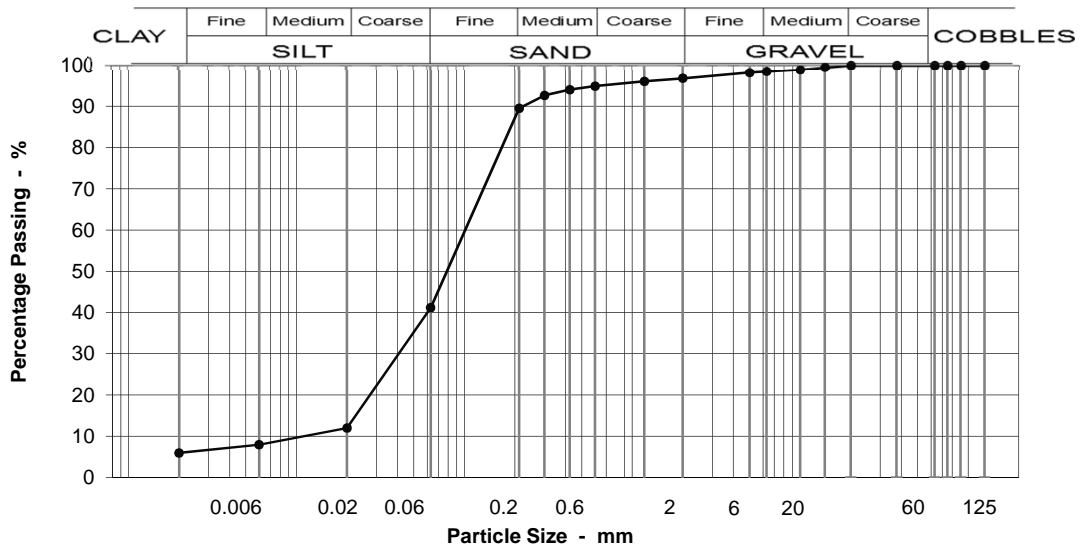
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS3 @ 0.5 - 0.7m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	99
10	99
6.3	98
5	98
2	97
1.18	96
0.600	95
0.425	94
0.300	93
0.212	90
0.063	41
0.020	12
0.006	8
0.002	6

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 2A/2B, 2A/2B.

Moisture content % 21

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	2
Fine GRAVEL	2
Coarse SAND	2
Medium SAND	5
Fine SAND	48
Silt & Clay	41

Grading Analysis	
D100	14
D60	0.12
D10	0.04
Uniformity Coefficient	3

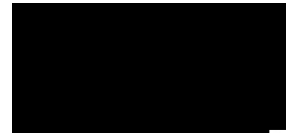
Description	
Light brown very sandy slightly clayey SILT.	

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS2171206004-610**
Our Project No. PZ1522D1
Your Sample Ref. 4
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 25-Jun-18

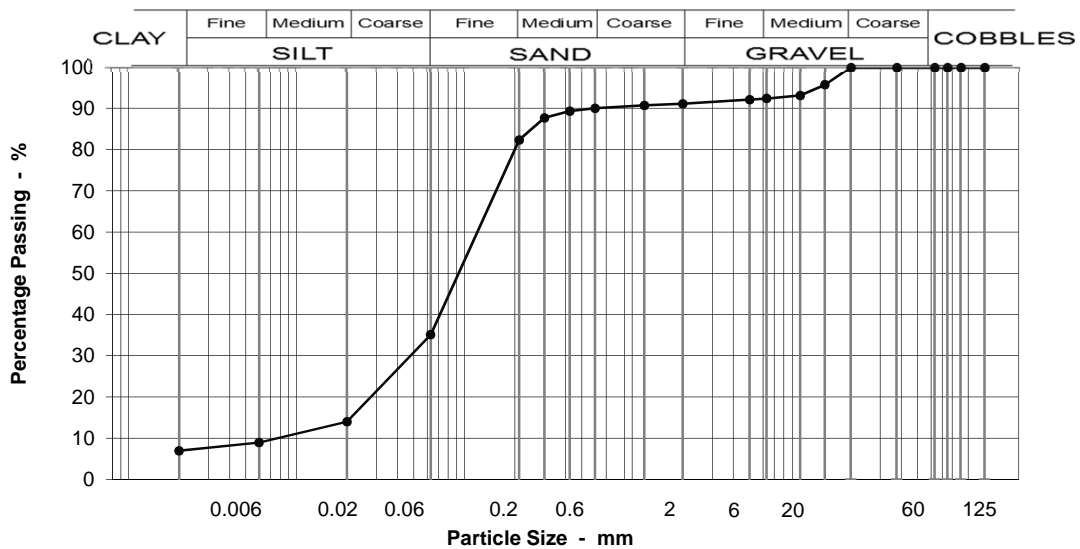
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS3 @ 0.9 - 1.2m Specimen: 2

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 2A/2B, 2A/2B.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	8
37.5	100		Fine GRAVEL	1
20	100		Coarse SAND	1
14	96		Medium SAND	8
10	93		Fine SAND	47
6.3	92		Silt & Clay	35
5	92			
2	91			
1.18	91			
0.600	90			
0.425	89			
0.300	88			
0.212	82			
0.063	35			
0.020	14			
0.006	9			
0.002	7			
Moisture content %		21		

Grading Analysis	
D100	14
D60	0.14
D10	0.03
Uniformity Coefficient	4

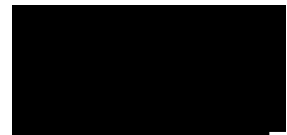
Description	
Soft grey slightly gravelly slightly clayey very sandy SILT. Gravel is medium angular to subangular flint.	

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



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County Hall
Martineau Lane
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Norfolk
NR1 2DH

Our reference No. **GTS2171206006-613**
Our Project No. PZ1522D1
Your Sample Ref. 6
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 23-Apr-18

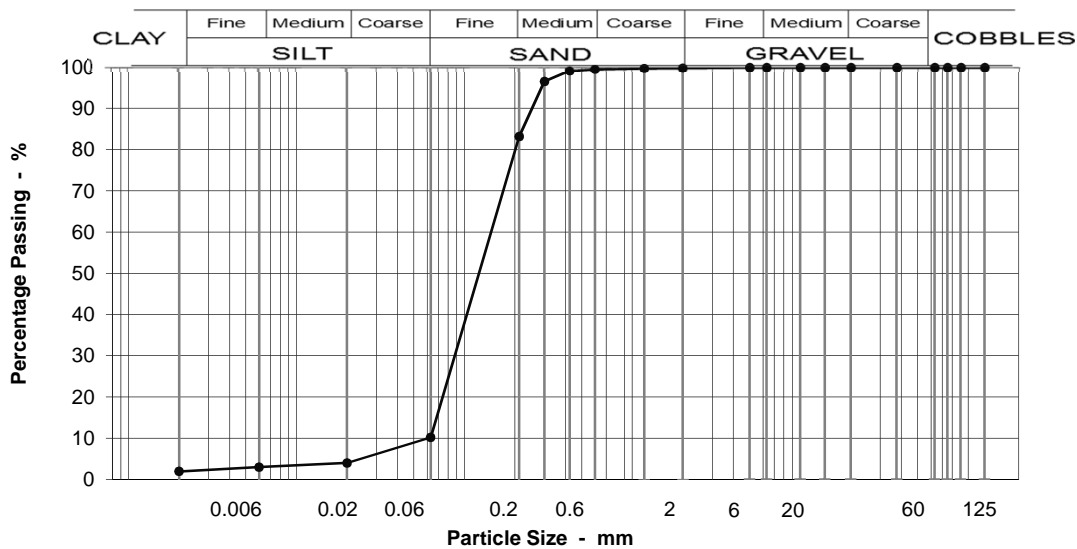
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS3 @ 1.2 - 2m Specimen: 1 @ 1.7m

Location and orientation within sample not applicable

Disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	0
14	100		Medium SAND	16
10	100		Fine SAND	73
6.3	100		Silt & Clay	10
5	100			
2	100			
1.18	100			
0.600	100			
0.425	99			
0.300	96			
0.212	83			
0.063	10			
0.020	4			
0.006	3			
0.002	2	Moisture content %	23	

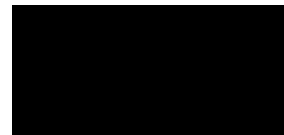
Grading Analysis	
D100	2
D60	0.16
D10	0.09
Uniformity Coefficient	2

Description
Bedded olive and grey fine and medium SAND;
Soft dark grey organic sandy SILT and grey silty fine SAND.

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS2171206007-613**
Our Project No. PZ1522D1
Your Sample Ref. 7
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 23-Apr-18

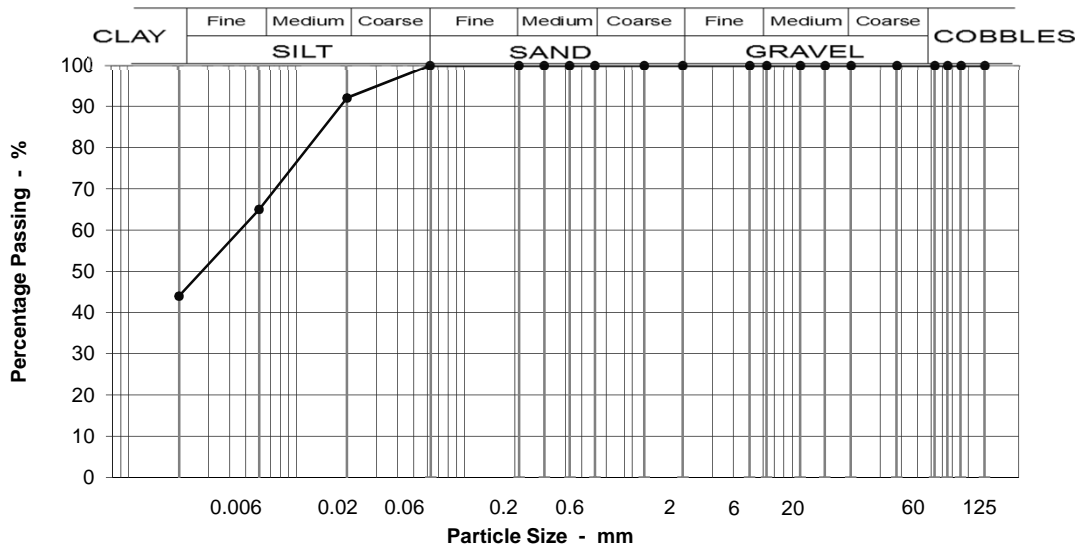
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS3 @ 2 - 3m Specimen: 1 @ 2.5m

Location and orientation within sample not applicable

Disturbed sample



Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	100
0.600	100
0.425	100
0.300	100
0.212	100
0.063	100
0.020	92
0.006	65
0.002	44

Specification for Highway Works Classification
Table 6/2

Moisture content % 0

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	0
Medium SAND	0
Fine SAND	0
Silt & Clay	100

Grading Analysis	
D100	0
D60	0.01
D10	0.00
Uniformity Coefficient	>10*

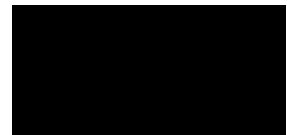
Description	
Soft laminated grey CLAY; SILT with numerous lenses of black organic material.	

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)



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County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS2171206009-613**
Our Project No. PZ1522D1
Your Sample Ref. 9
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 23-Apr-18

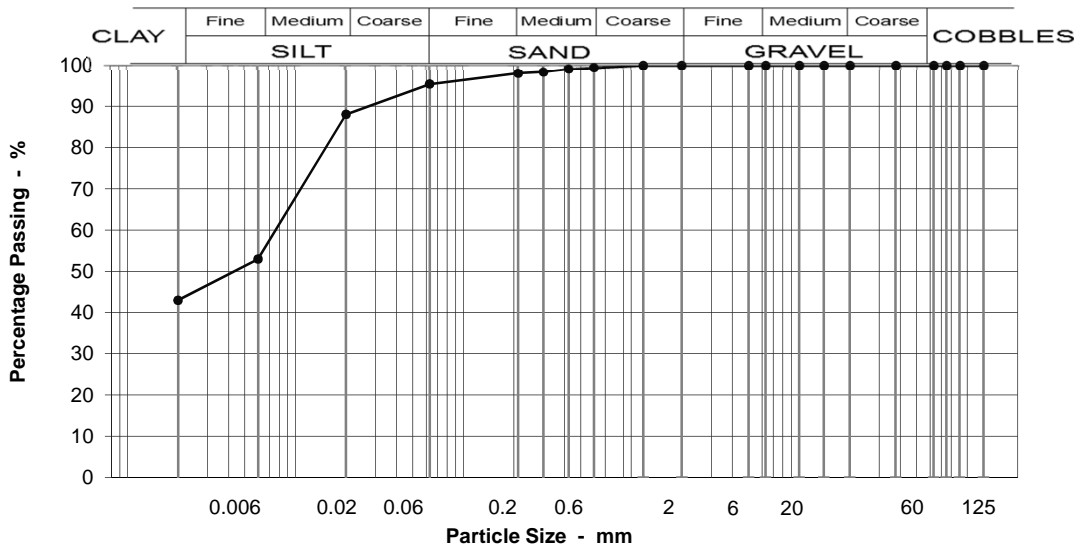
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS3 @ 4 - 5m Specimen: 3 @ 4.5m

Location and orientation within sample not applicable

Disturbed sample



Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	100
0.600	99
0.425	99
0.300	98
0.212	98
0.063	95
0.020	88
0.006	53
0.002	43

Specification for Highway Works Classification
Table 6/2

Moisture content % 0

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	1
Medium SAND	1
Fine SAND	3
Silt & Clay	95

Grading Analysis	
D100	1
D60	0.01
D10	0.00
Uniformity Coefficient	>10*

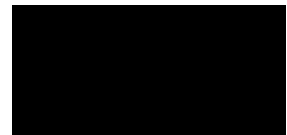
Description
Laminated and thinly bedded, black and dark grey organic silty CLAY and clayey SILT.

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS2171205015-610**
Our Project No. **PZ1522D1**
Your Sample Ref **3**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **22-May-18**

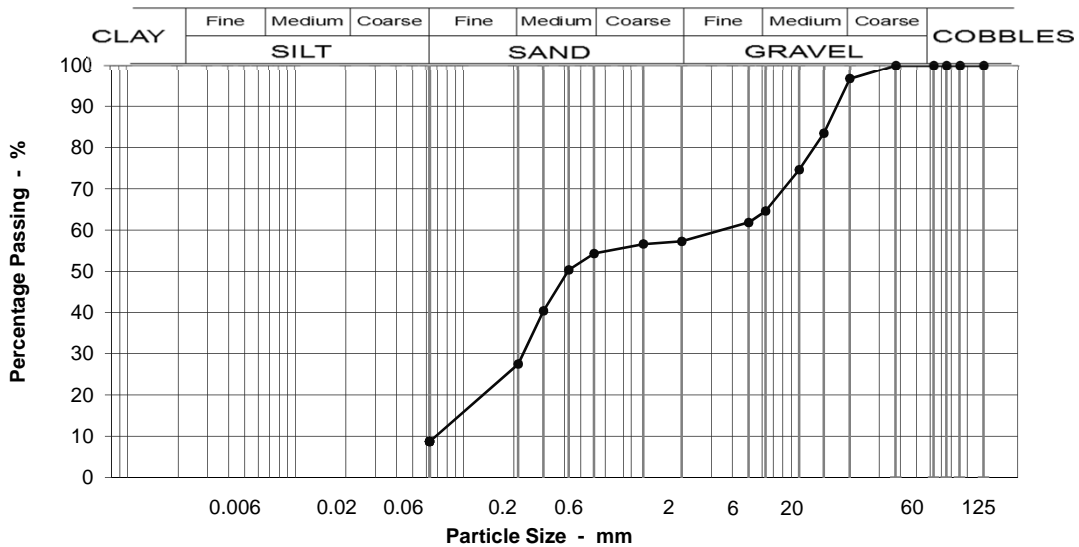
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS4 @ 0.7 - 1.1m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	97
14	83
10	75
6.3	65
5	62
2	57
1.18	57
0.600	54
0.425	50
0.300	40
0.212	27
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6E/6R, 6I, 6M, 6N.

Moisture content % 6.1

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	3
Medium GRAVEL	32
Fine GRAVEL	7
Coarse SAND	3
Medium SAND	27
Fine SAND	19
Silt & Clay	9

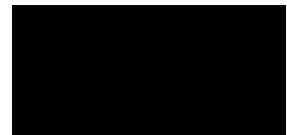
Grading Analysis	
D100	20
D60	3.81
D10	0.07
Uniformity Coefficient	52

Description	
Brown fine and medium SAND and angular to rounded flint and quartz GRAVEL.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS2171205019-610**
Our Project No. **PZ1522D1**
Your Sample Ref **7**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **23-Apr-18**

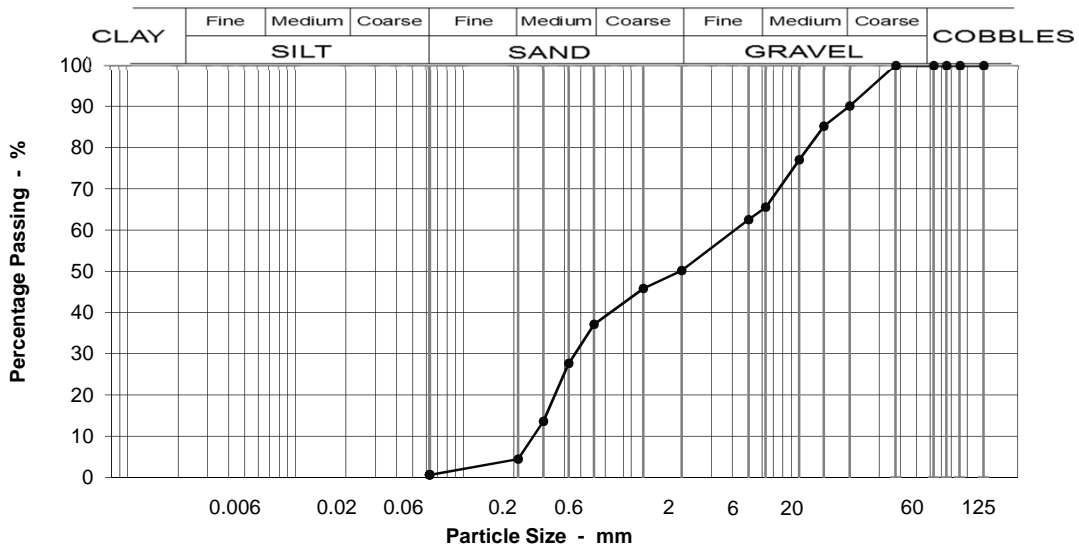
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS4 @ 2 - 3m Specimen: 1

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	90
14	85
10	77
6.3	66
5	63
2	50
1.18	46
0.600	37
0.425	28
0.300	14
0.212	5
0.063	1

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6A, 6E/6R, 6F1, 6I, 6M, 6N.

Moisture content % 9.5

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	10
Medium GRAVEL	25
Fine GRAVEL	15
Coarse SAND	13
Medium SAND	33
Fine SAND	4
Silt & Clay	1

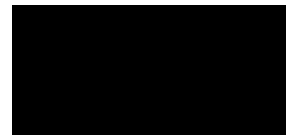
Grading Analysis	
D100	20
D60	4.38
D10	0.27
Uniformity Coefficient	17

Description	
Light grey fine and medium SAND and fine to coarse subangular to subrounded flint GRAVEL.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
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Norfolk
NR1 2DH

Our reference No. **GTS2171205020-610**
Our Project No. PZ1522D1
Your Sample Ref 8
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 23-Apr-18

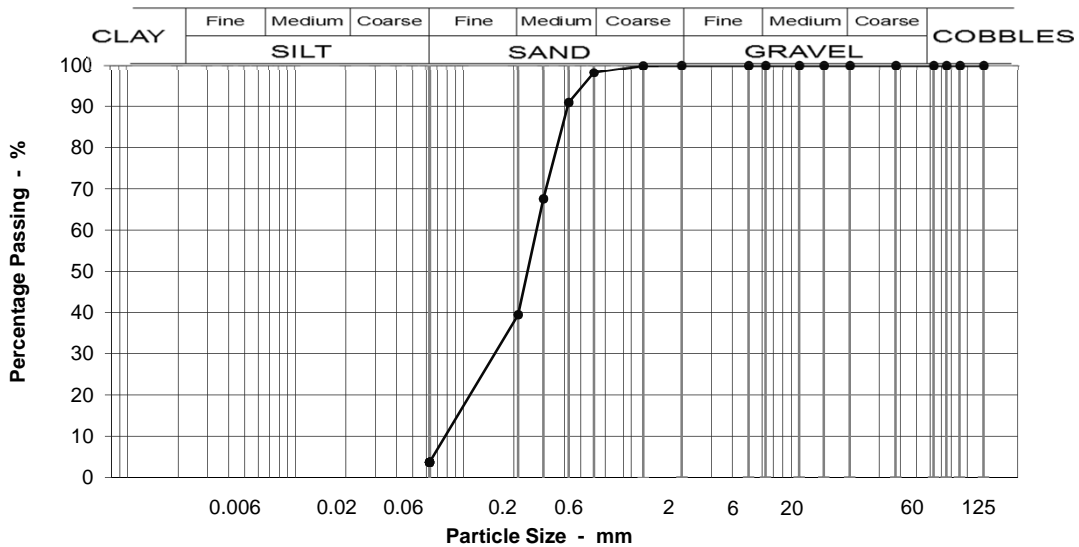
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS4 @ 3 - 4m Specimen: 1 @ 3.65m

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	100
0.600	98
0.425	91
0.300	68
0.212	39
0.063	4

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 19

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	2
Medium SAND	59
Fine SAND	36
Silt & Clay	4

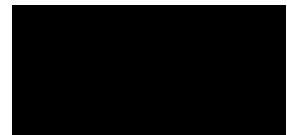
Grading Analysis	
D100	1
D60	0.28
D10	0.09
Uniformity Coefficient	3

Description	
Laminated light grey fine and medium SAND with some shell fragments.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS2171205021-613**
Our Project No. PZ1522D1
Your Sample Ref. 9
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 22-May-18

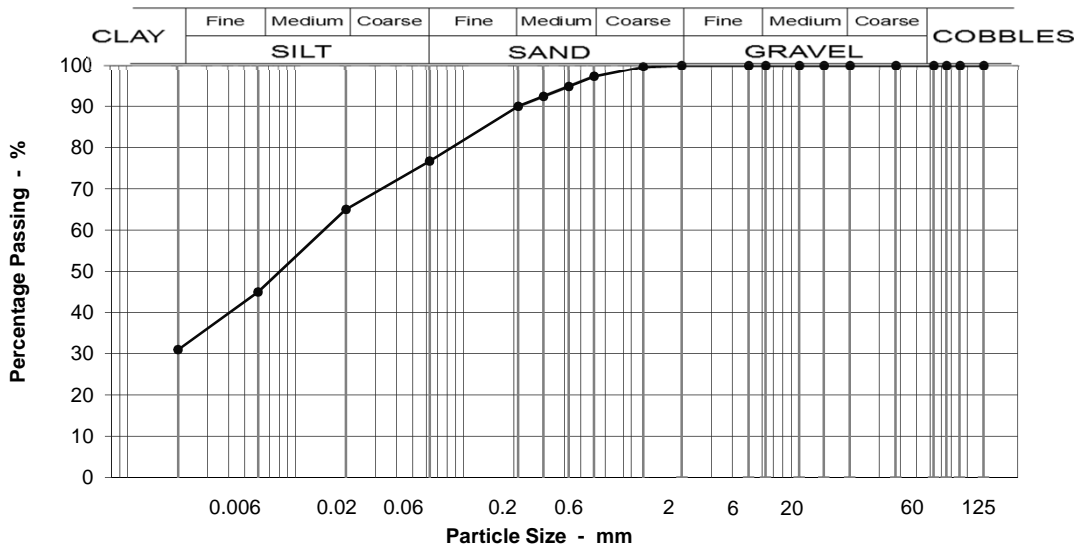
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS4 @ 4 - 5m Specimen: 1 @ 4.7m

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	100
0.600	97
0.425	95
0.300	92
0.212	90
0.063	77
0.020	65
0.006	45
0.002	31

Specification for Highway Works Classification
Table 6/2

Moisture content % 0

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	3
Medium SAND	7
Fine SAND	13
Silt & Clay	77

Grading Analysis	
D100	1
D60	0.02
D10	0.00
Uniformity Coefficient	>10*

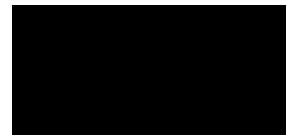
Description
Laminated grey silty CLAY, brown organic SILT, grey silty fine SAND and light grey fine and medium SAND.

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS2171204015-610**
Our Project No. **PZ1522D1**
Your Sample Ref **1**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **2-Jul-18**

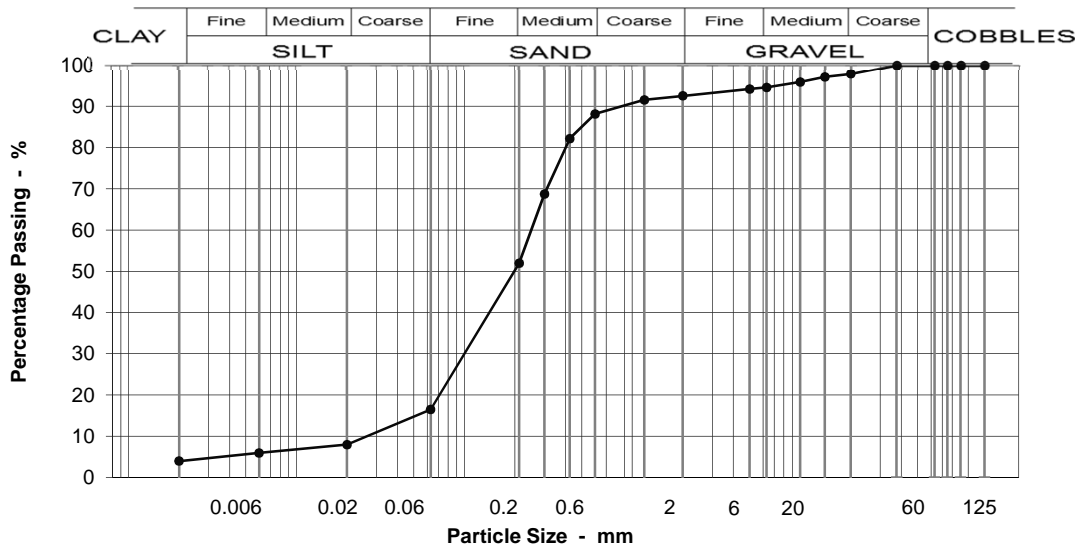
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS5 @ 0.1 - 0.4m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample

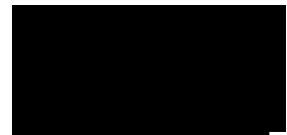


Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 2A/2B, 2A/2B.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	2
63	100		Medium GRAVEL	3
37.5	100		Fine GRAVEL	2
20	98		Coarse SAND	4
14	97		Medium SAND	36
10	96		Fine SAND	35
6.3	95		Silt & Clay	17
5	94		Grading Analysis	
2	93		D100	20
1.18	92		D60	0.25
0.600	88		D10	0.07
0.425	82		Uniformity Coefficient	4
0.300	69		Description	
0.212	52	Brownish grey fine and medium silty SAND.		
0.063	17			
0.020	8			
0.006	6			
0.002	4			
Moisture content %		12		

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
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Norwich
Norfolk
NR1 2DH

Our reference No. **GTS2171204016-610**
Our Project No. PZ1522D1
Your Sample Ref. 2
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 23-Apr-18

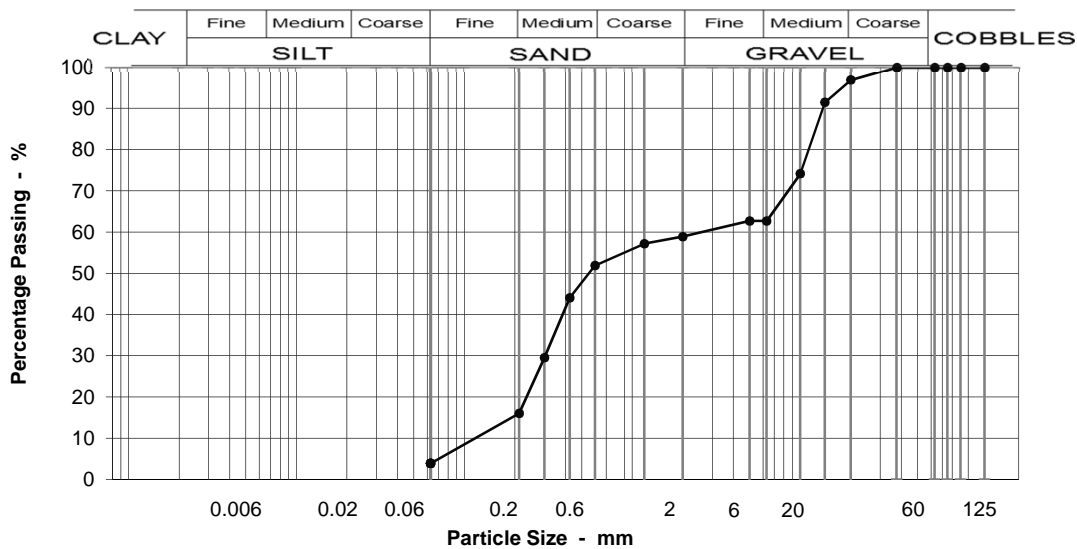
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS5 @ 0.4 - 0.7m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	97
14	91
10	74
6.3	63
5	63
2	59
1.18	57
0.600	52
0.425	44
0.300	30
0.212	16
0.063	4

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6E/6R, 6I, 6M, 6N.

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	3
Medium GRAVEL	34
Fine GRAVEL	4
Coarse SAND	7
Medium SAND	36
Fine SAND	12
Silt & Clay	4

Grading Analysis	
D100	20
D60	2.87
D10	0.14
Uniformity Coefficient	21

Description
Brown fine and medium SAND and medium angular to sub-rounded flint GRAVEL.

Moisture content % 5.6

Test Code = 610



Simon Holden (Project Technician)



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Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS2171204017-610**
Our Project No. **PZ1522D1**
Your Sample Ref **3**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **22-May-18**

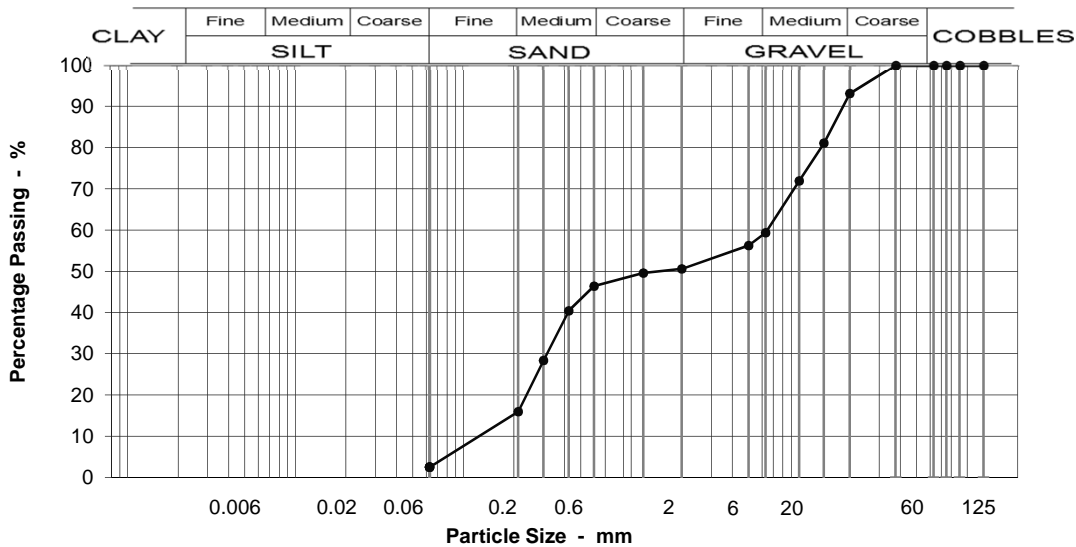
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS5 @ 0.9 - 1.2m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	93
14	81
10	72
6.3	59
5	56
2	51
1.18	50
0.600	46
0.425	40
0.300	28
0.212	16
0.063	3

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1A, 6E/6R, 6F1, 6I, 6M, 6N.

Moisture content % 3.1

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	7
Medium GRAVEL	34
Fine GRAVEL	9
Coarse SAND	4
Medium SAND	30
Fine SAND	13
Silt & Clay	3

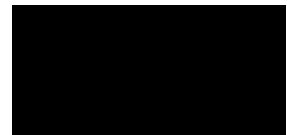
Grading Analysis	
D100	20
D60	6.49
D10	0.15
Uniformity Coefficient	45

Description	
Brown medium, rounded to sub-angular flint and quartz GRAVEL and medium SAND.	

Test Code = 610



Simon Holden (Project Technician)



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County Hall
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Norfolk
NR1 2DH

Our reference No. **GTS2171205003-610**
Our Project No. PZ1522D1
Your Sample Ref. 2
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 2-Jul-18

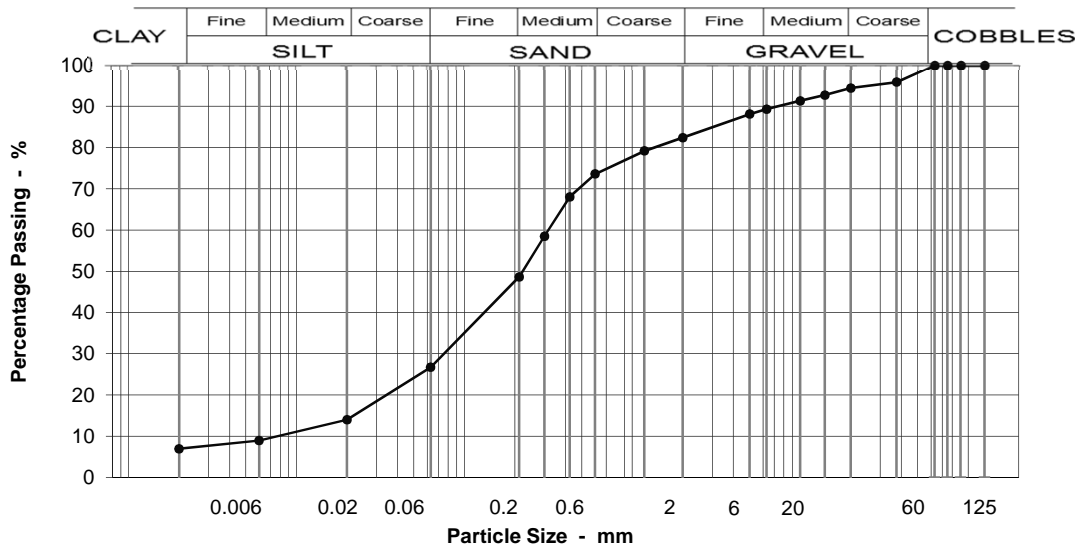
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS6 @ 0.3 - 0.6m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



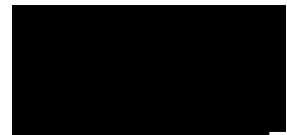
Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 2A/2B, 2A/2B.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	6
63	100		Medium GRAVEL	5
37.5	96		Fine GRAVEL	7
20	94		Coarse SAND	9
14	93		Medium SAND	25
10	91		Fine SAND	22
6.3	89		Silt & Clay	27
5	88		Grading Analysis	
2	82		D100	38
1.18	79		D60	0.32
0.600	74		D10	0.05
0.425	68		Uniformity Coefficient	7
0.300	58		Description	
0.212	49	Greyish brown slightly clayey, very silty fine and medium SAND with some roots. Gravel is fine to coarse angular to subangular flint, ceramics, wood and concrete.		
0.063	27			
0.020	14			
0.006	9			
0.002	7	Moisture content %	24	

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS2171205004-613**
Our Project No. PZ1522D1
Your Sample Ref. 3
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 22-May-18

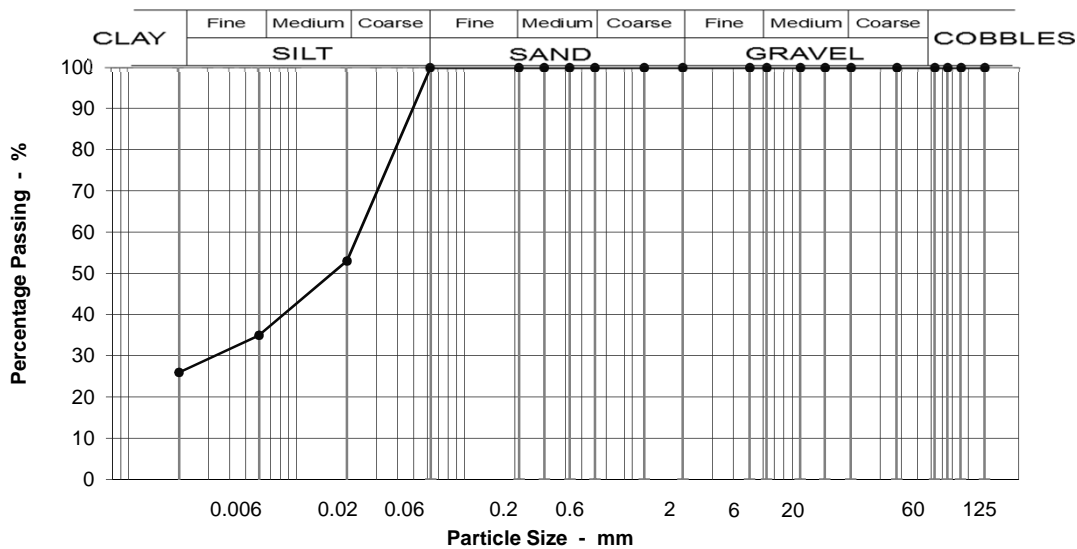
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS6 @ 0.9 - 1.1m Specimen: 1 @ 0.9m

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100		BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	0
14	100		Medium SAND	0
10	100		Fine SAND	0
6.3	100		Silt & Clay	100
5	100			
2	100			
1.18	100			
0.600	100			
0.425	100			
0.300	100			
0.212	100			
0.063	100			
0.020	53			
0.006	35			
0.002	26			
		Moisture content %		0

Grading Analysis	
D100	0
D60	0.03
D10	0.00
Uniformity Coefficient	>10*

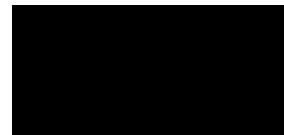
Description	
Mottled light grey and orangey brown very clayey coarse SILT with some roots.	

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
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Norfolk
NR1 2DH

Our reference No. **GTS2171205007-613**
Our Project No. **PZ1522D1**
Your Sample Ref **6**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **22-May-18**

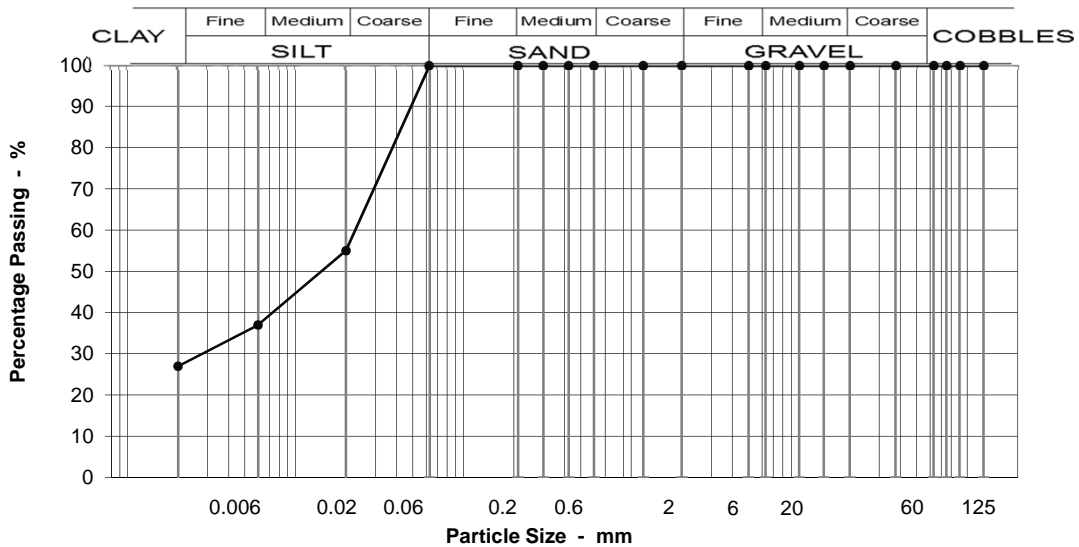
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS6 @ 1.2 - 2m Specimen: 2 @ 1.3m

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	100
0.600	100
0.425	100
0.300	100
0.212	100
0.063	100
0.020	55
0.006	37
0.002	27

Specification for Highway Works Classification
Table 6/2

Moisture content % 0

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	0
Medium SAND	0
Fine SAND	0
Silt & Clay	100

Grading Analysis	
D100	0
D60	0.02
D10	0.00
Uniformity Coefficient	>10*

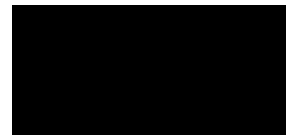
Description	
Mottled light grey and orangey brown very clayey coarse SILT.	

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS2171205009-613**
Our Project No. PZ1522D1
Your Sample Ref. 8
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 22-May-18

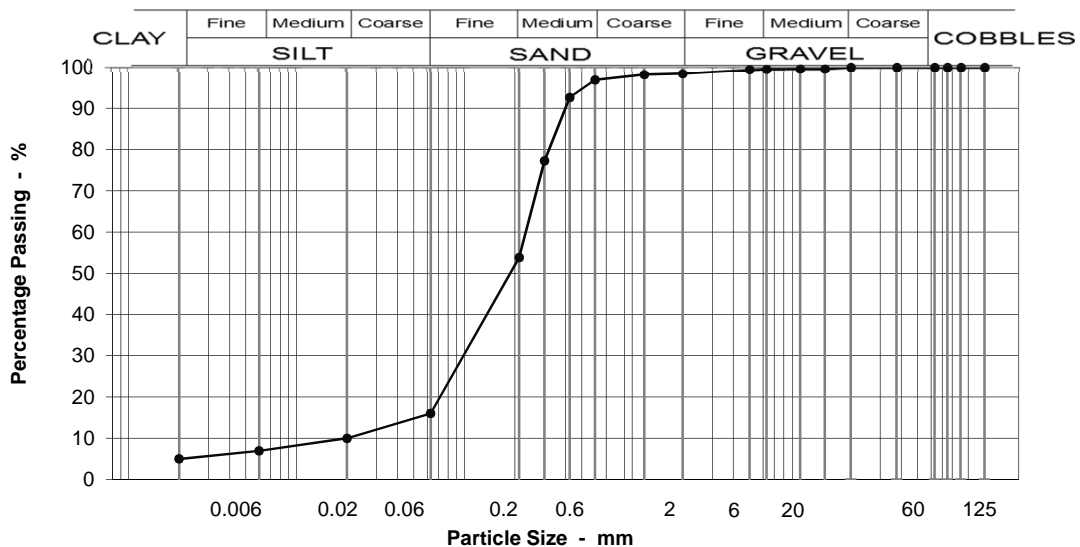
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS6 @ 2 - 2.5m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 2A/2B, 2A/2B.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	1
20	100		Coarse SAND	2
14	100		Medium SAND	43
10	100		Fine SAND	38
6.3	100		Silt & Clay	16
5	99			
2	98			
1.18	98			
0.600	97			
0.425	93			
0.300	77			
0.212	54			
0.063	16			
0.020	10			
0.006	7			
0.002	5	Moisture content %	21	

Grading Analysis	
D100	14
D60	0.24
D10	0.06
Uniformity Coefficient	4

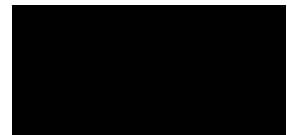
Description	
Grey fine and medium SAND with thin beds of dark grey sandy SILT and soft brown silty CLAY.	

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)



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County Hall
Martineau Lane
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Norfolk
NR1 2DH

Our reference No. **GTS2171205010-613**
Our Project No. PZ1522D1
Your Sample Ref. 9
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 22-May-18

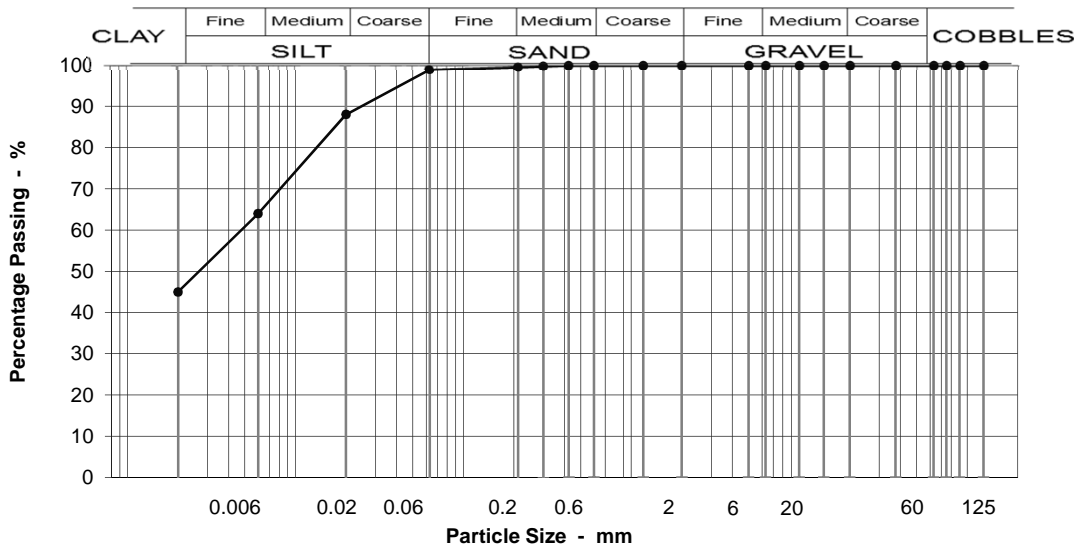
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS6 @ 2.5 - 3m Specimen: 2

Location and orientation within sample not applicable

Bulk disturbed sample



Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	100
0.600	100
0.425	100
0.300	100
0.212	100
0.063	99
0.020	88
0.006	64
0.002	45

Specification for Highway Works Classification
Table 6/2

Moisture content % 0

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	0
Medium SAND	0
Fine SAND	1
Silt & Clay	99

Grading Analysis	
D100	0
D60	0.01
D10	0.00
Uniformity Coefficient	>10*

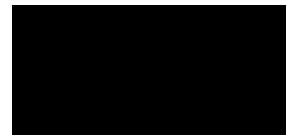
Description	
Laminated soft grey CLAY and black organic clayey SILT.	

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)



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County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS2171206017-610**
Our Project No. **PZ1522D1**
Your Sample Ref **2**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **22-May-18**

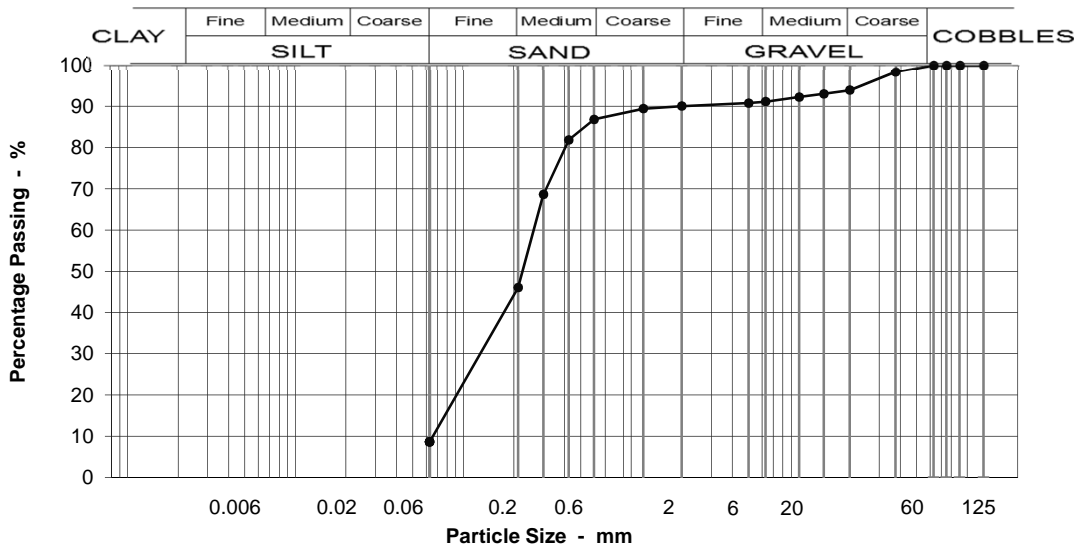
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS7 @ 0.5 - 0.8m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	98
20	94
14	93
10	92
6.3	91
5	91
2	90
1.18	89
0.600	87
0.425	82
0.300	69
0.212	46
0.063	9

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 7.3

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	6
Medium GRAVEL	3
Fine GRAVEL	1
Coarse SAND	3
Medium SAND	41
Fine SAND	37
Silt & Clay	9

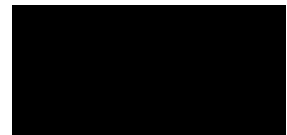
Grading Analysis	
D100	38
D60	0.27
D10	0.07
Uniformity Coefficient	4

Description	
Brown gravelly fine and medium SAND with occasional roots. Gravel is medium and coarse rounded to sub-angular flint.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS2171206019-610**
Our Project No. PZ1522D1
Your Sample Ref. 4
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 4-Jul-18

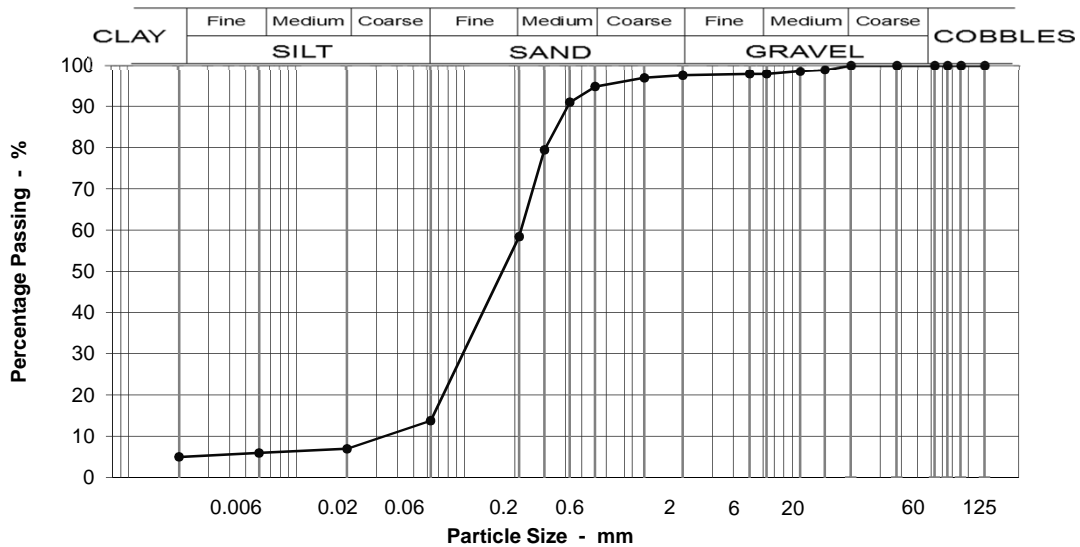
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS7 @ 1.2 - 2m Specimen: 2 @ 1.5m

Location and orientation within sample not applicable

Disturbed sample

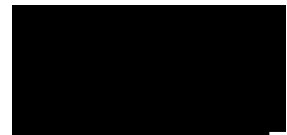


Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1B, 6E/6R.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	2
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	3
14	99		Medium SAND	36
10	99		Fine SAND	45
6.3	98		Silt & Clay	14
5	98		Grading Analysis	
2	97		D100	14
1.18	97		D60	0.22
0.600	95		D10	0.08
0.425	91		Uniformity Coefficient	3
0.300	79		Description	
0.212	58	Light brown slightly clayey silty fine and medium SAND.		
0.063	14			
0.020	7			
0.006	6			
0.002	5			
Moisture content %		11		

Test Code = 610



Simon Holden (Project Technician)



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County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS2171206020-610**
Our Project No. PZ1522D1
Your Sample Ref. 5
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 23-Apr-18

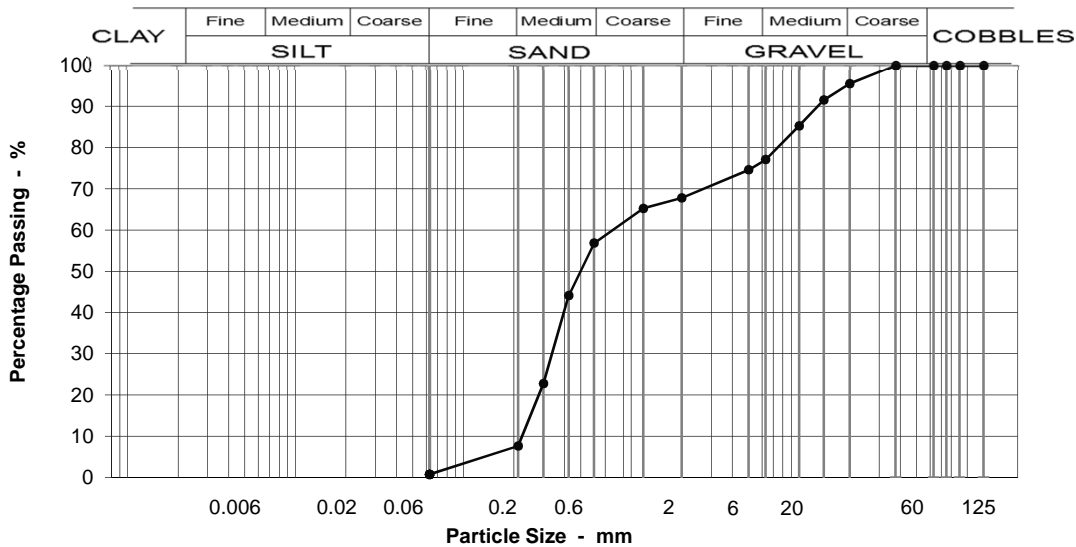
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS7 @ 2 - 3m Specimen: 3 @ 2.6m

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	96
14	92
10	85
6.3	77
5	75
2	68
1.18	65
0.600	57
0.425	44
0.300	23
0.212	8
0.063	1

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 12

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	4
Medium GRAVEL	18
Fine GRAVEL	9
Coarse SAND	11
Medium SAND	49
Fine SAND	7
Silt & Clay	1

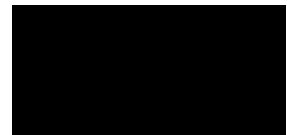
Grading Analysis	
D100	20
D60	0.82
D10	0.23
Uniformity Coefficient	4

Description
Grey very gravelly medium and coarse SAND. Gravel is fine to medium subrounded to subangular flint GRAVEL.

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS2171206023-613**
Our Project No. **PZ1522D1**
Your Sample Ref **8**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **22-May-18**

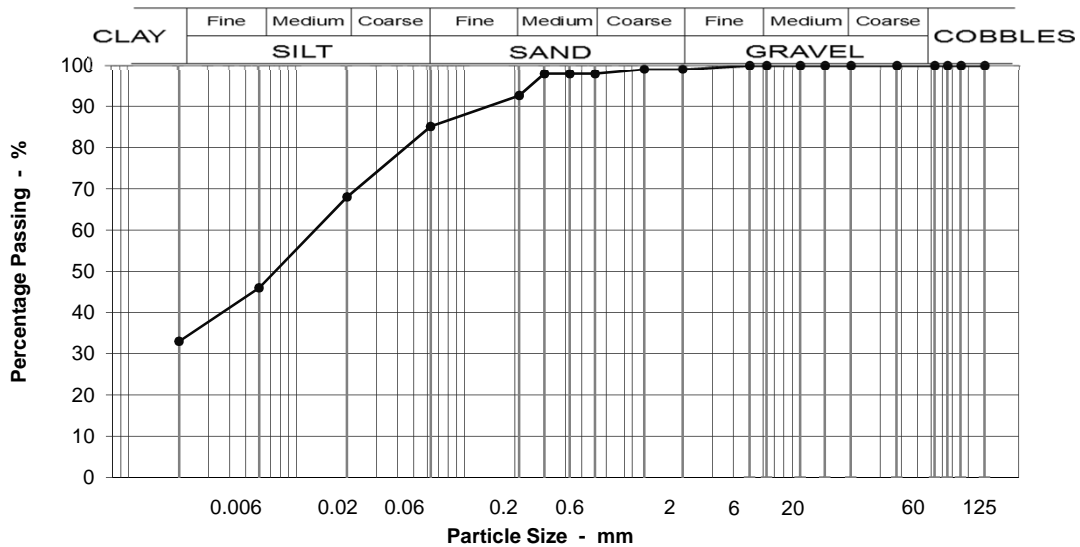
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS7 @ 3.6 - 4m Specimen: 2 @ 3.6m

Location and orientation within sample not applicable

Disturbed sample



Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	99
1.18	99
0.600	98
0.425	98
0.300	98
0.212	93
0.063	85
0.020	68
0.006	46
0.002	33

Specification for Highway Works Classification
Table 6/2

Moisture content % 0

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	1
Coarse SAND	1
Medium SAND	5
Fine SAND	8
Silt & Clay	85

Grading Analysis	
D100	2
D60	0.01
D10	0.00
Uniformity Coefficient	>10*

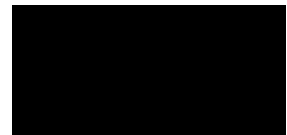
Description	
Firm light grey very clayey, fine and coarse SILT with numerous lenses of black organic material.	

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS2171206024-613**
Our Project No. PZ1522D1
Your Sample Ref. 9
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 22-May-18

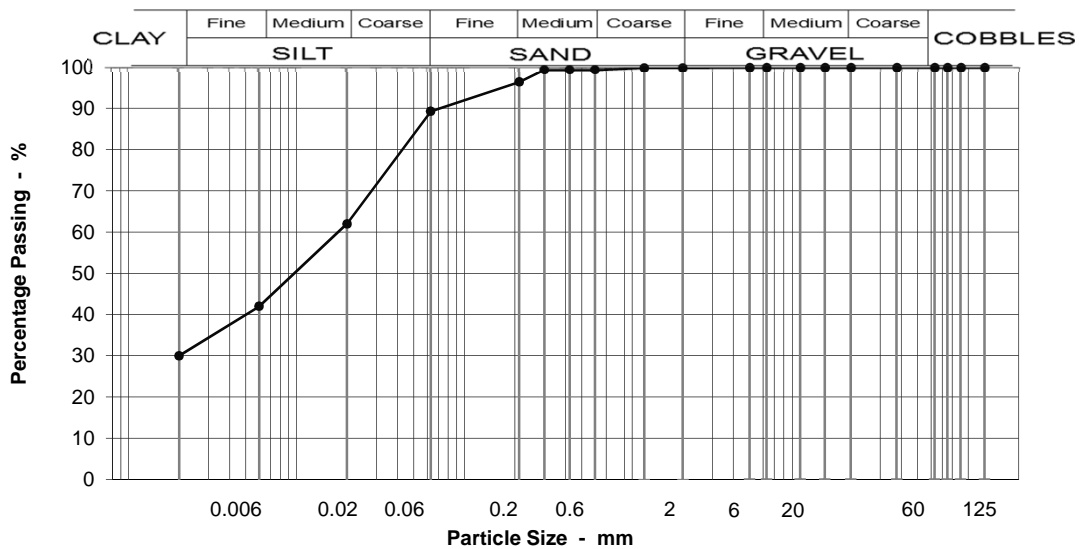
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS7 @ 4.8 - 5m Specimen: 2 @ 4.8m

Location and orientation within sample not applicable

Disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100		BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	0
14	100		Medium SAND	3
10	100		Fine SAND	7
6.3	100		Silt & Clay	89
5	100			
2	100			
1.18	100			
0.600	99			
0.425	99			
0.300	99			
0.212	96			
0.063	89			
0.020	62			
0.006	42			
0.002	30			
		Moisture content %		0

Grading Analysis	
D100	2
D60	0.02
D10	0.00
Uniformity Coefficient	>10*

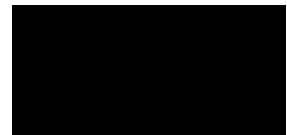
Description	
Soft to firm grey very clayey sandy SILT with occasional lenses of brown organic material and some shell fragments.	

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS2171206026-613**
Our Project No. PZ1522D1
Your Sample Ref. 11
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 22-May-18

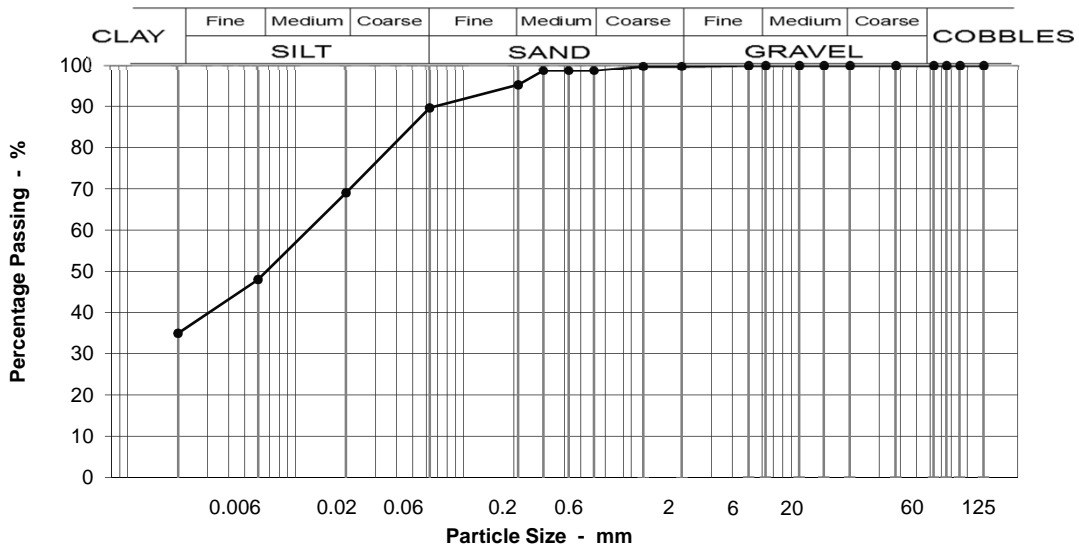
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS7 @ 6.2 - 7m Specimen: 2 @ 6.2m

Location and orientation within sample not applicable

Disturbed sample



Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	100
0.600	99
0.425	99
0.300	99
0.212	95
0.063	90
0.020	69
0.006	48
0.002	35

Specification for Highway Works Classification
Table 6/2

Moisture content % 0

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	1
Medium SAND	4
Fine SAND	6
Silt & Clay	90

Grading Analysis	
D100	2
D60	0.01
D10	0.00
Uniformity Coefficient	>10*

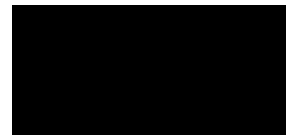
Description	
Soft grey sandy very clayey SILT with some shell fragments.	

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS2171204001-610**
Our Project No. **PZ1522D1**
Your Sample Ref **1**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **23-Apr-18**

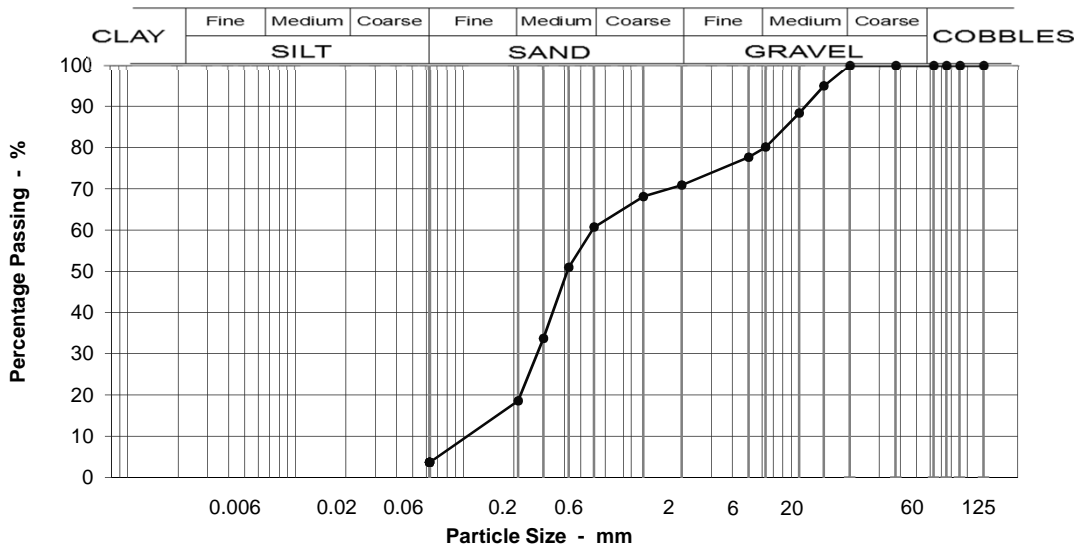
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS9 @ 0.1 - 0.3m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	95
10	88
6.3	80
5	78
2	71
1.18	68
0.600	61
0.425	51
0.300	34
0.212	19
0.063	4

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 14

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	20
Fine GRAVEL	9
Coarse SAND	10
Medium SAND	42
Fine SAND	15
Silt & Clay	4

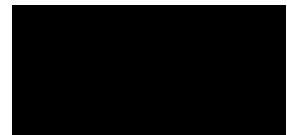
Grading Analysis	
D100	14
D60	0.59
D10	0.13
Uniformity Coefficient	5

Description
Greyish brown very gravelly medium SAND with some roots. Gravel is fine and medium rounded to sub-angular flint and quartz.

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS2171204003-610**
Our Project No. **PZ1522D1**
Your Sample Ref **3**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **23-Apr-18**

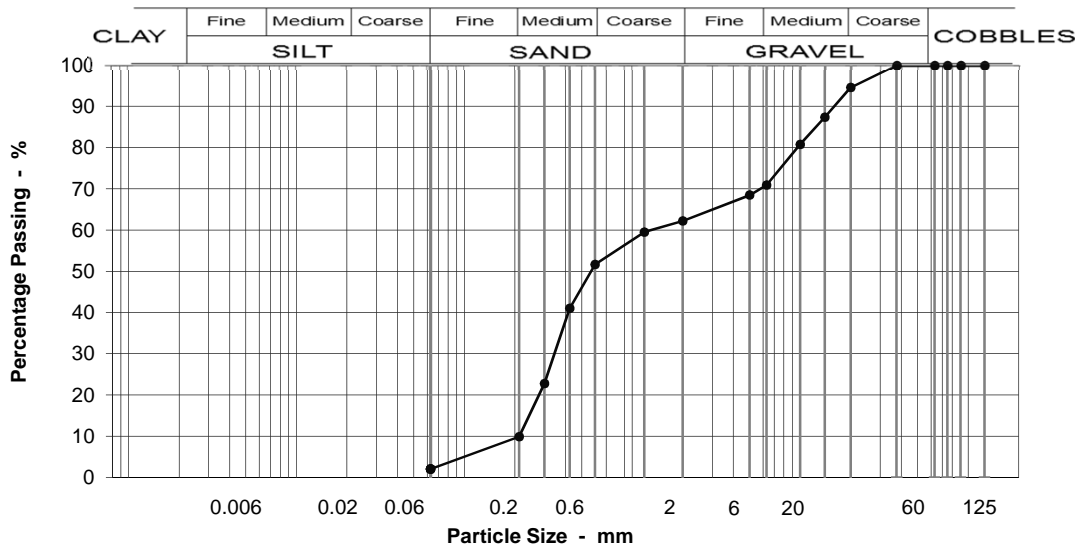
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 Wet Sieving Method

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS9 @ 0.5 - 0.7m Specimen: 1

Location and orientation within sample not applicable

Bulk disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	95
14	87
10	81
6.3	71
5	68
2	62
1.18	59
0.600	52
0.425	41
0.300	23
0.212	10
0.063	2

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6J, 6M.

Moisture content % 14

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	5
Medium GRAVEL	24
Fine GRAVEL	9
Coarse SAND	11
Medium SAND	42
Fine SAND	8
Silt & Clay	2

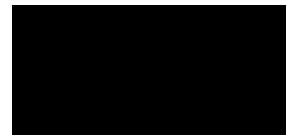
Grading Analysis	
D100	20
D60	1.33
D10	0.21
Uniformity Coefficient	6

Description
Greyish brown very gravelly medium SAND with some roots. Gravel is fine, medium and course rounded to sub-angular flint.

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS2171204004-610**
Our Project No. **PZ1522D1**
Your Sample Ref **4**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **2-Jul-18**

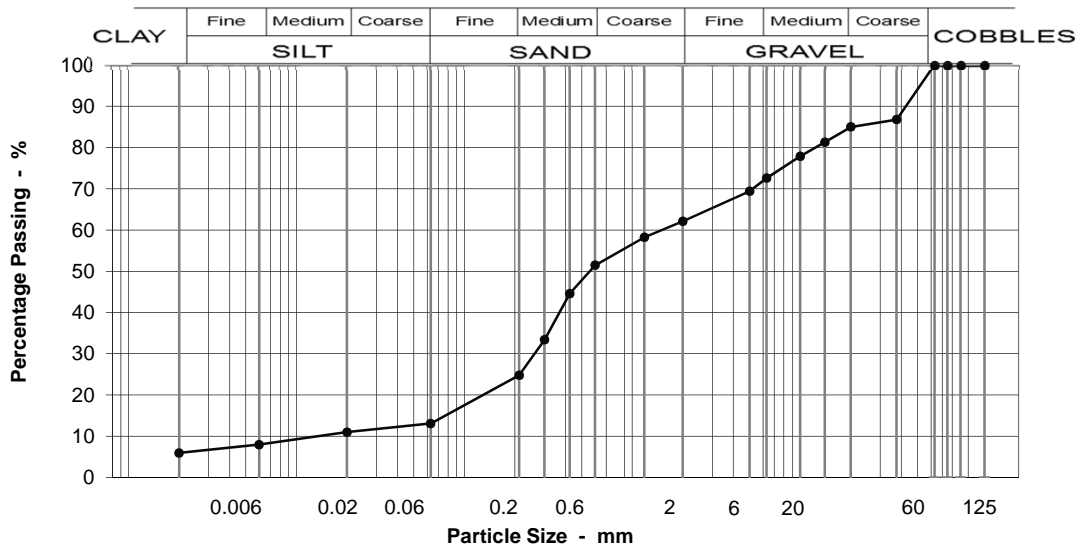
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS9 @ 0.8 - 1.2m Specimen: 2

Location and orientation within sample not applicable

Bulk disturbed sample

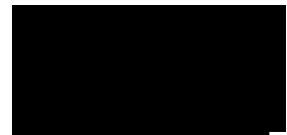


Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 1A, 6E/6R, 6I, 6N.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	15
63	100		Medium GRAVEL	12
37.5	87		Fine GRAVEL	11
20	85		Coarse SAND	11
14	81		Medium SAND	27
10	78		Fine SAND	12
6.3	73		Silt & Clay	13
5	69		Grading Analysis	
2	62		D100	38
1.18	58		D60	1.55
0.600	51		D10	0.09
0.425	45		Uniformity Coefficient	17
0.300	33		Description	
0.212	25	MADE GROUND comprising dark grey organic very gravelly, very sandy silty clay. Gravel is fine to medium angular to rounded flint, brick & quartz. Some roots.		
0.063	13			
0.020	11			
0.006	8			
0.002	6	Moisture content %	26	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS2171204006-613**
Our Project No. PZ1522D1
Your Sample Ref. 6
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 22-May-18

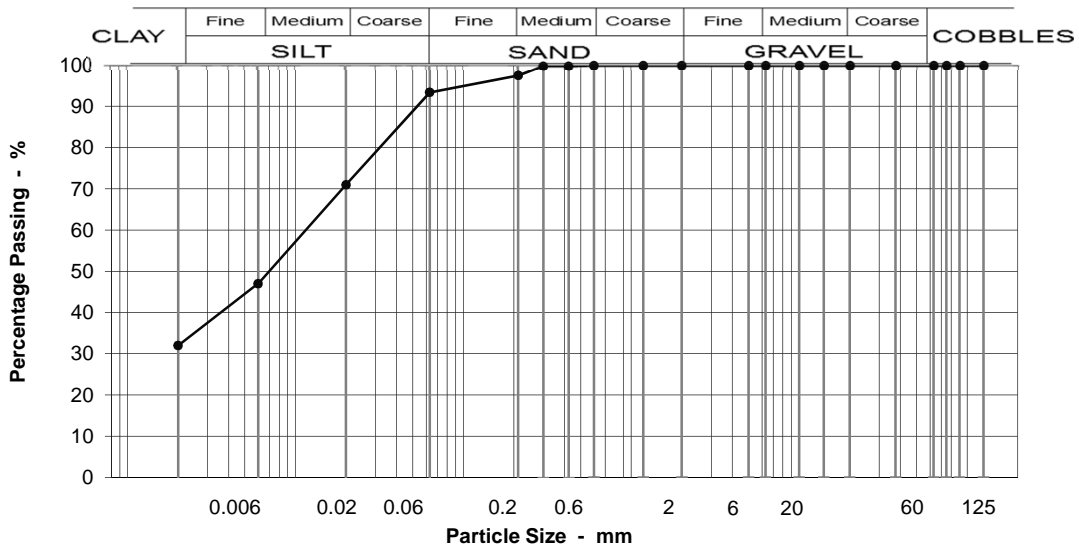
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS9 @ 1.7 - 2m Specimen: 2 @ 1.7m

Location and orientation within sample not applicable

Disturbed sample



Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	100
0.600	100
0.425	100
0.300	100
0.212	97
0.063	93
0.020	71
0.006	47
0.002	32

Specification for Highway Works Classification
Table 6/2

Moisture content % 0

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	0
Medium SAND	3
Fine SAND	4
Silt & Clay	93

Grading Analysis	
D100	0
D60	0.01
D10	0.00
Uniformity Coefficient	>10*

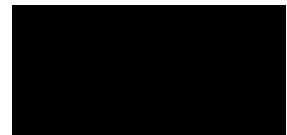
Description	
Stiff, grey, very clayey SILT with occasional shell fragments and some roots.	

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **GTS2171204008-613**
Our Project No. **PZ1522D1**
Your Sample Ref **8**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **22-May-18**

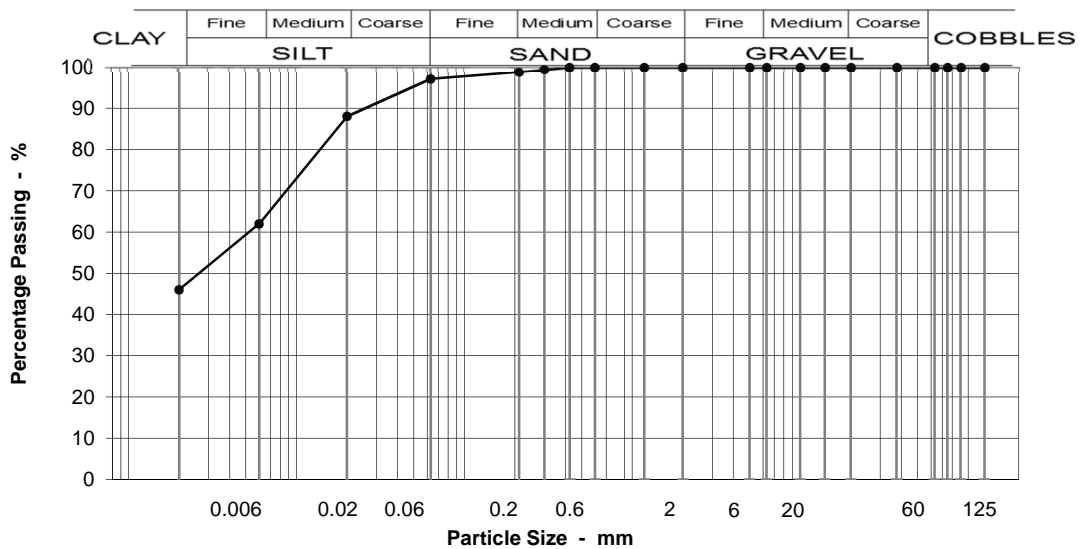
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9.1 & 9.4

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS9 @ 3.5 - 4m Specimen: 2 @ 3.5m

Location and orientation within sample not applicable

Disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100		BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	0
14	100		Medium SAND	1
10	100		Fine SAND	2
6.3	100		Silt & Clay	97
5	100			
2	100			
1.18	100			
0.600	100			
0.425	100			
0.300	99			
0.212	99			
0.063	97			
0.020	88			
0.006	62			
0.002	46			
		Moisture content %		0

Grading Analysis	
D100	0
D60	0.01
D10	0.00
Uniformity Coefficient	>10*

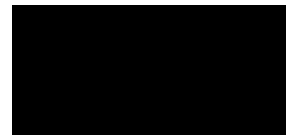
Description	
Soft to firm, laminated, grey CLAY: SILT with lenses of brown fibrous peat.	

* Uniformity coefficient extrapolated

Test Code = 613



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL201809266-610**
Our Project No. **PZ1522D1**
Your Sample Ref. **2**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **19-Oct-18**

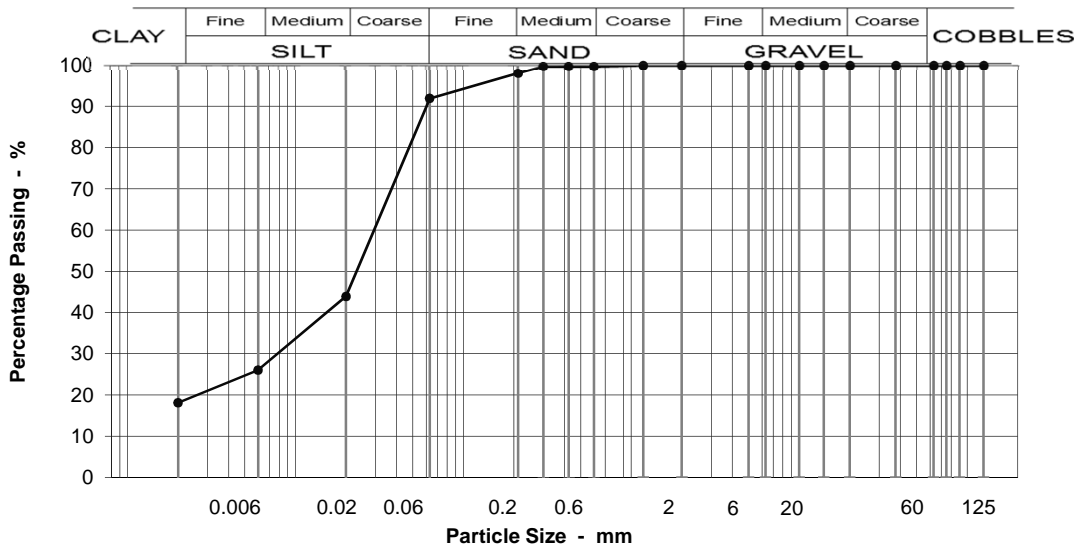
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS20 @ 1 - 2m Specimen: 1 @ 1.4m

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	100
0.600	100
0.425	100
0.300	100
0.212	98
0.063	92
0.020	44
0.006	26
0.002	18

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 2A/2B, 2A/2B, 2D.

Moisture content % 31

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	0
Medium SAND	2
Fine SAND	6
Silt & Clay	92

Grading Analysis	
D100	1
D60	0.03
D10	0.00
Uniformity Coefficient	>10*

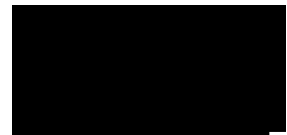
Description	
Grey slightly sandy clayey SILT.	

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL201809267-610**
Our Project No. **PZ1522D1**
Your Sample Ref. **3**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **19-Oct-18**

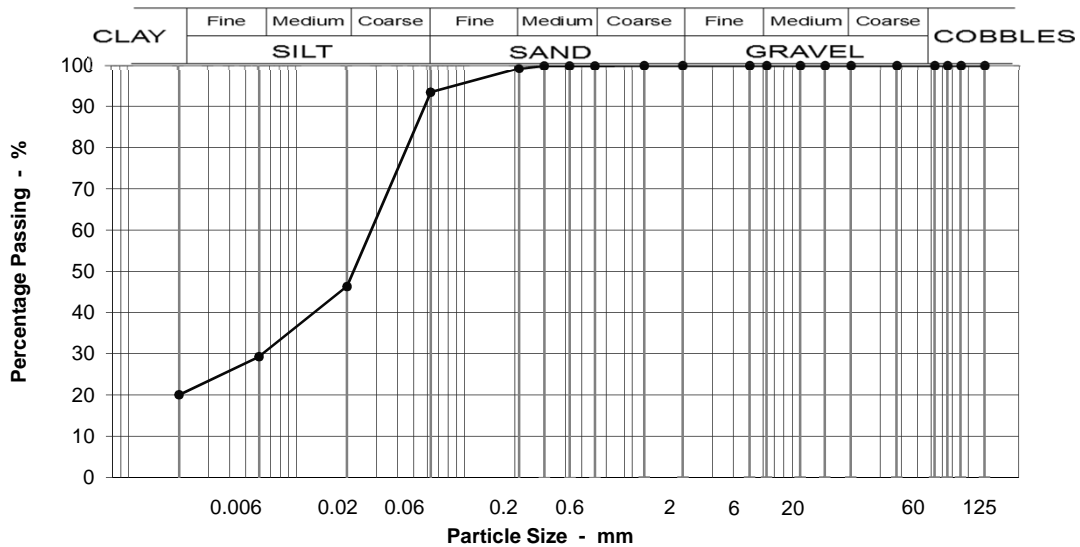
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS20 @ 2 - 3m Specimen: 4 @ 2.6m

Location and orientation within sample not applicable

Disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 2A/2B, 2A/2B, 2D.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	0
14	100		Medium SAND	1
10	100		Fine SAND	6
6.3	100		Silt & Clay	93
5	100			
2	100			
1.18	100			
0.600	100			
0.425	100			
0.300	100			
0.212	99			
0.063	93			
0.020	46			
0.006	29			
0.002	20	Moisture content %	53	

Grading Analysis	
D100	1
D60	0.03
D10	0.00
Uniformity Coefficient	>10*

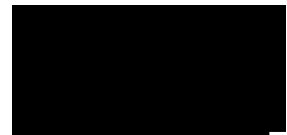
Description	
Laminated, dark grey SILT, organic very silty CLAY and light grey sandy SILT.	

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. NCCL2018092613-610
Our Project No PZ1522D1
Your Sample Ref 2
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 19-Oct-18

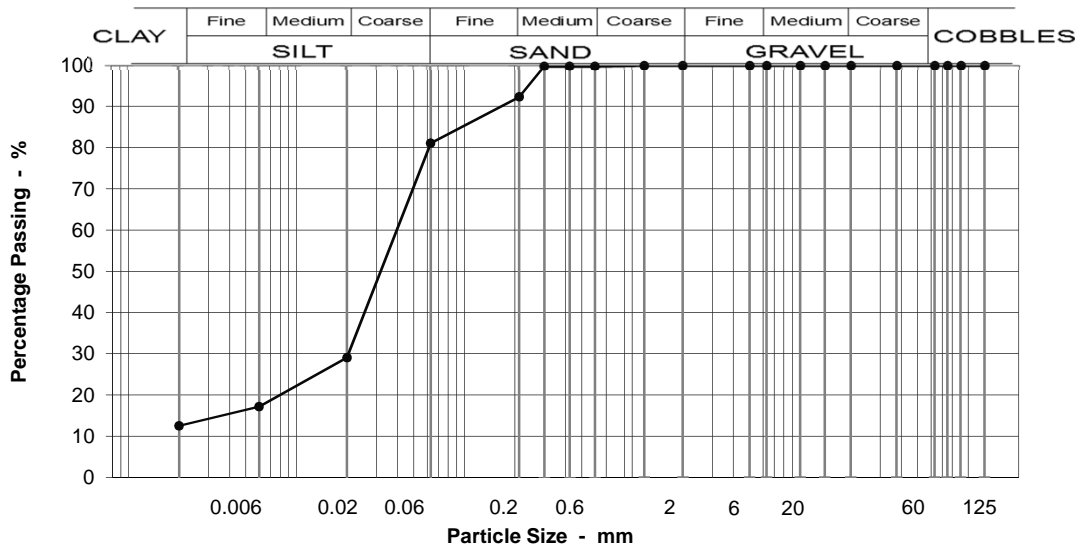
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS21 @ 1 - 2m **Specimen:** 3 @ 1.4m

Location and orientation within sample not applicable

Disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 2A/2B, 2A/2B, 2D.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	0
14	100		Medium SAND	8
10	100		Fine SAND	11
6.3	100		Silt & Clay	81
5	100			
2	100			
1.18	100			
0.600	100			
0.425	100			
0.300	100			
0.212	92			
0.063	81			
0.020	29			
0.006	17			
0.002	13			
Moisture content %		26		

Grading Analysis	
D100	1
D60	0.05
D10	0.00
Uniformity Coefficient	>10*

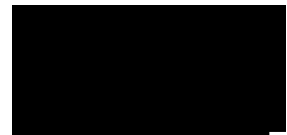
Description	
Laminated and thinly bedded light grey sandy SILT soft to firm grey and greyish brown silty CLAY, dark grey slightly organic sandy SILT and greyish brown silty fine to medium SAND.	

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
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Our reference No. **NCCL2018092614-610**
Our Project No. **PZ1522D1**
Your Sample Ref **3**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **19-Oct-18**

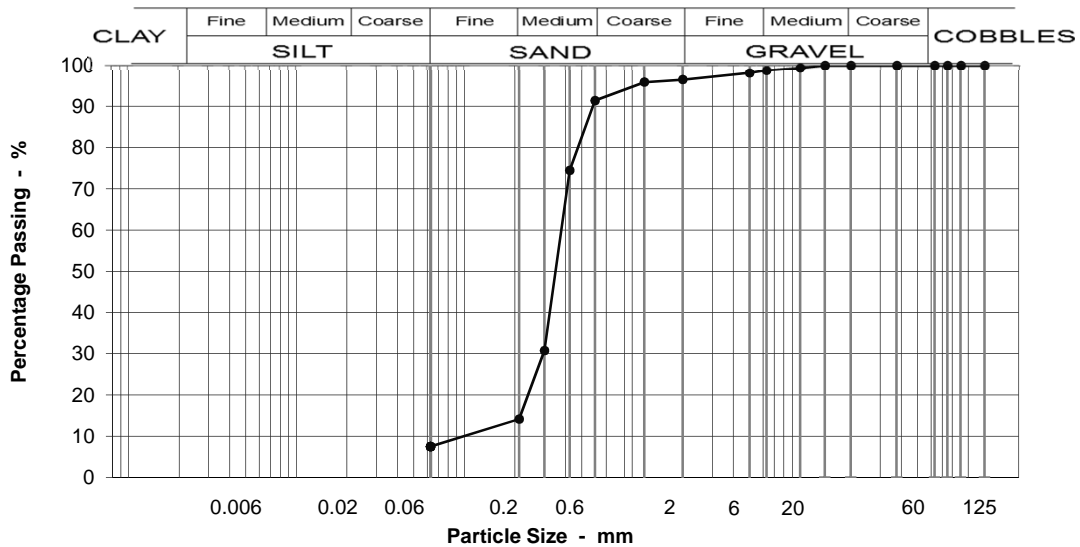
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS21 @ 2 - 3m Specimen: 1 @ 2m

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	99
6.3	99
5	98
2	96
1.18	96
0.600	91
0.425	74
0.300	31
0.212	14
0.063	8

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 19

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	1
Fine GRAVEL	2
Coarse SAND	5
Medium SAND	77
Fine SAND	7
Silt & Clay	8

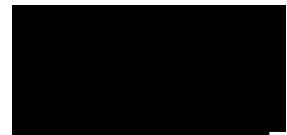
Grading Analysis	
D100	10
D60	0.38
D10	0.12
Uniformity Coefficient	3

Description	
Greyish brown medium SAND.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL2018092616-610**
Our Project No. **PZ1522D1**
Your Sample Ref **5**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **19-Oct-18**

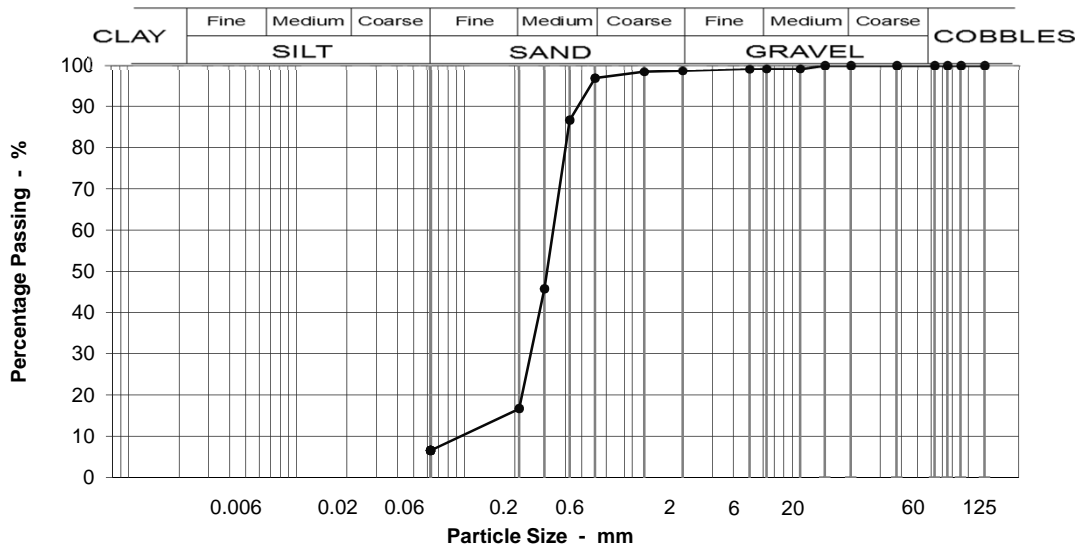
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS21 @ 4 - 5m Specimen: 2 @ 4m

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	99
6.3	99
5	99
2	99
1.18	98
0.600	97
0.425	87
0.300	46
0.212	17
0.063	7

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 14

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	1
Fine GRAVEL	1
Coarse SAND	2
Medium SAND	80
Fine SAND	10
Silt & Clay	7

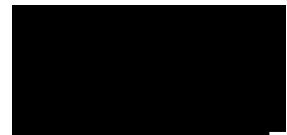
Grading Analysis	
D100	10
D60	0.34
D10	0.11
Uniformity Coefficient	3

Description	
Dark grey medium SAND.	

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL2018092620-610**
Our Project No. PZ1522D1
Your Sample Ref. 1
Your Project or Order No. PZ1522
Date Tested
Date Report Issued 19-Oct-18

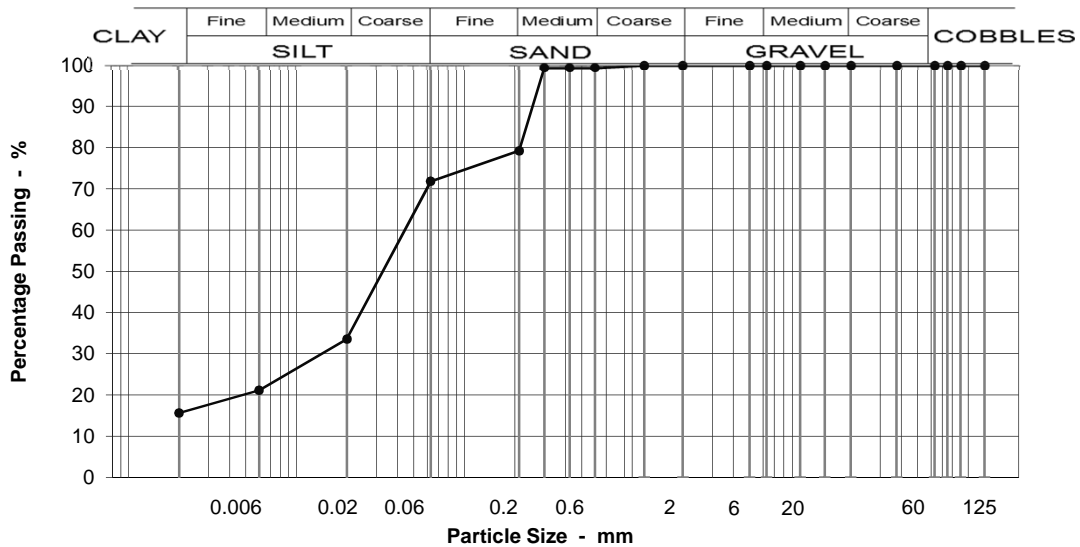
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS22 @ 0 - 1m Specimen: 3 @ 0.55m

Location and orientation within sample not applicable

Disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 2A/2B, 2A/2B.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	0
37.5	100		Fine GRAVEL	0
20	100		Coarse SAND	1
14	100		Medium SAND	20
10	100		Fine SAND	7
6.3	100		Silt & Clay	72
5	100			
2	100			
1.18	100			
0.600	99			
0.425	99			
0.300	99			
0.212	79			
0.063	72			
0.020	34			
0.006	21			
0.002	16			
Moisture content %		23		

Grading Analysis	
D100	1
D60	0.05
D10	0.00
Uniformity Coefficient	>10*

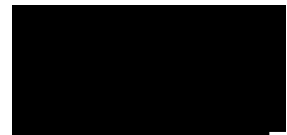
Description	
Laminated soft to firm light grey clayey SILT and dark grey slightly organic silty CLAY.	

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL2018092622-610**
Our Project No. **PZ1522D1**
Your Sample Ref **3**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **19-Oct-18**

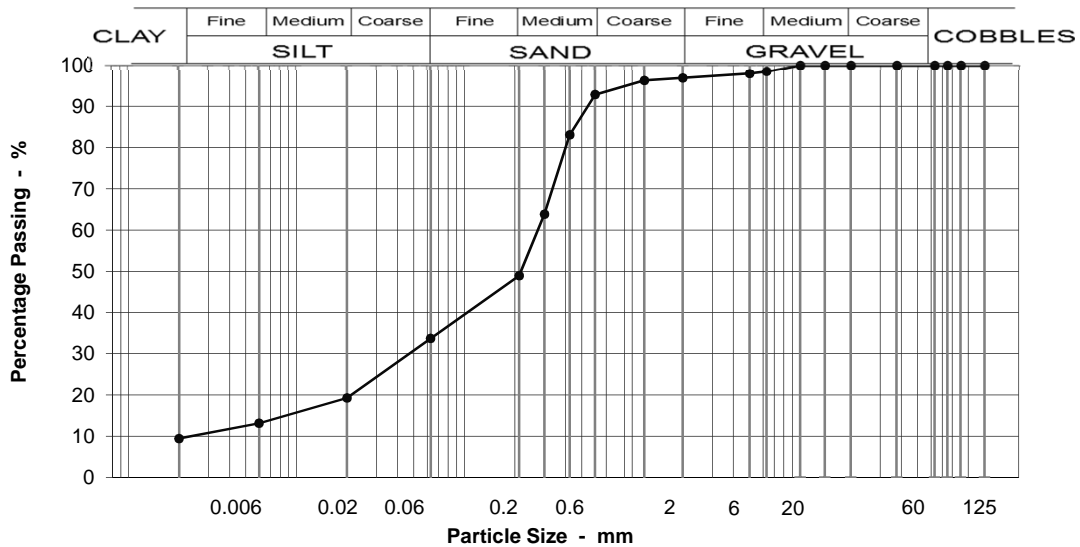
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS22 @ 2 - 3m Specimen: 2 @ 2m

Location and orientation within sample not applicable

Disturbed sample



Sieving		Specification for Highway Works Classification Table 6/2	Sample Proportions	
Particle Size mm	% Passing			
125	100	This material complies with the following material classes 2A/2B, 2A/2B.	BOULDERS	0
90	100		COBBLES	0
75	100		Coarse GRAVEL	0
63	100		Medium GRAVEL	2
37.5	100		Fine GRAVEL	2
20	100		Coarse SAND	4
14	100		Medium SAND	44
10	100		Fine SAND	15
6.3	98		Silt & Clay	34
5	98			
2	97			
1.18	96			
0.600	93			
0.425	83			
0.300	64			
0.212	49			
0.063	34			
0.020	19			
0.006	13			
0.002	9	Moisture content %	28	

Grading Analysis	
D100	6
D60	0.28
D10	0.04
Uniformity Coefficient	7*

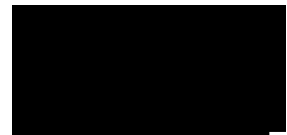
Description	
dark grey organic slightly clayey very silty fine to medium SAND.	

* Uniformity coefficient extrapolated

Test Code = 610



Simon Holden (Project Technician)



Community & Environmental Services
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our reference No. **NCCL2018092624-610**
Our Project No. **PZ1522D1**
Your Sample Ref **5**
Your Project or Order No. **PZ1522**
Date Tested
Date Report Issued **19-Oct-18**

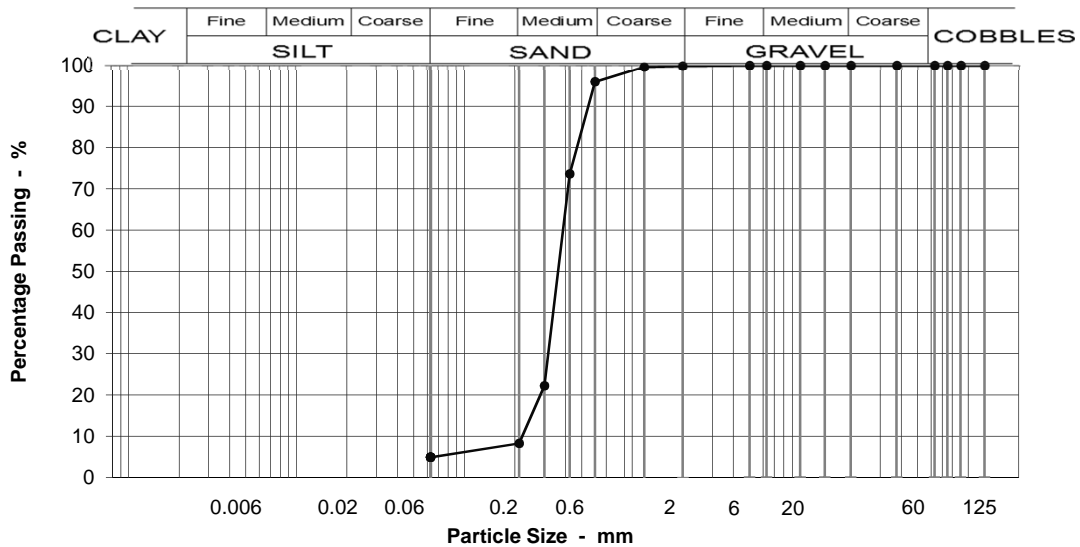
Particle Size Distribution to BS 1377 : Part 2 :1990 Section 9

Scheme: Gt Yarmouth 3rd River Crossing

Location: WS22 @ 4 - 5m Specimen: 2 @ 4.5m

Location and orientation within sample not applicable

Disturbed sample



Sieving	
Particle Size mm	% Passing
125	100
90	100
75	100
63	100
37.5	100
20	100
14	100
10	100
6.3	100
5	100
2	100
1.18	100
0.600	96
0.425	74
0.300	22
0.212	8
0.063	5

Specification for Highway Works Classification
Table 6/2

This material complies with the following material classes 1B, 6E/6R, 6M.

Moisture content % 18

Sample Proportions	
BOULDERS	0
COBBLES	0
Coarse GRAVEL	0
Medium GRAVEL	0
Fine GRAVEL	0
Coarse SAND	4
Medium SAND	88
Fine SAND	3
Silt & Clay	5

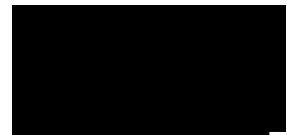
Grading Analysis	
D100	2
D60	0.39
D10	0.22
Uniformity Coefficient	2

Description	
Brownish grey medium SAND.	

Test Code = 610



Simon Holden (Project Technician)



Norfolk Partnership Laboratory

Community & Environmental Services

County Hall
 Martineau Lane
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 Norfolk
 NR1 2DH

Email: civil.laboratory@norfolk.gov.uk

Our Project No PZ1522D1
Our Report and sample No GTS1171128003-642
Your Sample Ref B3
Your Project or Order No PZ1522
Date Report Issued 02-Mar-18
Date Tested 27-Feb-18

Determination of the California Bearing Ratio to BS 1377 : PART 4 : 1990

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH4 @ 0.7m	Specimen: 1	
Date sampled	28-Nov-17	Date received	
Sample type	Bulk Disturbed	Sample Mass	8.5kg

If a sample certificate was provided it is available for inspection.
 The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	Brown slightly gravelly fine to medium SAND. Gravel is fine to coarse sub-angular to rounded flint, quartz & concrete. MADE GROUND.		

Supplier	Not applicable	Source	Ex site
-----------------	----------------	---------------	---------

Location	Not applicable		
Orientation	Not applicable		
Method of Division	Test Specimen		
Preparation Method	Quartering		
Condition	Sieving, Natural Moisture Content		
	Unsoaked		
Retained 37.5mm	%	0	
Retained 20mm	%	12.9	
Number of layers		3	CBR Value Top % 29
Blows per layer		62 Blows	CBR Value Bottom % 19
BS Method	3.4, 2.5kg Rammer		
Bulk Density	Mg/m ³	1.83	Moisture Content Top % 4.0
Dry Density	Mg/m ³	1.76	Moisture Cont. Bottom % 2.4
Initial Moisture Content	%	2.1	Moisture Content Method Oven dried @ 105-110°C

Remarks

Test Code = 642



Scott Viner (Project Technician)



Norfolk Partnership Laboratory

Community & Environmental Services

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 Norfolk
 NR1 2DH

 Email: civil.laboratory@norfolk.gov.uk
Our Project No PZ1522D1
Our Report and sample No GTS2171205023-642
Your Sample Ref B2
Your Project or Order No PZ1522
Date Report Issued
Date Tested 21-Mar-18

Page 1 of 1

Determination of the California Bearing Ratio to BS 1377 : PART 4 : 1990

Scheme	Gt Yarmouth 3rd River Crossing		
Location	WS1 @ 0.3m		
Date sampled	05-Dec-17	Date received	06-Dec-17
Sample type	Bulk Disturbed	Sample Mass	12.543kg
If a sample certificate was provided it is available for inspection. The accuracy of information provided by third parties cannot be guaranteed.			
Material	Soil		
Description	Dark brown, gravelly fine and medium SAND. Gravel is fine, medium and coarse, sub-angular to sub-rounded flint. Numerous roots.		
Supplier	Not applicable	Source	Ex site

Location	Test Specimen		
Orientation	Not applicable		
Method of Division	Preparation Details		
Preparation Method	Quartering		
Condition	Sieving, Natural Moisture Content		
	Unsoaked		
Retained 37.5mm	%	5	
Retained 20mm	%	8.2	
Number of layers		3	CBR Value Top % 19
Blows per layer		N/A	CBR Value Bottom % 29
BS Method	3.7, Vib.Hammer		
Bulk Density	Mg/m ³	2.06	Moisture Content Top % 10
Dry Density	Mg/m ³	1.87	Moisture Cont. Bottom % 11
Initial Moisture Content	%	12	Moisture Content Method Oven dried @ 105-110°C

Remarks

Test Code = 642



Peter Hardiment (Operations Manager)





Norfolk Partnership Laboratory

Community & Environmental Services

County Hall
Martineau Lane
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NR1 2DH

Email: civil.laboratory@norfolk.gov.uk

Our Project No PZ1522D1
Our Report and sample No GTS2171205014-642
Your Sample Ref B2
Your Project or Order No PZ1522
Date Report Issued
Date Tested 21-Mar-18

Page 1 of 1

Determination of the California Bearing Ratio to BS 1377 : PART 4 : 1990

Scheme	Gt Yarmouth 3rd River Crossing		
Location	WS4 @ 0.4m		
Date sampled	05-Dec-17	Date received	06-Dec-17
Sample type	Bulk Disturbed	Sample Mass	13.4467kg

If a sample certificate was provided it is available for inspection.

The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	MADE GROUND - comprising brown, very gravelly, fine and medium sand. Gravel is fine, medium and coarse, sub-rounded to rounded, flint, concrete and quartz.		
Supplier	Not applicable	Source	Ex site

Location	Not applicable		
Orientation	Not applicable		
Method of Division	Test Specimen		
Preparation Method	Quartering		
Condition	Sieving, Natural Moisture Content		
	Unsoaked		
Retained 37.5mm	%	7	
Retained 20mm	%	13.7	
Number of layers		3	CBR Value Top % 18
Blows per layer		N/A	CBR Value Bottom % 18
BS Method		3.7, Vib.Hammer	Average CBR Value % 18
Bulk Density	Mg/m ³	1.99	Moisture Content Top % 8.4
Dry Density	Mg/m ³	1.83	Moisture Cont. Bottom % 8.4
Initial Moisture Content	%	8.9	Moisture Content Method Oven dried @ 105-110°C

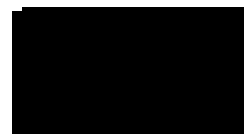
Remarks

Test Code = 642



0920

Peter Hardiment (Operations Manager)





Norfolk Partnership Laboratory

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NR1 2DH

Email: civil.laboratory@norfolk.gov.uk

Our Project No PZ1522D1
Our Report and sample No GTS2171206016-642
Your Sample Ref B1
Your Project or Order No PZ1522
Date Report Issued
Date Tested 21-Mar-18

Page 1 of 1

Determination of the California Bearing Ratio to BS 1377 : PART 4 : 1990

Scheme	Gt Yarmouth 3rd River Crossing		
Location	WS7 @ 0.1m		
Date sampled	06-Dec-17	Date received	07-Dec-17
Sample type	Bulk Disturbed	Sample Mass	16.84kg

If a sample certificate was provided it is available for inspection.

The accuracy of information provided by third parties cannot be guaranteed.

Material	Soil		
Description	MADE GROUND - comprising brown, slightly silty, very gravelly, fine and medium sand. Gravel is angular to sub-rounded, flint and quartz. Some roots.		
Supplier	Not applicable	Source	Ex site

Location	Not applicable		
Orientation	Not applicable		
Method of Division	Test Specimen		
Preparation Method	Quartering		
Condition	Sieving, Natural Moisture Content		
	Unsoaked		
Retained 37.5mm	%	6	
Retained 20mm	%	12.8	
Number of layers		3	CBR Value Top % <1
Blows per layer		N/A	CBR Value Bottom % <1
BS Method	3.7, Vib.Hammer		
Bulk Density	Mg/m ³	2.07	Moisture Content Top % 16
Dry Density	Mg/m ³	1.79	Moisture Cont. Bottom % 16
Initial Moisture Content	%	16	Moisture Content Method Oven dried @ 105-110°C

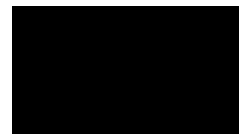
Remarks

Test Code = 642



0920

Peter Hardiment (Operations Manager)





Norfolk Partnership Laboratory

Email: civil.laboratory@norfolk.gov.uk

Community & Environmental Services

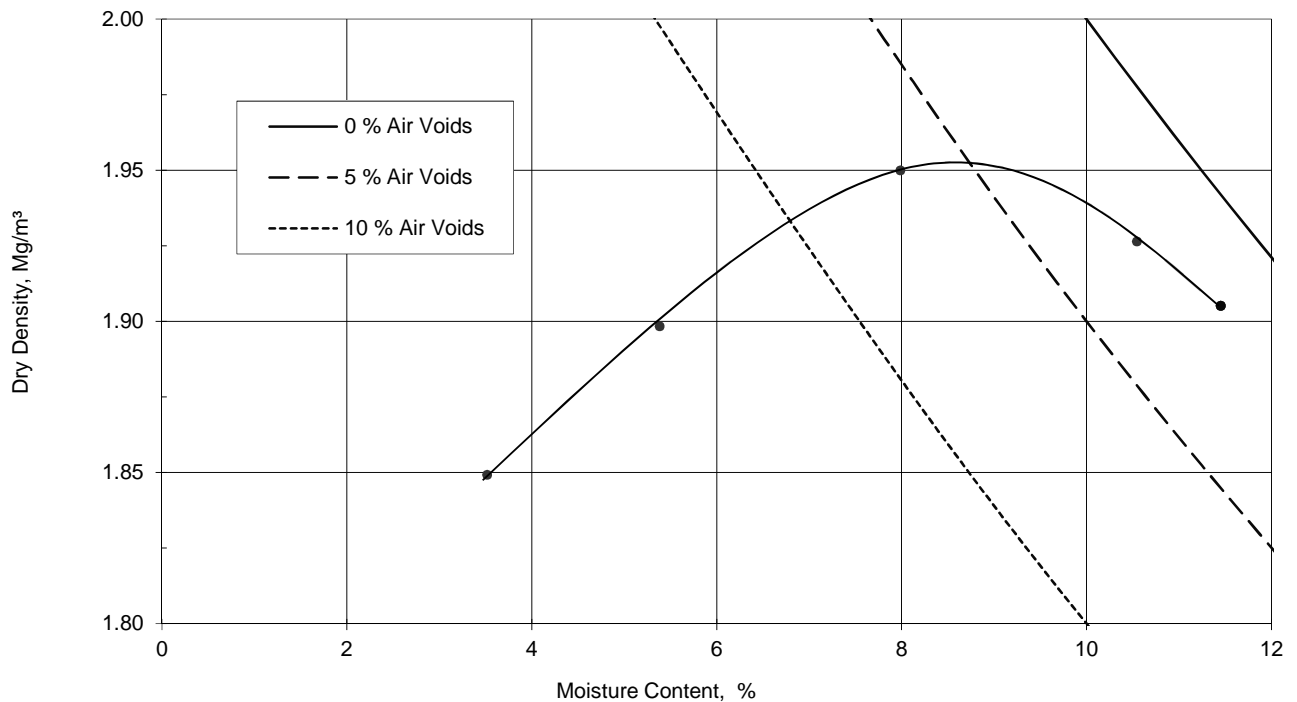
County Hall
Martineau Lane
Norwich
Norfolk
NR1 2DH

Our Project No PZ1522D1
Our Report and sample No. GTS1171128003-640
Your Sample Ref B3
Your Project or Order No PZ1522
Date Report Issued 14-Mar-18

Page 1 of 1

Determination of Dry Density/Moisture Content Relationship to BS 1377 : Part 4 : 1990 : Section 3

Scheme	Gt Yarmouth 3rd River Crossing		
Location	BH4	Depth	0.7 - 1m
Date received	28-Nov-17	Date tested	15-Feb-18
Sample type	Bulk Disturbed	Sample Mass	18kg
If a Sample Certificate was provided it is available for inspection. The accuracy of information provided by third parties cannot be guaranteed.			
Description	MADE GROUND - comprising greyish brown slightly gravelly fine to medium sand. Gravel is fine to coarse sub-angular to rounded flint, quartz & concrete.		
Supplier	Not applicable	Source	Ex site



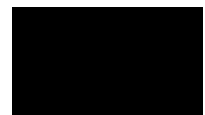
Method of division	Quartering	Retained on 37.5 mm Sieve	%	3.5
Preparation	Natural	Retained on 20.0 mm Sieve	%	14.5
Test Method	3.4 2.5kg	Particle Density	Assumed	Mg/m³ 2.50
Mould Type	CBR	Maximum Dry Density	Mg/m³	1.95
Samples Used	Seperate	Optimum Moisture Content	%	8.5

Remarks



0920

Peter Hardiment (Operations Manager)



Test Code = 640

DETERMINATION OF ONE DIMENSIONAL CONSOLIDATION PROPERTIES

BS1377:Part 5:1990, clause 3

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH1
Sample Description:	Grey brown and grey CLAY	Sample Depth (m):	4.00
		Sample Reference:	P17

Sample condition: Undisturbed
 Depth of specimen: 4.10 m

Swelling Pressure: 0.4 kPa
 Note: Initial seating load of 0.4 kPa sufficient to prevent swelling

Initial Conditions:

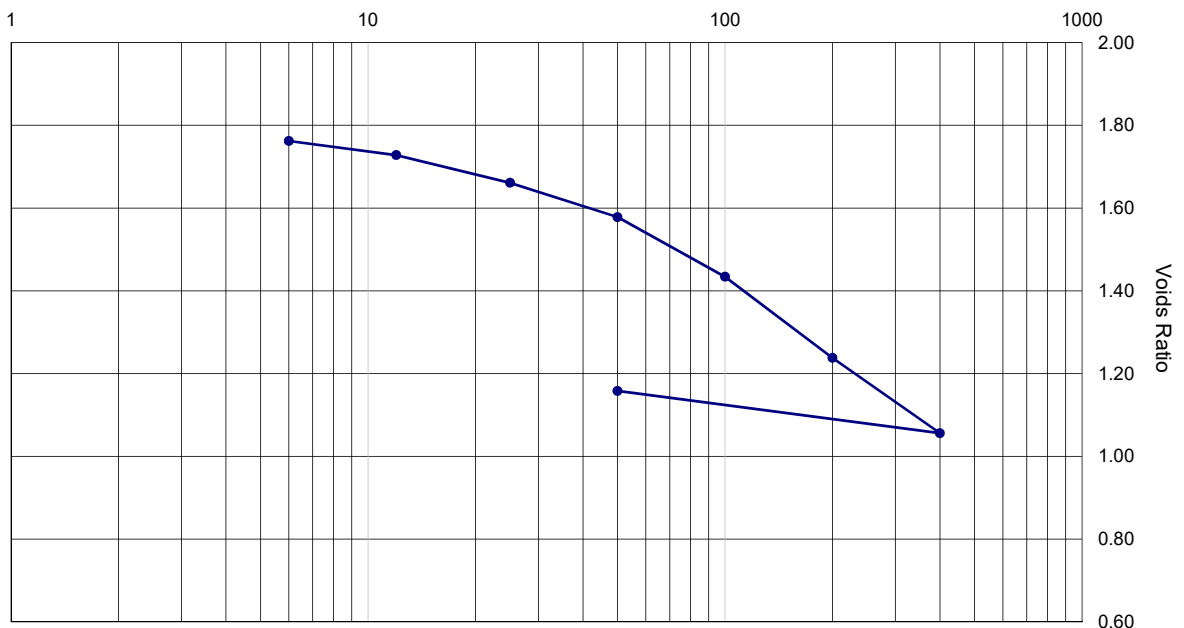
Moisture Content: 68 %
 Voids Ratio: 1.813
 Diameter: 74.69 mm
 Height: 20.04 mm
 Bulk Density: 1.62 Mg/m³
 Dry Density: 0.96 Mg/m³

Final Conditions

Moisture Content: 47 %
 Voids Ratio: 1.158
 Initial Degree of Saturation: 100 %
 Particle Density (Assumed): 2.70 Mg/m³
 Laboratory Temperature: 16.9 °C

Pressure Range kPa	Time Fitting Method	Mv (m ² /MN)	Voids Ratio	Cv M ² /year
0 - 6	t90	3.0	1.762	0.91
6 - 12	t90	2.1	1.728	0.41
12 - 25	t90	1.9	1.661	0.40
25 - 50	t90	1.2	1.578	0.38
50 - 100	t90	1.1	1.434	0.28
100 - 200	t90	0.81	1.238	0.32
200 - 400	t90	0.4	1.056	0.32
400 - 50	t90	0.14	1.158	

Log of Pressure (kPa)



Remarks

Swelling pressure determined in accordance with BS 1377 Part 5 Clause 4.1a
 Determination of swelling pressure not covered by UKAS accreditation.

Approved	Date	Sheet No.:
MW	31/03/2018	1 of 1

DETERMINATION OF ONE DIMENSIONAL CONSOLIDATION PROPERTIES

BS1377:Part 5:1990, clause 3

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH7
Sample Description:	Dark brown pseudo fibrous PEAT with pockets of grey clay	Sample Depth (m):	2.00
		Sample Reference:	U9

Sample condition: Undisturbed
 Depth of specimen: 2.10 m

Swelling Pressure: 0.4 kPa
 Note: Initial seating load of 0.4 kPa sufficient to prevent swelling

Initial Conditions:

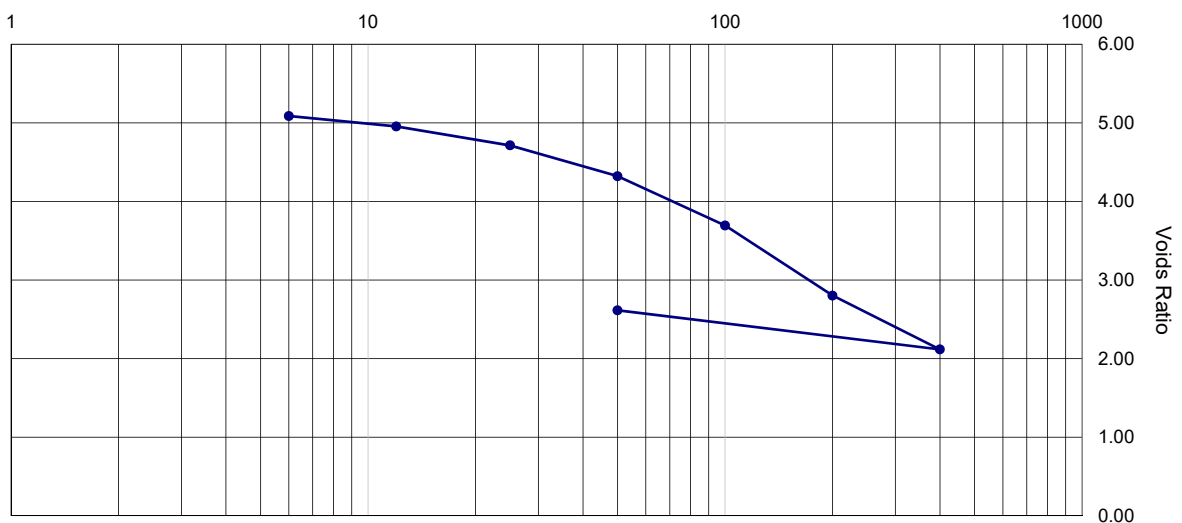
Moisture Content: 300 %
 Voids Ratio: 5.25
 Diameter: 74.57 mm
 Height: 20.17 mm
 Bulk Density: 1.11 Mg/m³
 Dry Density: 0.28 Mg/m³

Final Conditions

Moisture Content: 170 %
 Voids Ratio: 2.614
 Initial Degree of Saturation: 100 %
 Particle Density (Assumed): 1.75 Mg/m³
 Laboratory Temperature: 16.5 °C

Pressure Range kPa	Time Fitting Method	Mv (m ² /MN)	Voids Ratio	Cv M ² /year
0 - 6	t90	4.3	5.087	23
6 - 12	t90	3.6	4.954	6.6
12 - 25	t90	3.1	4.713	3.8
25 - 50	t90	2.7	4.321	2.3
50 - 100	t90	2.4	3.694	0.78
100 - 200	t90	1.9	2.801	0.29
200 - 400	t90	0.9	2.116	0.12
400 - 50	t90	0.46	2.614	

Log of Pressure (kPa)



Remarks

Swelling pressure determined in accordance with BS 1377 Part 5 Clause 4.1a
 Determination of swelling pressure not covered by UKAS accreditation.

Approved

Date

Sheet No.:

MW

31/03/2018

1 of 1

DETERMINATION OF ONE DIMENSIONAL CONSOLIDATION PROPERTIES

BS1377:Part 5:1990, clause 3 and 4.1a

Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Dark grey and grey brown silty CLAY	Sample Depth (m):	3.00
		Sample Reference:	UT11

Sample condition: Undisturbed
 Depth of specimen: 3.08 m

Swelling Pressure: 0.4 kPa
 Note: Initial seating load of 0.4 kPa sufficient to prevent swelling

Initial Conditions:

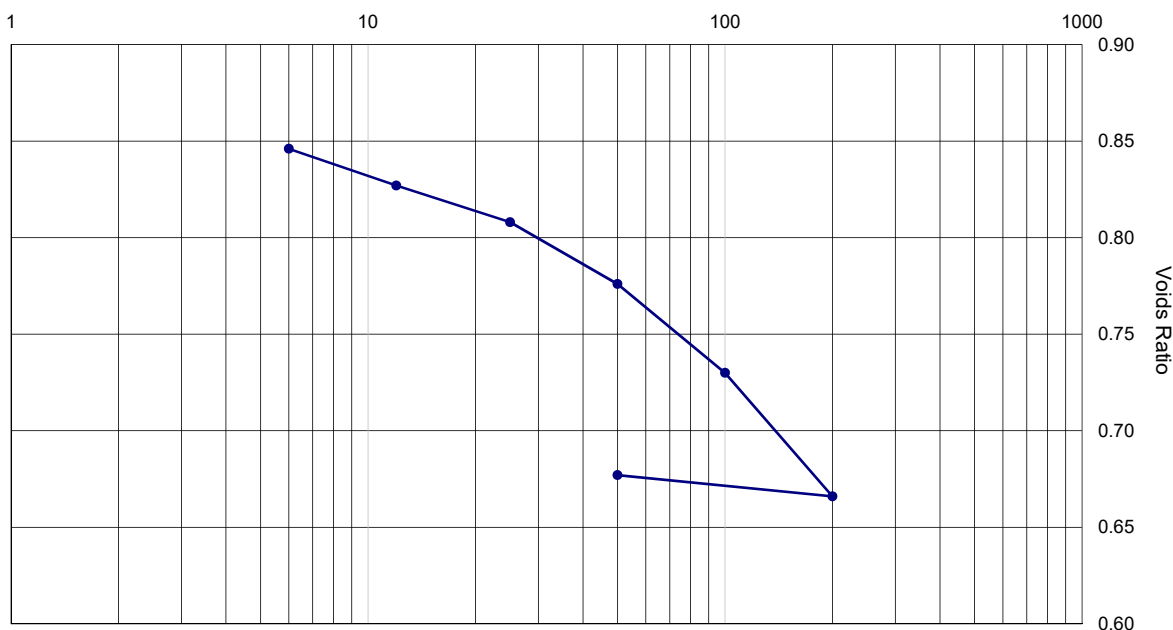
Moisture Content: 35 %
 Voids Ratio: 0.879
 Diameter: 74.49 mm
 Height: 20.04 mm
 Bulk Density: 1.90 Mg/m³
 Dry Density: 1.41 Mg/m³

Final Conditions

Moisture Content: 29 %
 Voids Ratio: 0.677
 Initial Degree of Saturation: 100 %
 Particle Density (Assumed): 2.65 Mg/m³
 Laboratory Temperature: 18.8 °C

Pressure Range kPa	Time Fitting Method	Mv (m ² /MN)	Voids Ratio	Cv M ² /year
0 - 6	t90	2.9	0.846	3.6
6 - 12	t90	1.7	0.827	2.3
12 - 25	t90	0.8	0.808	5.2
25 - 50	t90	0.72	0.776	5.9
50 - 100	t90	0.52	0.730	9.4
100 - 200	t90	0.37	0.666	10
200 - 50	t90	0.044	0.677	

Log of Pressure (kPa)



Remarks
 Swelling pressure determined in accordance with BS 1377 Part 5 Clause 4.1a
 Determination of swelling pressure not covered by UKAS accreditation.

Approved	Date	Sheet No.:
MW	25/04/2018	1 of 1

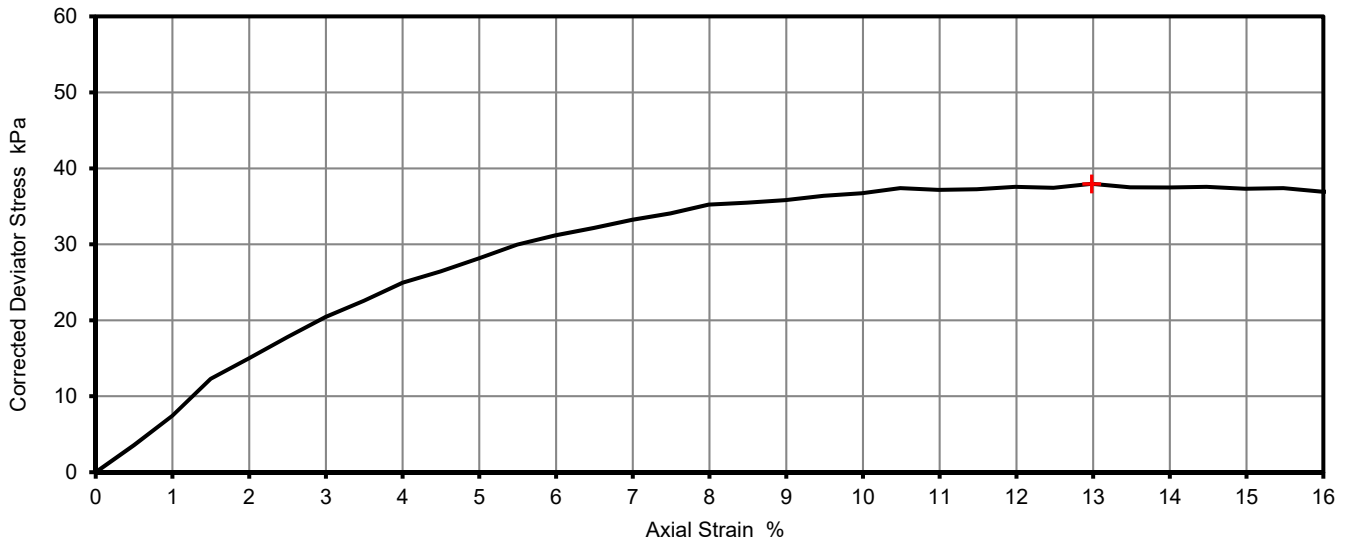
DETERMINATION OF UNDRAINED SHEAR STRENGTH - DEFINITIVE

BS1377 : Part 7 : 1990, Clause 8, Single Specimen

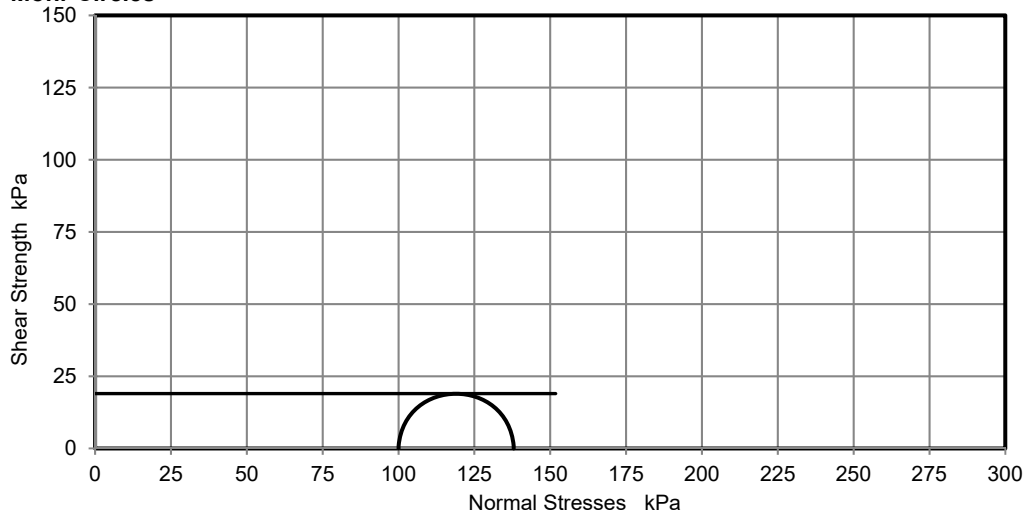
Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH1
Sample Description:	Very low strength dark grey CLAY with pockets of peat and plant remains	Sample Depth (m)	4.00
		Sample Reference	P17

Test Number	1		
Length	200.3	mm	
Diameter	101.2	mm	
Bulk Density	1.63	Mg/m ³	
Moisture Content	71.7	%	
Dry Density	0.95	Mg/m ³	
Rate of Strain	1.2	%/min	
Cell Pressure	100	kPa	
At failure	13.0	%	
Axial Strain	38	kPa	
Deviator Stress, (σ ₁ - σ ₃) _f	19	kPa	½(σ ₁ - σ ₃) _f
Undrained Shear Strength, c _u	Plastic		
Mode of Failure			

Deviator Stress v Axial Strain



Mohr Circles



Deviator stress corrected for area change and membrane effects

Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

Remarks	Approved	Date	Sheet No.:
	MW	31/03/2018	1 of 1

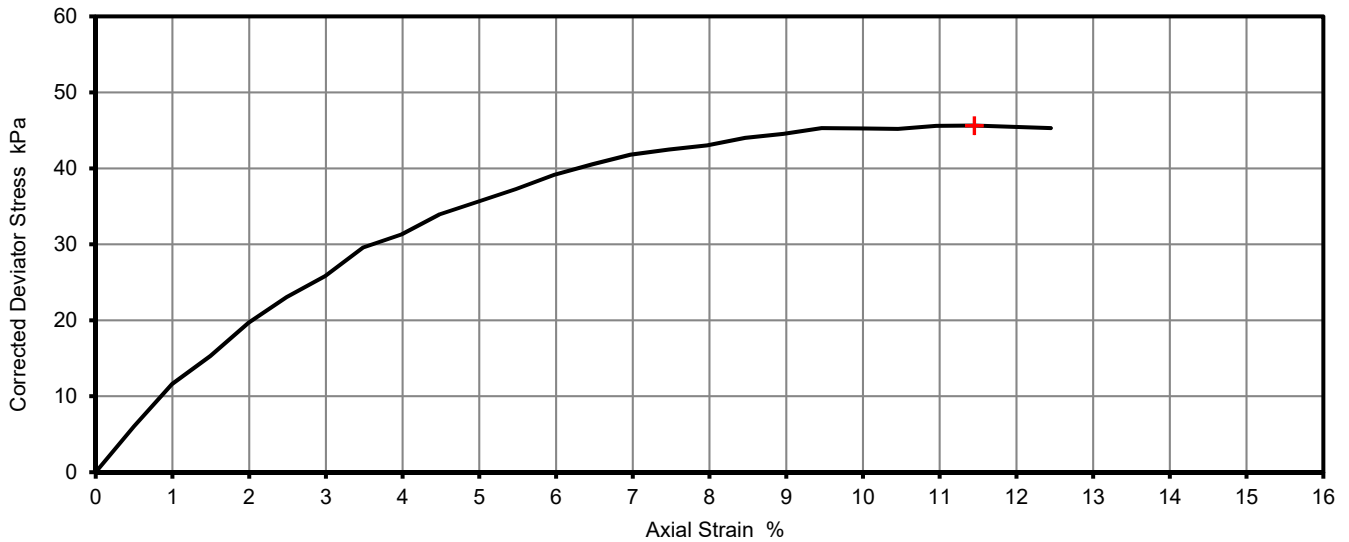
DETERMINATION OF UNDRAINED SHEAR STRENGTH - DEFINITIVE

BS1377 : Part 7 : 1990, Clause 8, Single Specimen

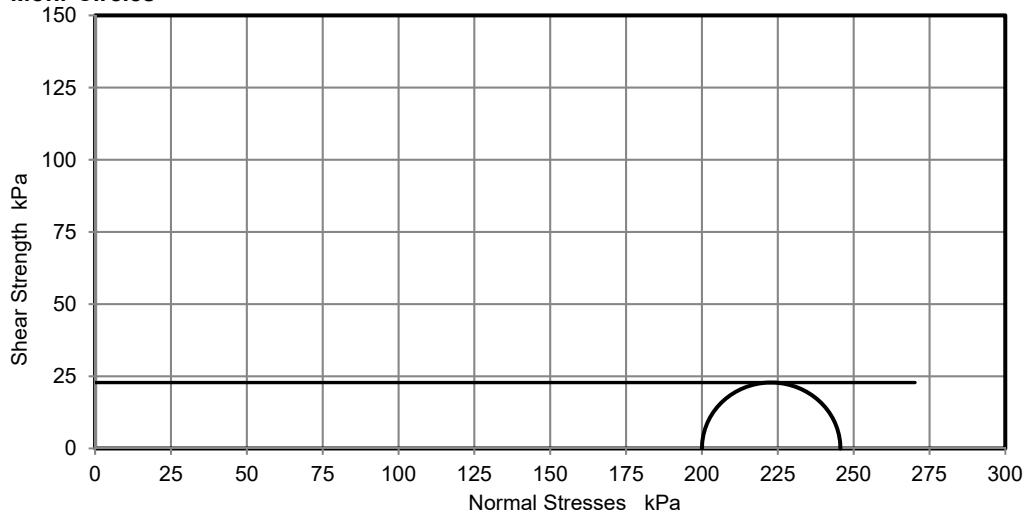
Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH2
Sample Description:	Low strength grey and dark grey CLAY with pockets of peat and plant remains	Sample Depth (m)	5.50
		Sample Reference	P18

Test Number	1		
Length	200.8	mm	
Diameter	101.3	mm	
Bulk Density	1.55	Mg/m ³	
Moisture Content	72.3	%	
Dry Density	0.90	Mg/m ³	
Rate of Strain	1.2	%/min	
Cell Pressure	200	kPa	
At failure	11.5	%	
Axial Strain	46	kPa	
Deviator Stress, ($\sigma_1 - \sigma_3$) _f	23	kPa	$\frac{1}{2}(\sigma_1 - \sigma_3)$ f
Undrained Shear Strength, cu	Plastic		
Mode of Failure			

Deviator Stress v Axial Strain



Mohr Circles



Deviator stress corrected for area change and membrane effects

Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

Remarks	Approved	Date	Sheet No.:
	MW	31/03/2018	1 of 1

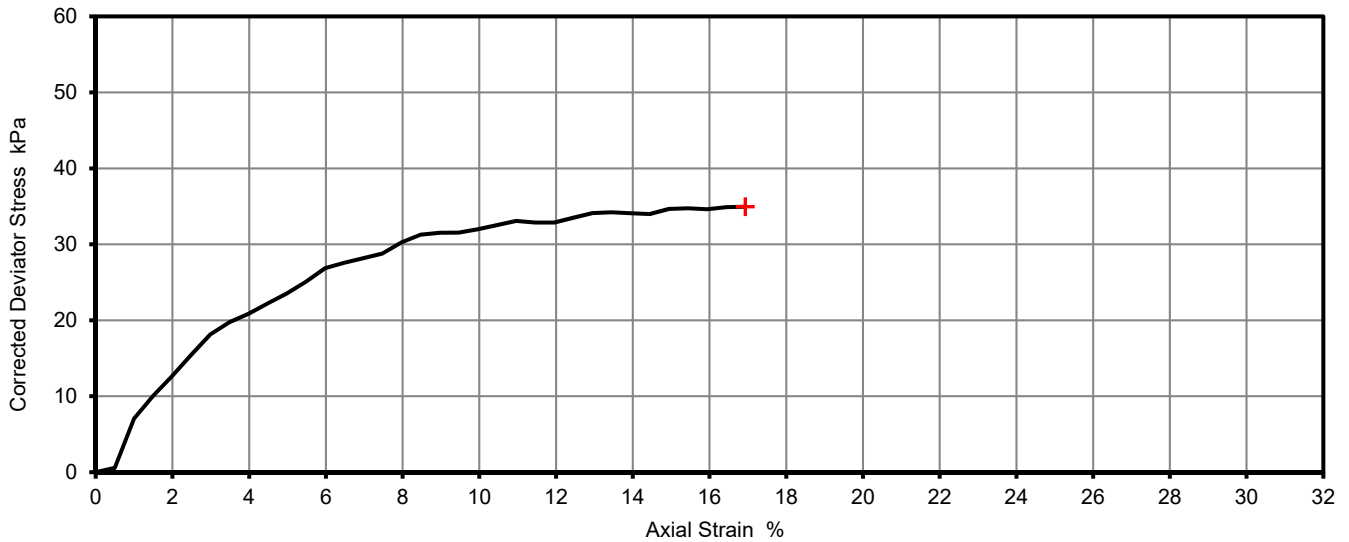
DETERMINATION OF UNDRAINED SHEAR STRENGTH - DEFINITIVE

BS1377 : Part 7 : 1990, Clause 8, Single Specimen

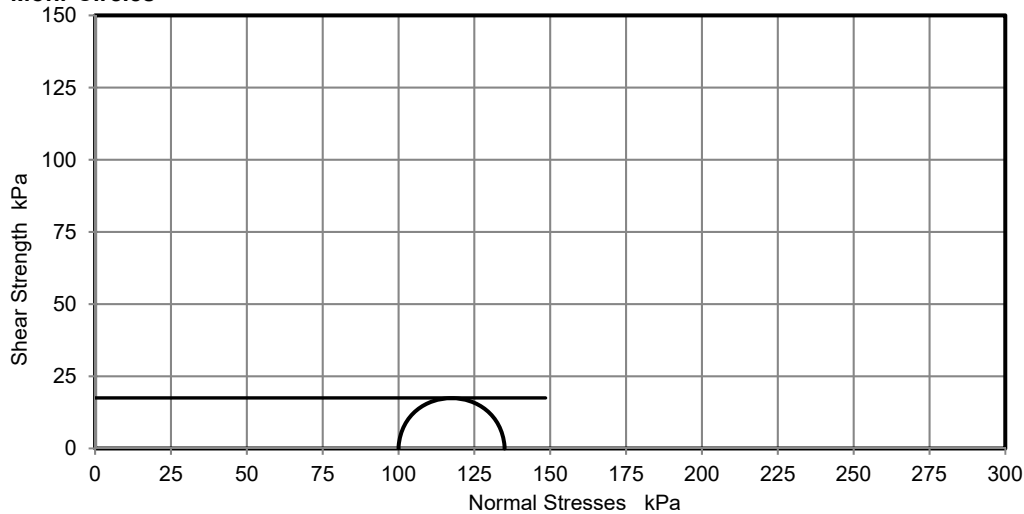
Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH5
Sample Description:	Very low strength dark brown and grey brown pseudo fibrous PEAT with occasional layers of plant remains and fine to medium sand	Sample Depth (m)	3.00
		Sample Reference	U10

Test Number	1		
Length	200.8	mm	
Diameter	103.2	mm	
Bulk Density	1.14	Mg/m ³	
Moisture Content	103.0	%	
Dry Density	0.56	Mg/m ³	
Rate of Strain	1.2	%/min	
Cell Pressure	100	kPa	
At failure	16.9	%	
Axial Strain	35	kPa	
Deviator Stress, ($\sigma_1 - \sigma_3$) _f	17	kPa	$\frac{1}{2}(\sigma_1 - \sigma_3)$ f
Undrained Shear Strength, c _u	Plastic		
Mode of Failure			

Deviator Stress v Axial Strain



Mohr Circles



Deviator stress corrected for area change and membrane effects

Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

Remarks	Approved	Date	Sheet No.:
	MW	31/03/2018	1 of 1

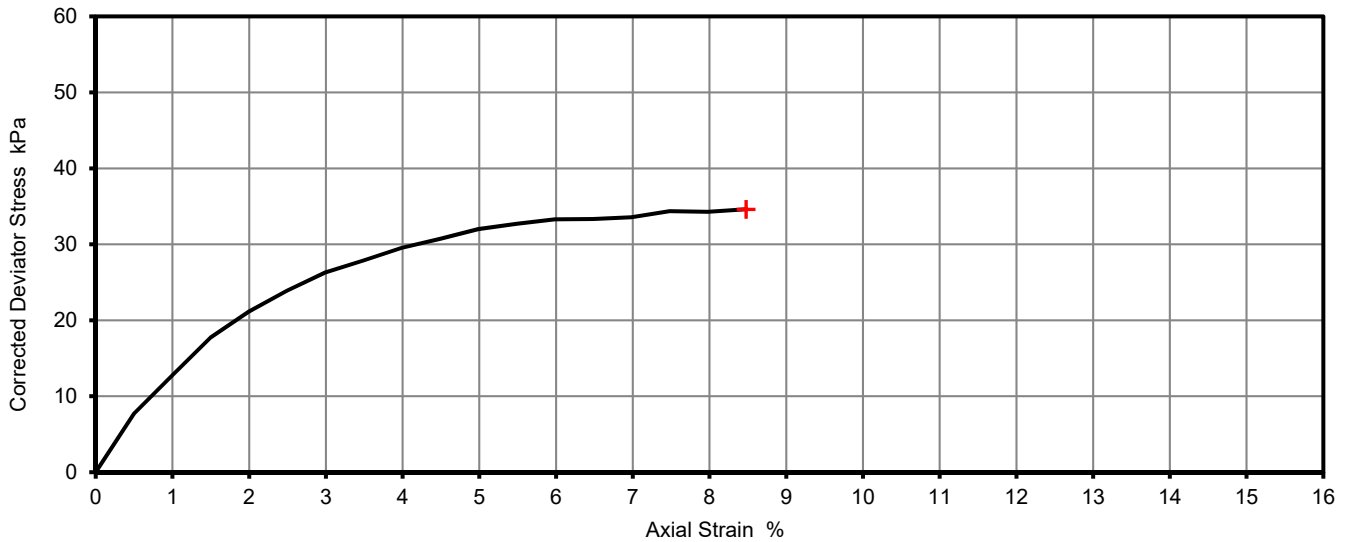
DETERMINATION OF UNDRAINED SHEAR STRENGTH - DEFINITIVE

BS1377 : Part 7 : 1990, Clause 8, Single Specimen

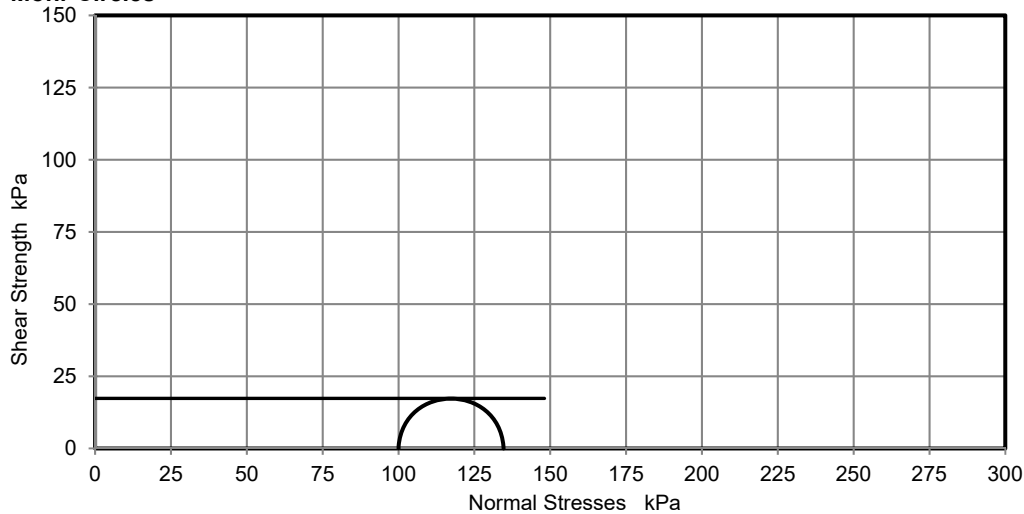
Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH7
Sample Description:	Very low strength dark brown pseudo fibrous PEAT with layers of plant remains	Sample Depth (m)	2.00
		Sample Reference	U9

Test Number	1		
Length	200.5	mm	
Diameter	103.1	mm	
Bulk Density	1.03	Mg/m ³	
Moisture Content	348.3	%	
Dry Density	0.23	Mg/m ³	
Rate of Strain	1.2	%/min	
Cell Pressure	100	kPa	
At failure	8.5	%	
Axial Strain	35	kPa	
Deviator Stress, ($\sigma_1 - \sigma_3$) _f	17	kPa	$\frac{1}{2}(\sigma_1 - \sigma_3)$ _f
Undrained Shear Strength, c_u	Compound		
Mode of Failure			

Deviator Stress v Axial Strain



Mohr Circles



Deviator stress corrected for area change and membrane effects

Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

Remarks	Approved	Date	Sheet No.:
	MW	31/03/2018	1 of 1



SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH THIRD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH05A
Sample Ref	76
Depth (m)	30.00-30.45
Sample Type	UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	174.0		
Diameter	mm	103.1		
Moisture Content	%	25		
Bulk Density	Mg/m ³	2.00		
Dry Density	Mg/m ³	1.60		

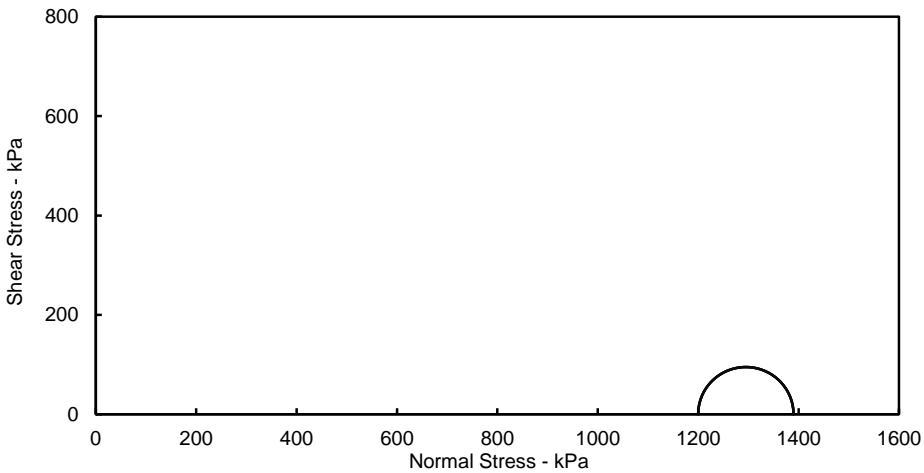
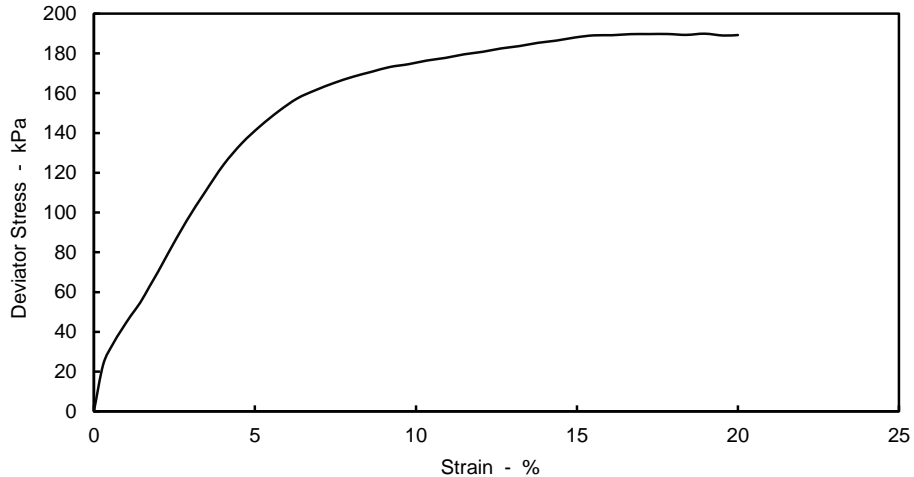
Comments
Undisturbed specimen taken 20mm below top of tube


Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	1.07		
Rate of Axial Displacement	%/min	2.33		
Cell Pressure	kPa	1200		
Strain at Failure	%	19.0		
Maximum Deviator Stress	kPa	190		
Shear Strength	kPa	95		
Mode of Failure			Compound	

Shear Strength Parameters	
C	kPa
Phi	°

Non Engineering Description	Stiff intact grey slightly sandy CLAY with occasional pockets and layers of sand.
-----------------------------	---



Originator	Checked & Approved
DM	 30/04/2018

UNCONSOLIDATED UNDRAINED SINGLE STAGE TRIAXIAL COMPRESSION

BS 1377 : Part 7 : 1990 Clause 8





SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH THIRD RIVER CROSSING

Contract No PZ1522D1

Client Norfolk County Council

Hole BH05A


Engineer Norfolk Partnership Laboratory

Sample Ref 76

Depth (m) 30.00-30.45

Sample Type UT



Originator	Checked & Approved
DM	 30/04/2018

Please note that these photographs are intended to show the failure mode, and do not necessarily show accurately the colouration of the soil.



Sheet 2 of 2



SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH THIRD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH05A
Sample Ref	76
Depth (m)	30.00-30.45
Sample Type	UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	154.1		
Diameter	mm	102.2		
Moisture Content	%	23		
Bulk Density	Mg/m ³	2.02		
Dry Density	Mg/m ³	1.64		

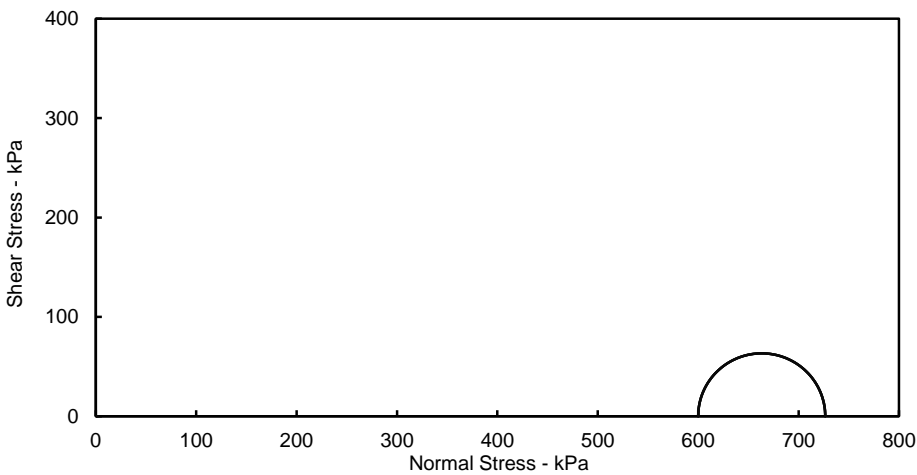
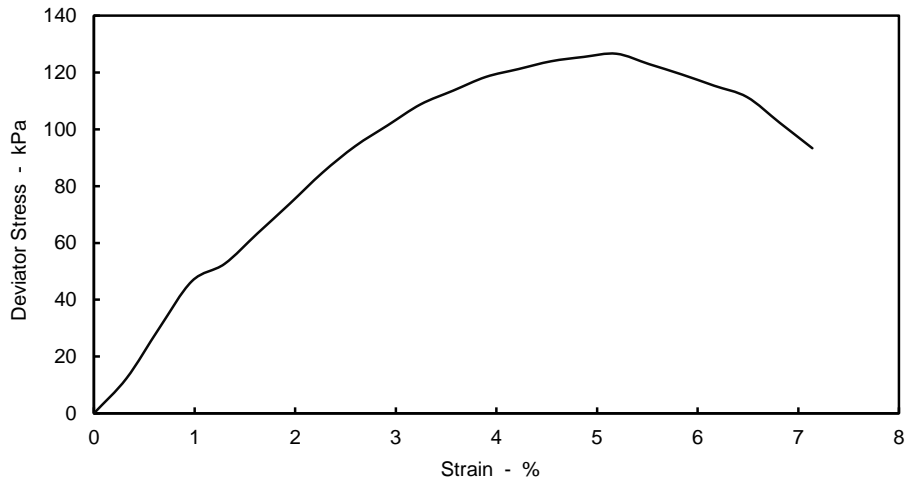
Comments
Undisturbed specimen taken 200mm below top of tube

Test Details

Membrane Thickness	mm	0.60		
Membrane Correction	kPa	0.78		
Rate of Axial Displacement	%/min	0.99		
Cell Pressure	kPa	600		
Strain at Failure	%	5.2		
Maximum Deviator Stress	kPa	127		
Shear Strength	kPa	63		
Mode of Failure			Brittle	

Shear Strength Parameters	
C	kPa
Phi	°

Non Engineering Description	Grey clayey SAND.
-----------------------------	-------------------



Originator	Checked & Approved
MAB	30/04/2018

UNCONSOLIDATED UNDRAINED SINGLE STAGE TRIAXIAL COMPRESSION

BS 1377 : Part 7 : 1990 Clause 8





SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH THIRD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No PZ1522D1

Hole BH05A

Sample Ref 76

Depth (m) 30.00-30.45

Sample Type UT



Originator

Checked & Approved

MAB

30/04/2018

Please note that these photographs are intended to show the failure mode, and do not necessarily show accurately the colouration of the soil.



Norfolk Partnership Laboratory

County Hall
Martineau Lane
Norwich
Norfolk
NR1 2SG

For the attention of Mr. S. Holden

Report No: C6401

Issue No 01

LABORATORY TEST REPORT

Project Name		GREAT YARMOUTH THIRD RIVER CROSSING	
Project Number	C6401	Date samples received	27/03/2018
Your Ref	PZ1522D1	Date written instructions received	26/03/2018
Purchase Order	PO 586415	Date testing commenced	21/04/2018
Please find enclosed the results as summarised below			
Item No	Test Quantity	Description	ISO 17025 Accredited
7.33	27	Single stage UU triaxial	Yes
Remarks :			
Issued by : L. Anaz		Date of Issue : 30/04/2018	
Approved Signatories :  30/04/2018		Key to symbols used in this report S/C : Testing was sub-contracted	
G Wilson (JMD/Laboratories Director), M D Brown (Quality Manager), L Anaz (Supervisor), Julie Hopkins (Administrator), A Davison (Supervisor)			
<p>Unless we are notified to the contrary, samples will be disposed after a period of one month from this date. The results reported relate to samples received in the laboratory only. All results contained in this report are provisional unless signed by an approved signatory This report should not be reproduced except in full without the written approval of the laboratory. Under multisite accreditation the testing contained in this report may have been performed at another Terra Tek laboratory. The enclosed results remain the property of Terra Tek Limited and we reserve the right to withdraw our report if we have not received cleared funds in accordance with our standard terms and conditions Only those results indicated in this report are UKAS accredited and any opinions or interpretations expressed are outside the scope of UKAS accreditation. Feedback on the this report may be left via our website www.terratek.co.uk/contact-us</p>			



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Offices in Airdrie, Birmingham, Belfast and Chesham

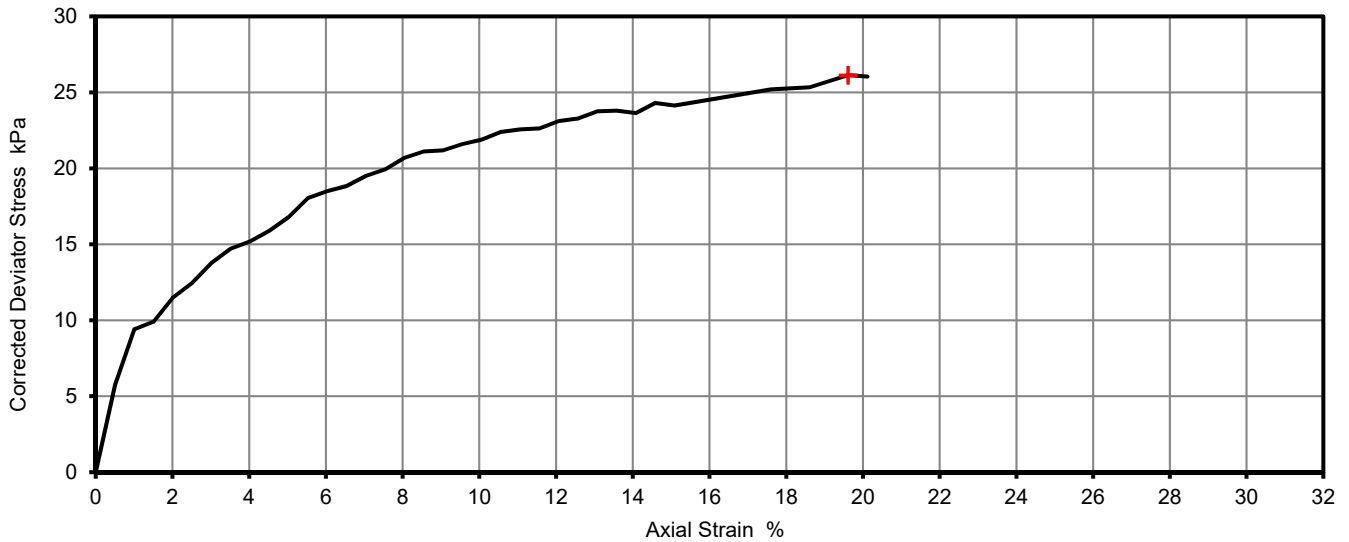
DETERMINATION OF UNDRAINED SHEAR STRENGTH - DEFINITIVE

BS1377 : Part 7 : 1990, clause 8, single specimen

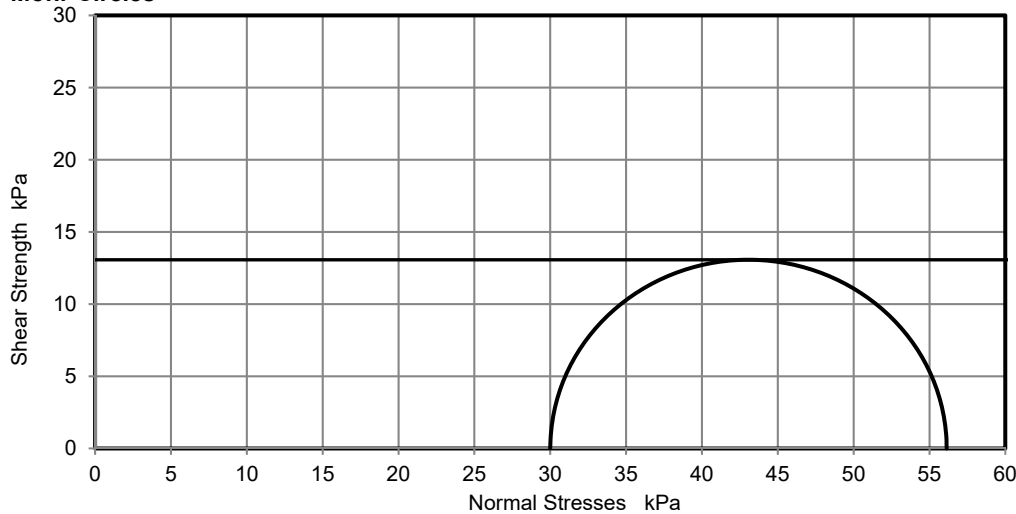
Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH9
Sample Description:	Very low strength grey and dark grey brown slightly gravelly CLAY with occasional pockets of sand. Gravel is of fine to medium flint	Sample Depth (m)	1.80
		Sample Reference	P10

Test Number	1		
Length	198.8	mm	
Diameter	102.5	mm	
Bulk Density	1.97	Mg/m ³	
Moisture Content	31.0	%	
Dry Density	1.50	Mg/m ³	
Rate of Strain	1.0	%/min	
Cell Pressure	30	kPa	
At failure	19.6	%	
Axial Strain	26	kPa	
Deviator Stress, ($\sigma_1 - \sigma_3$) _f	13	kPa	$\frac{1}{2}(\sigma_1 - \sigma_3)$ _f
Undrained Shear Strength, c_u	Plastic		
Mode of Failure			

Deviator Stress v Axial Strain



Mohr Circles



Deviator stress corrected for area change and membrane effects

Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

Remarks	Approved	Date	Sheet No.:
	MW	25/04/2018	1 of 1



Site GREAT YARMOUTH THIRD RIVER CROSSING

Contract No. PZ1522D1

Client Norfolk County Council
 Engineer Norfolk Partnership Laboratory

Hole BH09
 Sample Ref 71
 Depth (m) 27.50-27.95
 Sample Type UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	199.8		
Diameter	mm	104.2		
Moisture Content	%	25		
Bulk Density	Mg/m ³	2.04		
Dry Density	Mg/m ³	1.63		

Comments

Undisturbed specimen taken 10mm below top of tube

Test Details

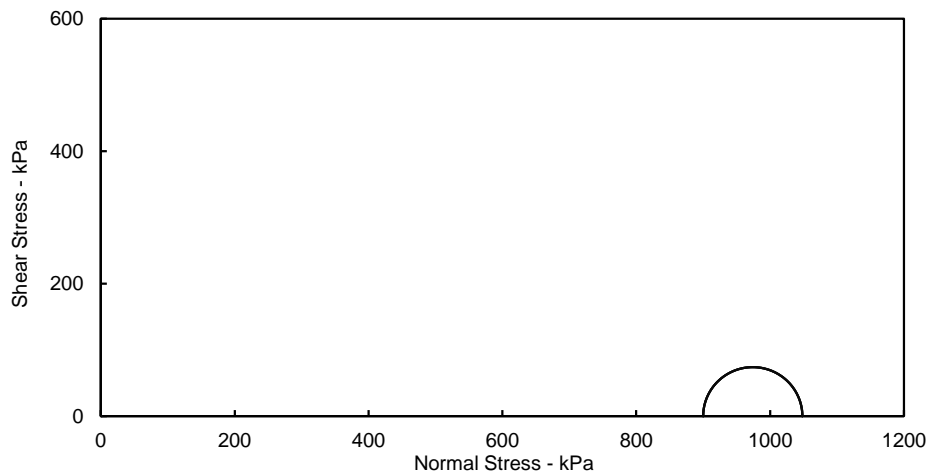
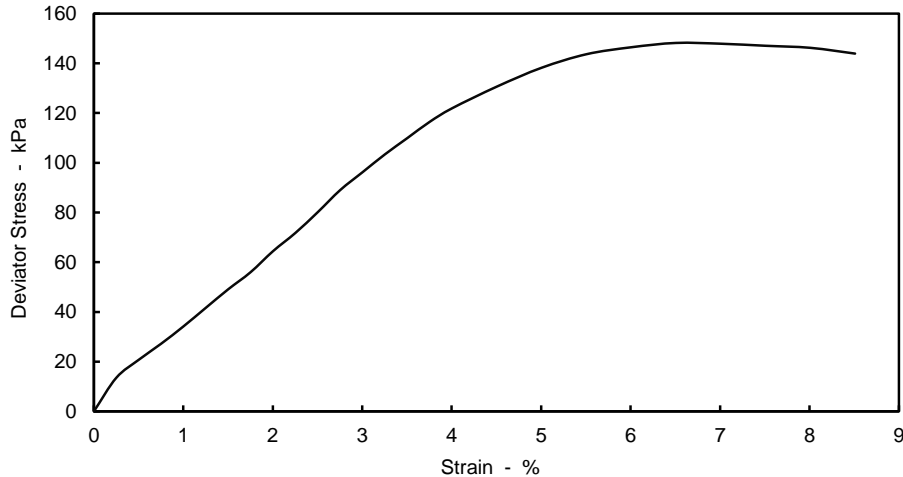
Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.46		
Rate of Axial Displacement	%/min	0.76		
Cell Pressure	kPa	900		
Strain at Failure	%	6.5		
Maximum Deviator Stress	kPa	148		
Shear Strength	kPa	74		
Mode of Failure			Plastic	

Shear Strength Parameters

C	kPa
Phi	°

Non Engineering Description

Firm layered slightly sandy CLAY with occasional layers of sand.



Originator

Checked & Approved

MAB

30/04/2018

UNCONSOLIDATED UNDRAINED SINGLE STAGE TRIAXIAL COMPRESSION

BS 1377 : Part 7 : 1990 Clause 8





Site GREAT YARMOUTH THIRD RIVER CROSSING


Contract No PZ1522D1

Client Norfolk County Council

Hole BH09
Sample Ref 71
Depth (m) 27.50-27.95
Sample Type UT

Engineer Norfolk Partnership Laboratory



Originator	Checked & Approved
MAB	 30/04/2018

Please note that these photographs are intended to show the failure mode, and do not necessarily show accurately the colouration of the soil.



Sheet 2 of 2



Site GREAT YARMOUTH THIRD RIVER CROSSING

Contract No. PZ1522D1

Client Norfolk County Council
 Engineer Norfolk Partnership Laboratory

Hole BH09
 Sample Ref 71
 Depth (m) 27.50-27.95
 Sample Type UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	184.3		
Diameter	mm	103.4		
Moisture Content	%	25		
Bulk Density	Mg/m ³	2.05		
Dry Density	Mg/m ³	1.64		

Comments

Undisturbed specimen taken 220mm below top of tube

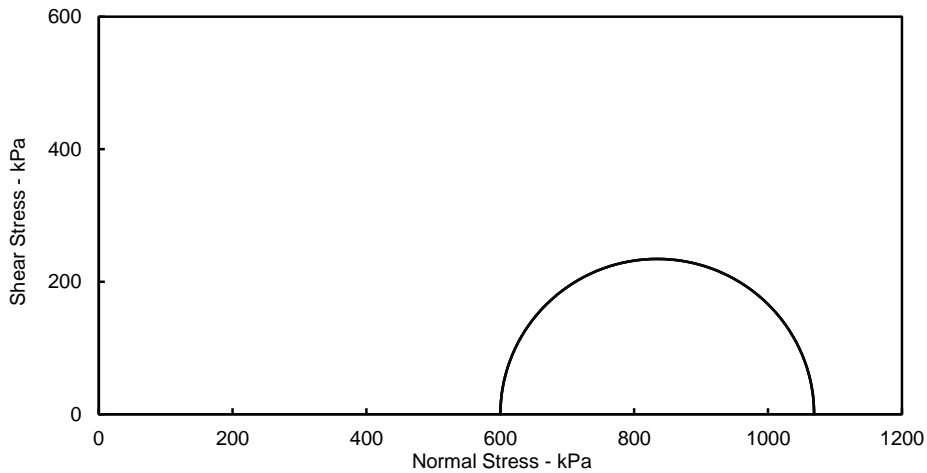
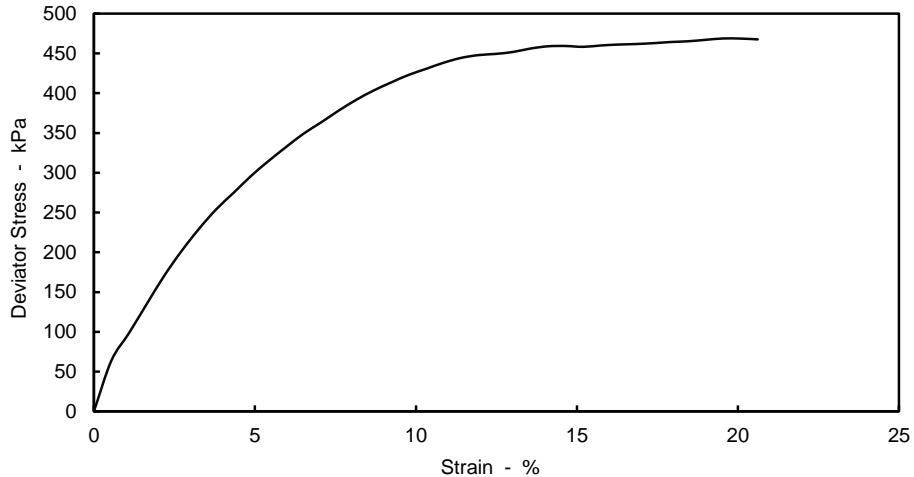
Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	1.08		
Rate of Axial Displacement	%/min	0.82		
Cell Pressure	kPa	600		
Strain at Failure	%	19.5		
Maximum Deviator Stress	kPa	469		
Shear Strength	kPa	234		
Mode of Failure			Brittle	

Shear Strength Parameters

C	kPa
Phi	°

Non Engineering Description Very stiff layered grey slightly sandy CLAY.



Originator

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MAB

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UNCONSOLIDATED UNDRAINED SINGLE STAGE TRIAXIAL COMPRESSION

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Site GREAT YARMOUTH THIRD RIVER CROSSING

Contract No PZ1522D1

Client Norfolk County Council

Hole BH09


Engineer Norfolk Partnership Laboratory

Sample Ref 71

Depth (m) 27.50-27.95

Sample Type UT



Originator	Checked & Approved
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Please note that these photographs are intended to show the failure mode, and do not necessarily show accurately the colouration of the soil.



Sheet 2 of 2

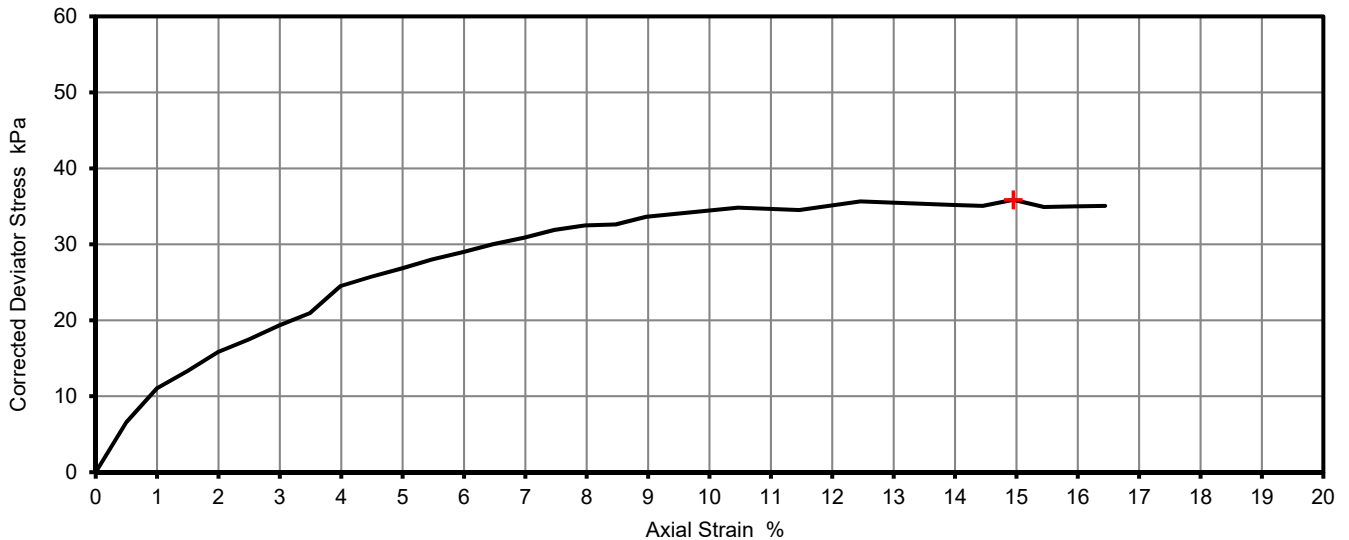
DETERMINATION OF UNDRAINED SHEAR STRENGTH - DEFINITIVE

BS1377 : Part 7 : 1990, clause 8, single specimen

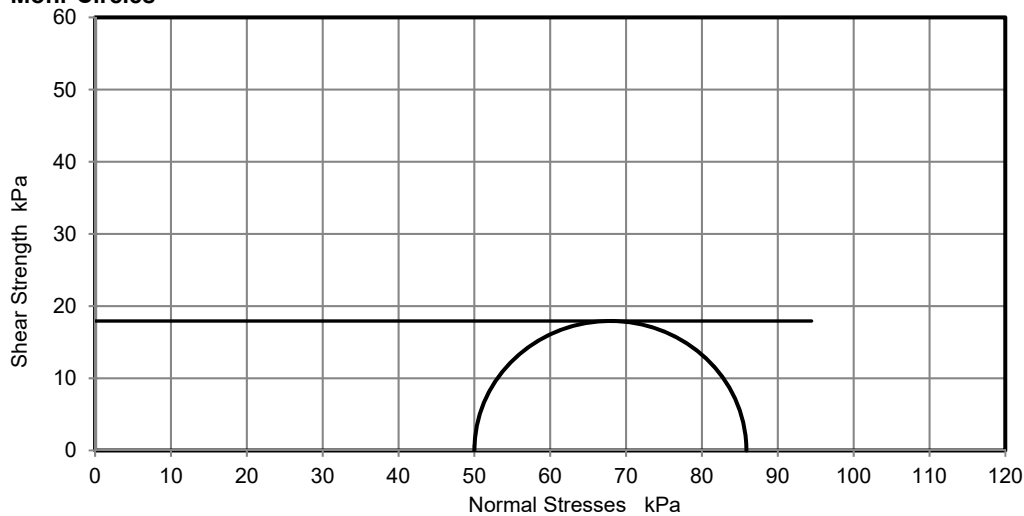
Project Name:	Gt Yarmouth 3rd River Crossing	Project Number:	PZ1522D1
Client Name:	Community & Environmental Services	Sample Location:	BH10
Sample Description:	Very low strength dark brown and dark grey slightly sandy CLAY becoming dark brown gravelly clayey SAND with pockets of peat. Gravel is of fine to coarse flint	Sample Depth (m)	3.00
		Sample Reference	UT11

Test Number	1				
Length	200.7	mm			
Diameter	102.8	mm			
Bulk Density	1.64	Mg/m ³			
Moisture Content	73.8	%			
Dry Density	0.95	Mg/m ³			
Rate of Strain	1.0	%/min			
Cell Pressure	50	kPa			
At failure	15.0	%			
Axial Strain	36	kPa			
Deviator Stress, (σ ₁ - σ ₃) _f	18	kPa	½(σ ₁ - σ ₃) _f		
Undrained Shear Strength, c _u	Plastic				
Mode of Failure					

Deviator Stress v Axial Strain



Mohr Circles



Deviator stress corrected for area change and membrane effects

Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

Remarks	Approved	Date	Sheet No.:
	MW	25/04/2018	1 of 1



SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH THIRD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No. PZ1522D1

Hole BH10
 Sample Ref 77
 Depth (m) 31.00-31.60
 Sample Type UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	176.1		
Diameter	mm	100.3		
Moisture Content	%	26		
Bulk Density	Mg/m ³	2.08		
Dry Density	Mg/m ³	1.66		

Comments

Undisturbed specimen taken 50mm below top of tube

Test Details

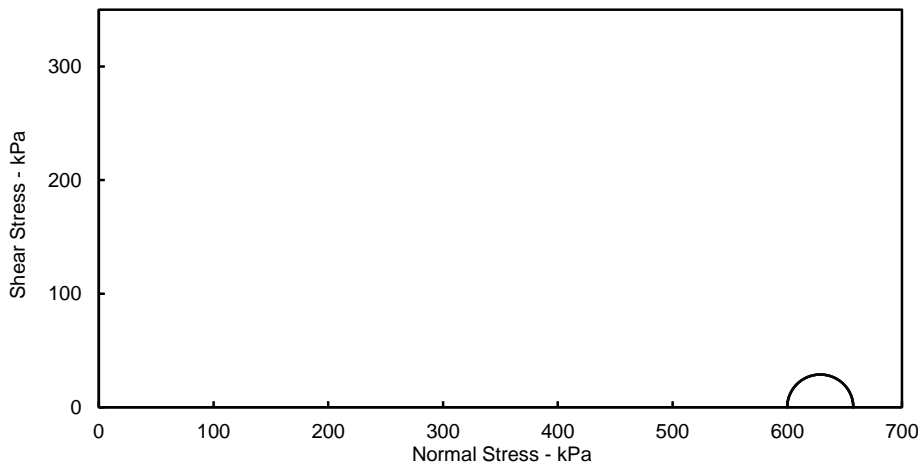
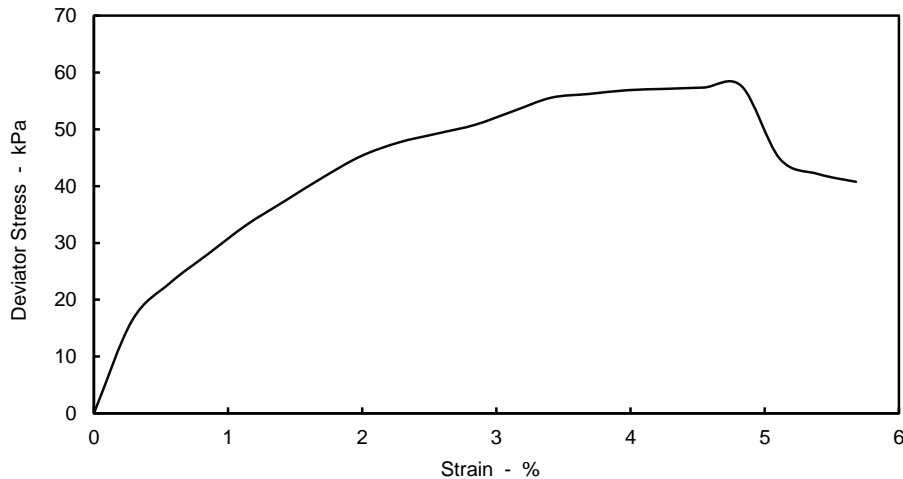
Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.37		
Rate of Axial Displacement	%/min	0.86		
Cell Pressure	kPa	600		
Strain at Failure	%	4.8		
Maximum Deviator Stress	kPa	58		
Shear Strength	kPa	29		
Mode of Failure			Brittle	

Non Engineering Description

Soft intact grey sandy CLAY.

Shear Strength Parameters

C	kPa
Phi	°



Originator

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MAB

30/04/2018

UNCONSOLIDATED UNDRAINED SINGLE STAGE TRIAXIAL COMPRESSION

BS 1377 : Part 7 : 1990 Clause 8





Site GREAT YARMOUTH THIRD RIVER CROSSING

Contract No PZ1522D1

Client Norfolk County Council

Hole BH10


Engineer Norfolk Partnership Laboratory

Sample Ref 77

Depth (m) 31.00-31.60

Sample Type UT



Originator	Checked & Approved
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Please note that these photographs are intended to show the failure mode, and do not necessarily show accurately the colouration of the soil.



Sheet 2 of 2



SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH THIRD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH10
Sample Ref	77
Depth (m)	31.00-31.60
Sample Type	UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	161.2		
Diameter	mm	102.3		
Moisture Content	%	24		
Bulk Density	Mg/m ³	2.05		
Dry Density	Mg/m ³	1.65		

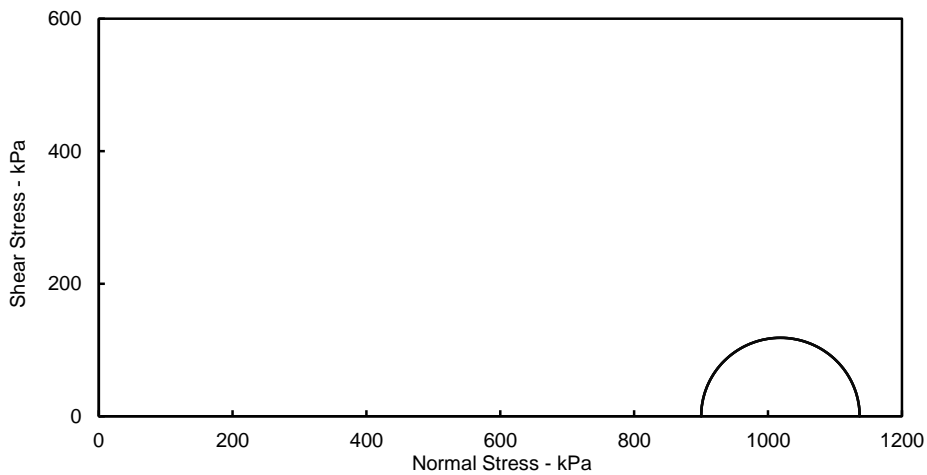
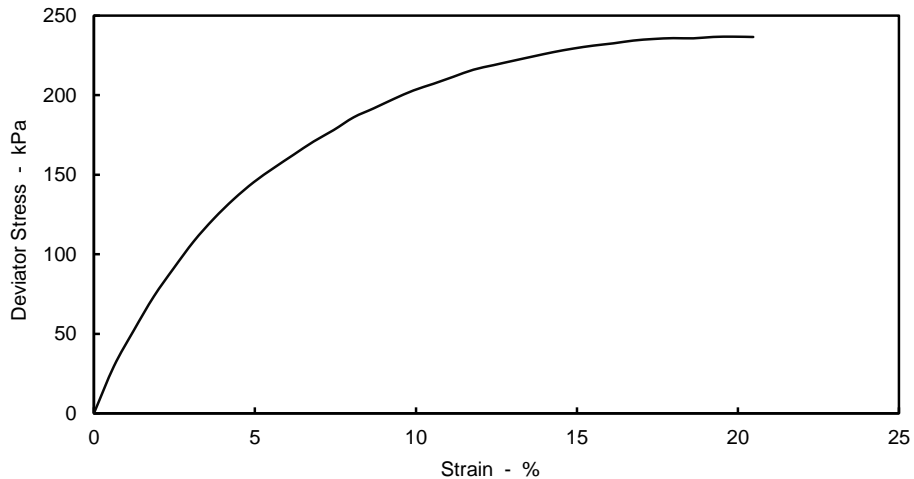
Comments
Undisturbed specimen taken 250mm below top of tube

Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	1.11		
Rate of Axial Displacement	%/min	0.94		
Cell Pressure	kPa	900		
Strain at Failure	%	19.9		
Maximum Deviator Stress	kPa	237		
Shear Strength	kPa	118		
Mode of Failure			Compound	

Shear Strength Parameters	
C	kPa
Phi	°

Non Engineering Description	Stiff intact grey sandy CLAY with layers of sand.
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Originator	Checked & Approved
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BS 1377 : Part 7 : 1990 Clause 8





Site GREAT YARMOUTH THIRD RIVER CROSSING

Contract No PZ1522D1

Client Norfolk County Council

Hole BH10


Sample Ref 77

Engineer Norfolk Partnership Laboratory

Depth (m) 31.00-31.60

Sample Type UT



Originator	Checked & Approved
MAB	 30/04/2018

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Site GREAT YARMOUTH THIRD RIVER CROSSING

Contract No. PZ1522D1

Client Norfolk County Council
 Engineer Norfolk Partnership Laboratory

Hole BH10
 Sample Ref 103
 Depth (m) 47.00-47.60
 Sample Type UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	175.3		
Diameter	mm	103.3		
Moisture Content	%	32		
Bulk Density	Mg/m ³	1.94		
Dry Density	Mg/m ³	1.47		

Comments

Undisturbed specimen taken 30mm below top of tube

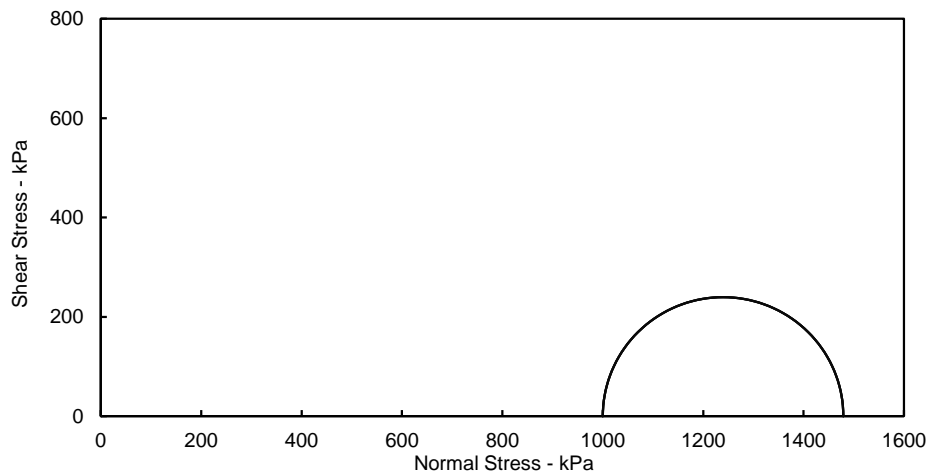
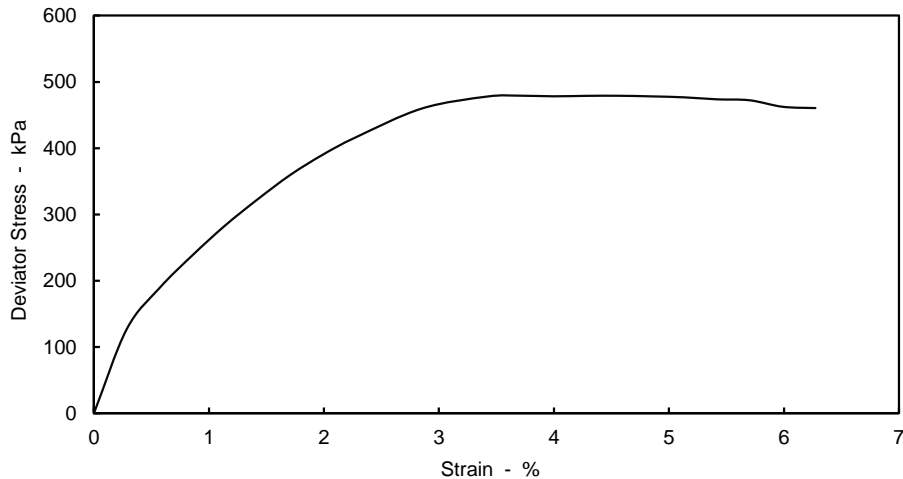
Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.29		
Rate of Axial Displacement	%/min	0.87		
Cell Pressure	kPa	1000		
Strain at Failure	%	3.7		
Maximum Deviator Stress	kPa	479		
Shear Strength	kPa	240		
Mode of Failure			Brittle	

Shear Strength Parameters

C	kPa
Phi	°

Non Engineering Description Very stiff intact dark grey CLAY.



Originator

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SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH THIRD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No PZ1522D1


Hole BH10

Sample Ref 103

Depth (m) 47.00-47.60

Sample Type UT



Originator	Checked & Approved
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Please note that these photographs are intended to show the failure mode, and do not necessarily show accurately the colouration of the soil.



Sheet 2 of 2



SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH THIRD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No. PZ1522D1

Hole BH10
 Sample Ref 103
 Depth (m) 47.00-47.60
 Sample Type UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	159.4		
Diameter	mm	103.3		
Moisture Content	%	29		
Bulk Density	Mg/m ³	1.99		
Dry Density	Mg/m ³	1.54		

Comments

Undisturbed specimen taken 250mm below top of tube

Test Details

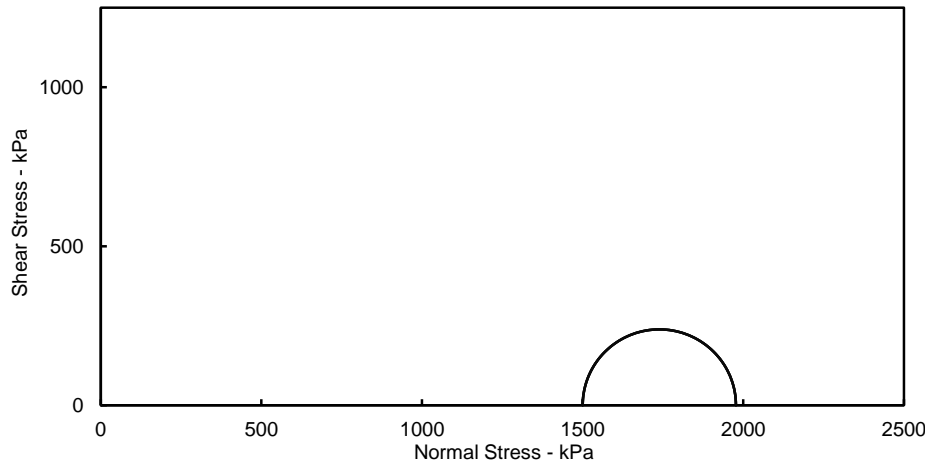
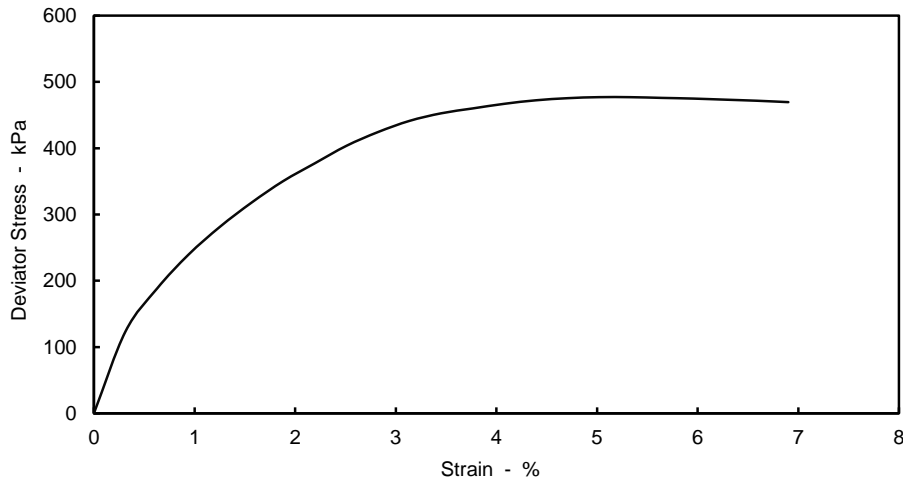
Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.38		
Rate of Axial Displacement	%/min	0.95		
Cell Pressure	kPa	1500		
Strain at Failure	%	5.0		
Maximum Deviator Stress	kPa	477		
Shear Strength	kPa	239		
Mode of Failure			Brittle	

Shear Strength Parameters

C	kPa
Phi	°

Non Engineering Description

Very stiff intact dark grey CLAY.



Originator

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BS 1377 : Part 7 : 1990 Clause 8





Site GREAT YARMOUTH THIRD RIVER CROSSING


Contract No PZ1522D1

Client Norfolk County Council

Hole BH10
Sample Ref 103
Depth (m) 47.00-47.60
Sample Type UT

Engineer Norfolk Partnership Laboratory



Originator	Checked & Approved
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Sheet 2 of 2



Site GREAT YARMOUTH THIRD RIVER CROSSING

Contract No. PZ1522D1

Client Norfolk County Council
 Engineer Norfolk Partnership Laboratory

Hole BH10
 Sample Ref 107
 Depth (m) 49.00-49.50
 Sample Type UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	199.5		
Diameter	mm	103.2		
Moisture Content	%	38		
Bulk Density	Mg/m ³	1.92		
Dry Density	Mg/m ³	1.40		

Comments

Undisturbed specimen taken 210mm below top of tube

Test Details

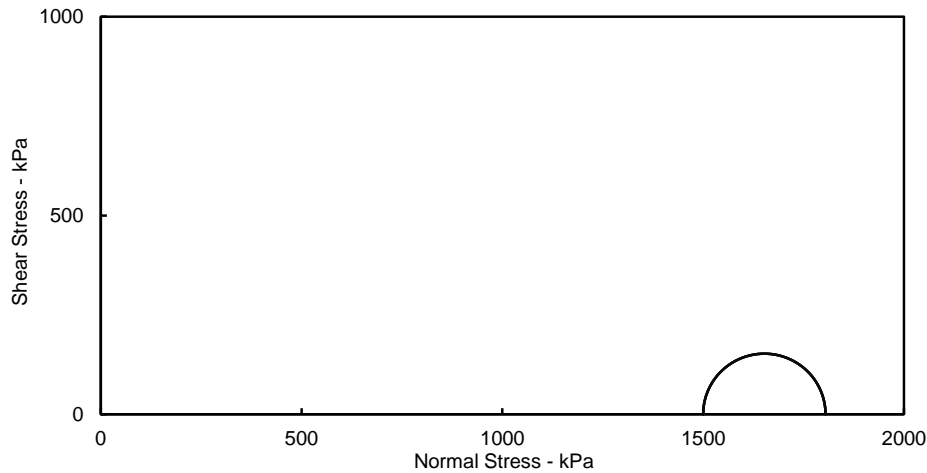
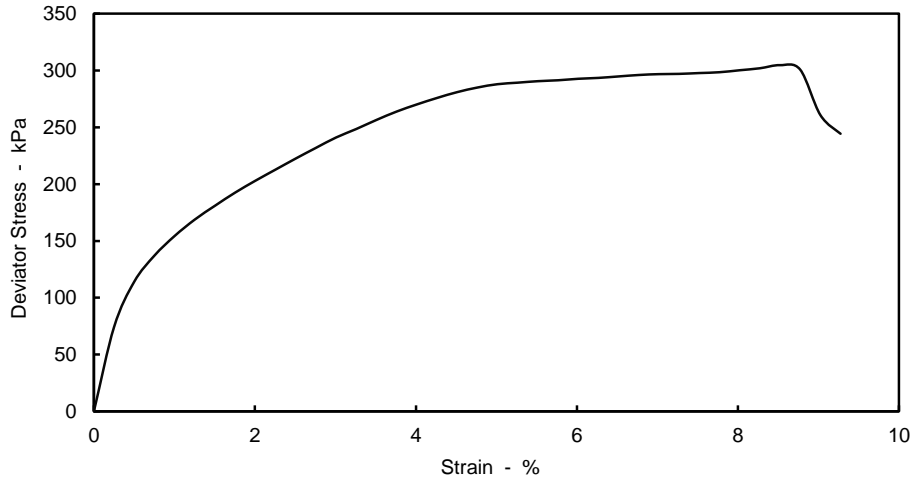
Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.58		
Rate of Axial Displacement	%/min	2.04		
Cell Pressure	kPa	1500		
Strain at Failure	%	8.5		
Maximum Deviator Stress	kPa	305		
Shear Strength	kPa	152		
Mode of Failure			Compound	

Non Engineering Description

Very stiff fissured dark greyish brown slightly sandy CLAY.

Shear Strength Parameters

C kPa
 Phi °



Originator

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DM

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UNCONSOLIDATED UNDRAINED SINGLE STAGE TRIAXIAL COMPRESSION

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Site GREAT YARMOUTH THIRD RIVER CROSSING


Contract No PZ1522D1

Client Norfolk County Council

Hole BH10
Sample Ref 107
Depth (m) 49.00-49.50
Sample Type UT

Engineer Norfolk Partnership Laboratory



Originator	Checked & Approved
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Please note that these photographs are intended to show the failure mode, and do not necessarily show accurately the colouration of the soil.



Sheet 2 of 2



SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH THIRD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No. PZ1522D1

Hole BH10A
 Sample Ref 81
 Depth (m) 31.00-31.45
 Sample Type UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	170.5		
Diameter	mm	104.4		
Moisture Content	%	28		
Bulk Density	Mg/m ³	2.01		
Dry Density	Mg/m ³	1.56		

Comments

Undisturbed specimen taken 20mm below top of tube

Test Details

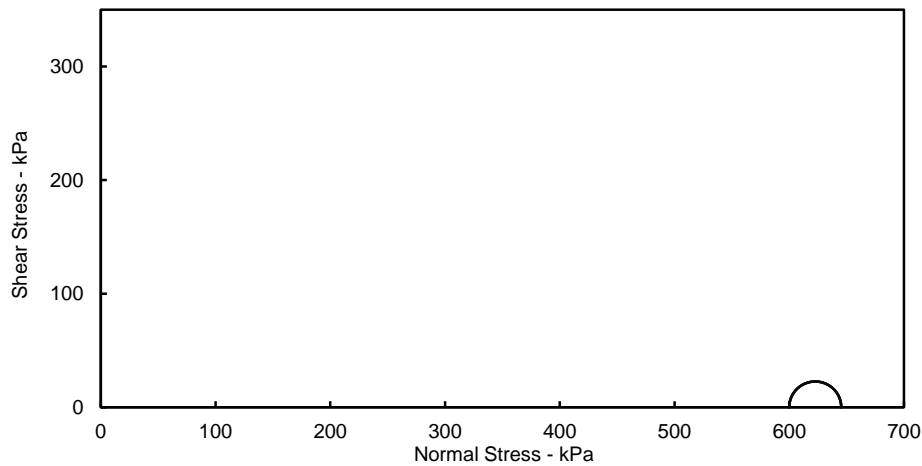
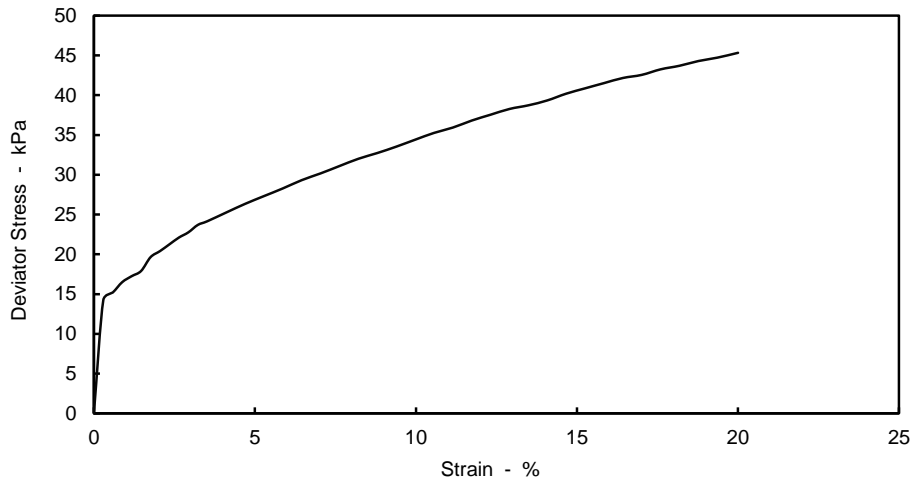
Membrane Thickness	mm	0.30		
Membrane Correction	kPa	1.09		
Rate of Axial Displacement	%/min	0.89		
Cell Pressure	kPa	600		
Strain at Failure	%	20.0		
Maximum Deviator Stress	kPa	45		
Shear Strength	kPa	23		
Mode of Failure			Plastic	

Non Engineering Description

Soft intact light grey CLAY with pockets/layers of sand.

Shear Strength Parameters

C	kPa
Phi	°



Originator

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30/04/2018

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BS 1377 : Part 7 : 1990 Clause 8





SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH THIRD RIVER CROSSING

Contract No PZ1522D1

Client Norfolk County Council

Hole BH10A


Engineer Norfolk Partnership Laboratory

Sample Ref 81

Depth (m) 31.00-31.45

Sample Type UT



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DM	 30/04/2018

Please note that these photographs are intended to show the failure mode, and do not necessarily show accurately the colouration of the soil.



Sheet 2 of 2



SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH THIRD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH10A
Sample Ref	81
Depth (m)	31.00-31.45
Sample Type	UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	199.4		
Diameter	mm	103.8		
Moisture Content	%	28		
Bulk Density	Mg/m ³	2.00		
Dry Density	Mg/m ³	1.56		

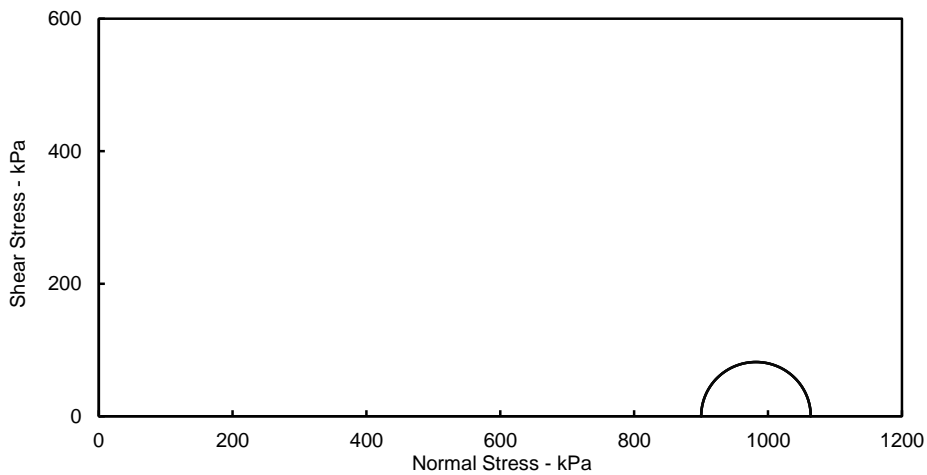
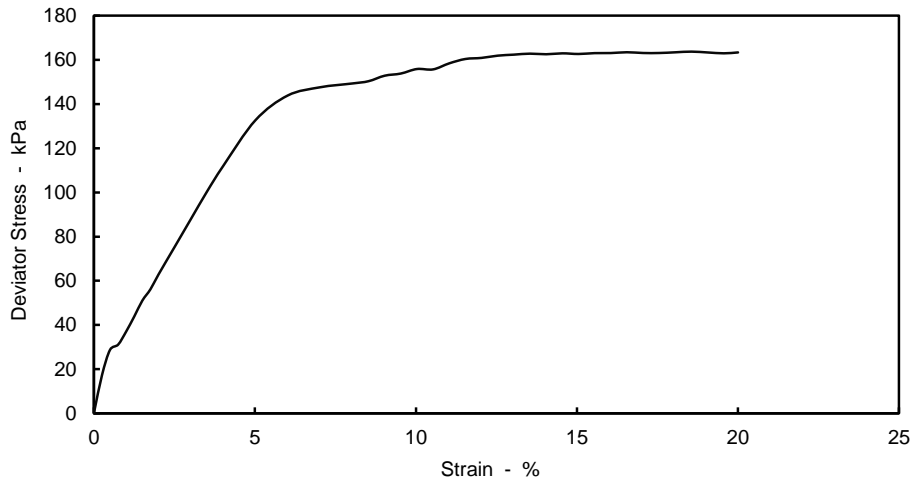
Comments
Undisturbed specimen taken 200mm below top of tube

Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	1.04		
Rate of Axial Displacement	%/min	0.76		
Cell Pressure	kPa	900		
Strain at Failure	%	18.6		
Maximum Deviator Stress	kPa	164		
Shear Strength	kPa	82		
Mode of Failure			Compound	

Shear Strength Parameters	
C	kPa
Phi	°

Non Engineering Description	Stiff laminated light grey sandy CLAY.
-----------------------------	--



Originator	DM	Checked & Approved	
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UNCONSOLIDATED UNDRAINED SINGLE STAGE TRIAXIAL COMPRESSION

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SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH THIRD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No PZ1522D1

Hole BH10A

Sample Ref 81

Depth (m) 31.00-31.45

Sample Type UT



Originator

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30/04/2018

Please note that these photographs are intended to show the failure mode, and do not necessarily show accurately the colouration of the soil.





SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH THIRD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH10A
Sample Ref	107
Depth (m)	47.00-47.45
Sample Type	UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	199.7		
Diameter	mm	101.3		
Moisture Content	%	30		
Bulk Density	Mg/m ³	1.97		
Dry Density	Mg/m ³	1.51		

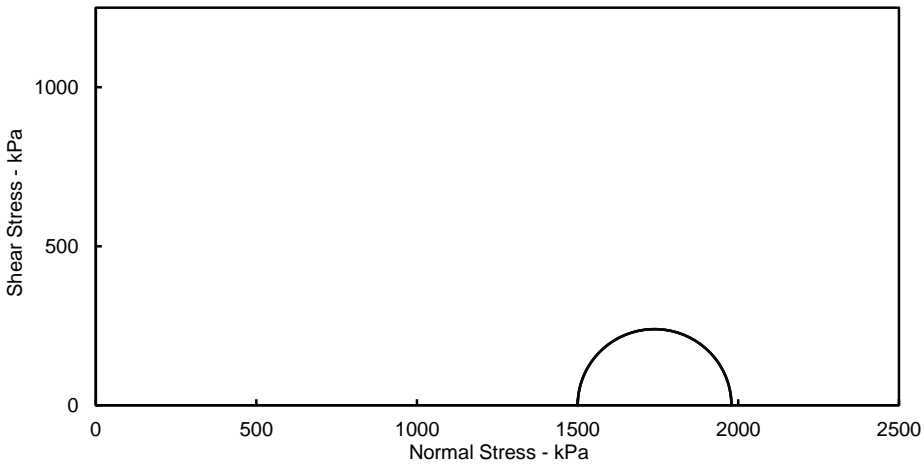
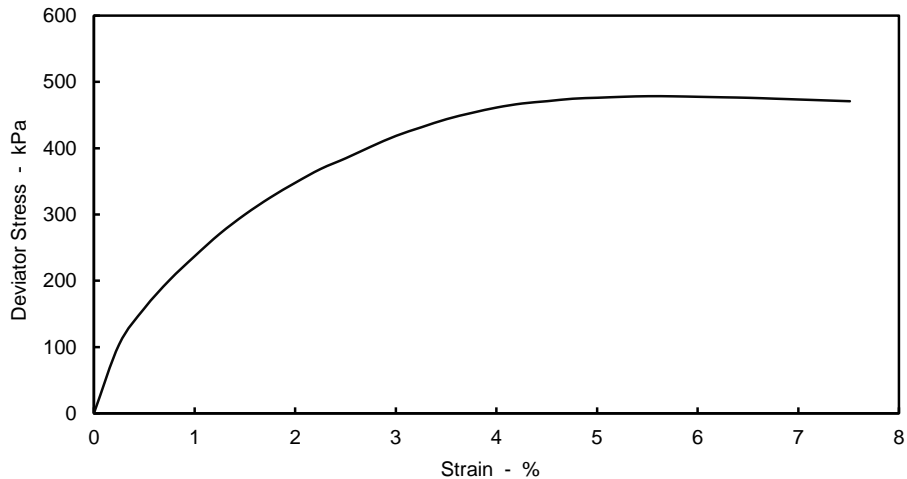
Comments
Undisturbed specimen taken 10mm below top of tube

Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.42		
Rate of Axial Displacement	%/min	0.76		
Cell Pressure	kPa	1500		
Strain at Failure	%	5.5		
Maximum Deviator Stress	kPa	478		
Shear Strength	kPa	239		
Mode of Failure			Brittle	

Shear Strength Parameters	
C	kPa
Phi	°

Non Engineering Description: Very stiff fissured dark greyish brown slightly sandy CLAY.



Originator	Checked & Approved
DM	30/04/2018

UNCONSOLIDATED UNDRAINED SINGLE STAGE TRIAXIAL COMPRESSION
BS 1377 : Part 7 : 1990 Clause 8



Sheet 1 of 2



Site GREAT YARMOUTH THIRD RIVER CROSSING


Contract No PZ1522D1

Client Norfolk County Council

Hole BH10A
Sample Ref 107
Depth (m) 47.00-47.45
Sample Type UT

Engineer Norfolk Partnership Laboratory



Originator	Checked & Approved
DM	 30/04/2018

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SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH THIRD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH10A
Sample Ref	107
Depth (m)	47.00-47.45
Sample Type	UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	159.6		
Diameter	mm	101.1		
Moisture Content	%	37		
Bulk Density	Mg/m ³	1.87		
Dry Density	Mg/m ³	1.36		

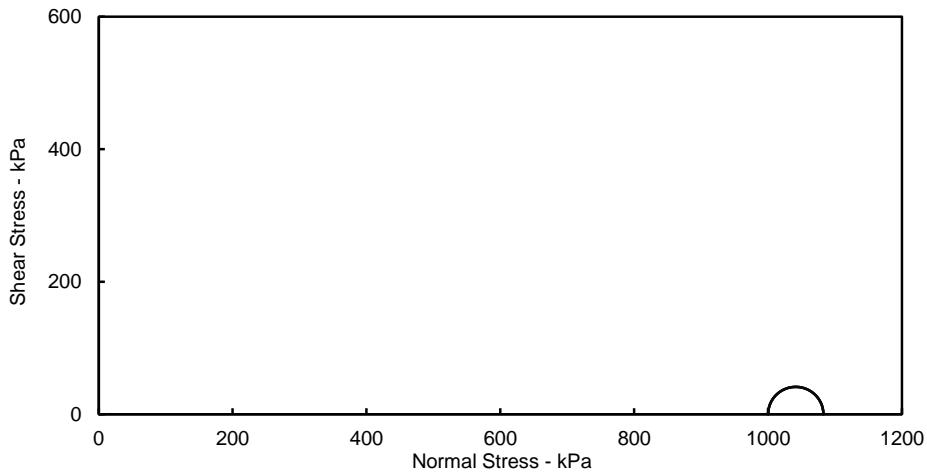
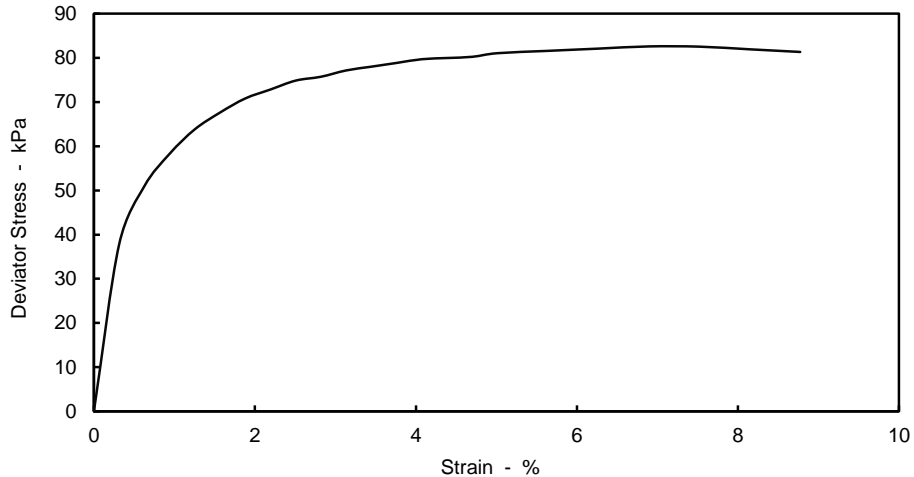
Comments
Undisturbed specimen taken 230mm below top of tube

Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.50		
Rate of Axial Displacement	%/min	2.54		
Cell Pressure	kPa	1000		
Strain at Failure	%	6.9		
Maximum Deviator Stress	kPa	83		
Shear Strength	kPa	41		
Mode of Failure			Brittle	

Shear Strength Parameters	
C	kPa
Phi	°

Non Engineering Description	Firm fissured greyish brown slightly sandy CLAY.
-----------------------------	--



Originator	Checked & Approved
MAB	30/04/2018

UNCONSOLIDATED UNDRAINED SINGLE STAGE TRIAXIAL COMPRESSION

BS 1377 : Part 7 : 1990 Clause 8





Site GREAT YARMOUTH THIRD RIVER CROSSING

Contract No PZ1522D1

Client Norfolk County Council

Hole BH10A


Engineer Norfolk Partnership Laboratory

Sample Ref 107

Depth (m) 47.00-47.45

Sample Type UT



Originator	Checked & Approved
MAB	 30/04/2018

Please note that these photographs are intended to show the failure mode, and do not necessarily show accurately the colouration of the soil.





SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH THIRD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH10A
Sample Ref	111
Depth (m)	49.00-49.45
Sample Type	UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	149.9		
Diameter	mm	103.8		
Moisture Content	%	37		
Bulk Density	Mg/m ³	1.89		
Dry Density	Mg/m ³	1.38		

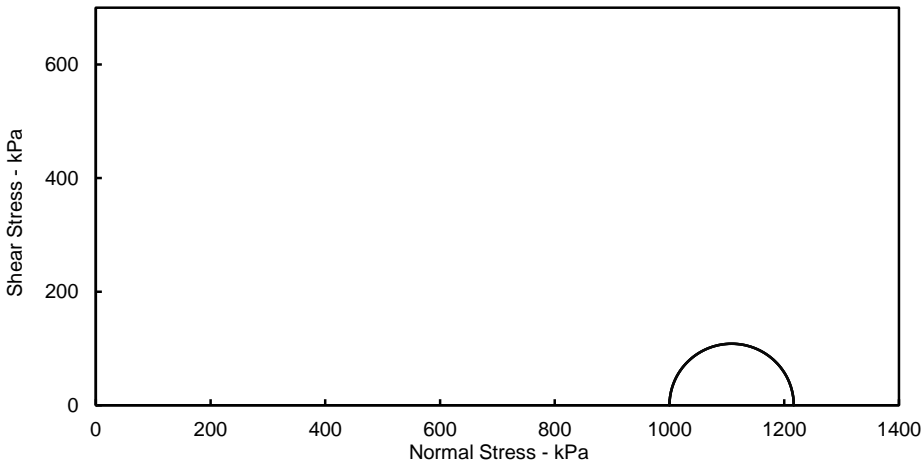
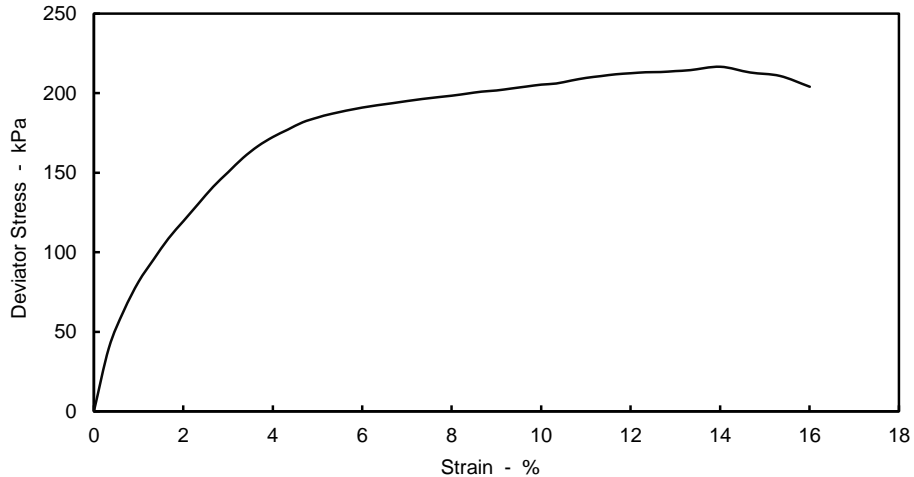
Comments
Undisturbed specimen taken 105mm below top of tube

Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.84		
Rate of Axial Displacement	%/min	2.71		
Cell Pressure	kPa	1000		
Strain at Failure	%	14.0		
Maximum Deviator Stress	kPa	217		
Shear Strength	kPa	108		
Mode of Failure			Compound	

Shear Strength Parameters	
C	kPa
Phi	°

Non Engineering Description
Top: Firm intact greyish brown slightly sandy CLAY.
Bottom: Stiff fissured dark greyish brown slightly sandy CLAY.



Originator	Checked & Approved
DM	30/04/2018

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BS 1377 : Part 7 : 1990 Clause 8

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SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH THIRD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No PZ1522D1


Hole BH10A

Sample Ref 111

Depth (m) 49.00-49.45

Sample Type UT



Originator	Checked & Approved
DM	 30/04/2018

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SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH THIRD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH10A
Sample Ref	111
Depth (m)	49.00-49.45
Sample Type	UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	157.5		
Diameter	mm	102.9		
Moisture Content	%	33		
Bulk Density	Mg/m ³	1.92		
Dry Density	Mg/m ³	1.44		

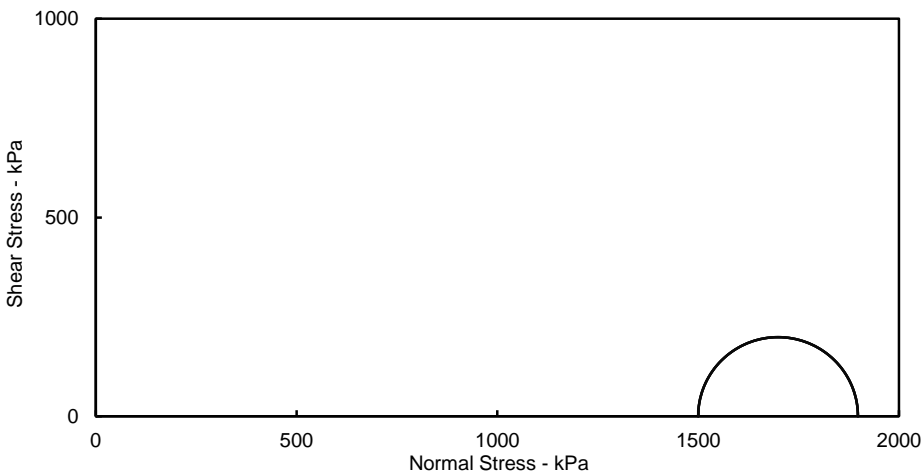
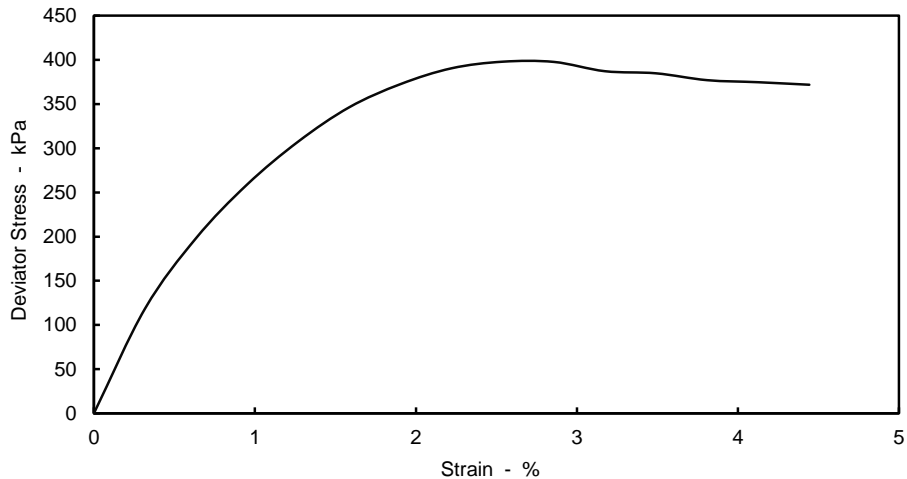
Comments
Undisturbed specimen taken 280mm below top of tube

Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.21		
Rate of Axial Displacement	%/min	0.96		
Cell Pressure	kPa	1500		
Strain at Failure	%	2.5		
Maximum Deviator Stress	kPa	398		
Shear Strength	kPa	199		
Mode of Failure			Brittle	

Shear Strength Parameters	
C	kPa
Phi	°

Non Engineering Description: Very stiff fissured greyish brown slightly sandy CLAY.



Originator	DM	Checked & Approved	
			30/04/2018

UNCONSOLIDATED UNDRAINED SINGLE STAGE TRIAXIAL COMPRESSION
BS 1377 : Part 7 : 1990 Clause 8

Sheet 1 of 2



SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH THIRD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No PZ1522D1


Hole BH10A

Sample Ref 111

Depth (m) 49.00-49.45

Sample Type UT



Originator	Checked & Approved
DM	 30/04/2018

Please note that these photographs are intended to show the failure mode, and do not necessarily show accurately the colouration of the soil.



Sheet 2 of 2



SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH THIRD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH11
Sample Ref	83
Depth (m)	31.00-31.45
Sample Type	UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	175.6		
Diameter	mm	103.2		
Moisture Content	%	27		
Bulk Density	Mg/m ³	2.02		
Dry Density	Mg/m ³	1.60		

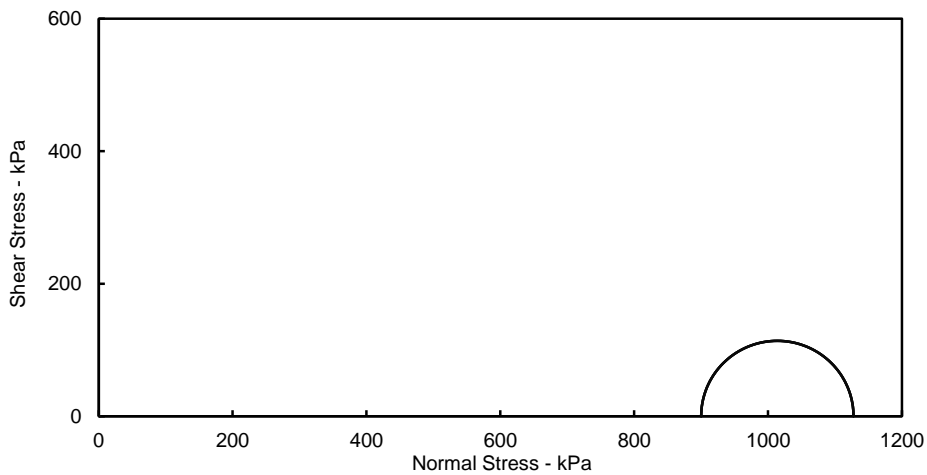
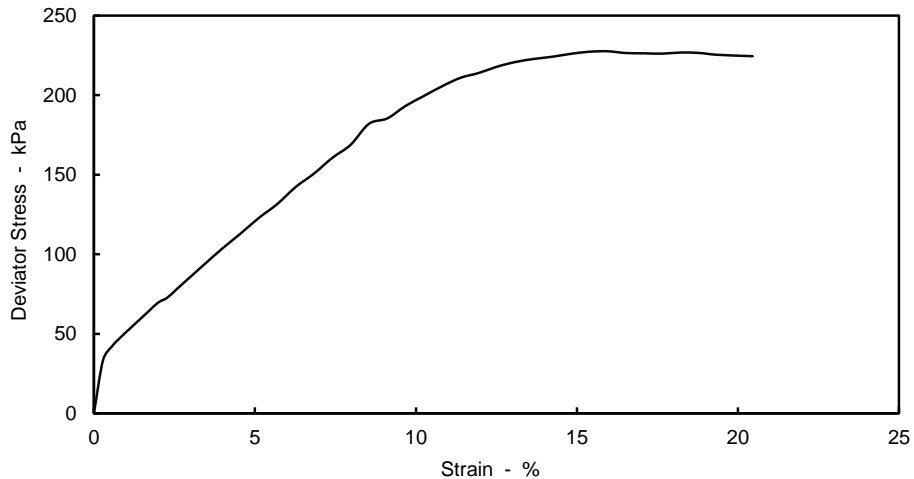
Comments
Undisturbed specimen taken 30mm below top of tube

Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.94		
Rate of Axial Displacement	%/min	0.87		
Cell Pressure	kPa	900		
Strain at Failure	%	15.9		
Maximum Deviator Stress	kPa	228		
Shear Strength	kPa	114		
Mode of Failure			Plastic	

Shear Strength Parameters	
C	kPa
Phi	°

Non Engineering Description: Stiff intact light grey sandy CLAY.



Originator	Checked & Approved
DM	30/04/2018

UNCONSOLIDATED UNDRAINED SINGLE STAGE TRIAXIAL COMPRESSION

BS 1377 : Part 7 : 1990 Clause 8






Site	GREAT YARMOUTH THIRD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No	PZ1522D1
Hole	BH11
Sample Ref	83
Depth (m)	31.00-31.45
Sample Type	UT



Originator	Checked & Approved
DM	 30/04/2018

Please note that these photographs are intended to show the failure mode, and do not necessarily show accurately the colouration of the soil.





SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH THIRD RIVER CROSSING

Contract No. PZ1522D1

Client Norfolk County Council
 Engineer Norfolk Partnership Laboratory

Hole BH11
 Sample Ref 83
 Depth (m) 31.00-31.45
 Sample Type UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	201.6		
Diameter	mm	103.5		
Moisture Content	%	28		
Bulk Density	Mg/m ³	2.01		
Dry Density	Mg/m ³	1.57		

Comments

Undisturbed specimen taken 210mm below top of tube

Test Details

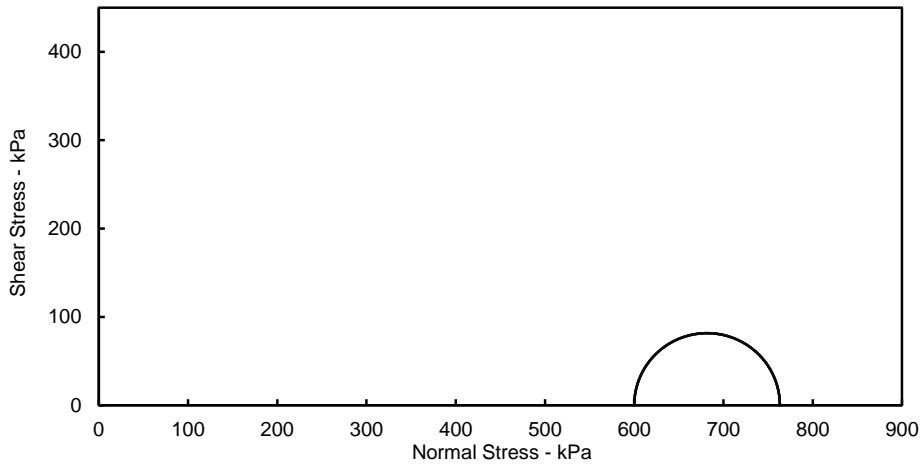
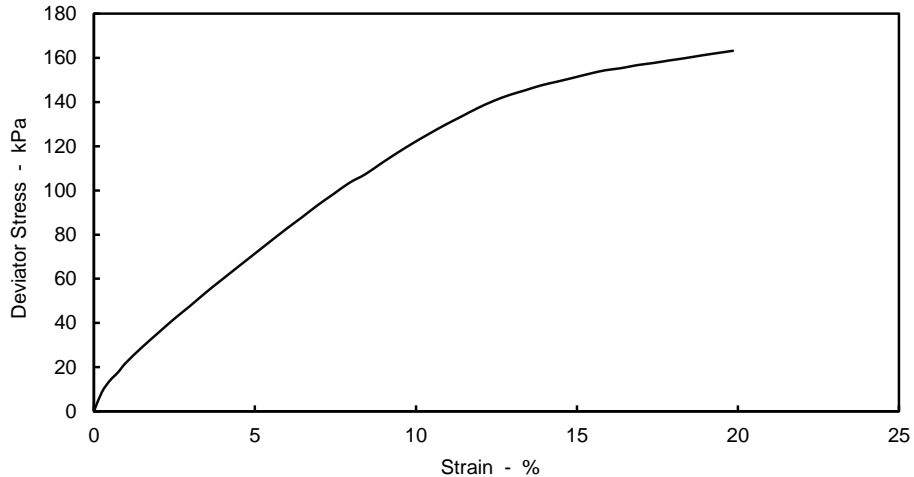
Membrane Thickness	mm	0.30		
Membrane Correction	kPa	1.10		
Rate of Axial Displacement	%/min	0.75		
Cell Pressure	kPa	600		
Strain at Failure	%	19.8		
Maximum Deviator Stress	kPa	163		
Shear Strength	kPa	82		
Mode of Failure			Plastic	

Shear Strength Parameters

C	kPa
Phi	°

Non Engineering Description

Stiff laminated light grey sandy CLAY.



Originator

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Site GREAT YARMOUTH THIRD RIVER CROSSING

Contract No PZ1522D1

Client Norfolk County Council

Hole BH11


Engineer Norfolk Partnership Laboratory

Sample Ref 83

Depth (m) 31.00-31.45

Sample Type UT



Originator	Checked & Approved
DM	 30/04/2018

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Sheet 2 of 2



SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH THIRD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH11
Sample Ref	110
Depth (m)	46.00-46.45
Sample Type	UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	175.0		
Diameter	mm	102.9		
Moisture Content	%	33		
Bulk Density	Mg/m ³	1.95		
Dry Density	Mg/m ³	1.47		

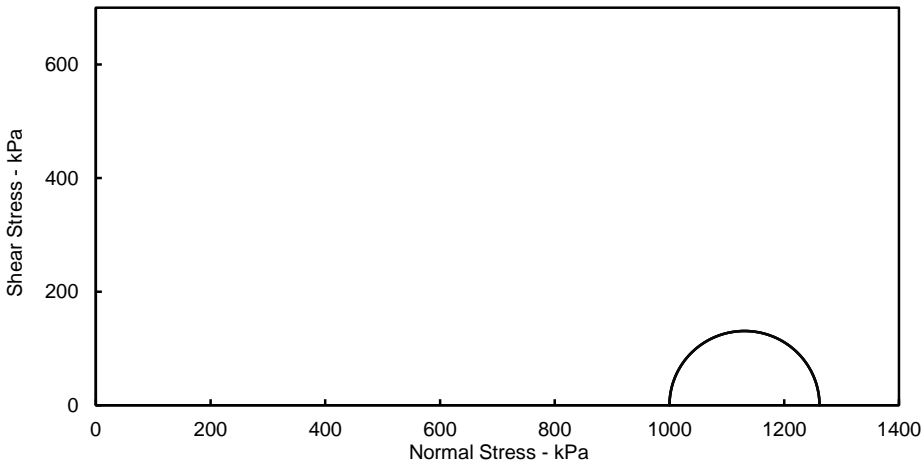
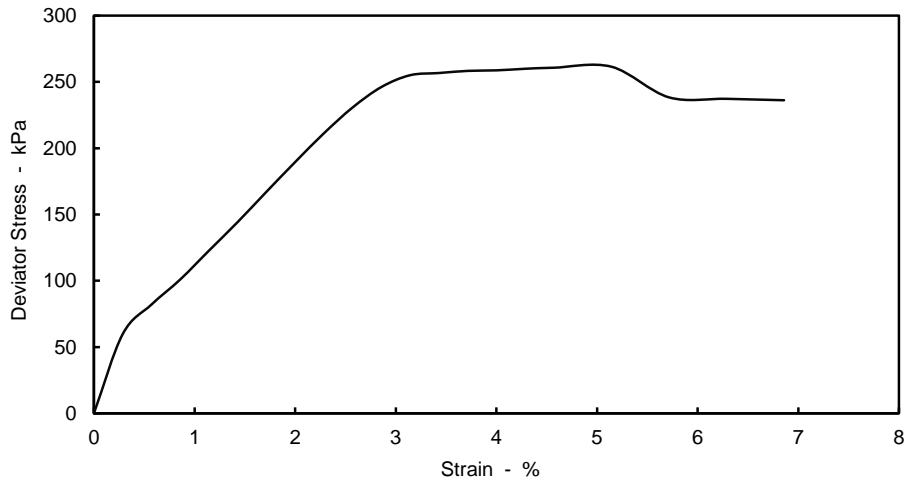
Comments
Undisturbed specimen taken 60mm below top of tube

Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.39		
Rate of Axial Displacement	%/min	0.87		
Cell Pressure	kPa	1000		
Strain at Failure	%	5.1		
Maximum Deviator Stress	kPa	261		
Shear Strength	kPa	131		
Mode of Failure			Brittle	

Shear Strength Parameters	
C	kPa
Phi	°

Non Engineering Description	Stiff laminated light grey sandy CLAY.
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Originator	Checked & Approved
MAB	30/04/2018

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Site GREAT YARMOUTH THIRD RIVER CROSSING


Contract No PZ1522D1

Client Norfolk County Council

Hole BH11
Sample Ref 110
Depth (m) 46.00-46.45
Sample Type UT

Engineer Norfolk Partnership Laboratory



Originator	Checked & Approved
MAB	 30/04/2018

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SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH THIRD RIVER CROSSING
 Client Norfolk County Council
 Engineer Norfolk Partnership Laboratory

Contract No. PZ1522D1
 Hole BH11
 Sample Ref 110
 Depth (m) 46.00-46.45
 Sample Type UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	157.0		
Diameter	mm	100.9		
Moisture Content	%	29		
Bulk Density	Mg/m ³	1.95		
Dry Density	Mg/m ³	1.52		

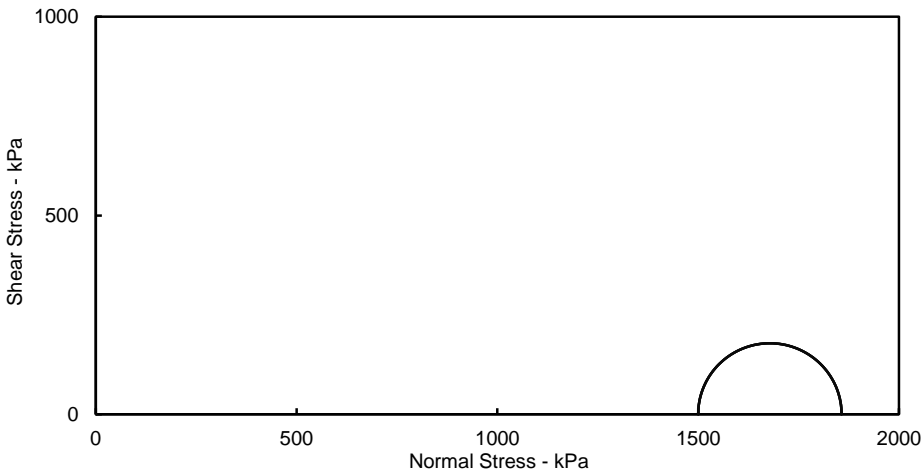
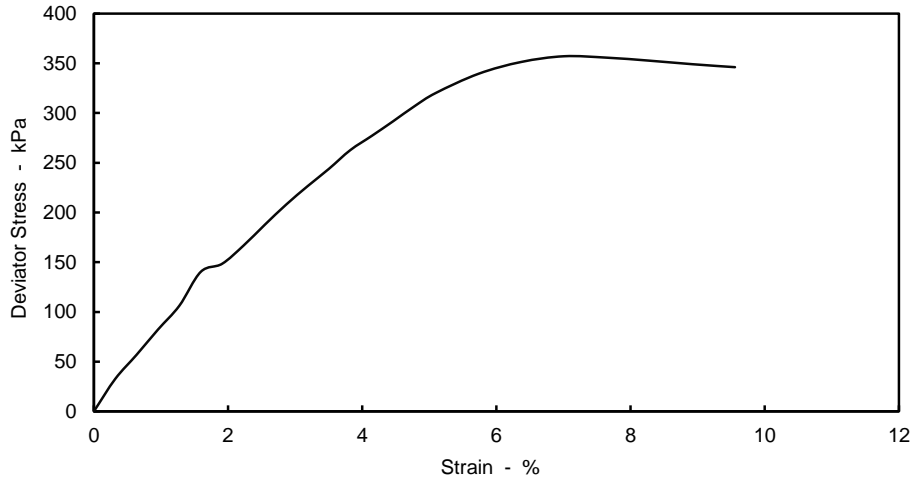
Comments
 Undisturbed specimen taken 250mm below top of tube

Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.51		
Rate of Axial Displacement	%/min	0.97		
Cell Pressure	kPa	1500		
Strain at Failure	%	7.0		
Maximum Deviator Stress	kPa	357		
Shear Strength	kPa	179		
Mode of Failure			Brittle	

Shear Strength Parameters	
C	kPa
Phi	°

Non Engineering Description Very stiff laminated light grey sandy CLAY.



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SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH THIRD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No PZ1522D1

Hole BH11

Sample Ref 110

Depth (m) 46.00-46.45

Sample Type UT



Originator


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DM

30/04/2018

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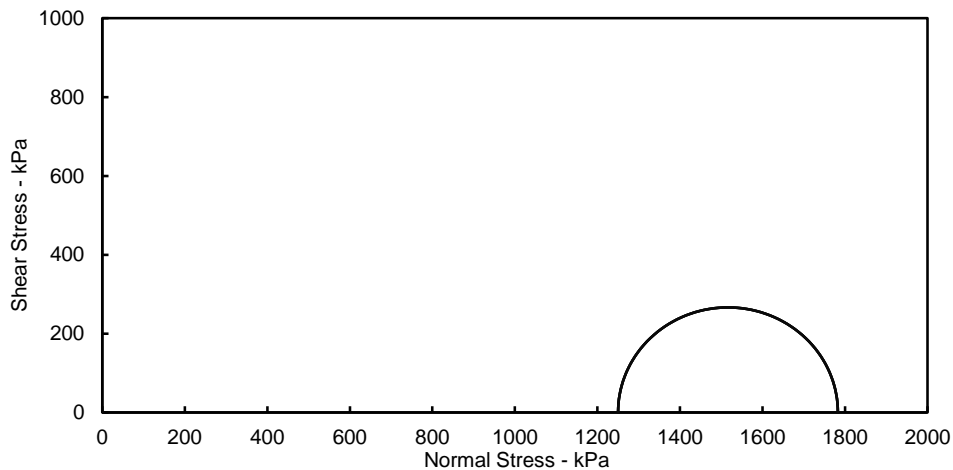
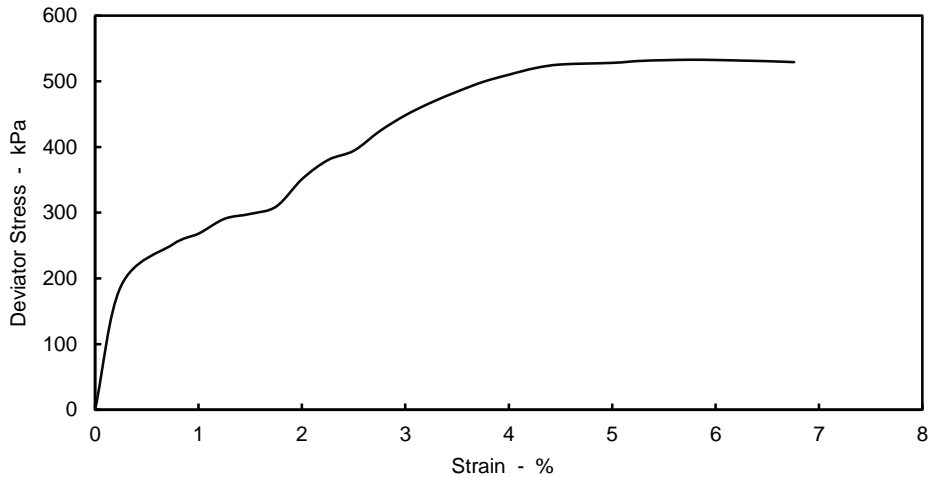


 TERRA TEK <small>SITE INVESTIGATION AND LABORATORY SERVICES</small>	Site	GREAT YARMOUTH 3RD RIVER CROSSING	Contract No.	PZ1522D1
	Client	Norfolk County Council	Hole	BH11
	Engineer	Norfolk Partnership Laboratory	Sample Ref	113
			Depth (m)	47.00
			Sample Type	UT

Sample Details			Undisturbed		
Sample Condition					
Height	mm	199.7			
Diameter	mm	102.6			
Moisture Content	%	33			
Bulk Density	Mg/m ³	1.94			
Dry Density	Mg/m ³	1.46			
Test Details					
Membrane Thickness	mm	0.30			
Membrane Correction	kPa	0.43			
Rate of Axial Displacement	%/min	0.76			
Cell Pressure	kPa	1250			
Strain at Failure	%	5.8			
Maximum Deviator Stress	kPa	533			
Shear Strength	kPa	266			
Mode of Failure			Brittle		
Non Engineering Description		Very stiff fissured brown slightly sandy CLAY.			

Comments
Undisturbed specimen taken 240mm below top of tube

Shear Strength Parameters		
C	n/a	kPa
Phi	n/a	°



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EH	 15/08/2018	



TERRA TEK

SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH 3RD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No PZ1522D1

Hole BH11

Sample Ref 113

Depth (m) 47.00

Sample Type UT



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15/08/2018

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Site	GREAT YARMOUTH 3RD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH11
Sample Ref	113
Depth (m)	47.00
Sample Type	UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	798.6		
Diameter	mm	102.5		
Moisture Content	%	33		
Bulk Density	Mg/m ³	0.46		
Dry Density	Mg/m ³	0.34		

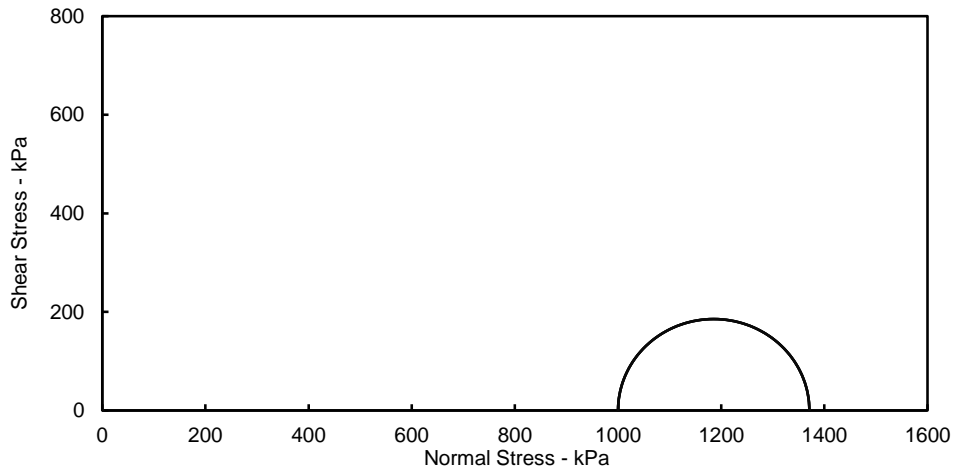
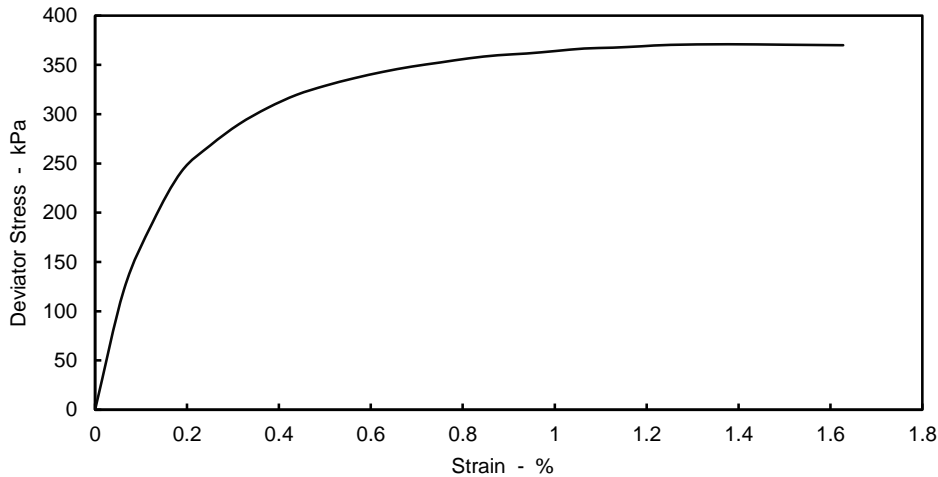
Comments
 Undisturbed specimen taken 20mm below top of tube


Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.12		
Rate of Axial Displacement	%/min	0.19		
Cell Pressure	kPa	1000		
Strain at Failure	%	1.4		
Maximum Deviator Stress	kPa	371		
Shear Strength	kPa	185		
Mode of Failure			Compound	

Shear Strength Parameters		
C	n/a	kPa
Phi	n/a	°

Non Engineering Description: Very stiff fissured brown slightly sandy CLAY.



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TERRA TEK

SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH 3RD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No PZ1522D1

Hole BH11

Sample Ref 113

Depth (m) 47.00

Sample Type UT



Originator


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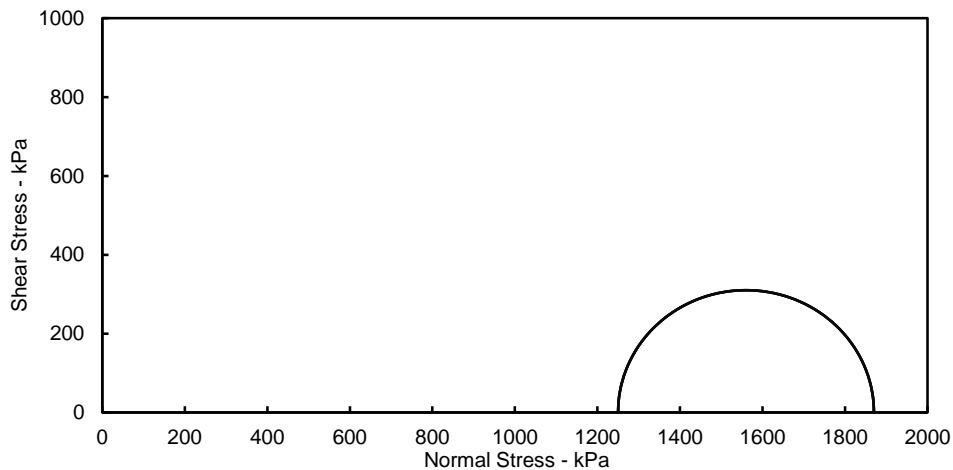
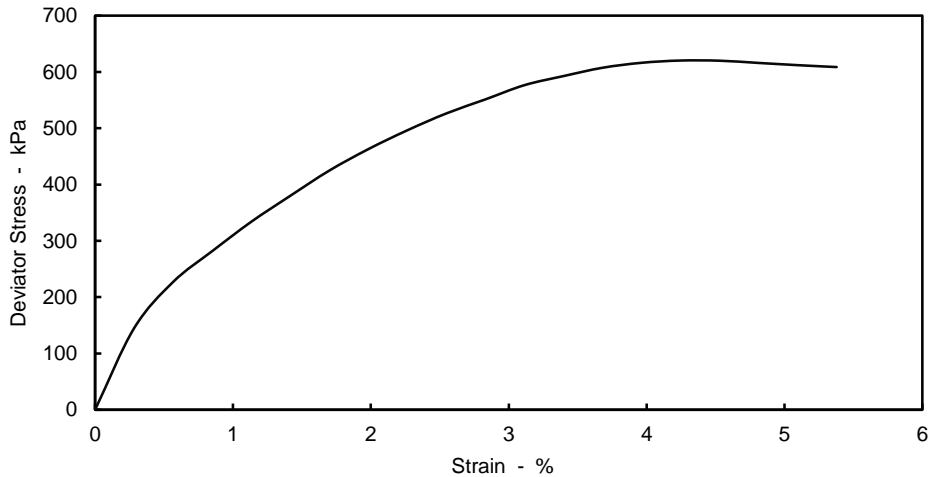



 TERRA TEK <small>SITE INVESTIGATION AND LABORATORY SERVICES</small>	Site	GREAT YARMOUTH 3RD RIVER CROSSING	Contract No.	PZ1522D1
	Client	Norfolk County Council	Hole	BH11A
	Engineer	Norfolk Partnership Laboratory	Sample Ref	118
			Depth (m)	48.50
			Sample Type	UT

Sample Details		Undisturbed		
Sample Condition				
Height	mm	176.6		
Diameter	mm	102.7		
Moisture Content	%	30		
Bulk Density	Mg/m ³	1.94		
Dry Density	Mg/m ³	1.50		
Test Details				
Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.33		
Rate of Axial Displacement	%/min	0.86		
Cell Pressure	kPa	1250		
Strain at Failure	%	4.2		
Maximum Deviator Stress	kPa	620		
Shear Strength	kPa	310		
Mode of Failure			Compound	
Non Engineering Description		Hard fissured olive brown slightly sandy CLAY.		

Comments
Undisturbed specimen taken 250mm below top of tube

Shear Strength Parameters		
C	n/a	kPa
Phi	n/a	°



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TERRA TEK

SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH 3RD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No PZ1522D1

Hole BH11A

Sample Ref 118

Depth (m) 48.50

Sample Type UT



Originator

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EH

15/08/2018

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SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH 3RD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH11A
Sample Ref	118
Depth (m)	48.50
Sample Type	UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	200.2		
Diameter	mm	102.4		
Moisture Content	%	30		
Bulk Density	Mg/m ³	1.96		
Dry Density	Mg/m ³	1.50		

Comments

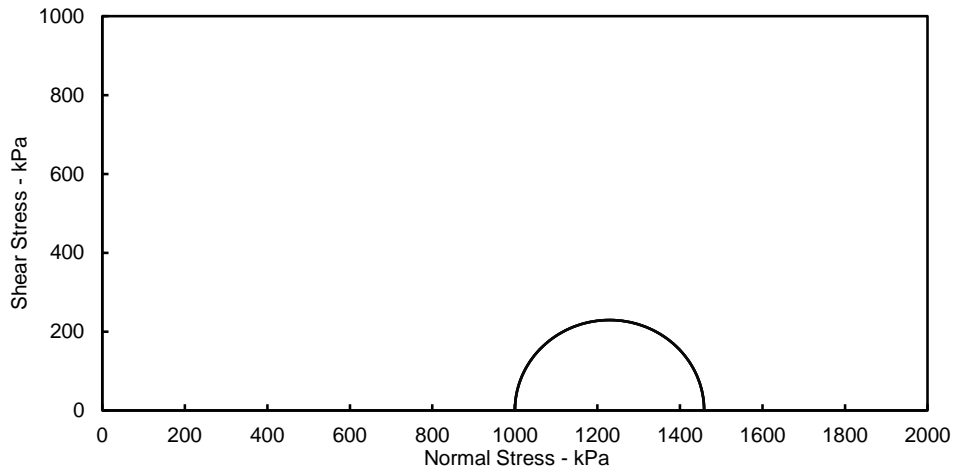
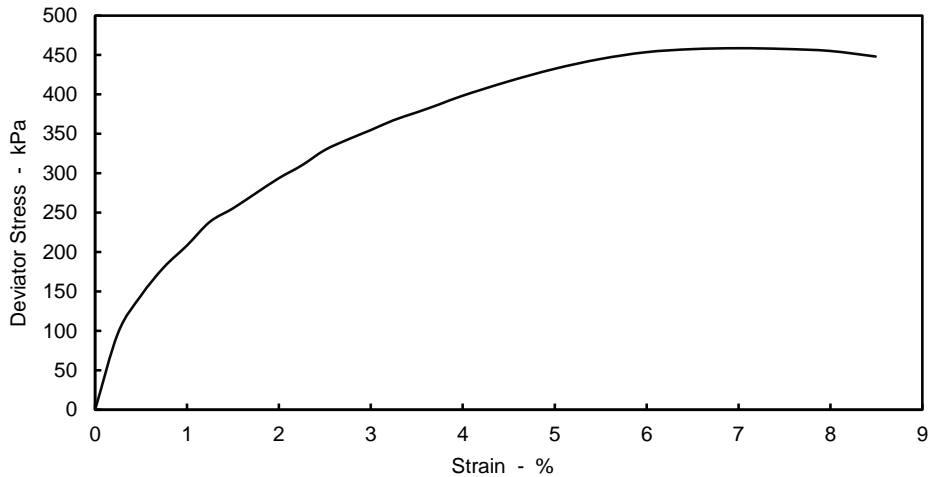
Undisturbed specimen taken 40mm below top of tube


Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.50		
Rate of Axial Displacement	%/min	0.76		
Cell Pressure	kPa	1000		
Strain at Failure	%	7.0		
Maximum Deviator Stress	kPa	459		
Shear Strength	kPa	229		
Mode of Failure			Brittle	

Non Engineering Description: Very stiff fissured olive brown slightly sandy CLAY.

Shear Strength Parameters		
C	n/a	kPa
Phi	n/a	°



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TERRA TEK

SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH 3RD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No PZ1522D1



Hole BH11A

Sample Ref 118

Depth (m) 48.50

Sample Type UT



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EH	 15/08/2018		



SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH THIRD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH11
Sample Ref	117
Depth (m)	48.50-48.95
Sample Type	UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	157.9		
Diameter	mm	103.3		
Moisture Content	%	24		
Bulk Density	Mg/m ³	2.06		
Dry Density	Mg/m ³	1.66		

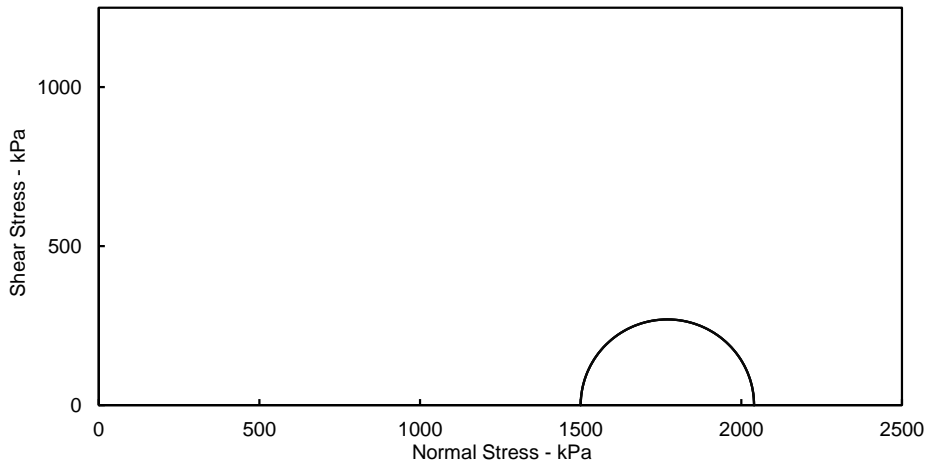
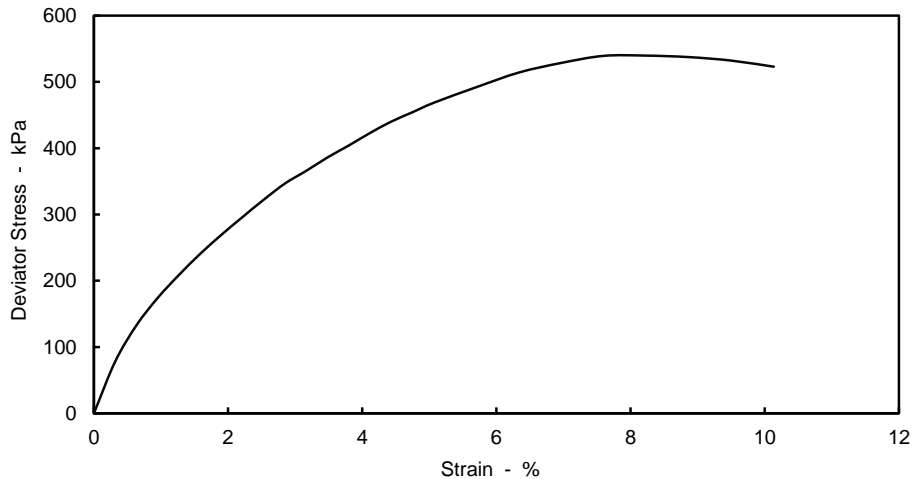
Comments
Undisturbed specimen taken 80mm below top of tube

Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.57		
Rate of Axial Displacement	%/min	0.96		
Cell Pressure	kPa	1500		
Strain at Failure	%	8.2		
Maximum Deviator Stress	kPa	540		
Shear Strength	kPa	270		
Mode of Failure			Brittle	

Shear Strength Parameters	
C	kPa
Phi	°

Non Engineering Description: Very stiff fissured dark brown slightly sandy CLAY.



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Site GREAT YARMOUTH THIRD RIVER CROSSING


Contract No PZ1522D1

Client Norfolk County Council

Hole BH11
Sample Ref 117
Depth (m) 48.50-48.95
Sample Type UT

Engineer Norfolk Partnership Laboratory



Originator	Checked & Approved
DM	 30/04/2018

Please note that these photographs are intended to show the failure mode, and do not necessarily show accurately the colouration of the soil.



Sheet 2 of 2



SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH THIRD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH11
Sample Ref	117
Depth (m)	48.50-48.95
Sample Type	UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	175.4		
Diameter	mm	103.3		
Moisture Content	%	31		
Bulk Density	Mg/m ³	1.96		
Dry Density	Mg/m ³	1.50		

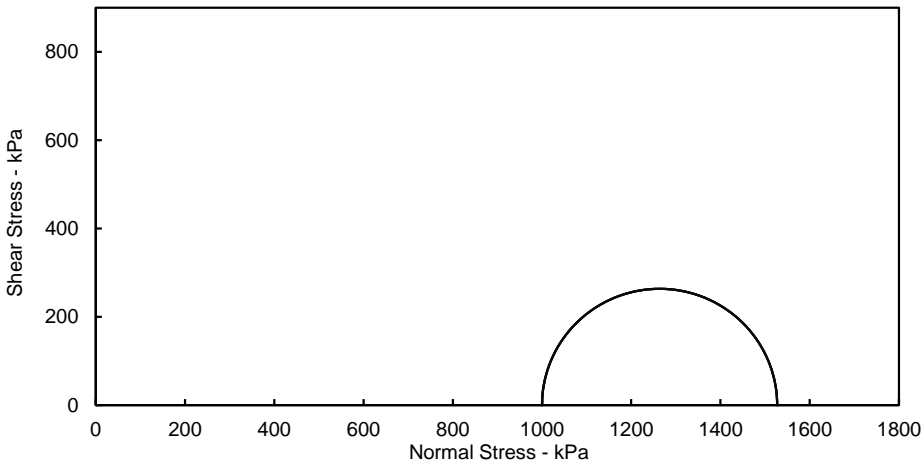
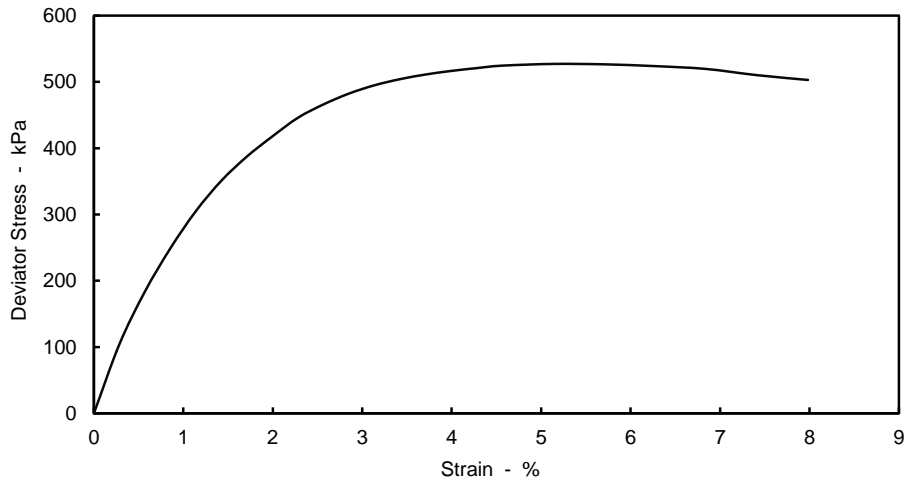
Comments
Undisturbed specimen taken 260mm below top of tube

Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.38		
Rate of Axial Displacement	%/min	0.87		
Cell Pressure	kPa	1000		
Strain at Failure	%	5.1		
Maximum Deviator Stress	kPa	527		
Shear Strength	kPa	264		
Mode of Failure			Brittle	

Shear Strength Parameters	
C	kPa
Phi	°

Non Engineering Description: Very stiff fissured dark brown slightly sandy CLAY.



Originator	Checked & Approved
DM	30/04/2018

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SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH THIRD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No PZ1522D1


Hole BH11

Sample Ref 117

Depth (m) 48.50-48.95

Sample Type UT



Originator	Checked & Approved
DM	 30/04/2018

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Sheet 2 of 2



SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH THIRD RIVER CROSSING

Contract No. PZ1522D1

Client Norfolk County Council
 Engineer Norfolk Partnership Laboratory

Hole BH11A
 Sample Ref 79
 Depth (m) 28.00-28.45
 Sample Type UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	170.3		
Diameter	mm	103.5		
Moisture Content	%	21		
Bulk Density	Mg/m ³	2.06		
Dry Density	Mg/m ³	1.70		

Comments

Undisturbed specimen taken 80mm below top of tube

Test Details

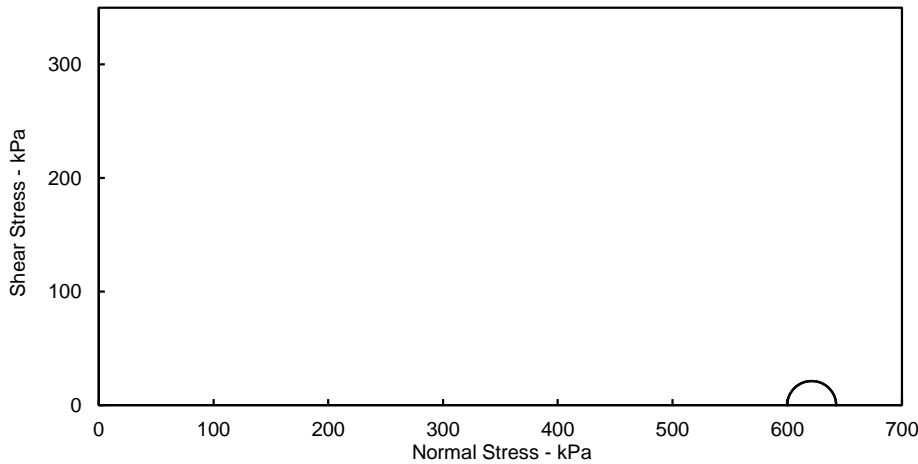
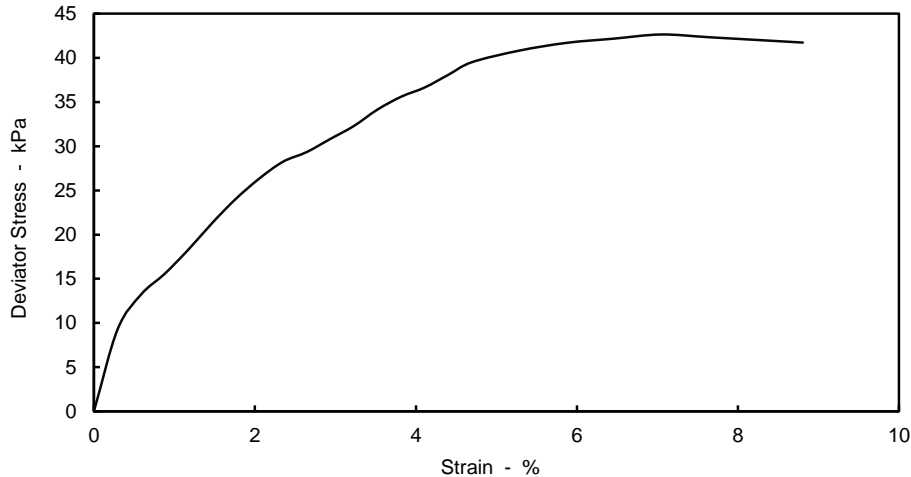
Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.50		
Rate of Axial Displacement	%/min	0.89		
Cell Pressure	kPa	600		
Strain at Failure	%	7.0		
Maximum Deviator Stress	kPa	43		
Shear Strength	kPa	21		
Mode of Failure			Plastic	

Shear Strength Parameters

C	kPa
Phi	°

Non Engineering Description

Soft intact light grey slightly clayey SAND.



Originator

Checked & Approved

DM

30/04/2018

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BS 1377 : Part 7 : 1990 Clause 8





Site GREAT YARMOUTH THIRD RIVER CROSSING


Contract No PZ1522D1

Client Norfolk County Council

Hole BH11A
Sample Ref 79
Depth (m) 28.00-28.45
Sample Type UT

Engineer Norfolk Partnership Laboratory



Originator	Checked & Approved
DM	 30/04/2018

Please note that these photographs are intended to show the failure mode, and do not necessarily show accurately the colouration of the soil.



Sheet 2 of 2



SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH THIRD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH11A
Sample Ref	79
Depth (m)	28.00-28.45
Sample Type	UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	194.8		
Diameter	mm	103.9		
Moisture Content	%	24		
Bulk Density	Mg/m ³	2.08		
Dry Density	Mg/m ³	1.67		

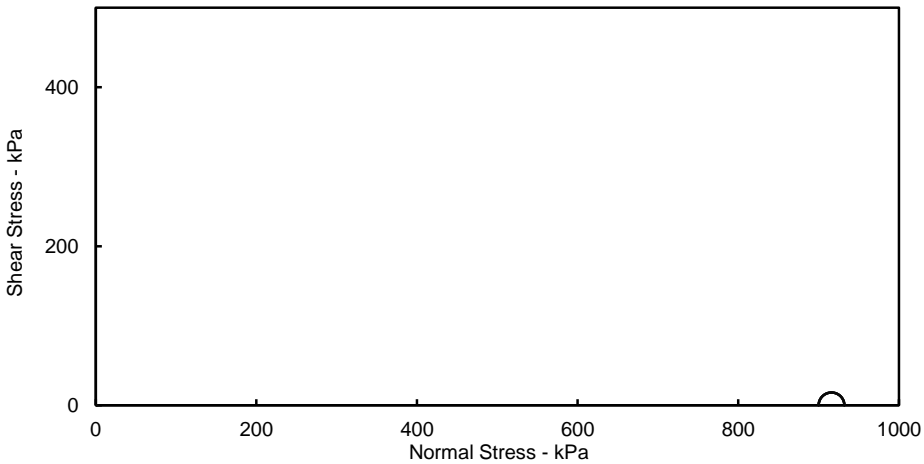
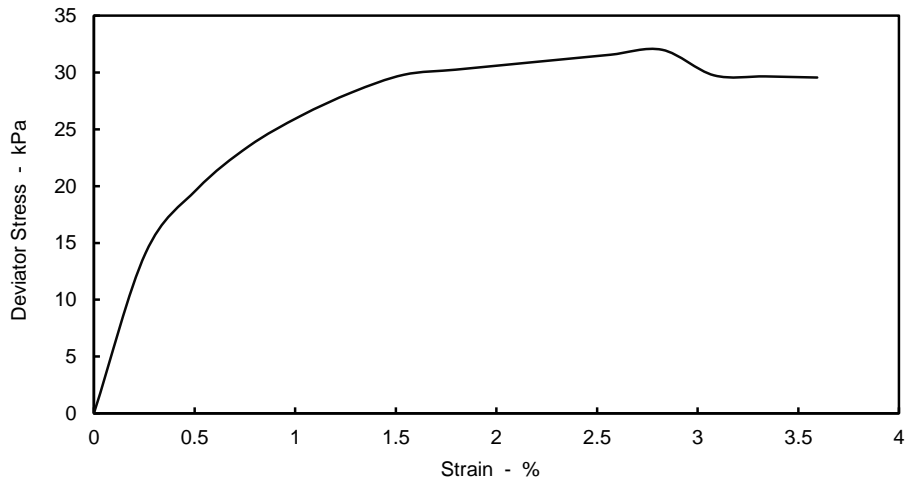
Comments
Undisturbed specimen taken 250mm below top of tube

Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.22		
Rate of Axial Displacement	%/min	0.78		
Cell Pressure	kPa	900		
Strain at Failure	%	2.8		
Maximum Deviator Stress	kPa	32		
Shear Strength	kPa	16		
Mode of Failure			Plastic	

Shear Strength Parameters	
C	kPa
Phi	°

Non Engineering Description	Light grey slightly clayey SAND.
-----------------------------	----------------------------------



Originator	Checked & Approved
MAB	30/04/2018

UNCONSOLIDATED UNDRAINED SINGLE STAGE TRIAXIAL COMPRESSION
BS 1377 : Part 7 : 1990 Clause 8



Sheet 1 of 2



SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH THIRD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No PZ1522D1

Hole BH11A

Sample Ref 79

Depth (m) 28.00-28.45

Sample Type UT



Originator

Checked & Approved

MAB

30/04/2018

Please note that these photographs are intended to show the failure mode, and do not necessarily show accurately the colouration of the soil.





SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH THIRD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH11A
Sample Ref	87
Depth (m)	31.50-32.10
Sample Type	UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	173.2		
Diameter	mm	103.5		
Moisture Content	%	26		
Bulk Density	Mg/m ³	1.99		
Dry Density	Mg/m ³	1.57		

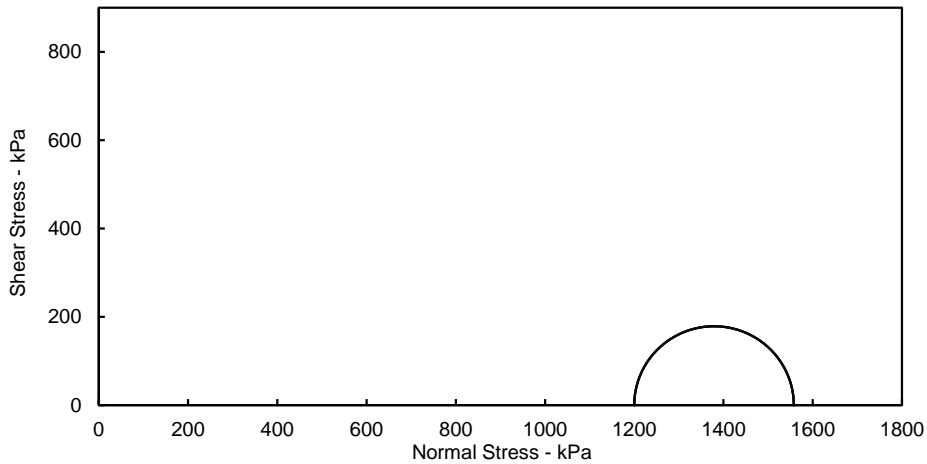
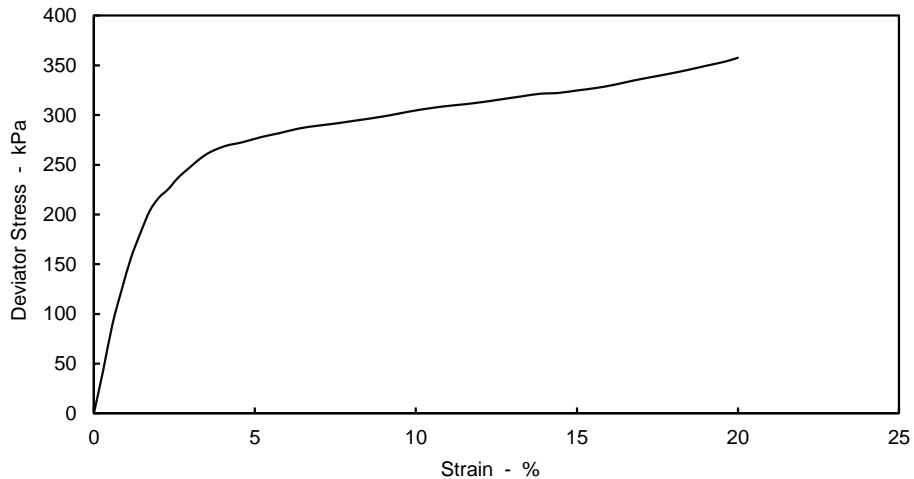
Comments
Undisturbed specimen taken 40mm below top of tube

Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	1.10		
Rate of Axial Displacement	%/min	0.88		
Cell Pressure	kPa	1200		
Strain at Failure	%	20.0		
Maximum Deviator Stress	kPa	358		
Shear Strength	kPa	179		
Mode of Failure			Plastic	

Shear Strength Parameters	
C	kPa
Phi	°

Non Engineering Description: Very stiff intact CLAY with layers/pockets of sand.



Originator	Checked & Approved
DM	2018

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SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH THIRD RIVER CROSSING

Contract No PZ1522D1

Client Norfolk County Council

Hole BH11A


Engineer Norfolk Partnership Laboratory

Sample Ref 87

Depth (m) 31.50-32.10

Sample Type UT



Originator	Checked & Approved
DM	 30/04/2018

Please note that these photographs are intended to show the failure mode, and do not necessarily show accurately the colouration of the soil.



Sheet 2 of 2



SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH THIRD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH11A
Sample Ref	87
Depth (m)	31.50-32.10
Sample Type	UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	173.4		
Diameter	mm	103.4		
Moisture Content	%	24		
Bulk Density	Mg/m ³	2.05		
Dry Density	Mg/m ³	1.65		

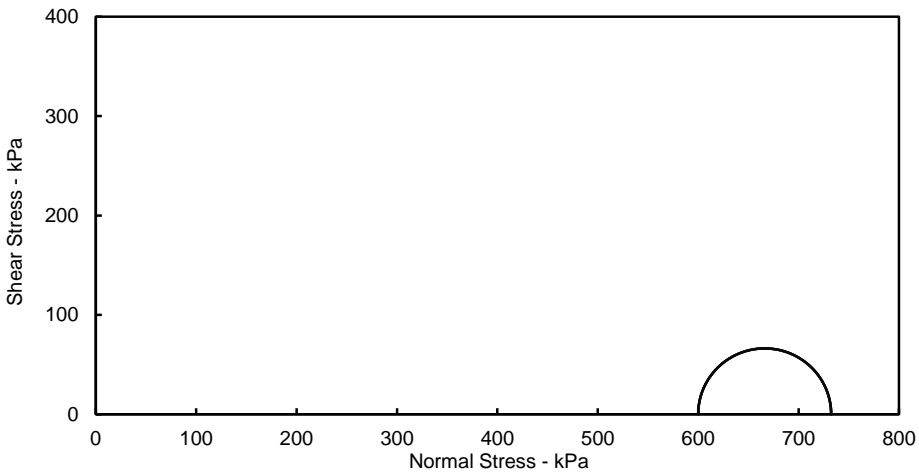
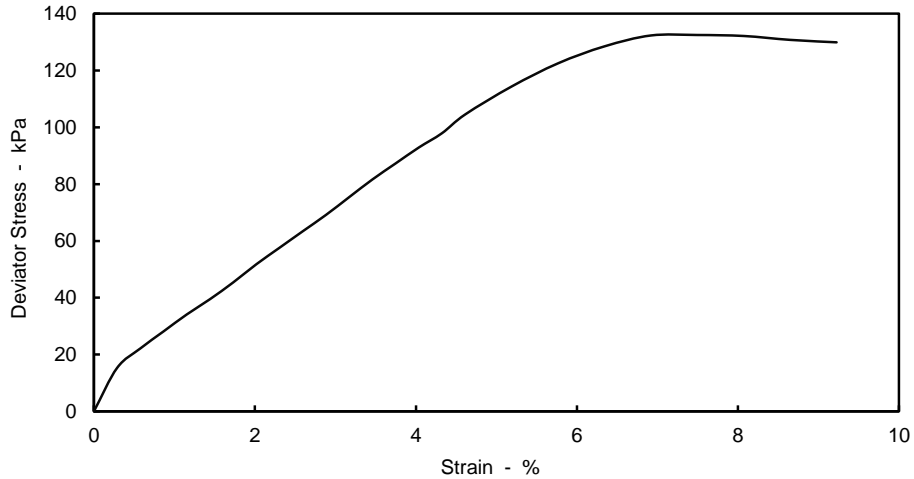
Comments
Undisturbed specimen taken 240mm below top of tube

Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.52		
Rate of Axial Displacement	%/min	0.88		
Cell Pressure	kPa	600		
Strain at Failure	%	7.5		
Maximum Deviator Stress	kPa	132		
Shear Strength	kPa	66		
Mode of Failure			Plastic	

Shear Strength Parameters	
C	kPa
Phi	°

Non Engineering Description	Grey very clayey SAND.
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UNCONSOLIDATED UNDRAINED SINGLE STAGE TRIAXIAL COMPRESSION

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Site GREAT YARMOUTH THIRD RIVER CROSSING


Contract No PZ1522D1

Client Norfolk County Council

Hole BH11A
Sample Ref 87
Depth (m) 31.50-32.10
Sample Type UT

Engineer Norfolk Partnership Laboratory



Originator	Checked & Approved
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Sheet 2 of 2



SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH THIRD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH11A
Sample Ref	114
Depth (m)	47.00-47.50
Sample Type	UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	175.3		
Diameter	mm	102.6		
Moisture Content	%	31		
Bulk Density	Mg/m ³	1.99		
Dry Density	Mg/m ³	1.52		

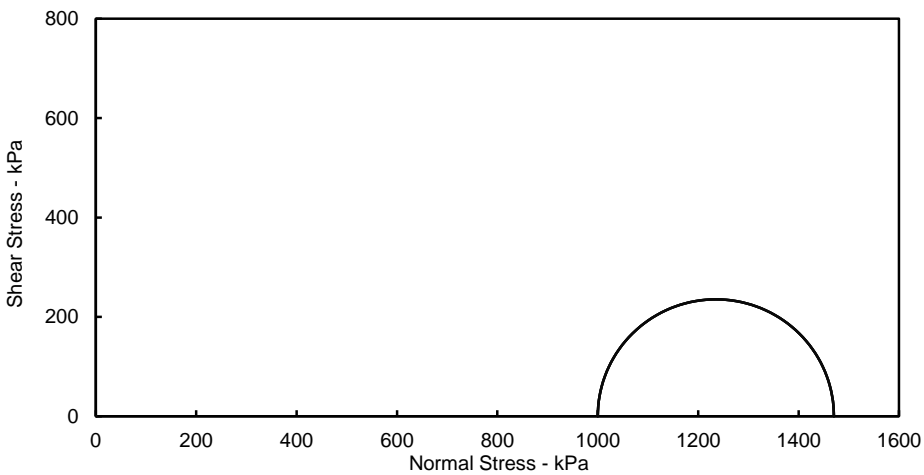
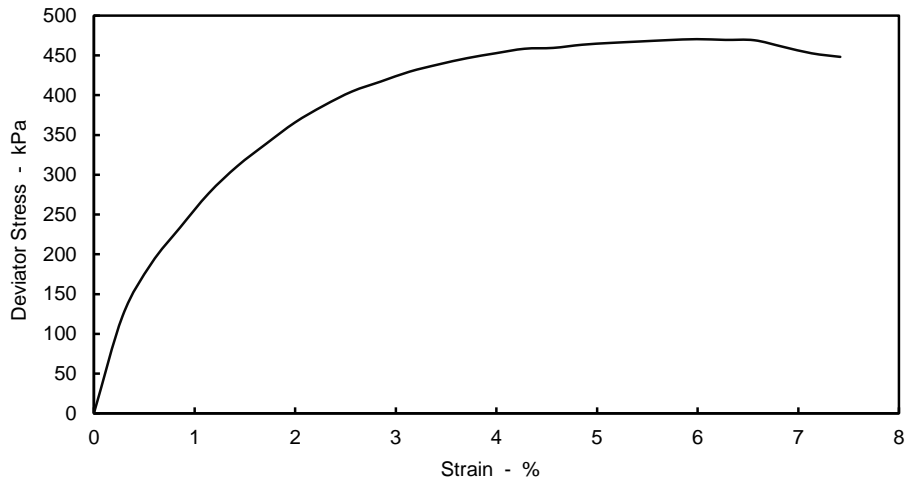
Comments
Undisturbed specimen taken 30mm below top of tube

Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.44		
Rate of Axial Displacement	%/min	0.87		
Cell Pressure	kPa	1000		
Strain at Failure	%	6.0		
Maximum Deviator Stress	kPa	470		
Shear Strength	kPa	235		
Mode of Failure			Brittle	

Shear Strength Parameters	
C	kPa
Phi	°

Non Engineering Description	Hard fissured dark brown CLAY.
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Sheet 1 of 2



SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH THIRD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No PZ1522D1


Hole BH11A

Sample Ref 114

Depth (m) 47.00-47.50

Sample Type UT



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SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH THIRD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH11A
Sample Ref	114
Depth (m)	47.00-47.50
Sample Type	UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	174.2		
Diameter	mm	102.4		
Moisture Content	%	31		
Bulk Density	Mg/m ³	1.98		
Dry Density	Mg/m ³	1.51		

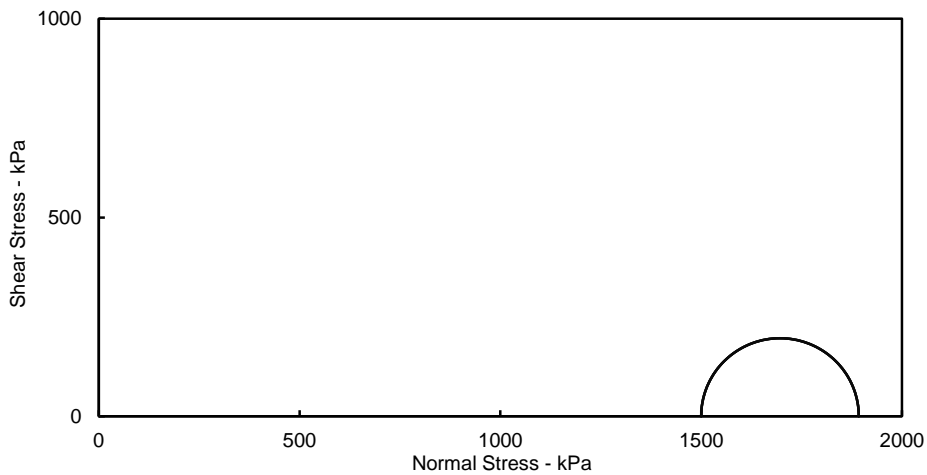
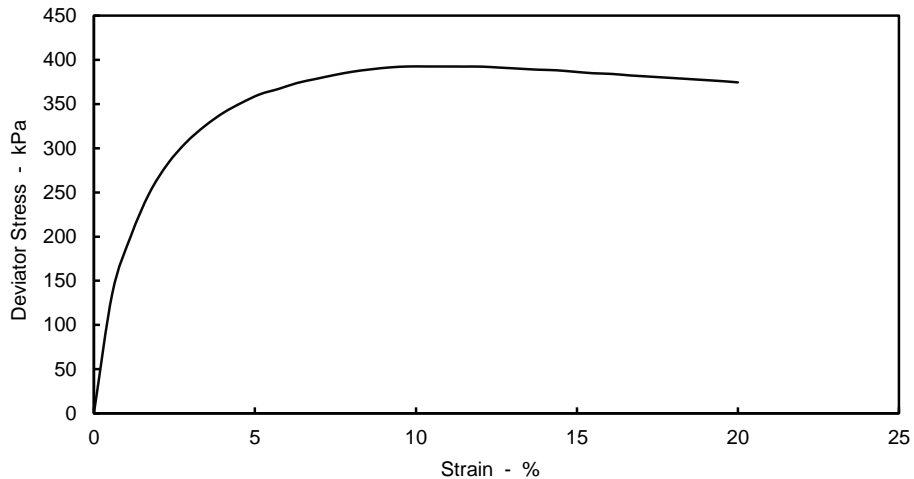
Comments
Undisturbed specimen taken 250mm below top of tube


Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.68		
Rate of Axial Displacement	%/min	0.87		
Cell Pressure	kPa	1500		
Strain at Failure	%	10.3		
Maximum Deviator Stress	kPa	392		
Shear Strength	kPa	196		
Mode of Failure			Brittle	

Shear Strength Parameters	
C	kPa
Phi	°

Non Engineering Description	Very stiff fissured dark brown CLAY.
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Site GREAT YARMOUTH THIRD RIVER CROSSING


Contract No PZ1522D1

Client Norfolk County Council

Hole BH11A
Sample Ref 114
Depth (m) 47.00-47.50
Sample Type UT


Engineer Norfolk Partnership Laboratory



Originator	Checked & Approved
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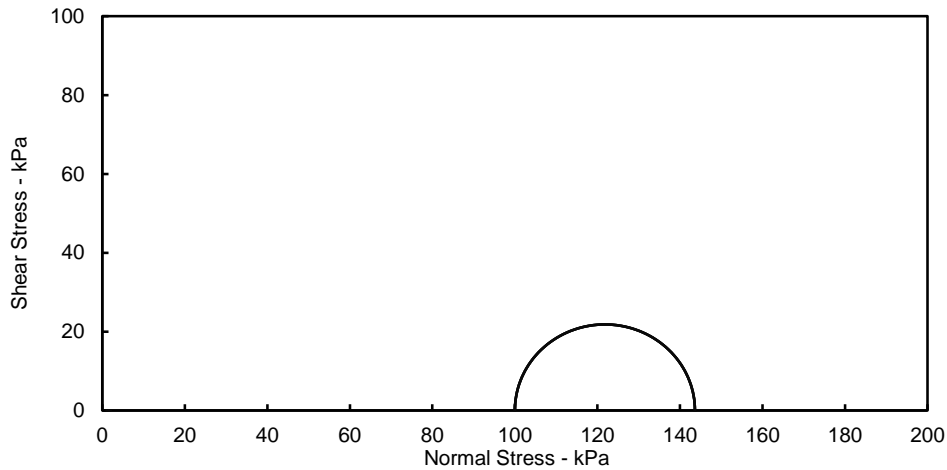
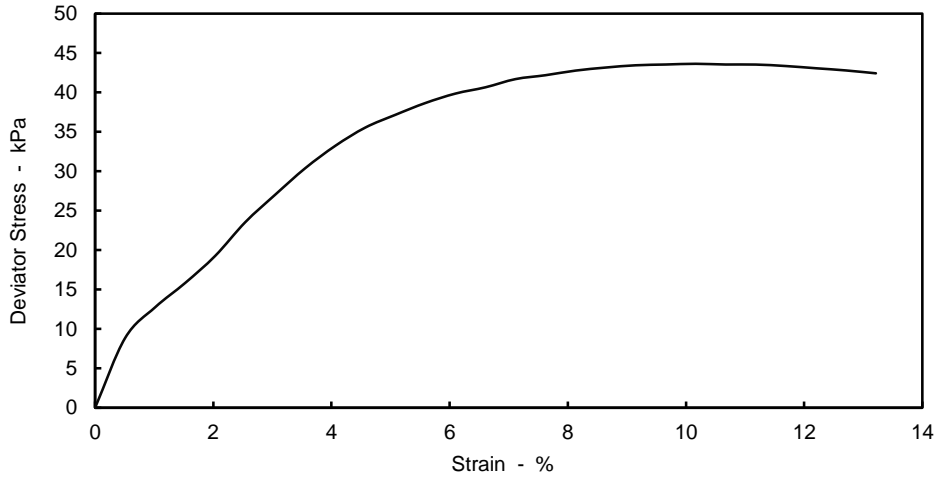



 SITE INVESTIGATION AND LABORATORY SERVICES	Site	GREAT YARMOUTH 3RD RIVER CROSSING	Contract No.	PZ1522D1
	Client	Norfolk County Council	Hole	BH12
	Engineer	Norfolk Partnership Laboratory	Sample Ref	7
			Depth (m)	2.50
			Sample Type	P

Sample Details		Undisturbed		
Sample Condition				
Height	mm	196.8		
Diameter	mm	101.3		
Moisture Content	%	42		
Bulk Density	Mg/m ³	1.77		
Dry Density	Mg/m ³	1.25		
Test Details				
Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.68		
Rate of Axial Displacement	%/min	2.06		
Cell Pressure	kPa	100		
Strain at Failure	%	10.2		
Maximum Deviator Stress	kPa	44		
Shear Strength	kPa	22		
Mode of Failure			Compound	
Non Engineering Description	Soft intact very dark grey slightly sandy CLAY			

Comments
Undisturbed specimen taken 250mm below bottom of tube

Shear Strength Parameters		
C	n/a	kPa
Phi	n/a	°



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EH	15/08/2018		

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SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH 3RD RIVER CROSSING

Contract No **PZ1522D1**

Client Norfolk County Council

Hole BH12



Engineer Norfolk Partnership Laboratory

Sample Ref 7

Depth (m) 2.50

Sample Type P



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EH	 15/08/2018		



SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH 3RD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH12
Sample Ref	7
Depth (m)	2.50
Sample Type	P

Sample Details

Sample Condition		Undisturbed		
Height	mm	198.6		
Diameter	mm	99.8		
Moisture Content	%	47		
Bulk Density	Mg/m ³	1.77		
Dry Density	Mg/m ³	1.21		

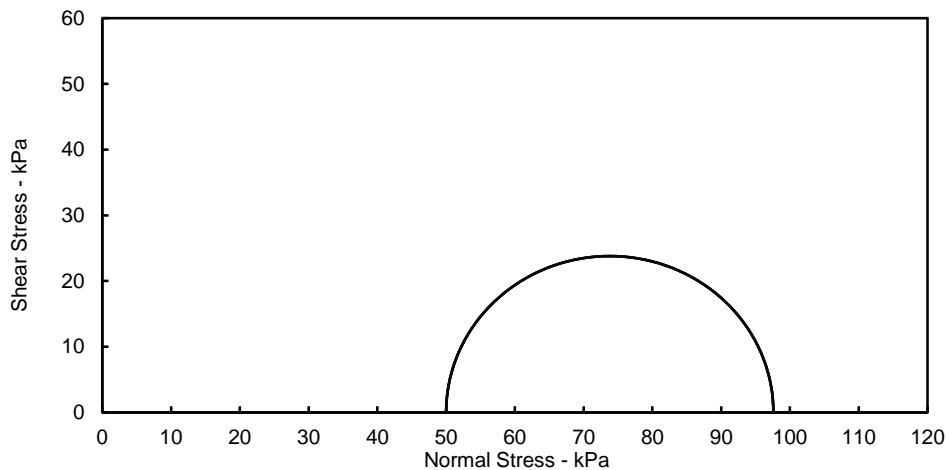
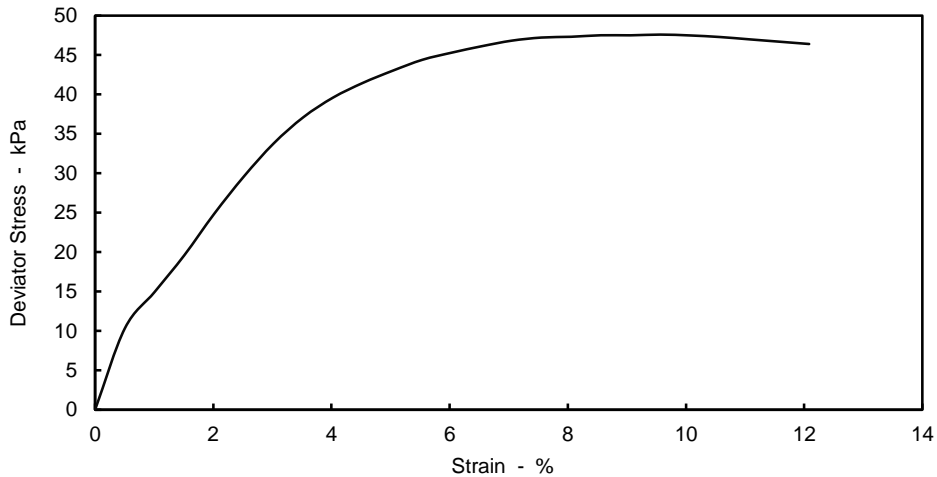
Comments
Undisturbed specimen taken 50mm below bottom of tube


Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.66		
Rate of Axial Displacement	%/min	2.04		
Cell Pressure	kPa	50		
Strain at Failure	%	9.6		
Maximum Deviator Stress	kPa	48		
Shear Strength	kPa	24		
Mode of Failure			Plastic	

Shear Strength Parameters		
C	n/a	kPa
Phi	n/a	°

Non Engineering Description: Soft intact very dark grey slightly sandy CLAY.



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EH	 15/08/2018

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SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH 3RD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No **PZ1522D1**

Hole BH12

Sample Ref 7

Depth (m) 2.50

Sample Type P



Originator

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15/08/2018

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SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH 3RD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH12
Sample Ref	74
Depth (m)	30.50
Sample Type	U

Sample Details

Sample Condition		Undisturbed		
Height	mm	199.6		
Diameter	mm	104.4		
Moisture Content	%	28		
Bulk Density	Mg/m ³	2.04		
Dry Density	Mg/m ³	1.59		

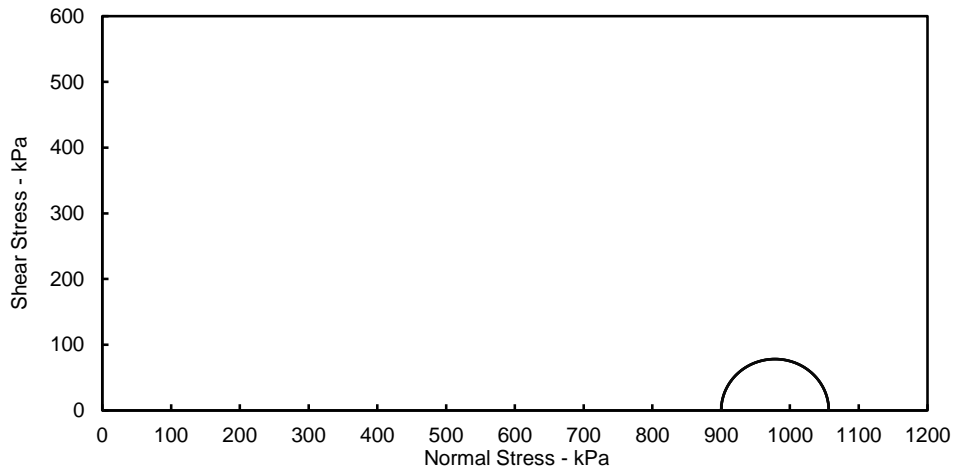
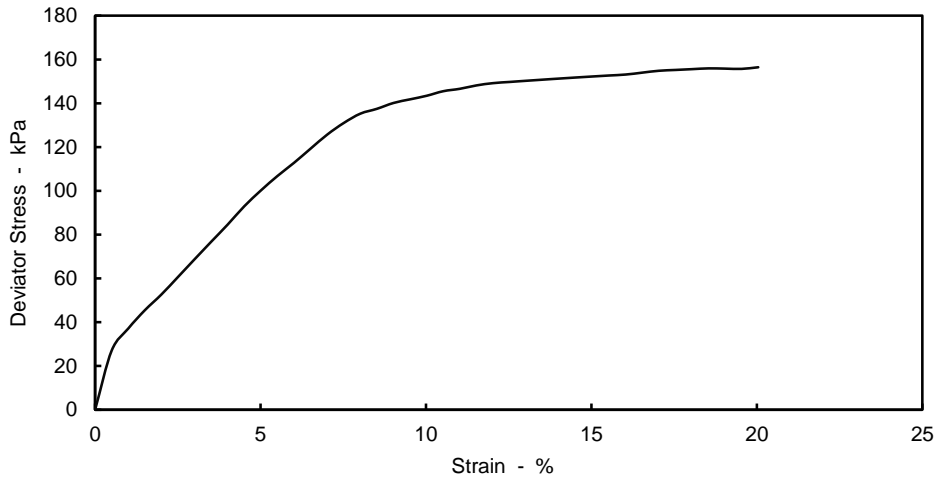
Comments
Undisturbed specimen taken 230mm below top of tube

Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	1.09		
Rate of Axial Displacement	%/min	0.76		
Cell Pressure	kPa	900		
Strain at Failure	%	20.0		
Maximum Deviator Stress	kPa	156		
Shear Strength	kPa	78		
Mode of Failure			Brittle	

Shear Strength Parameters		
C	n/a	kPa
Phi	n/a	°

Non Engineering Description	Stiff intact light grey slightly sandy SILT/CLAY.
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EH	8/2018

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SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH 3RD RIVER CROSSING

Contract No **PZ1522D1**

Client Norfolk County Council

Hole BH12



Engineer Norfolk Partnership Laboratory

Sample Ref 74

Depth (m) 30.50

Sample Type U



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EH	 8/2018		



SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH 3RD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH12
Sample Ref	74
Depth (m)	30.50
Sample Type	U

Sample Details

Sample Condition		Undisturbed		
Height	mm	176.6		
Diameter	mm	103.5		
Moisture Content	%	24		
Bulk Density	Mg/m ³	2.05		
Dry Density	Mg/m ³	1.65		

Comments

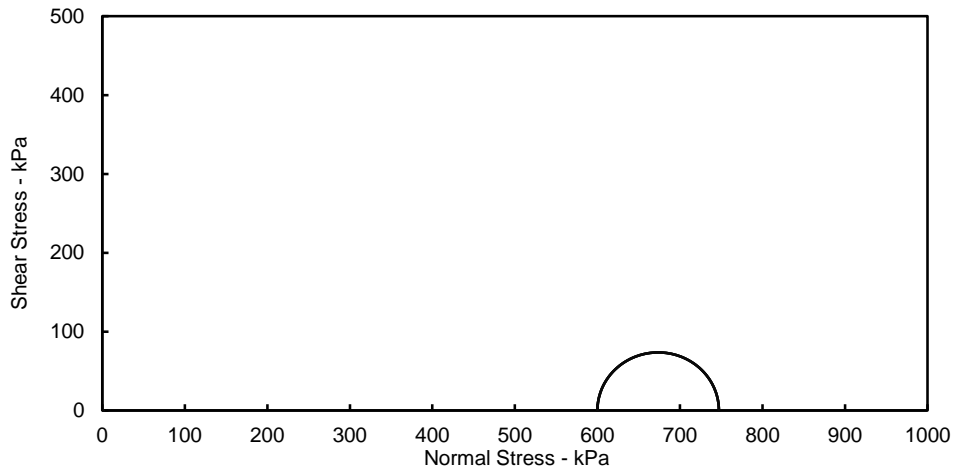
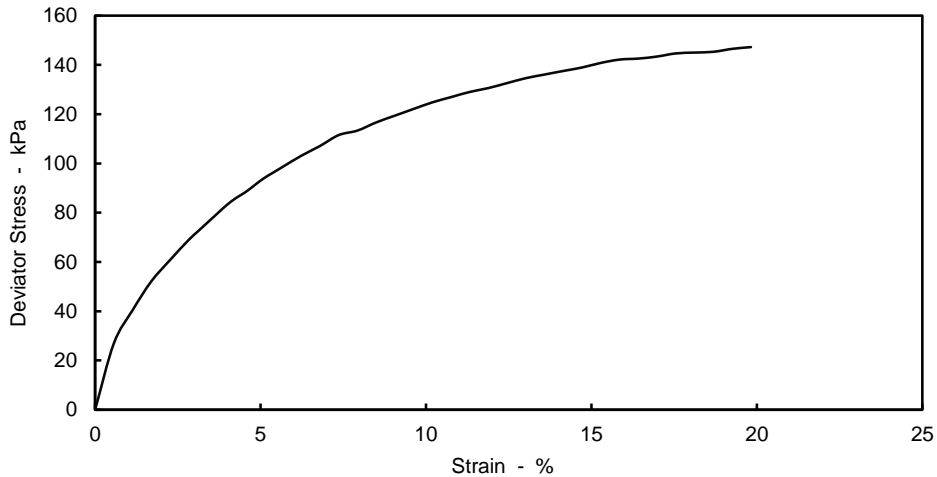
Undisturbed specimen taken 40mm below top of tube


Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	1.10		
Rate of Axial Displacement	%/min	0.86		
Cell Pressure	kPa	600		
Strain at Failure	%	19.8		
Maximum Deviator Stress	kPa	147		
Shear Strength	kPa	74		
Mode of Failure			Plastic	

Non Engineering Description	Firm intact light grey slightly sandy SILT.
-----------------------------	---

Shear Strength Parameters		
C	n/a	kPa
Phi	n/a	°



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SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH 3RD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No **PZ1522D1**

Hole BH12

Sample Ref 74

Depth (m) 30.50

Sample Type U



Originator

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EH

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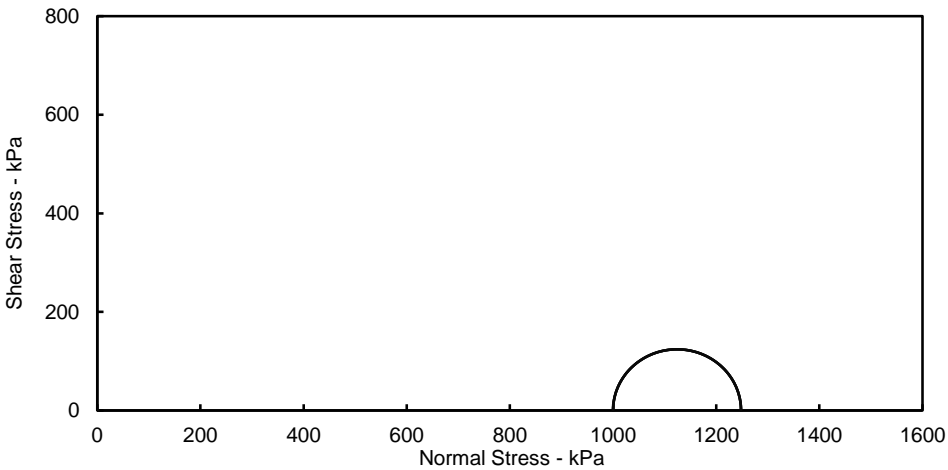
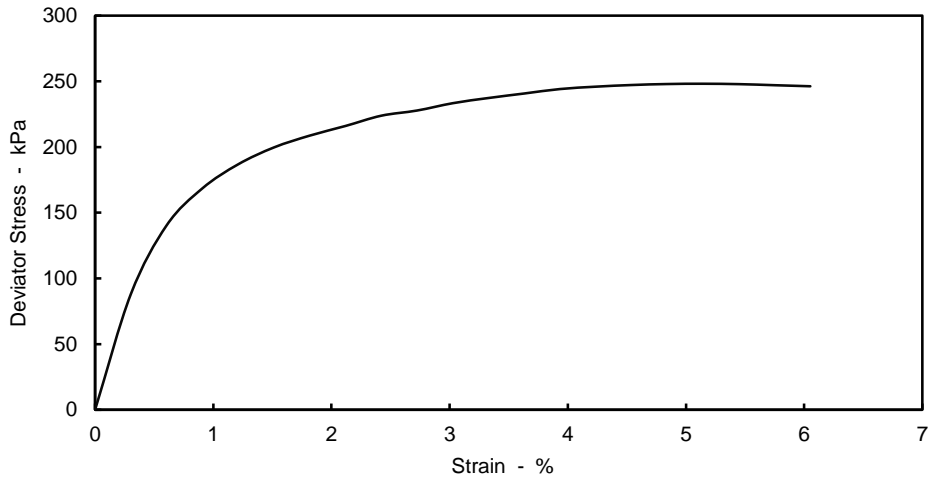
Site	GREAT YARMOUTH 3RD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory


Contract No.	PZ1522D1
Hole	BH12
Sample Ref	99
Depth (m)	46.50
Sample Type	U

Sample Details		Undisturbed		
Sample Condition				
Height	mm	165.2		
Diameter	mm	104.1		
Moisture Content	%	32		
Bulk Density	Mg/m ³	1.94		
Dry Density	Mg/m ³	1.47		
Test Details				
Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.38		
Rate of Axial Displacement	%/min	0.92		
Cell Pressure	kPa	1000		
Strain at Failure	%	5.1		
Maximum Deviator Stress	kPa	248		
Shear Strength	kPa	124		
Mode of Failure			Plastic	
Non Engineering Description	Stiff fissured olive brown slightly sandy CLAY.			

Comments
 Undisturbed specimen taken 160mm below top of tube

Shear Strength Parameters		
C	n/a	kPa
Phi	n/a	°



Originator	Checked & Approved
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TERRA TEK

SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH 3RD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No **PZ1522D1**



Hole BH12

Sample Ref 99

Depth (m) 46.50

Sample Type U



Originator	Checked & Approved	Please note that these photographs are intended to show the failure mode, and do not necessarily show accurately the colouration of the soil.	 <p style="text-align: right;">Sheet 2 of 2</p>
EH	 15/08/2018		



SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH 3RD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH12
Sample Ref	103
Depth (m)	48.50
Sample Type	U

Sample Details

Sample Condition		Undisturbed		
Height	mm	199.5		
Diameter	mm	104.6		
Moisture Content	%	30		
Bulk Density	Mg/m ³	1.97		
Dry Density	Mg/m ³	1.51		

Comments

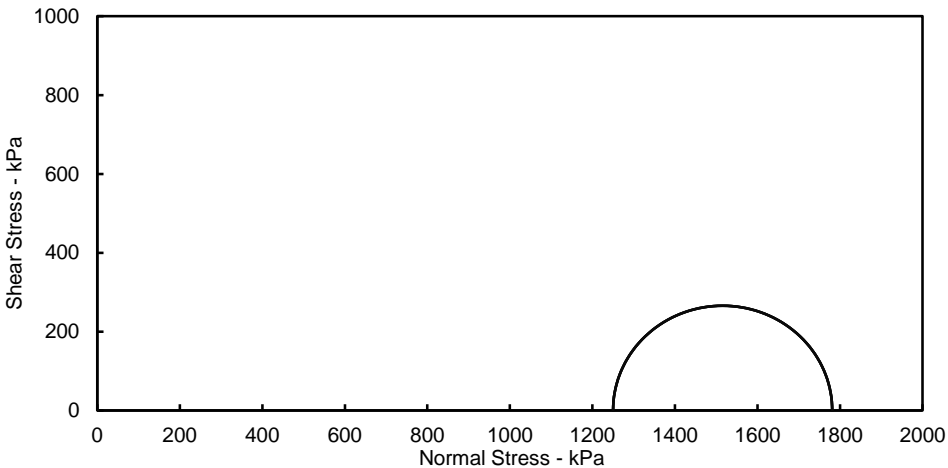
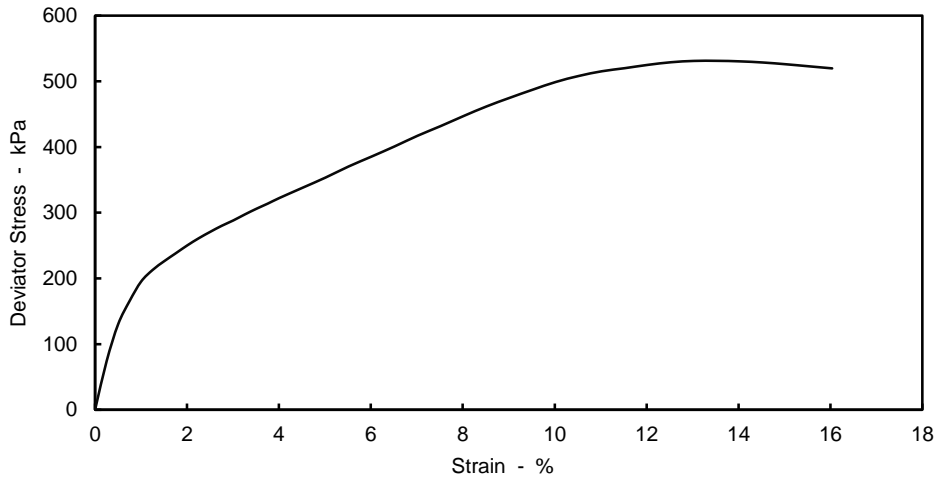
Undisturbed specimen taken 240mm below top of tube

Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.82		
Rate of Axial Displacement	%/min	0.76		
Cell Pressure	kPa	1250		
Strain at Failure	%	13.5		
Maximum Deviator Stress	kPa	531		
Shear Strength	kPa	266		
Mode of Failure			Plastic	

Non Engineering Description: Very stiff fissured olive brown slightly sandy CLAY.

Shear Strength Parameters		
C	n/a	kPa
Phi	n/a	°



Originator	Checked & Approved
EH	15/08/2018

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TERRA TEK

SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH 3RD RIVER CROSSING

Contract No **PZ1522D1**

Client Norfolk County Council

Hole BH12

Sample Ref 103

Depth (m) 48.50

Engineer Norfolk Partnership Laboratory

Sample Type U



Originator

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Please note that these photographs are intended to show the failure mode, and do not necessarily show accurately the colouration of the soil.

EH

15/08/2018





SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH 3RD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH12
Sample Ref	103
Depth (m)	48.50
Sample Type	U

Sample Details

Sample Condition		Undisturbed		
Height	mm	199.7		
Diameter	mm	104.2		
Moisture Content	%	34		
Bulk Density	Mg/m ³	1.91		
Dry Density	Mg/m ³	1.43		

Comments

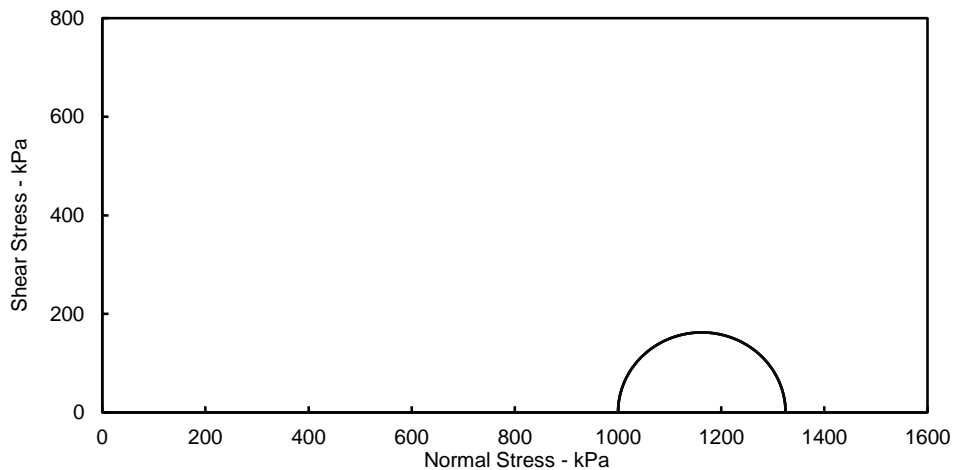
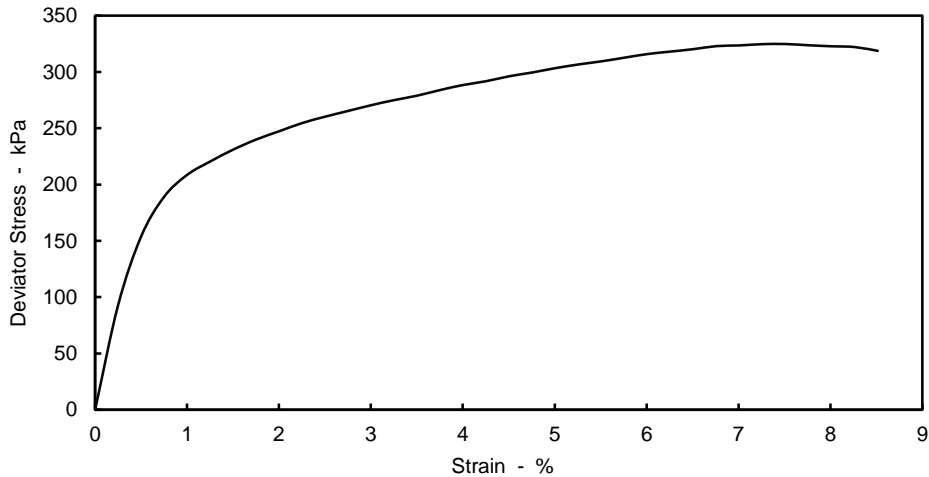
Undisturbed specimen taken 30mm below top of tube


Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.52		
Rate of Axial Displacement	%/min	0.76		
Cell Pressure	kPa	1000		
Strain at Failure	%	7.5		
Maximum Deviator Stress	kPa	325		
Shear Strength	kPa	162		
Mode of Failure			Compound	

Non Engineering Description: Very stiff fissured olive brown slightly sandy CLAY.

Shear Strength Parameters		
C	n/a	kPa
Phi	n/a	°



Originator	Checked & Approved
EH	 15/08/2018

UNCONSOLIDATED UNDRAINED SINGLE STAGE TRIAXIAL COMPRESSION
 BS 1377 : Part 7 : 1990 Clause 8



TERRA TEK

SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH 3RD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No PZ1522D1


Hole BH12

Sample Ref 103

Depth (m) 48.50

Sample Type U



Originator	Checked & Approved
EH	 15/08/2018

Please note that these photographs are intended to show the failure mode, and do not necessarily show accurately the colouration of the soil.





SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH 3RD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH12B
Sample Ref	73
Depth (m)	29.50
Sample Type	UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	200.1		
Diameter	mm	103.3		
Moisture Content	%	24		
Bulk Density	Mg/m ³	2.08		
Dry Density	Mg/m ³	1.68		

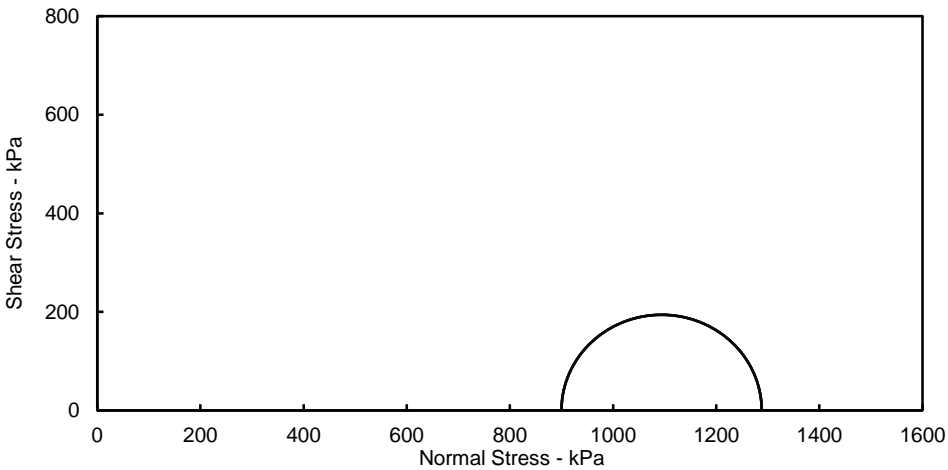
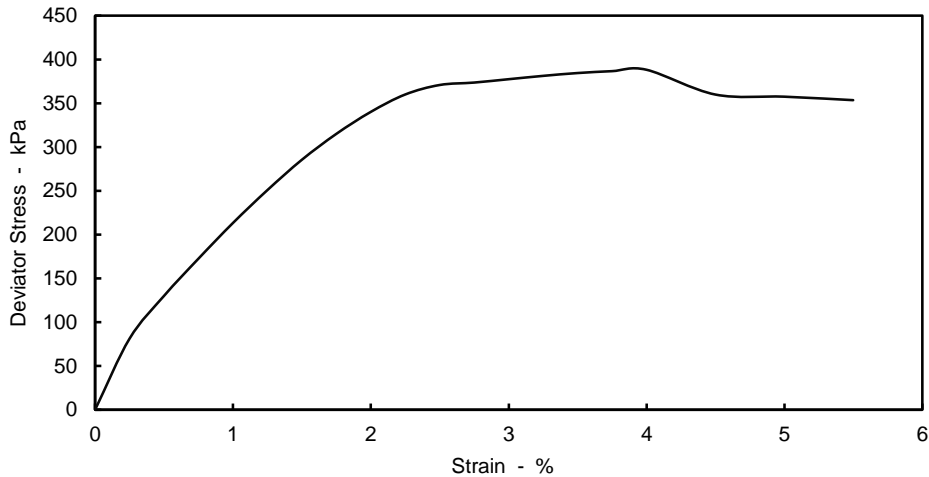
Comments
 Undisturbed specimen taken 220mm below top of tube

Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.31		
Rate of Axial Displacement	%/min	0.76		
Cell Pressure	kPa	900		
Strain at Failure	%	4.0		
Maximum Deviator Stress	kPa	388		
Shear Strength	kPa	194		
Mode of Failure			Brittle	

Shear Strength Parameters		
C	n/a	kPa
Phi	n/a	°

Non Engineering Description: Very stiff fissured grey slightly sandy CLAY.



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SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH 3RD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No **PZ1522D1**


Hole BH12B

Sample Ref 73

Depth (m) 29.50

Sample Type UT



Originator	Checked & Approved
EH	 15/08/2018

Please note that these photographs are intended to show the failure mode, and do not necessarily show accurately the colouration of the soil.





SITE INVESTIGATION AND LABORATORY SERVICES

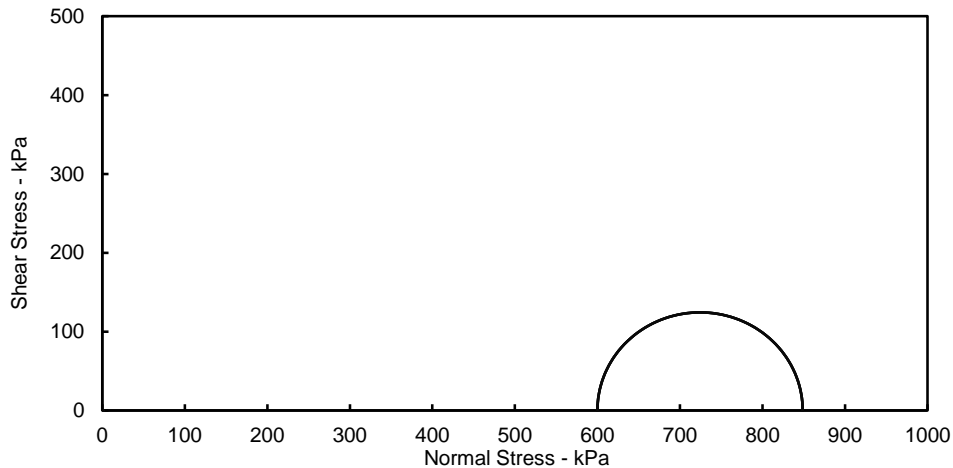
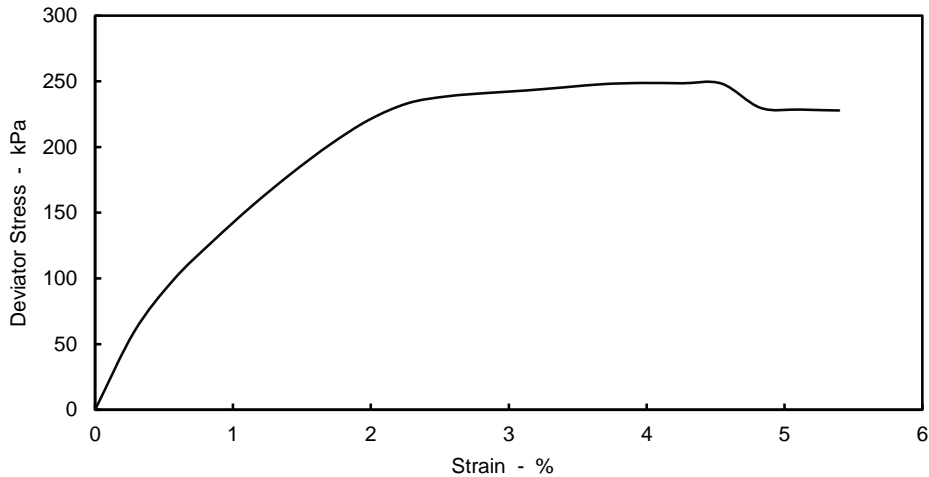
Site	GREAT YARMOUTH 3RD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory


Contract No.	PZ1522D1
Hole	BH12B
Sample Ref	73
Depth (m)	29.50
Sample Type	UT

Sample Details		Undisturbed		
Sample Condition				
Height	mm	176.1		
Diameter	mm	103.5		
Moisture Content	%	26		
Bulk Density	Mg/m ³	2.00		
Dry Density	Mg/m ³	1.58		
Test Details				
Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.31		
Rate of Axial Displacement	%/min	0.86		
Cell Pressure	kPa	600		
Strain at Failure	%	4.0		
Maximum Deviator Stress	kPa	249		
Shear Strength	kPa	124		
Mode of Failure			Brittle	
Non Engineering Description		Stiff fissured grey slightly sandy CLAY.		

Comments
 Undisturbed specimen taken 30mm below top of tube

Shear Strength Parameters		
C	n/a	kPa
Phi	n/a	°



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SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH 3RD RIVER CROSSING

Contract No **PZ1522D1**

Client Norfolk County Council

Hole BH12B



Engineer Norfolk Partnership Laboratory

Sample Ref 73

Depth (m) 29.50

Sample Type UT



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EH	 8/2018		



SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH 3RD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH12B
Sample Ref	76
Depth (m)	31.50
Sample Type	UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	178.4		
Diameter	mm	103.2		
Moisture Content	%	26		
Bulk Density	Mg/m ³	1.96		
Dry Density	Mg/m ³	1.55		

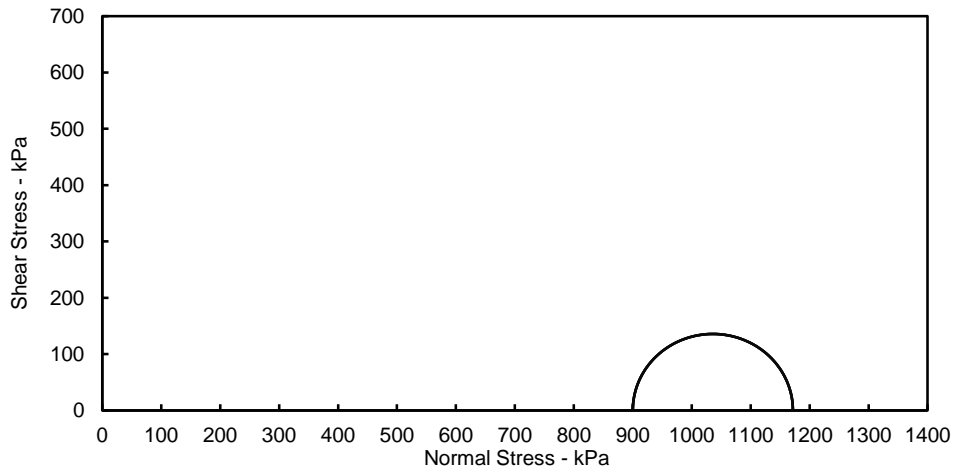
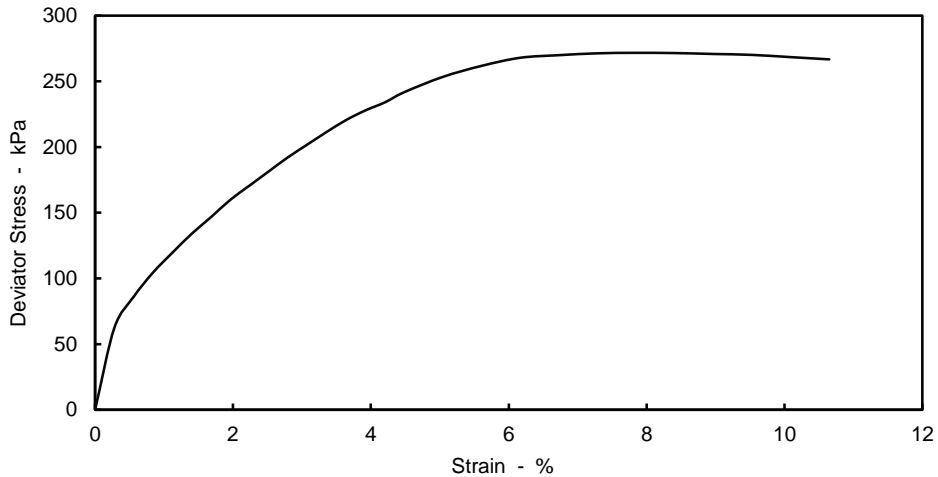
Comments
 Undisturbed specimen taken
 40mm below top of tube

Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.54		
Rate of Axial Displacement	%/min	2.28		
Cell Pressure	kPa	900		
Strain at Failure	%	7.8		
Maximum Deviator Stress	kPa	272		
Shear Strength	kPa	136		
Mode of Failure			Compound	

Shear Strength Parameters		
C	n/a	kPa
Phi	n/a	°

Non Engineering Description: Stiff fissured grey slightly sandy CLAY.



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SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH 3RD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No **PZ1522D1**


Hole BH12B

Sample Ref 76

Depth (m) 31.50

Sample Type UT



Originator	Checked & Approved
EH	 15/08/2018

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SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH 3RD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH12B
Sample Ref	99
Depth (m)	46.50
Sample Type	UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	200.3		
Diameter	mm	103.6		
Moisture Content	%	30		
Bulk Density	Mg/m ³	2.03		
Dry Density	Mg/m ³	1.56		

Comments

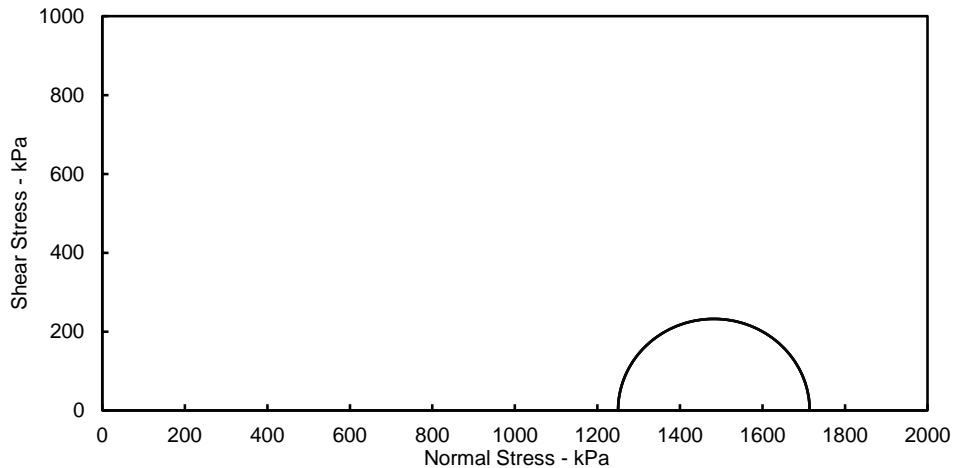
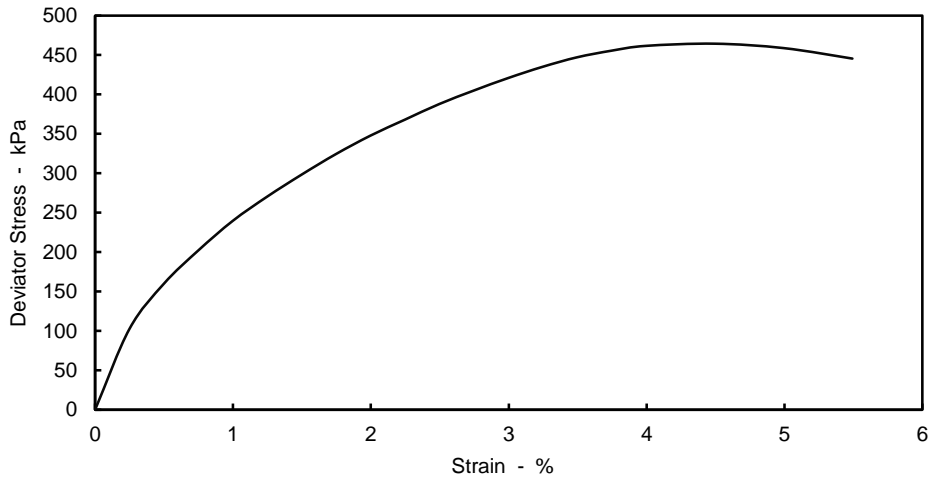
Undisturbed specimen taken 210mm below top of tube

Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.34		
Rate of Axial Displacement	%/min	0.76		
Cell Pressure	kPa	1250		
Strain at Failure	%	4.5		
Maximum Deviator Stress	kPa	464		
Shear Strength	kPa	232		
Mode of Failure			Compound	

Non Engineering Description	Very stiff fissured brown slightly sandy CLAY.
-----------------------------	--

Shear Strength Parameters		
C	n/a	kPa
Phi	n/a	°



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SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH 3RD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No **PZ1522D1**


Hole BH12B

Sample Ref 99

Depth (m) 46.50

Sample Type UT



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SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH 3RD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH12B
Sample Ref	99
Depth (m)	46.50
Sample Type	UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	177.5		
Diameter	mm	103.5		
Moisture Content	%	35		
Bulk Density	Mg/m ³	1.87		
Dry Density	Mg/m ³	1.39		

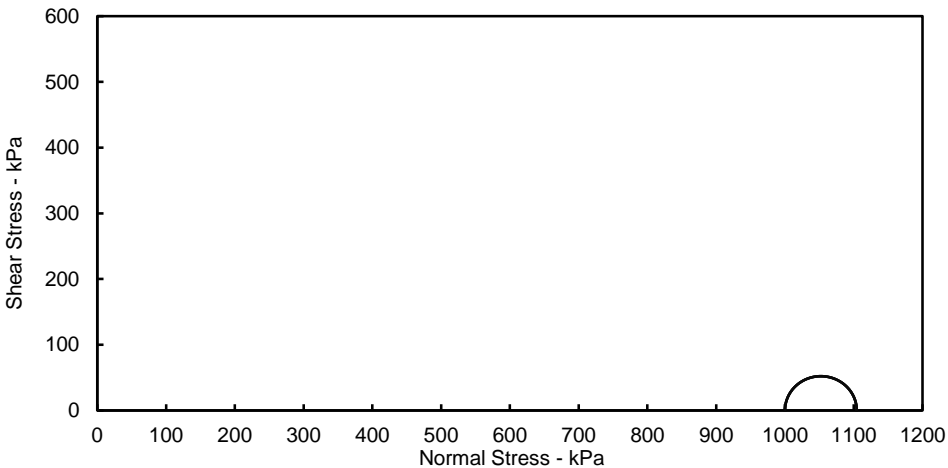
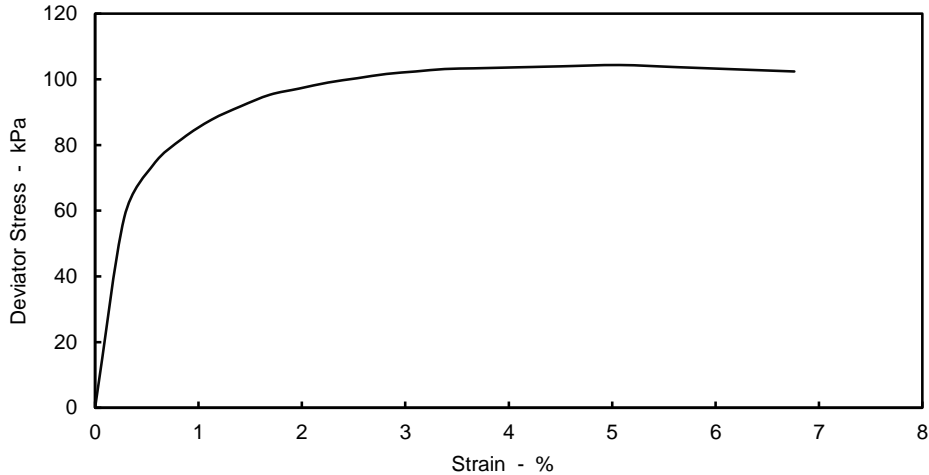
Comments
 Undisturbed specimen taken 30mm below top of tube

Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.38		
Rate of Axial Displacement	%/min	0.86		
Cell Pressure	kPa	1000		
Strain at Failure	%	5.1		
Maximum Deviator Stress	kPa	104		
Shear Strength	kPa	52		
Mode of Failure			Plastic	

Shear Strength Parameters		
C	n/a	kPa
Phi	n/a	°

Non Engineering Description: Firm fissured brown slightly sandy CLAY.



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SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH 3RD RIVER CROSSING

Contract No **PZ1522D1**

Hole BH12B

Sample Ref 99



Depth (m) 46.50

Sample Type UT

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory



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SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH 3RD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH12B
Sample Ref	103
Depth (m)	48.50
Sample Type	UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	175.5		
Diameter	mm	103.6		
Moisture Content	%	32		
Bulk Density	Mg/m ³	1.95		
Dry Density	Mg/m ³	1.47		

Comments

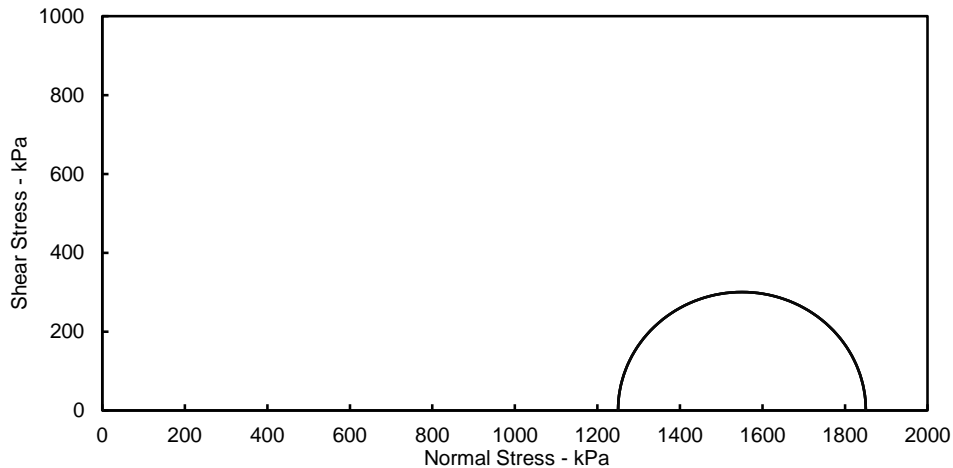
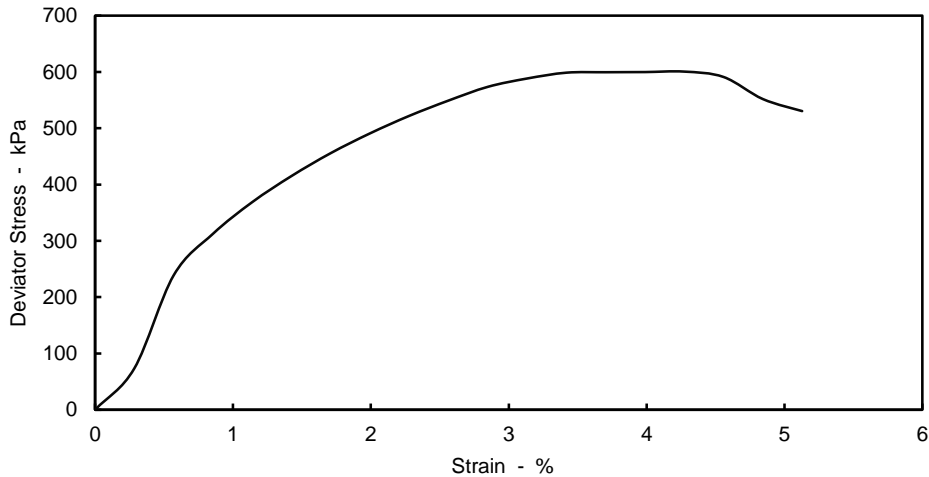
Undisturbed specimen taken 30mm below top of tube

Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.33		
Rate of Axial Displacement	%/min	0.87		
Cell Pressure	kPa	1250		
Strain at Failure	%	4.3		
Maximum Deviator Stress	kPa	601		
Shear Strength	kPa	300		
Mode of Failure			Brittle	

Non Engineering Description	Hard fissured brown slightly sandy CLAY.
-----------------------------	--

Shear Strength Parameters		
C	n/a	kPa
Phi	n/a	°



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EH	15/08/2018

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SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH 3RD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No **PZ1522D1**

Hole BH12B

Sample Ref 103

Depth (m) 48.50

Sample Type UT



Originator

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SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH 3RD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH12B
Sample Ref	103
Depth (m)	48.50
Sample Type	UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	198.3		
Diameter	mm	103.4		
Moisture Content	%	31		
Bulk Density	Mg/m ³	1.97		
Dry Density	Mg/m ³	1.51		

Comments

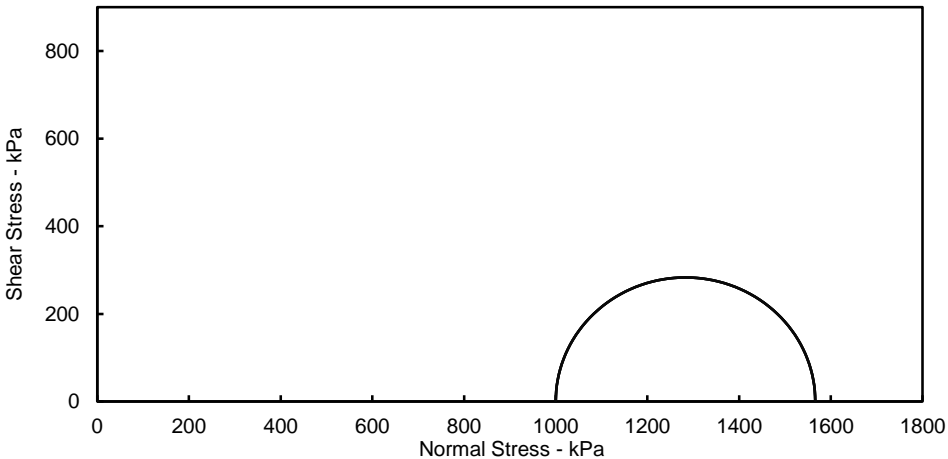
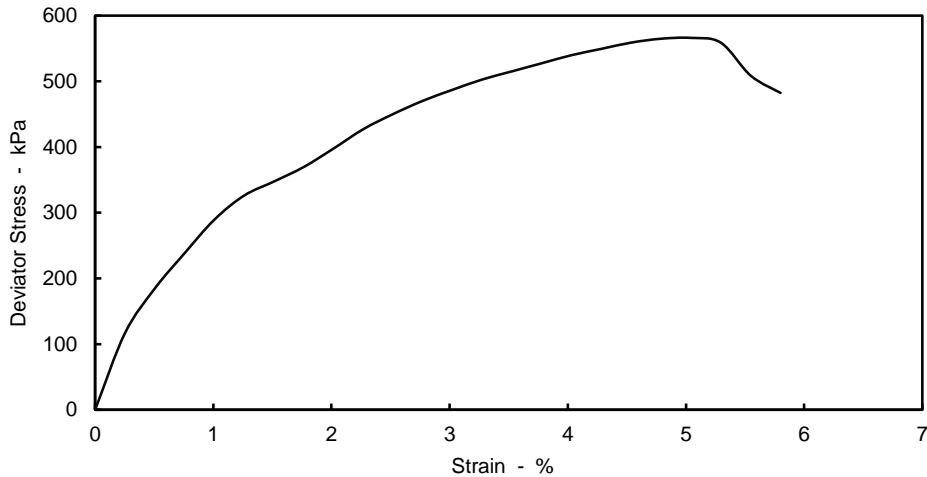
Undisturbed specimen taken 220mm below top of tube

Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.38		
Rate of Axial Displacement	%/min	0.77		
Cell Pressure	kPa	1000		
Strain at Failure	%	5.0		
Maximum Deviator Stress	kPa	566		
Shear Strength	kPa	283		
Mode of Failure			Brittle	

Non Engineering Description	Very stiff fissured brown slightly sandy CLAY.
-----------------------------	--

Shear Strength Parameters		
C	n/a	kPa
Phi	n/a	°



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SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH 3RD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No PZ1522D1



Hole BH12B

Sample Ref 103

Depth (m) 48.50

Sample Type UT



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EH	 15/08/2018		



SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH 3RD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH13
Sample Ref	78
Depth (m)	27.80
Sample Type	UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	179.5		
Diameter	mm	100.3		
Moisture Content	%	22		
Bulk Density	Mg/m ³	1.94		
Dry Density	Mg/m ³	1.60		

Comments

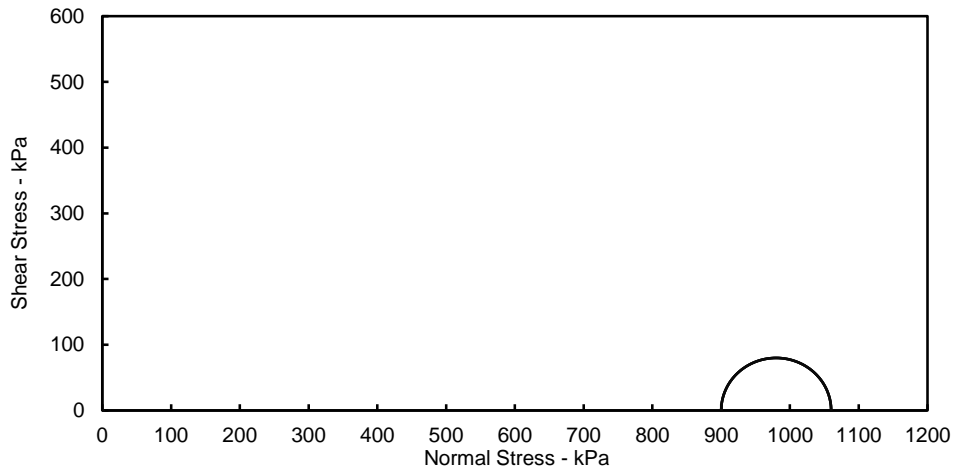
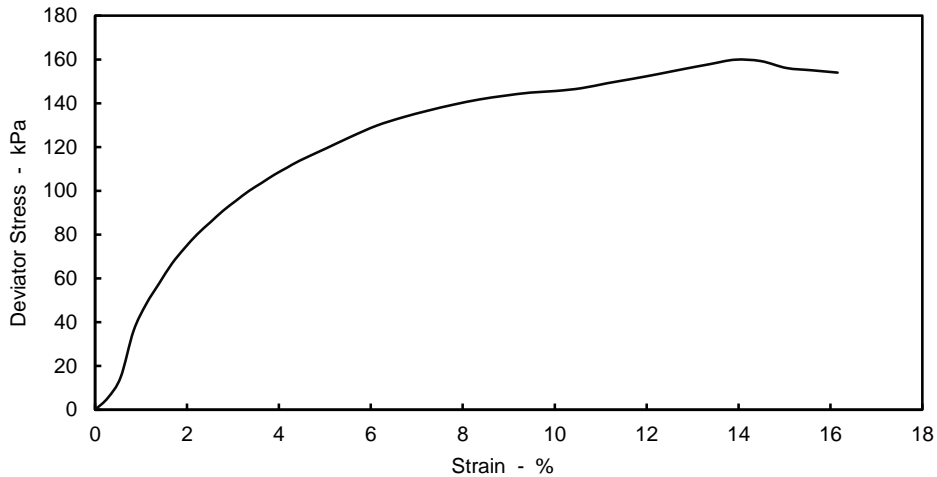
Undisturbed specimen taken 20mm below top of tube


Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.87		
Rate of Axial Displacement	%/min	2.26		
Cell Pressure	kPa	900		
Strain at Failure	%	13.9		
Maximum Deviator Stress	kPa	160		
Shear Strength	kPa	80		
Mode of Failure			Plastic	

Shear Strength Parameters		
C	n/a	kPa
Phi	n/a	°

Non Engineering Description	Stiff grey intact sandy CLAY.
-----------------------------	-------------------------------



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EH	 15/08/2018

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SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH 3RD RIVER CROSSING

Contract No **PZ1522D1**

Client Norfolk County Council

Hole BH13



Engineer Norfolk Partnership Laboratory

Sample Ref 78

Depth (m) 27.80

Sample Type UT



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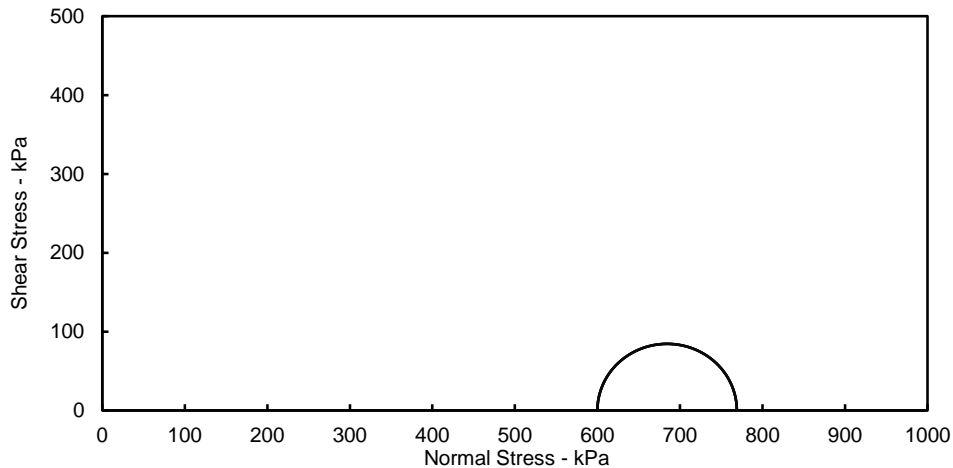
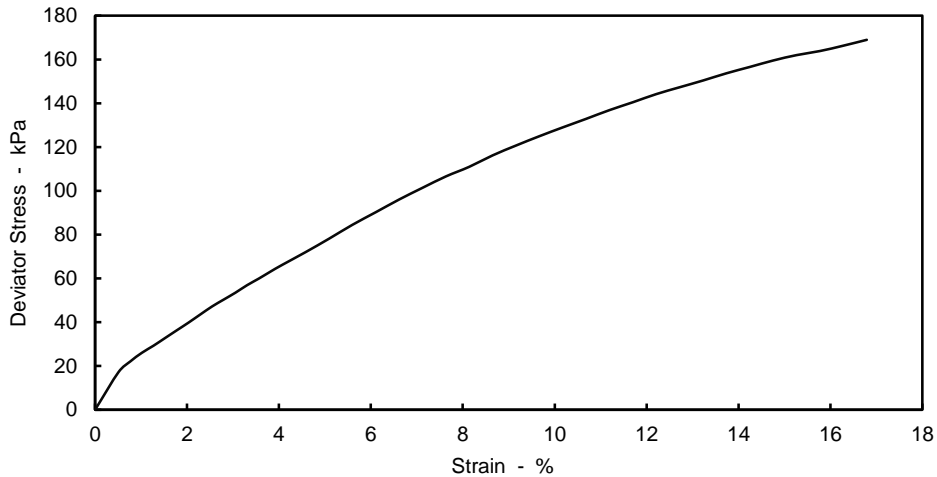
Site	GREAT YARMOUTH 3RD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH13
Sample Ref	78
Depth (m)	27.80
Sample Type	UT

Sample Details		Undisturbed		
Sample Condition				
Height	mm	196.5		
Diameter	mm	100.9		
Moisture Content	%	23		
Bulk Density	Mg/m ³	2.07		
Dry Density	Mg/m ³	1.69		
Test Details				
Membrane Thickness	mm	0.30		
Membrane Correction	kPa	1.00		
Rate of Axial Displacement	%/min	0.77		
Cell Pressure	kPa	600		
Strain at Failure	%	16.8		
Maximum Deviator Stress	kPa	169		
Shear Strength	kPa	84		
Mode of Failure			Plastic	
Non Engineering Description		Stiff intact grey slightly clayey SAND.		

Comments
 Undisturbed specimen taken
 210mm below top of tube

Shear Strength Parameters		
C	n/a	kPa
Phi	n/a	°



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EH	15/08/2018

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SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH 3RD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No **PZ1522D1**

Hole BH13

Sample Ref 78

Depth (m) 27.80

Sample Type UT



Originator

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SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH 3RD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH13
Sample Ref	106
Depth (m)	45.00
Sample Type	UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	176.1		
Diameter	mm	101.3		
Moisture Content	%	34		
Bulk Density	Mg/m ³	1.87		
Dry Density	Mg/m ³	1.39		

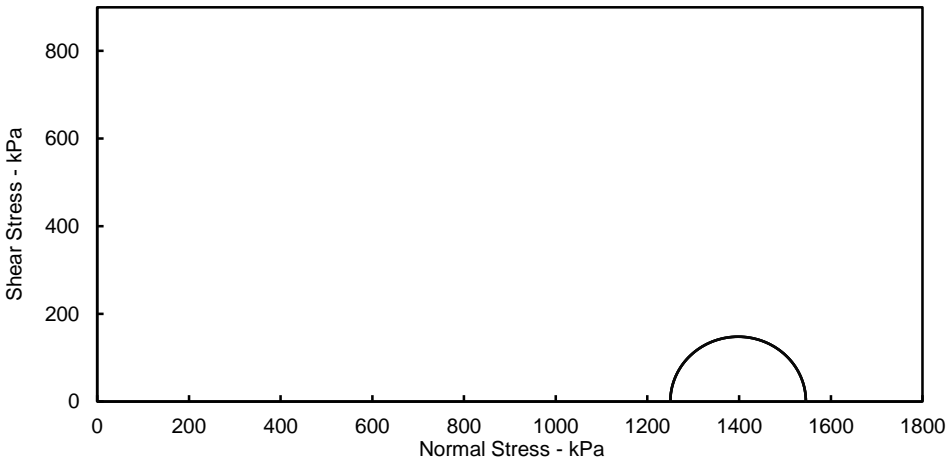
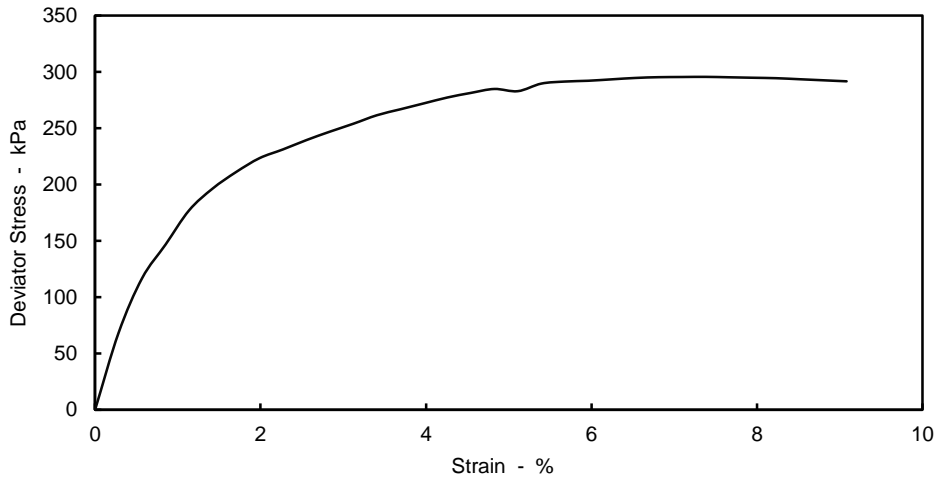
Comments
 Undisturbed specimen taken 100mm below top of tube

Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.53		
Rate of Axial Displacement	%/min	0.86		
Cell Pressure	kPa	1250		
Strain at Failure	%	7.4		
Maximum Deviator Stress	kPa	296		
Shear Strength	kPa	148		
Mode of Failure			Compound	

Shear Strength Parameters		
C	n/a	kPa
Phi	n/a	°

Non Engineering Description: Stiff fissured grey slightly sandy CLAY.



Originator	Checked & Approved
EH	[Signature] 15/08/2018

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SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH 3RD RIVER CROSSING

Contract No **PZ1522D1**

Client Norfolk County Council

Hole BH13


Sample Ref 106

Depth (m) 45.00

Engineer Norfolk Partnership Laboratory

Sample Type UT



Originator	Checked & Approved
EH	 15/08/2018

Please note that these photographs are intended to show the failure mode, and do not necessarily show accurately the colouration of the soil.





SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH 3RD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH13
Sample Ref	106
Depth (m)	45.00
Sample Type	UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	163.3		
Diameter	mm	100.3		
Moisture Content	%	36		
Bulk Density	Mg/m ³	1.89		
Dry Density	Mg/m ³	1.40		

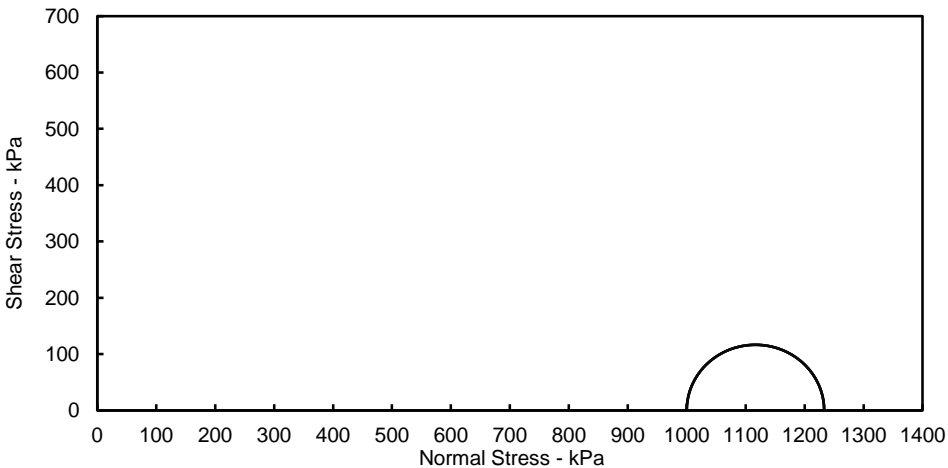
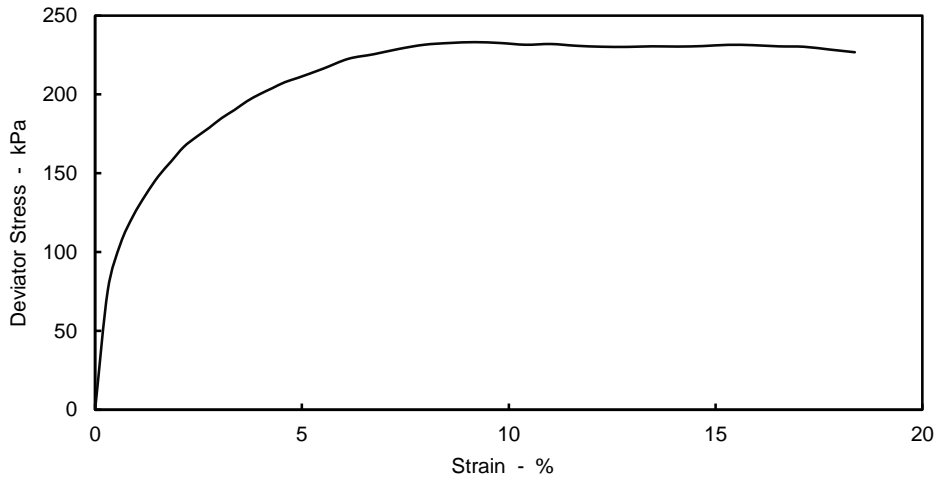
Comments
 Undisturbed specimen taken
 40mm below top of tube


Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.63		
Rate of Axial Displacement	%/min	0.93		
Cell Pressure	kPa	1000		
Strain at Failure	%	9.2		
Maximum Deviator Stress	kPa	233		
Shear Strength	kPa	117		
Mode of Failure			Compound	

Shear Strength Parameters		
C	n/a	kPa
Phi	n/a	°

Non Engineering Description: Stiff fissured grey sandy CLAY.



Originator	Checked & Approved
EH	 /2018

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SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH 3RD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No PZ1522D1

Hole BH13

Sample Ref 106

Depth (m) 45.00

Sample Type UT



Originator

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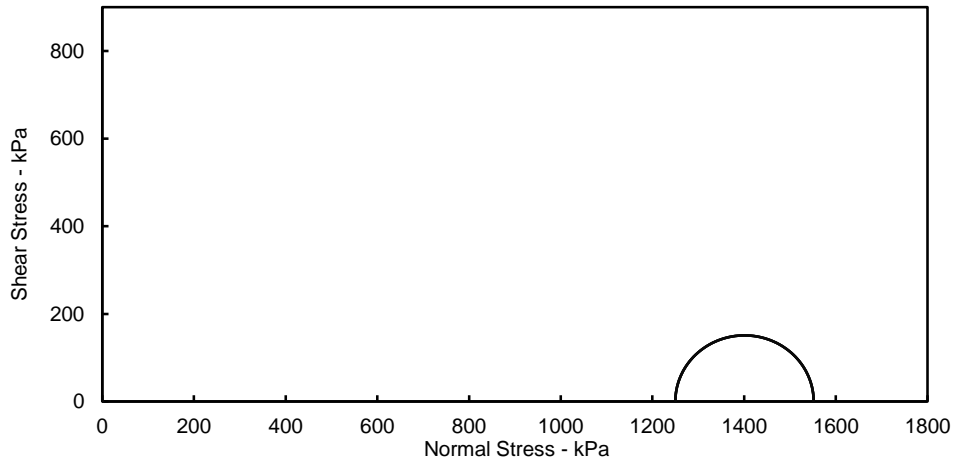
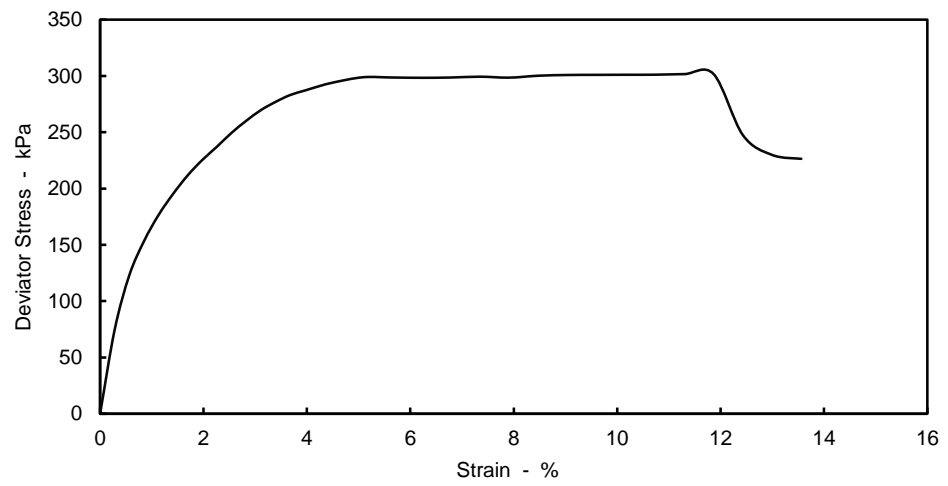
Site GREAT YARMOUTH 3RD RIVER CROSSING
 Client Norfolk County Council
 Engineer Norfolk Partnership Laboratory

Contract No. **PZ1522D1**
 Hole BH13
 Sample Ref 110
 Depth (m) 46.50
 Sample Type UT

Sample Details		
Sample Condition		Undisturbed
Height	mm	177.0
Diameter	mm	102.8
Moisture Content	%	34
Bulk Density	Mg/m ³	1.92
Dry Density	Mg/m ³	1.44
Test Details		
Membrane Thickness	mm	0.30
Membrane Correction	kPa	0.75
Rate of Axial Displacement	%/min	0.86
Cell Pressure	kPa	1250
Strain at Failure	%	11.9
Maximum Deviator Stress	kPa	302
Shear Strength	kPa	151
Mode of Failure		Compound
Non Engineering Description	Very stiff fissured greyish brown slightly sandy CLAY.	

Comments
 Undisturbed specimen taken 40mm below top of tube

Shear Strength Parameters		
C	n/a	kPa
Phi	n/a	°



Originator EH
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 BS 1377 : Part 7 : 1990 Clause 8



TERRA TEK

SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH 3RD RIVER CROSSING

Contract No **PZ1522D1**

Client Norfolk County Council

Hole BH13



Sample Ref 110

Depth (m) 46.50

Engineer Norfolk Partnership Laboratory

Sample Type UT



Originator	Checked & Approved	Please note that these photographs are intended to show the failure mode, and do not necessarily show accurately the colouration of the soil.	 <p>Sheet 2 of 2</p>
EH	 15/08/2018		



SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH 3RD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH13
Sample Ref	110
Depth (m)	46.50
Sample Type	UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	197.3		
Diameter	mm	102.7		
Moisture Content	%	30		
Bulk Density	Mg/m ³	1.99		
Dry Density	Mg/m ³	1.53		

Comments

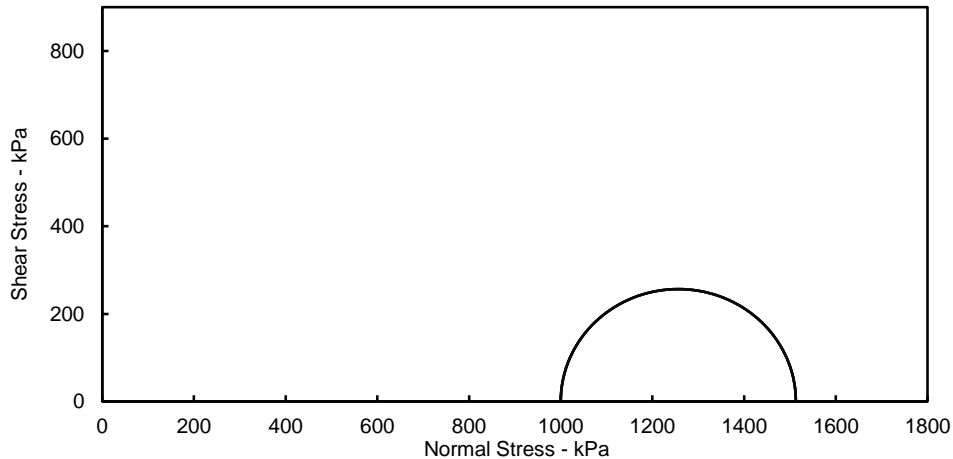
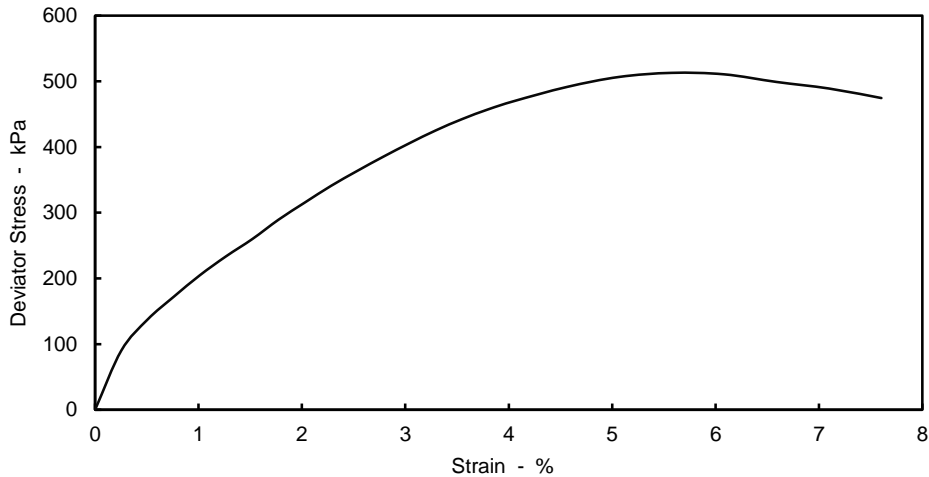
Undisturbed specimen taken 240mm below top of tube

Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.41		
Rate of Axial Displacement	%/min	0.77		
Cell Pressure	kPa	1000		
Strain at Failure	%	5.6		
Maximum Deviator Stress	kPa	513		
Shear Strength	kPa	256		
Mode of Failure			Brittle	

Non Engineering Description	Very stiff fissured grey slightly sandy CLAY.
-----------------------------	---

Shear Strength Parameters		
C	n/a	kPa
Phi	n/a	°



Originator	Checked & Approved
EH	15/08/2018

UNCONSOLIDATED UNDRAINED SINGLE STAGE TRIAXIAL COMPRESSION

BS 1377 : Part 7 : 1990 Clause 8



TERRA TEK

SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH 3RD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No **PZ1522D1**

Hole BH13

Sample Ref 110

Depth (m) 46.50

Sample Type UT



Originator

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SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH 3RD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH13
Sample Ref	115
Depth (m)	48.50
Sample Type	UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	177.6		
Diameter	mm	102.4		
Moisture Content	%	28		
Bulk Density	Mg/m ³	1.97		
Dry Density	Mg/m ³	1.54		

Comments

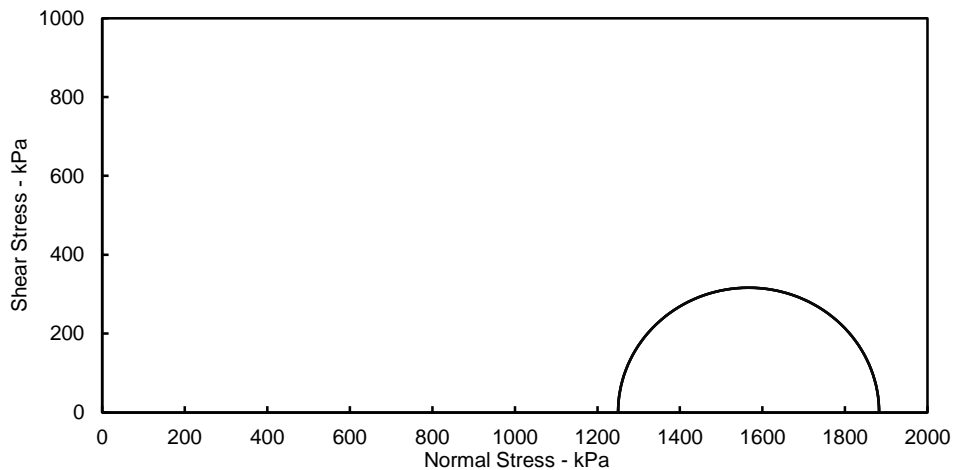
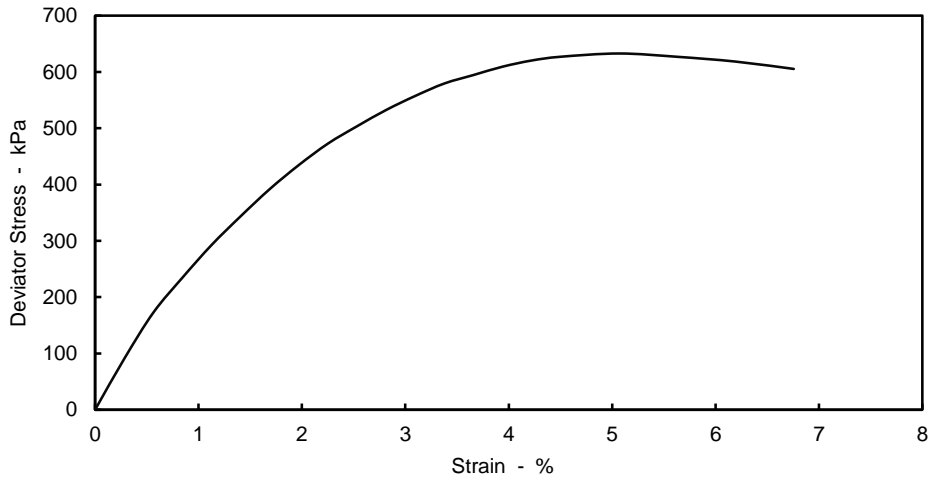
Undisturbed specimen taken 100mm below top of tube

Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.38		
Rate of Axial Displacement	%/min	0.86		
Cell Pressure	kPa	1250		
Strain at Failure	%	5.1		
Maximum Deviator Stress	kPa	633		
Shear Strength	kPa	316		
Mode of Failure			Brittle	

Non Engineering Description	Hard fissured greyish brown slightly sandy CLAY
-----------------------------	---

Shear Strength Parameters		
C	n/a	kPa
Phi	n/a	°



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EH	15/08/2018

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SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH 3RD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No **PZ1522D1**



Hole BH13

Sample Ref 115

Depth (m) 48.50

Sample Type UT



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EH	 15/08/2018		



SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH 3RD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH13
Sample Ref	115
Depth (m)	48.50
Sample Type	UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	165.8		
Diameter	mm	102.7		
Moisture Content	%	35		
Bulk Density	Mg/m ³	1.94		
Dry Density	Mg/m ³	1.44		

Comments

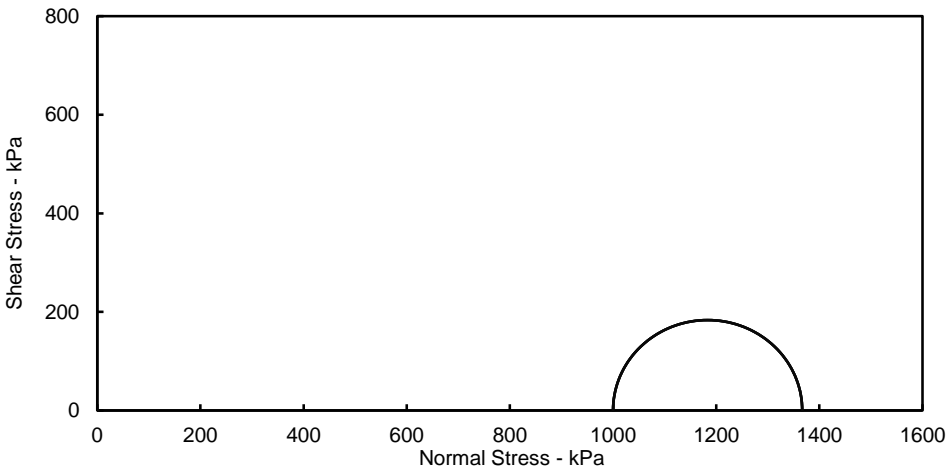
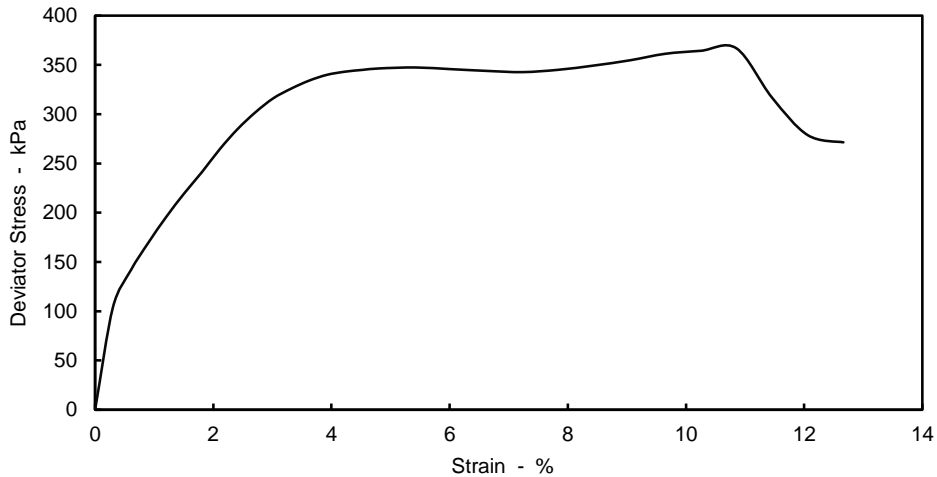
Undisturbed specimen taken 100mm below top of tube

Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.70		
Rate of Axial Displacement	%/min	0.92		
Cell Pressure	kPa	1000		
Strain at Failure	%	10.9		
Maximum Deviator Stress	kPa	367		
Shear Strength	kPa	183		
Mode of Failure			Plastic	

Non Engineering Description: Very stiff fissured greyish brown slightly sandy CLAY.

Shear Strength Parameters		
C	n/a	kPa
Phi	n/a	°



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SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH 3RD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No **PZ1522D1**

Hole BH13

Sample Ref 115

Depth (m) 48.50

Sample Type UT



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SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH 3RD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH13A
Sample Ref	74
Depth (m)	28.00
Sample Type	UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	200.0		
Diameter	mm	103.8		
Moisture Content	%	18		
Bulk Density	Mg/m ³	2.15		
Dry Density	Mg/m ³	1.82		

Comments

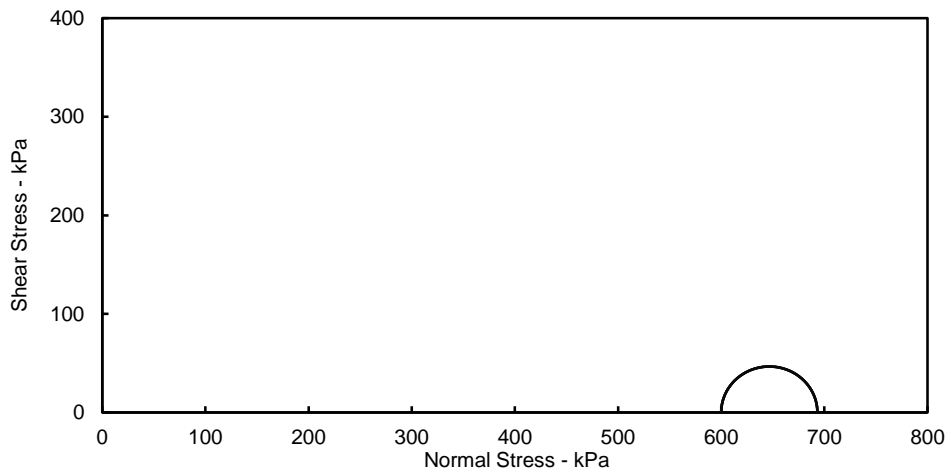
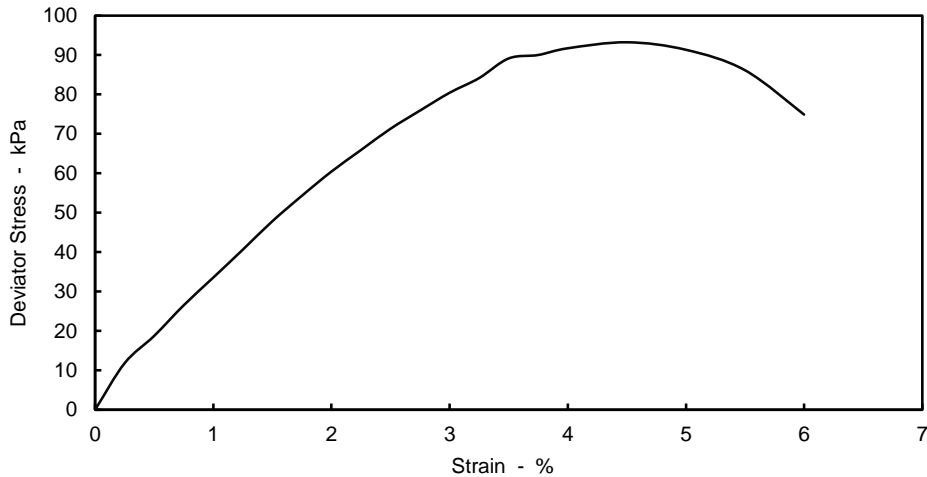
Undisturbed specimen taken 200mm below top of tube

Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.34		
Rate of Axial Displacement	%/min	0.76		
Cell Pressure	kPa	600		
Strain at Failure	%	4.5		
Maximum Deviator Stress	kPa	93		
Shear Strength	kPa	47		
Mode of Failure			Plastic	

Shear Strength Parameters		
C	n/a	kPa
Phi	n/a	°

Non Engineering Description	Firm intact grey silty SAND.
-----------------------------	------------------------------



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SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH 3RD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No PZ1522D1

Hole BH13A

Sample Ref 74

Depth (m) 28.00

Sample Type UT



Originator

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Site	GREAT YARMOUTH 3RD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH13A
Sample Ref	81
Depth (m)	31.00
Sample Type	UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	175.3		
Diameter	mm	103.8		
Moisture Content	%	26		
Bulk Density	Mg/m ³	2.04		
Dry Density	Mg/m ³	1.62		

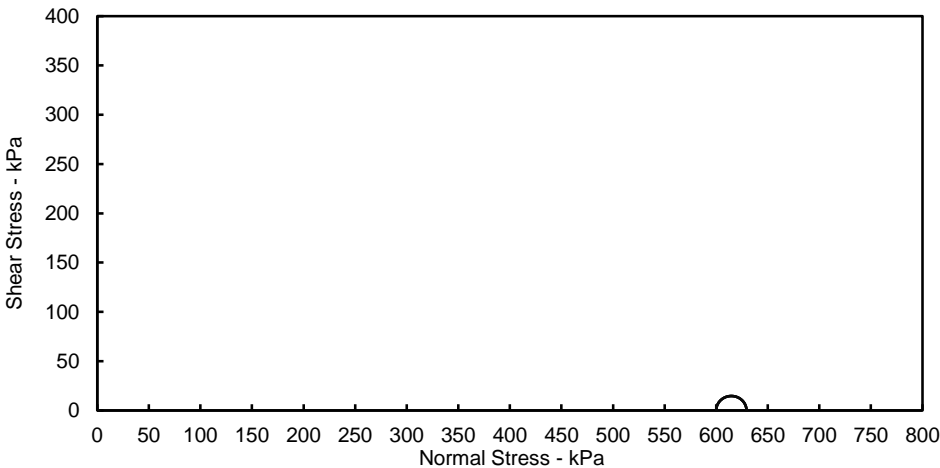
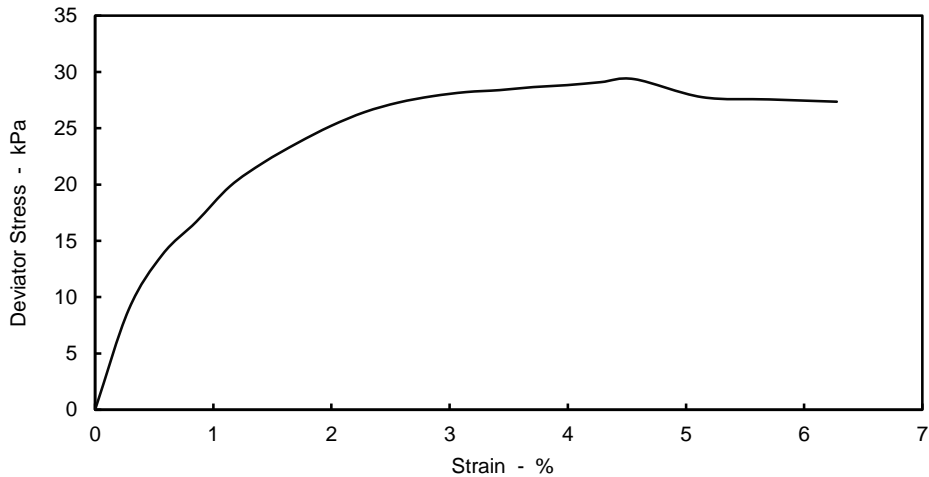
Comments
 Undisturbed specimen taken 100mm below top of tube

Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.35		
Rate of Axial Displacement	%/min	0.87		
Cell Pressure	kPa	600		
Strain at Failure	%	4.6		
Maximum Deviator Stress	kPa	29		
Shear Strength	kPa	15		
Mode of Failure			Plastic	

Shear Strength Parameters		
C	n/a	kPa
Phi	n/a	°

Non Engineering Description: Very soft intact sandy CLAY.



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SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH 3RD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No PZ1522D1



Hole BH13A

Sample Ref 81

Depth (m) 31.00

Sample Type UT



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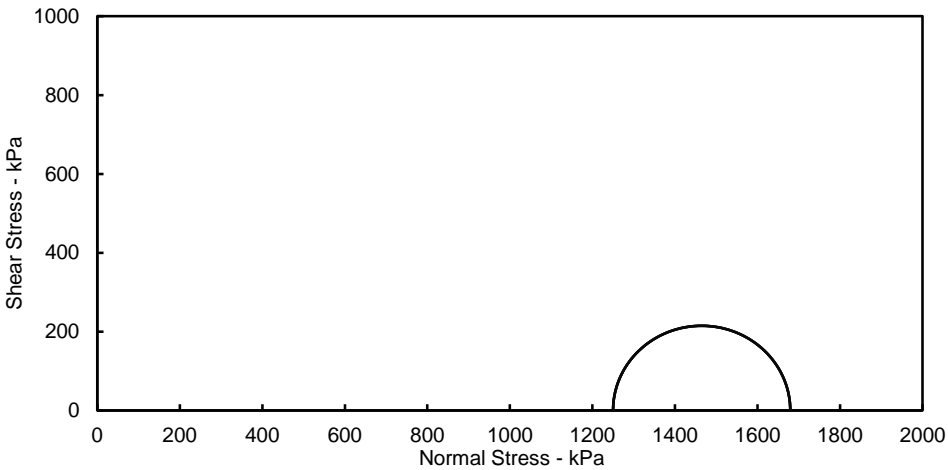
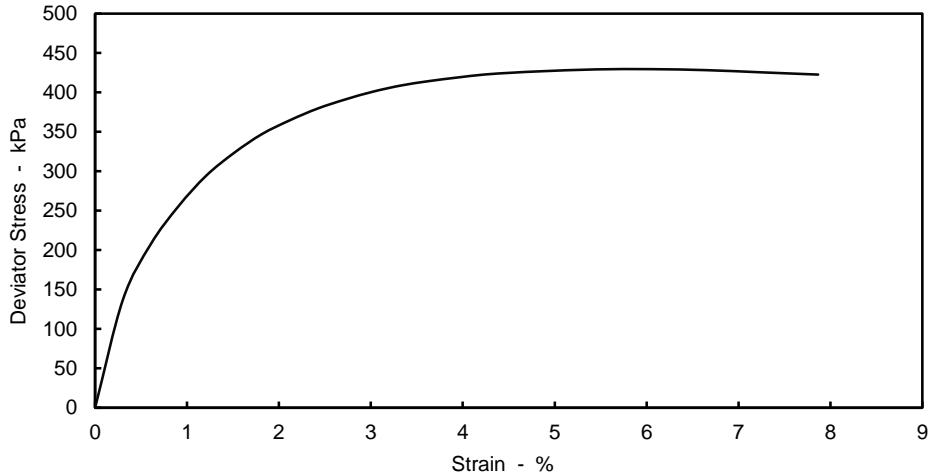
Site	GREAT YARMOUTH 3RD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory


Contract No.	PZ1522D1
Hole	BH13A
Sample Ref	105
Depth (m)	46.00
Sample Type	UT

Sample Details		Undisturbed	
Sample Condition			
Height	mm	165.3	
Diameter	mm	103.5	
Moisture Content	%	33	
Bulk Density	Mg/m ³	1.94	
Dry Density	Mg/m ³	1.46	
Test Details			
Membrane Thickness	mm	0.30	
Membrane Correction	kPa	0.44	
Rate of Axial Displacement	%/min	0.92	
Cell Pressure	kPa	1250	
Strain at Failure	%	6.1	
Maximum Deviator Stress	kPa	430	
Shear Strength	kPa	215	
Mode of Failure		Compound	
Non Engineering Description	Very stiff fissured grey mottled brown slightly sandy CLAY.		

Comments
 Undisturbed specimen taken 280mm below top of tube

Shear Strength Parameters		
C	n/a	kPa
Phi	n/a	°



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Sheet 1 of 2

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SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH 3RD RIVER CROSSING

Contract No **PZ1522D1**

Client Norfolk County Council

Hole BH13A

Sample Ref 105

Depth (m) 46.00

Engineer Norfolk Partnership Laboratory

Sample Type UT



Originator

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SITE INVESTIGATION AND LABORATORY SERVICES

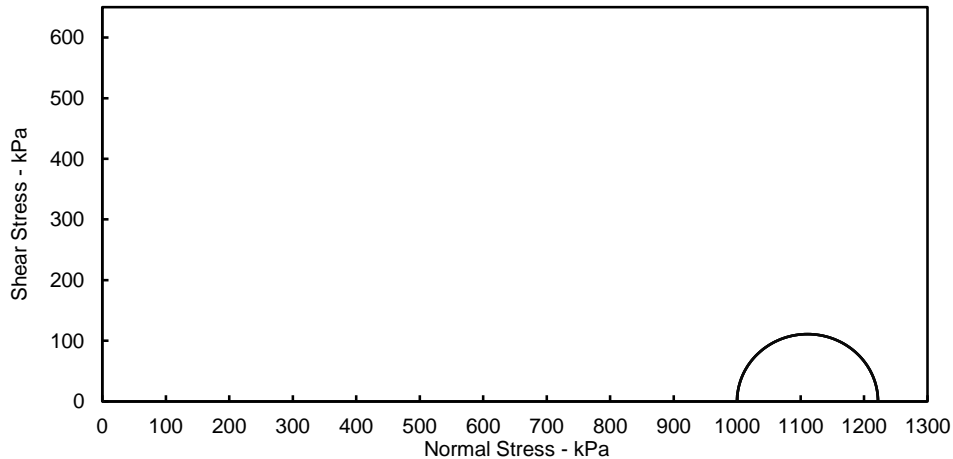
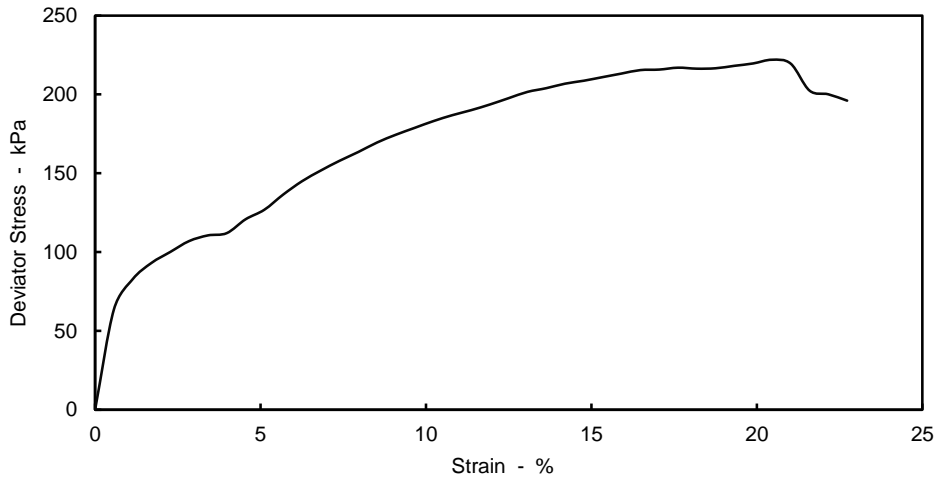
Site	GREAT YARMOUTH 3RD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH13A
Sample Ref	105
Depth (m)	46.00
Sample Type	UT

Sample Details		Undisturbed		
Sample Condition				
Height	mm	176.0		
Diameter	mm	103.5		
Moisture Content	%	33		
Bulk Density	Mg/m ³	1.96		
Dry Density	Mg/m ³	1.47		
Test Details				
Membrane Thickness	mm	0.30		
Membrane Correction	kPa	1.12		
Rate of Axial Displacement	%/min	0.86		
Cell Pressure	kPa	1000		
Strain at Failure	%	20.5		
Maximum Deviator Stress	kPa	222		
Shear Strength	kPa	111		
Mode of Failure			Compound	
Non Engineering Description	Stiff fissured grey mottled brown slightly sandy CLAY.			

Comments
 Undisturbed specimen taken 30mm below top of tube

Shear Strength Parameters		
C	n/a	kPa
Phi	n/a	°



Originator	Checked & Approved
EH	[Signature] 15/08/2018

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SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH 3RD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No PZ1522D1

Hole BH13A

Sample Ref 105

Depth (m) 46.00

Sample Type UT



Originator

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SITE INVESTIGATION AND LABORATORY SERVICES

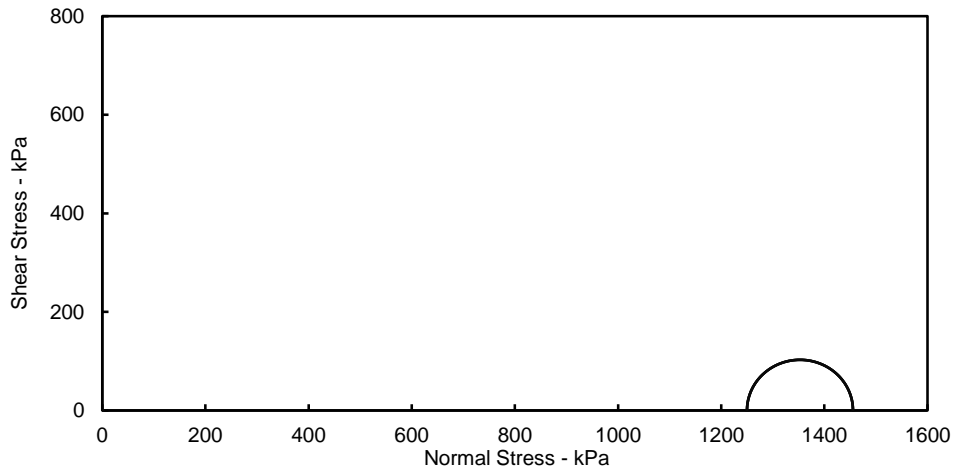
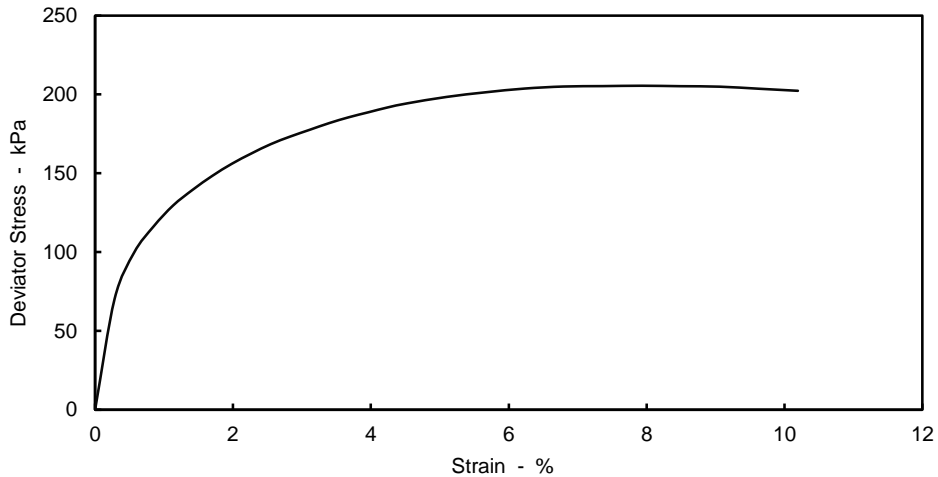
Site	GREAT YARMOUTH 3RD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory


Contract No.	PZ1522D1
Hole	BH13A
Sample Ref	115
Depth (m)	49.50
Sample Type	UT

Sample Details		Undisturbed		
Sample Condition				
Height	mm	176.6		
Diameter	mm	103.6		
Moisture Content	%	22		
Bulk Density	Mg/m ³	1.85		
Dry Density	Mg/m ³	1.51		
Test Details				
Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.55		
Rate of Axial Displacement	%/min	0.86		
Cell Pressure	kPa	1250		
Strain at Failure	%	7.9		
Maximum Deviator Stress	kPa	206		
Shear Strength	kPa	103		
Mode of Failure			Compound	
Non Engineering Description		Stiff fissured brown slightly sandy CLAY.		

Comments
Undisturbed specimen taken 50mm below top of tube

Shear Strength Parameters		
C	n/a	kPa
Phi	n/a	°



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SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH 3RD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No **PZ1522D1**



Hole BH13A

Sample Ref 115

Depth (m) 49.50

Sample Type UT



Originator	Checked & Approved	Please note that these photographs are intended to show the failure mode, and do not necessarily show accurately the colouration of the soil.	 <p style="text-align: right;">Sheet 2 of 2</p>
EH	 15/08/2018		



SITE INVESTIGATION AND LABORATORY SERVICES

Site	GREAT YARMOUTH 3RD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH13A
Sample Ref	115
Depth (m)	49.50
Sample Type	UT

Sample Details

Sample Condition		Undisturbed		
Height	mm	199.7		
Diameter	mm	103.0		
Moisture Content	%	30		
Bulk Density	Mg/m ³	1.98		
Dry Density	Mg/m ³	1.53		

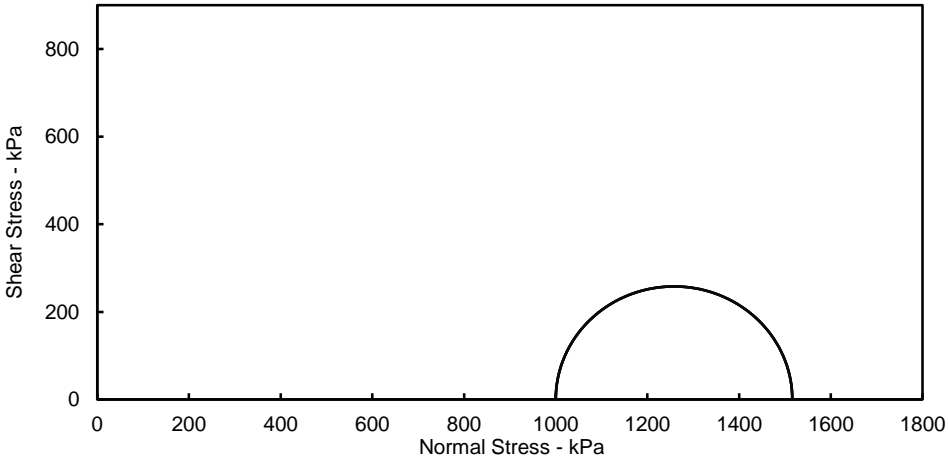
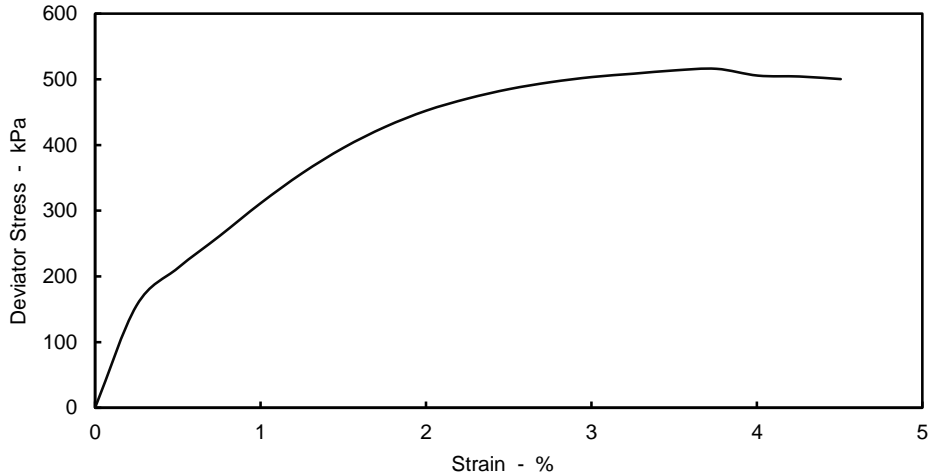
Comments
 Undisturbed specimen taken
 240mm below top of tube


Test Details

Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.29		
Rate of Axial Displacement	%/min	0.76		
Cell Pressure	kPa	1000		
Strain at Failure	%	3.8		
Maximum Deviator Stress	kPa	516		
Shear Strength	kPa	258		
Mode of Failure			Brittle	

Shear Strength Parameters		
C	n/a	kPa
Phi	n/a	°

Non Engineering Description: Very stiff fissured brown slightly sandy CLAY.



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SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH 3RD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No **PZ1522D1**

Hole BH13A

Sample Ref 115

Depth (m) 49.50

Sample Type UT



Originator

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15/08/2018

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SITE INVESTIGATION AND LABORATORY SERVICES

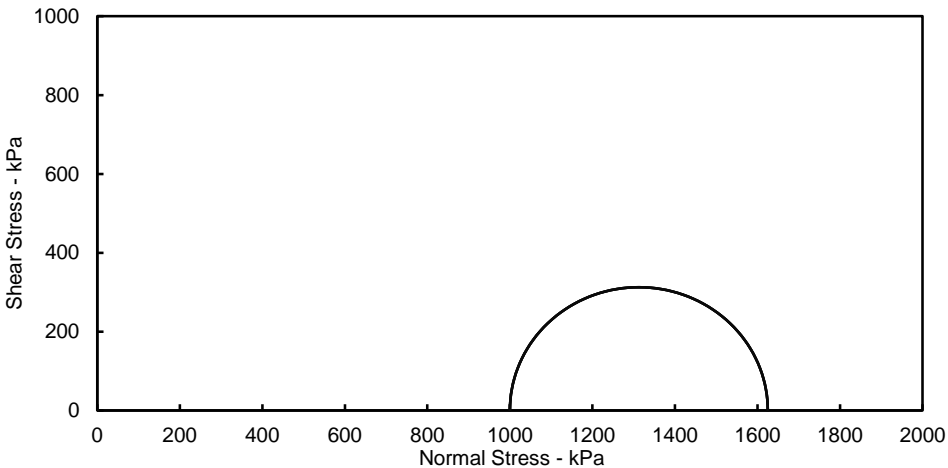
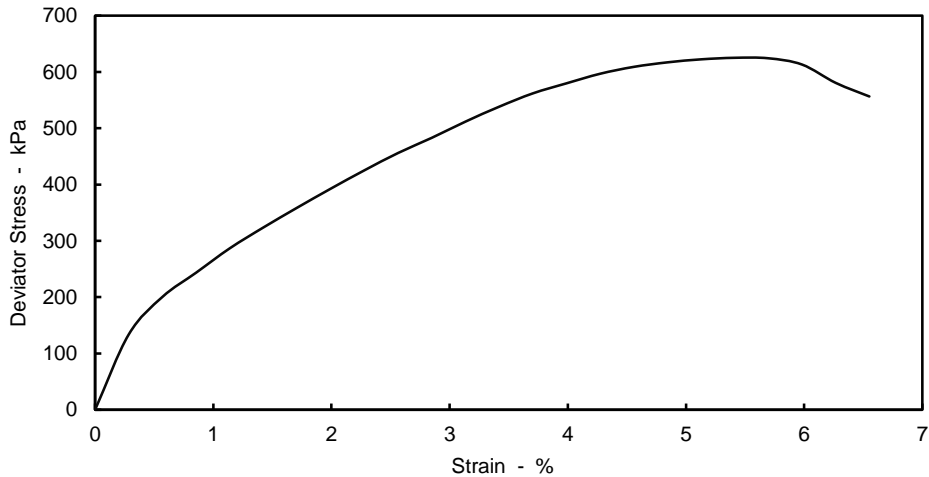
Site	GREAT YARMOUTH 3RD RIVER CROSSING
Client	Norfolk County Council
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH13A
Sample Ref	115
Depth (m)	49.50
Sample Type	UT

Sample Details		Undisturbed		
Sample Condition				
Height	mm	175.5		
Diameter	mm	103.5		
Moisture Content	%	30		
Bulk Density	Mg/m ³	1.99		
Dry Density	Mg/m ³	1.53		
Test Details				
Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.40		
Rate of Axial Displacement	%/min	0.87		
Cell Pressure	kPa	1000		
Strain at Failure	%	5.4		
Maximum Deviator Stress	kPa	625		
Shear Strength	kPa	313		
Mode of Failure			Brittle	
Non Engineering Description	Hard fissured dark brown slightly sandy CLAY.			

Comments
Undisturbed specimen taken 20mm below top of tube

Shear Strength Parameters		
C	n/a	kPa
Phi	n/a	°



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EH	15/08/2018

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TERRA TEK

SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH 3RD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No PZ1522D1

Hole BH13A

Sample Ref 115

Depth (m) 49.50

Sample Type UT



Originator

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SITE INVESTIGATION AND LABORATORY SERVICES

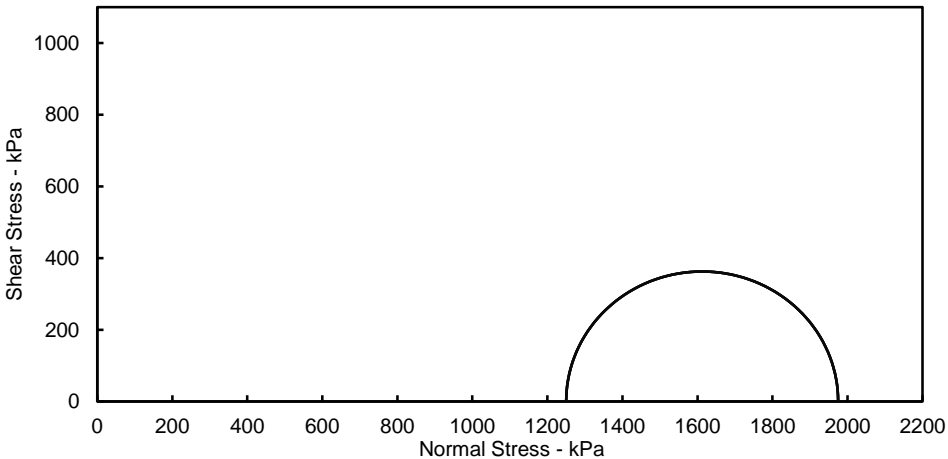
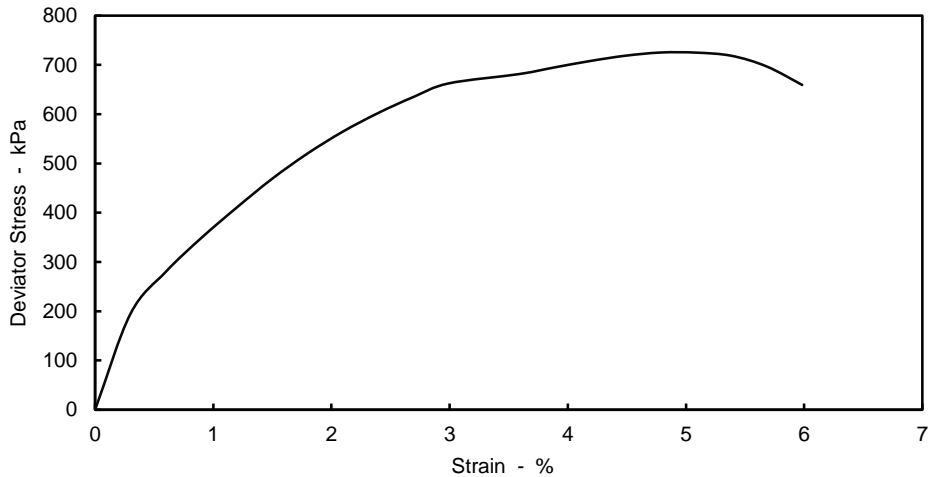
Site	GREAT YARMOUTH 3RD RIVER CROSSING
Client	Norfolk County Conucl
Engineer	Norfolk Partnership Laboratory

Contract No.	PZ1522D1
Hole	BH13A
Sample Ref	115
Depth (m)	49.50
Sample Type	UT

Sample Details		Undisturbed		
Sample Condition				
Height	mm	167.1		
Diameter	mm	103.4		
Moisture Content	%	30		
Bulk Density	Mg/m ³	1.96		
Dry Density	Mg/m ³	1.52		
Test Details				
Membrane Thickness	mm	0.30		
Membrane Correction	kPa	0.36		
Rate of Axial Displacement	%/min	0.91		
Cell Pressure	kPa	1250		
Strain at Failure	%	4.8		
Maximum Deviator Stress	kPa	725		
Shear Strength	kPa	363		
Mode of Failure			Brittle	
Non Engineering Description		Hard fissured dark brown slightly sandy CLAY.		

Comments
 Undisturbed specimen taken 200mm below top of tube

Shear Strength Parameters		
C	n/a	kPa
Phi	n/a	°



Originator	Checked & Approved
EH	15/08/2018

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TERRA TEK

SITE INVESTIGATION AND LABORATORY SERVICES

Site GREAT YARMOUTH 3RD RIVER CROSSING

Client Norfolk County Council

Engineer Norfolk Partnership Laboratory

Contract No PZ1522D1



Hole BH13A

Sample Ref 115

Depth (m) 49.50

Sample Type UT



Originator	Checked & Approved	Please note that these photographs are intended to show the failure mode, and do not necessarily show accurately the colouration of the soil.	 <p style="text-align: right;">Sheet 2 of 2</p>
EH	 15/08/2018		