

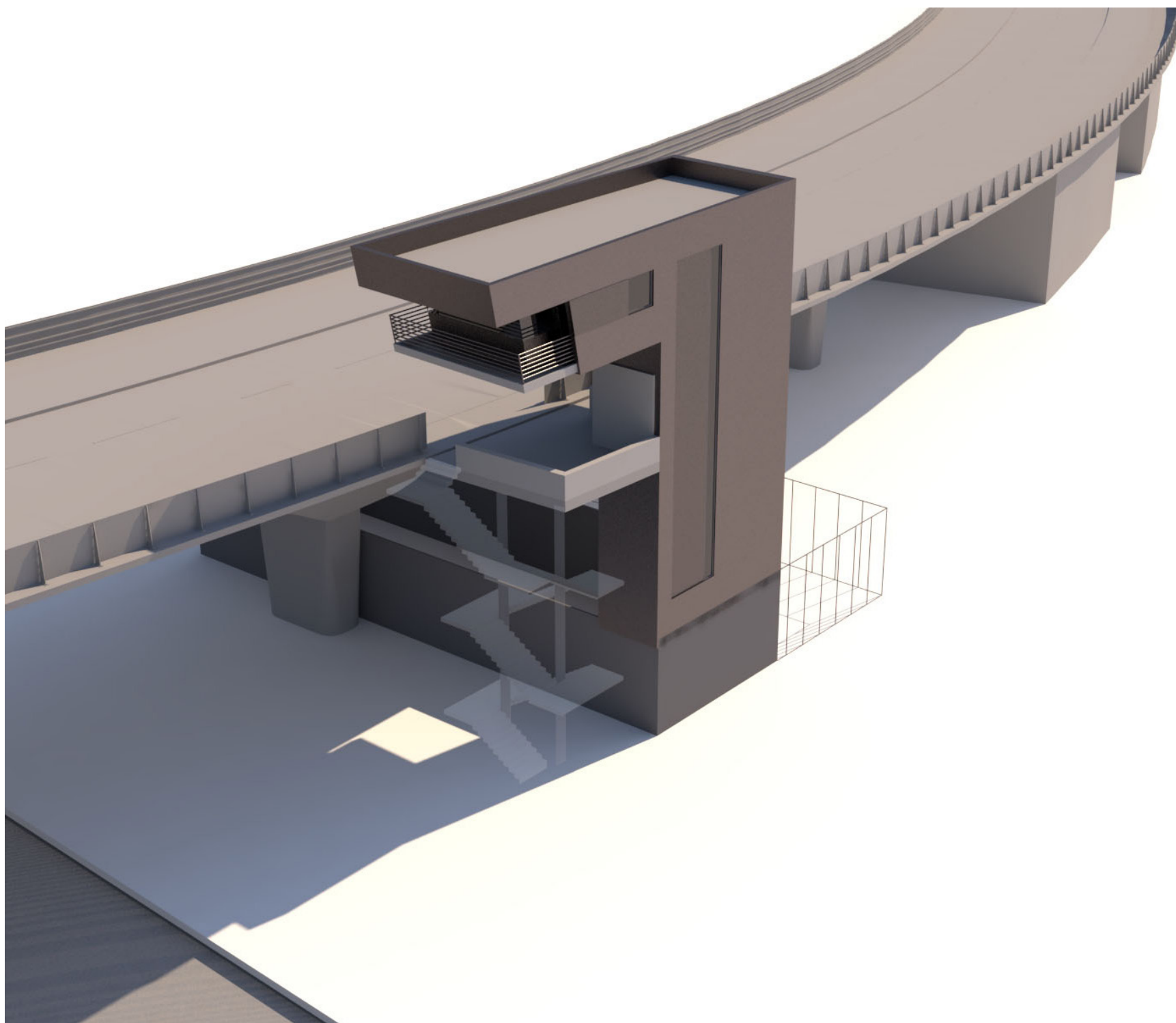
The Lake Lothing (Lowestoft) Third Crossing Order 201[*]



Lake Lothing
**THIRD
CROSSING**

**Document 7.5:
Design Report**

Appendix 7



Lake Lothing Third Crossing **Control tower**

Design Report: scheme design

November 2017
427-pr-01



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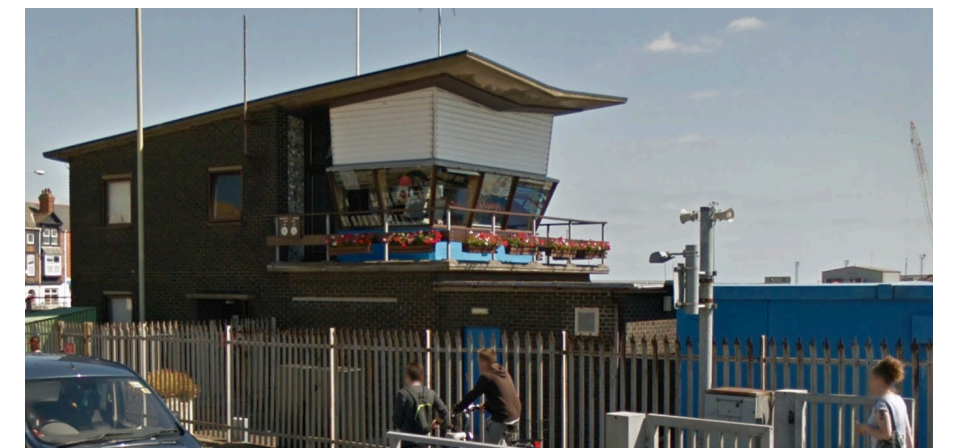
1.0 Introduction

1.1 Context

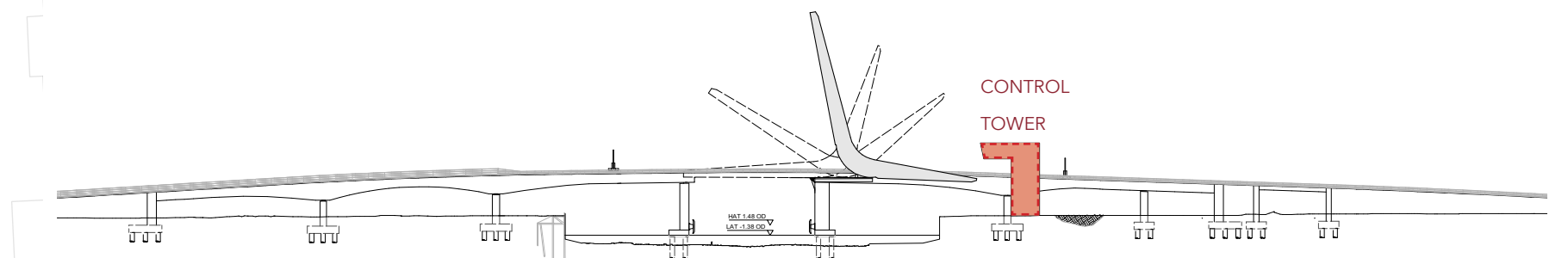
The Control Tower provides Control Room, Plant Rooms and ancillary spaces required for operation of the proposed new Lake Lothing Third Crossing in Lowestoft. It also provides a public viewing area and flexibility for future provision of public access between quayside and bridge. The Control Tower is an integral part of WSP's scheme design proposal for the bridge project.

The location of the Control Tower has been fixed to the southwest corner of the bridge, as close to the opening bascule and water as possible.

No detailed Brief has been supplied by the Operator so the provision required has been assumed to be at least to match the provision in the existing control room to the current Lowestoft Bascule Bridge.



New bridge part-plan



Elevation overview

2.0 Design approach

2.1 Control tower design process and precedents

The distinctive 'blades' of the rolling bascule bridge's opening section are designed to be memorable landmarks in Lowestoft's landscape.

Our initial studies explored whether the Control Tower should be designed to be a similar strong element to reflect the 'marine tech' form of the blades or to contrast and complement them. The team concluded that the bascule should be seen as the 'main event' against the horizon and that the Control Tower should be **subservient** and complementary to it - a 'supporting player' rather than competing with the singular form of the blades.

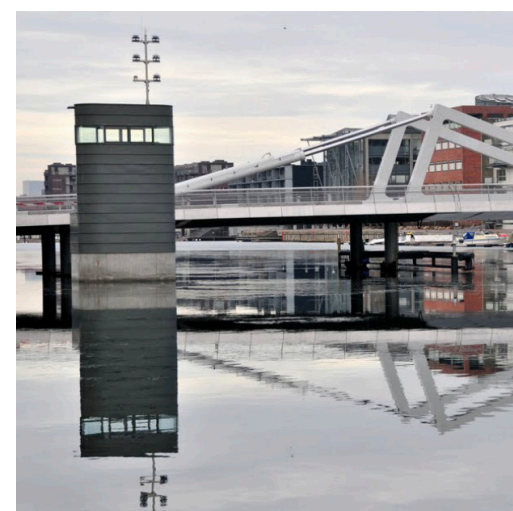
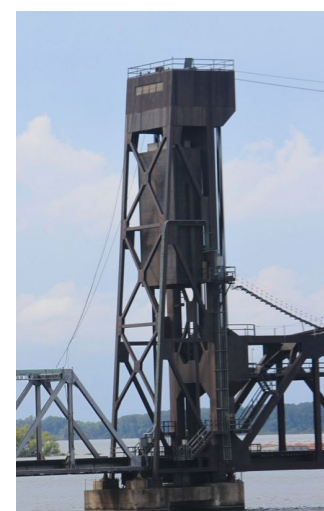
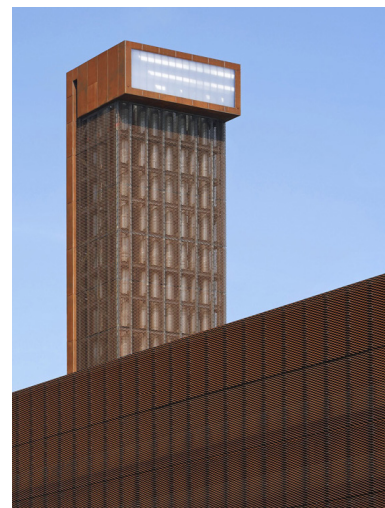
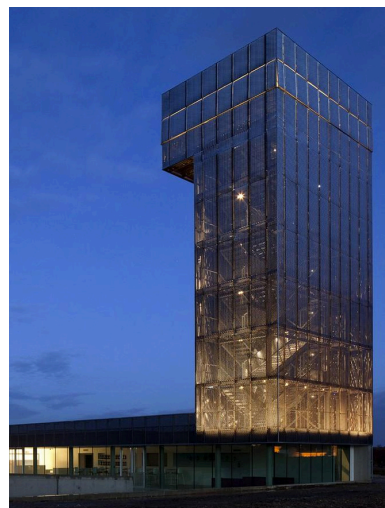
The Control Tower is therefore expressed as a simple prismatic form, more modest and reticent than the rolling bascule although clearly expressive of its function. The appearance also has echoes of the dockside industrial heritage, in contrast to the bridge's more expressive 'marine tech' form.



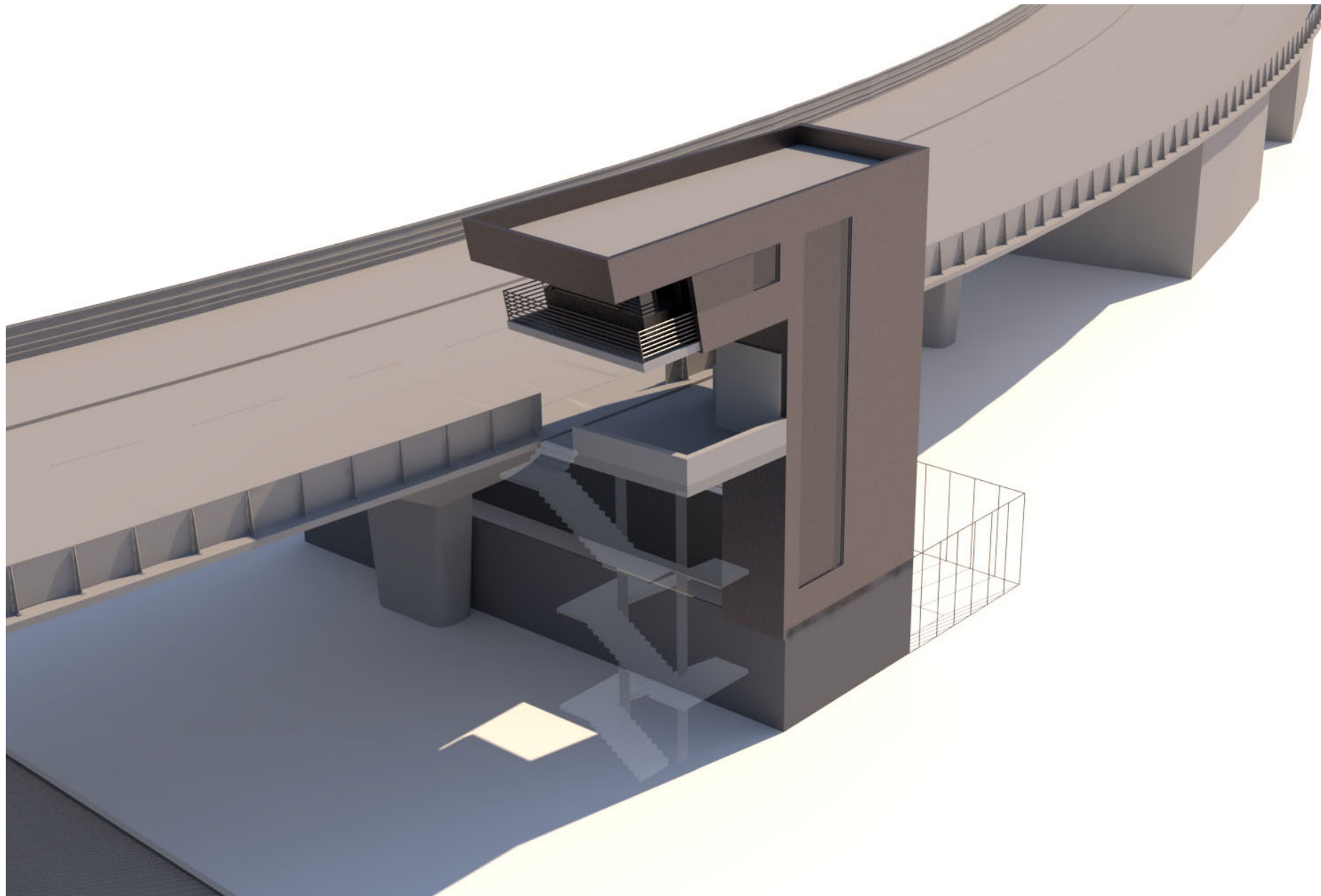
Initial study- view: sleek 'marine tech' as bascule



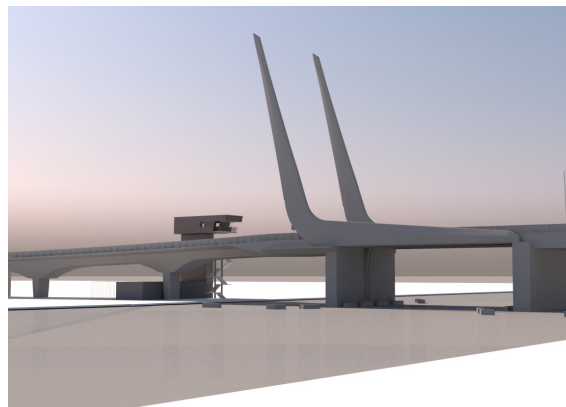
Initial study- view: contrasting/complementary to bascule



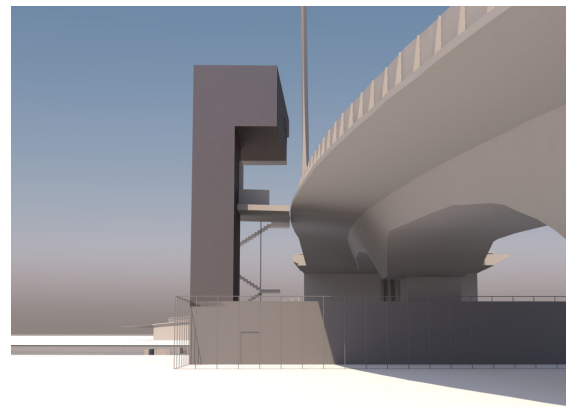
Control Tower precedents



Control tower bird view



Control tower from far



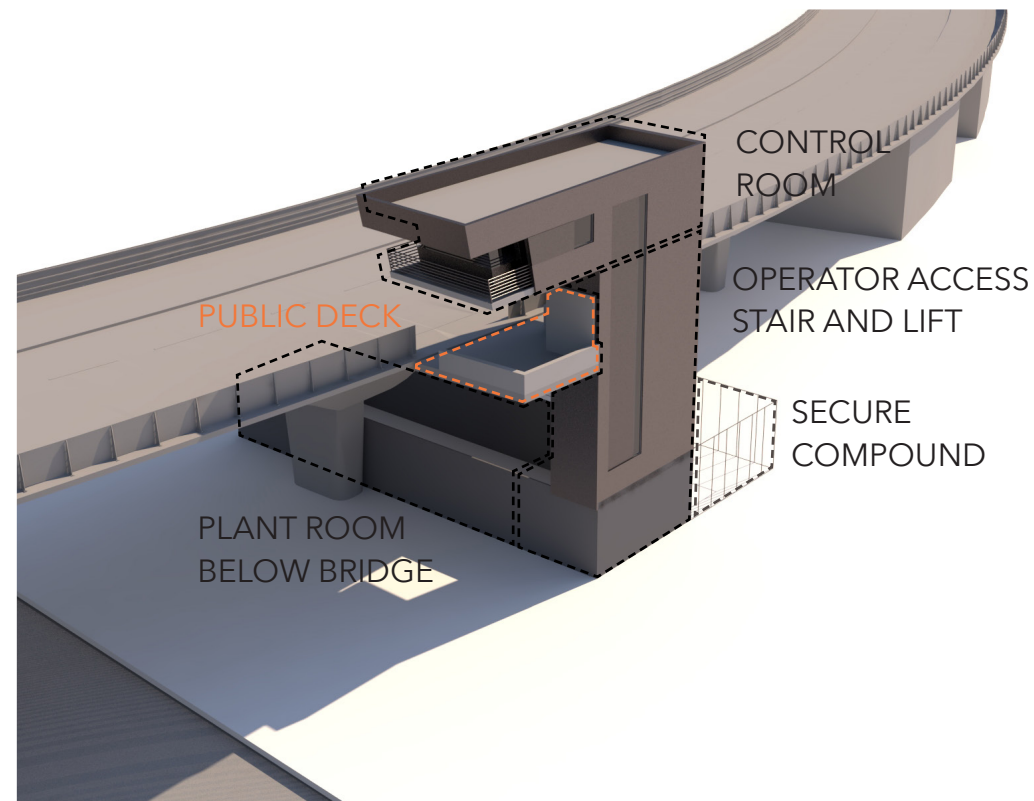
Control tower from ground



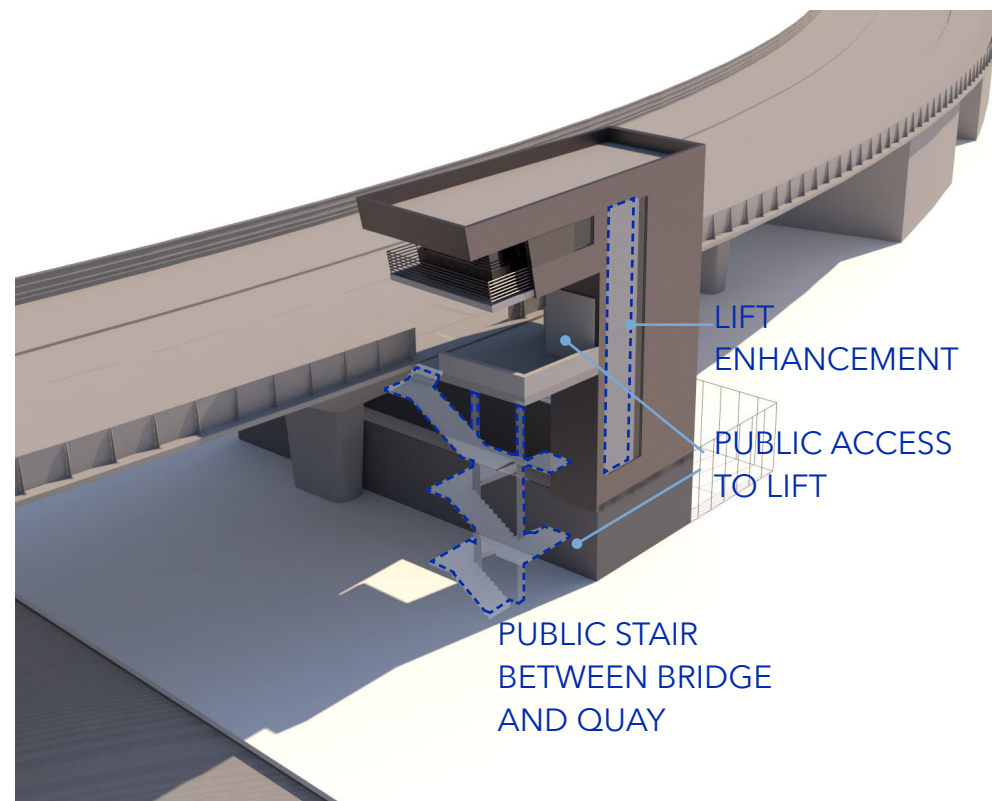
Control tower from bridge deck

2.2 Design Principles

- Designed to **complement** and be **secondary** to the bascule's 'main event'.
- **Simple** form expressive of function, distinctive, and recalling historic **industrial** context.
- **Cantilevered** form expresses bridge opening dynamic and maximises operator views.
- Provides good **operational** areas: secure, with good visibility, space for support facilities and flexibility.
- Provides **public viewing deck** and interpretation area.
- Flexibility to enable **potential future public access** from quayside to bridge.
- Plantroom layout **separates public** quayside from operational areas to south.
- Robust materials and finishes for long term **durability**.



Proposed control tower



Potential future additions

2.3 Summary of Control Tower provision

Compound	Security fenced and gated area below bridge including parking space for 2 cars.
Plant room	To accommodate electrical and hydraulic plant and substation. Riser connection at Pier 3 to bridge
Entrance	From secure compound with internal access door to Plant Room and space for further WCs and storage.
Access	Secure stair and lift linking quay level, bridge deck level and Control Room.
Control Room	Upper level providing 50m ² (NIA) for control room with 180deg view over water, mess area, kitchenette, storage and WCs. Small external balcony giving view over water and bridge.
Public deck	Viewing deck directly accessed from bridge walkway, sheltered below control room. Solid wall and parapet surfaces to allow addition of interpretation/display/artwork.
Roof areas	Flats roofs over CT and PR allow installation of additional plant, photovoltaics, etc and access to bridge soffit.

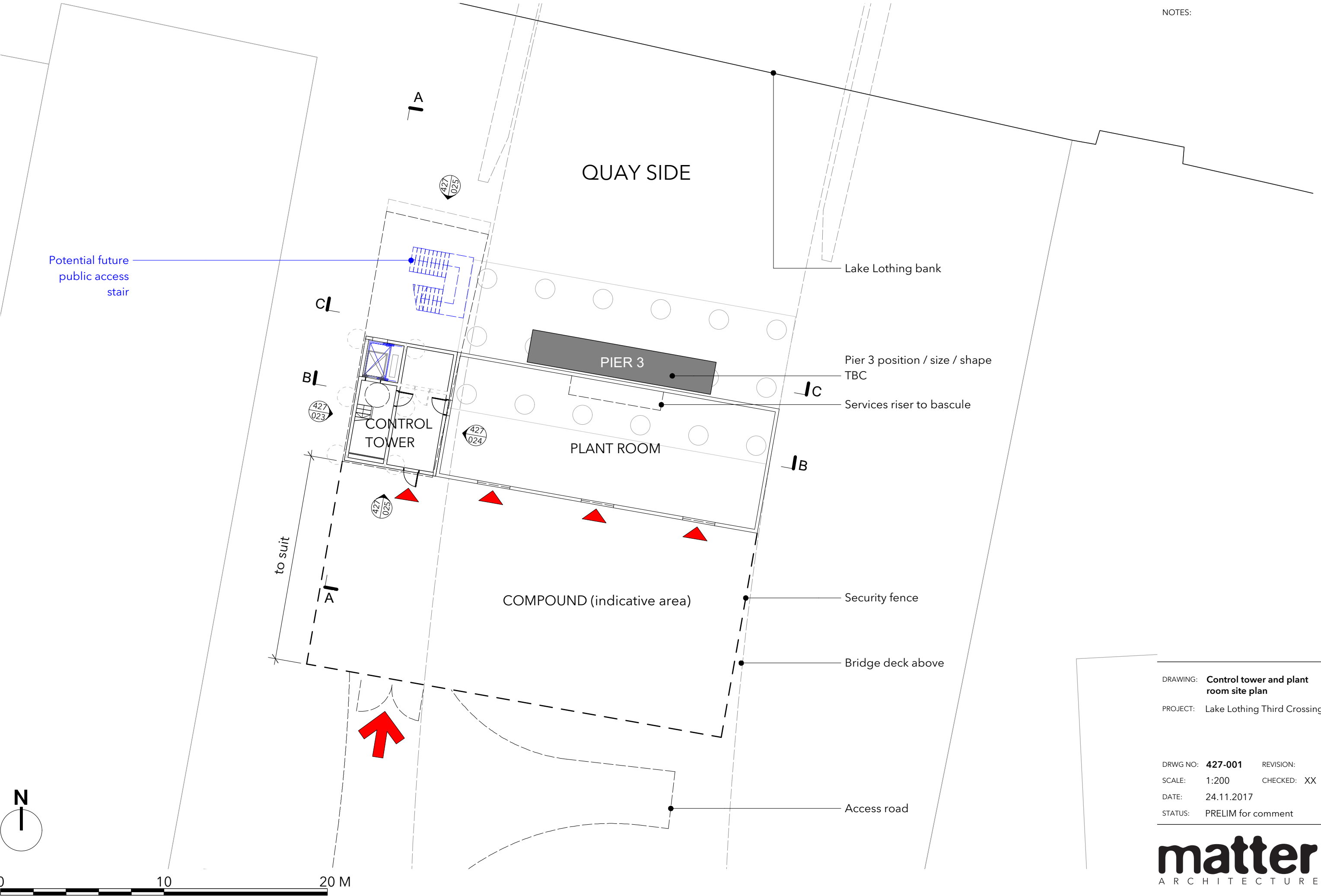
The design also provides flexibility for **potential future addition** of public access between quay level and bridge deck, enabling:

- Addition of **external stair** up to public deck
- Addition of public **access to lift** (dual entry)
- Lift car enlargement and **enhancement** with panoramic window.

3.0 Scheme design proposals

Following are scheme drawings and outline specification:

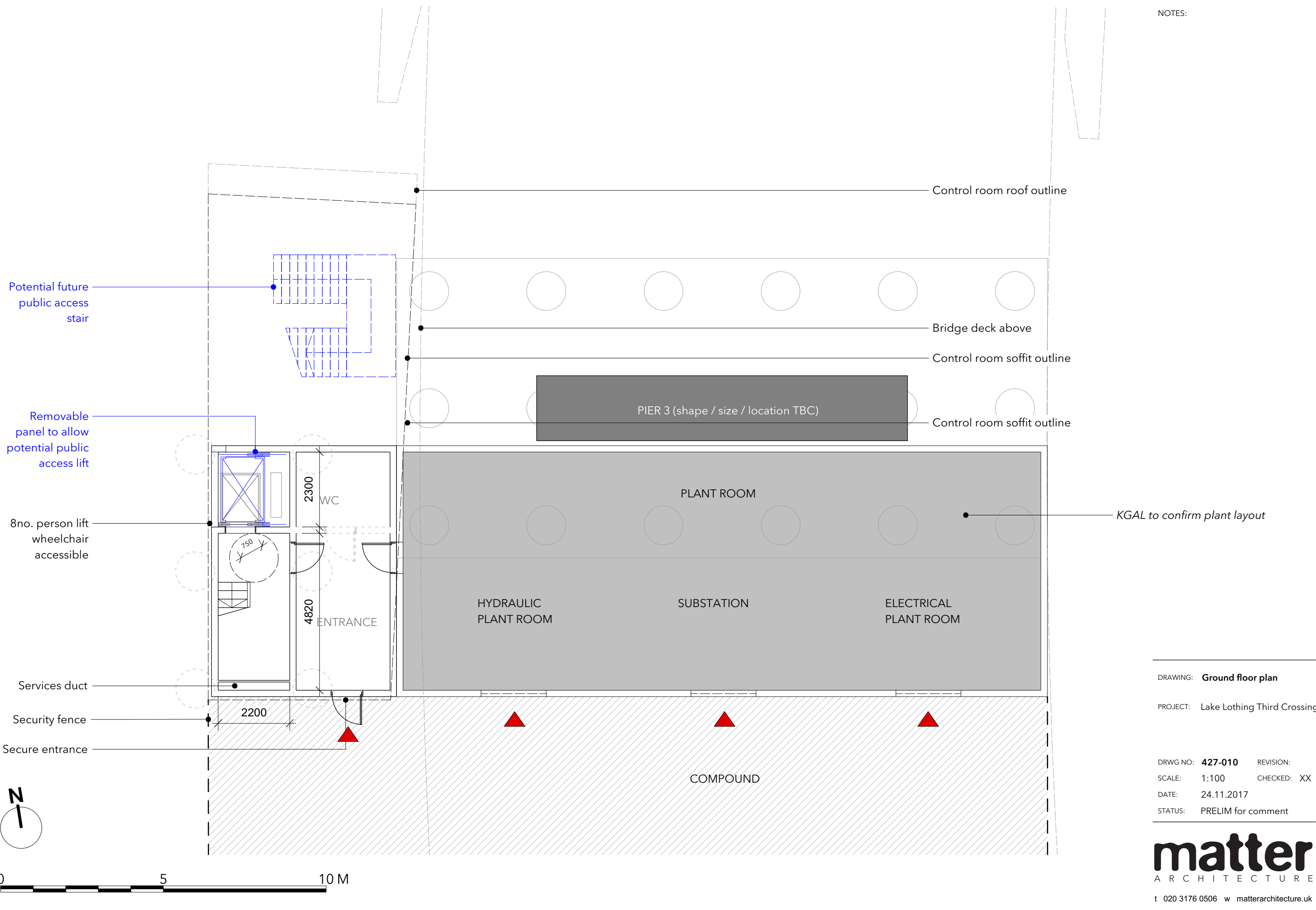
- 3.1 427-001-Control tower and plant site plan
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DRAWING: **Control tower and plant room site plan**
PROJECT: Lake Lothing Third Crossing

DRWG NO: **427-001** REVISION:
SCALE: 1:200 CHECKED: XX
DATE: 24.11.2017
STATUS: PRELIM for comment

NOTES:

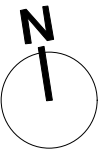
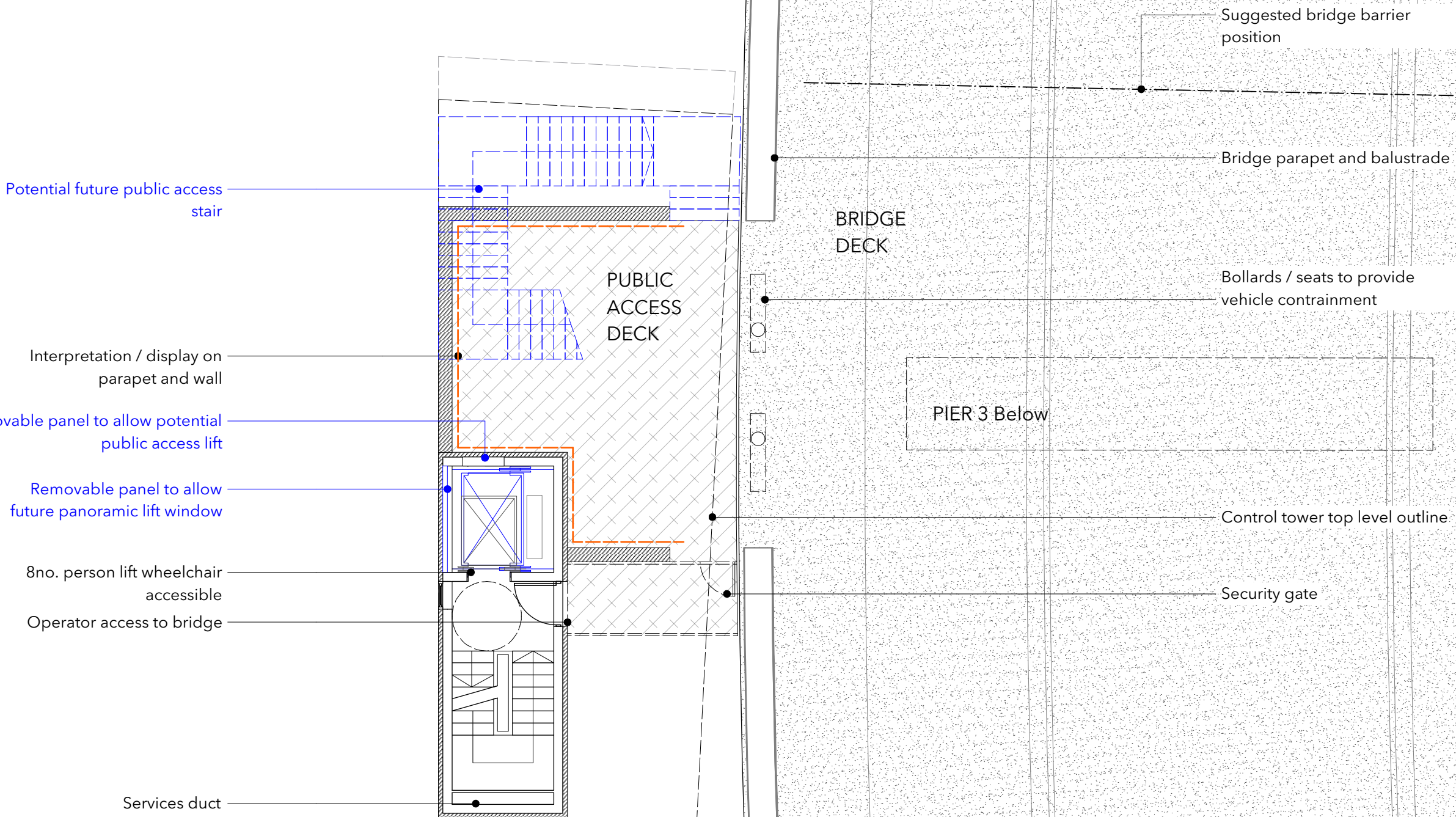


DRAWING: **Ground floor plan**

PROJECT: Lake Lothing Third Crossing

DRWG NO: **427-010** REVISION:
SCALE: 1:100 CHECKED: XX
DATE: 24.11.2017
STATUS: PRELIM for comment

NOTES:

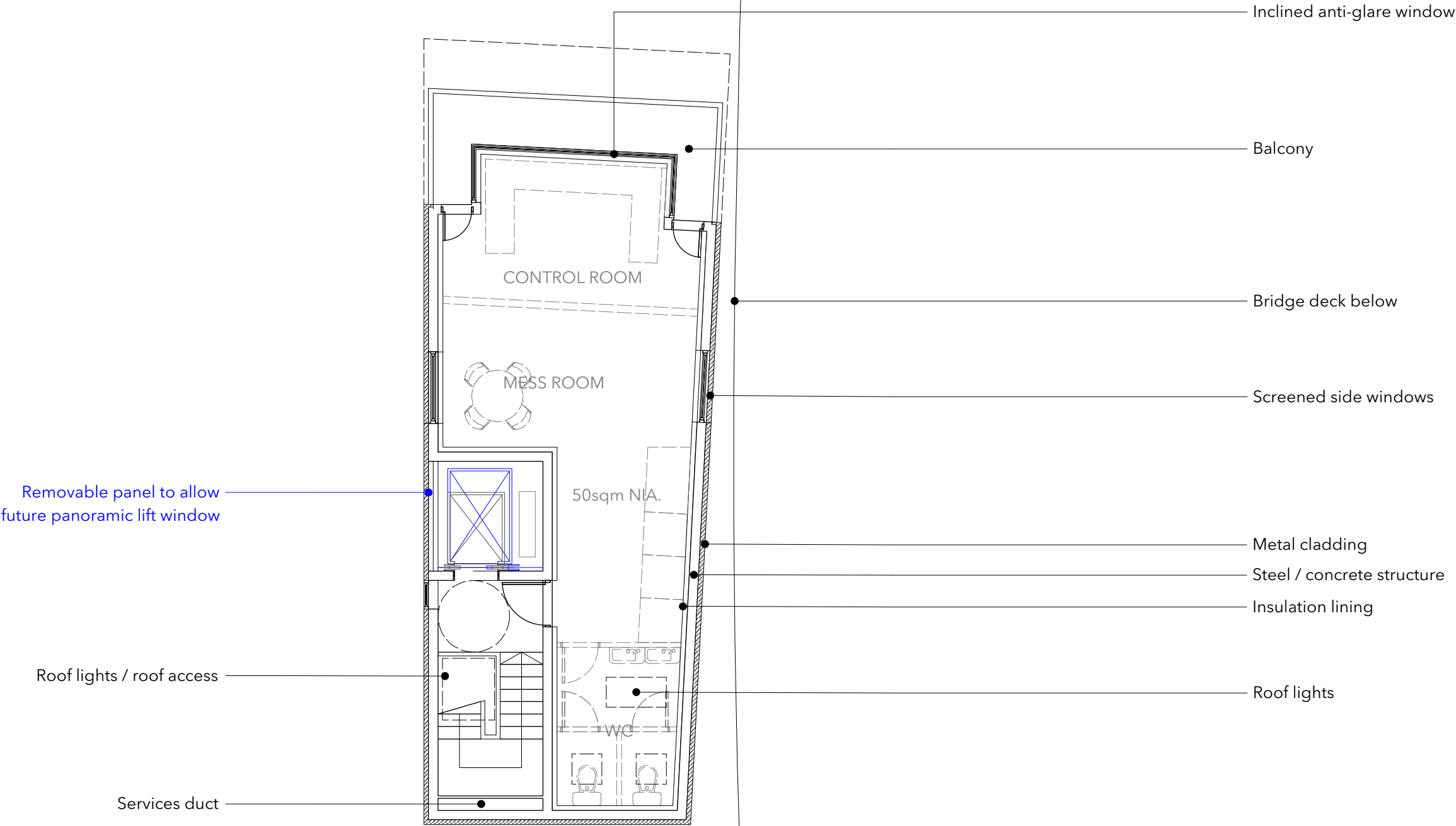


DRAWING: **Bridge deck level floor plan**

PROJECT: Lake Lothing Third Crossing

DRWG NO: **427-011** REVISION:
SCALE: 1:100 CHECKED: XX
DATE: 24.11.2017
STATUS: PRELIM for comment

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DRAWING: **Control room floor plan**

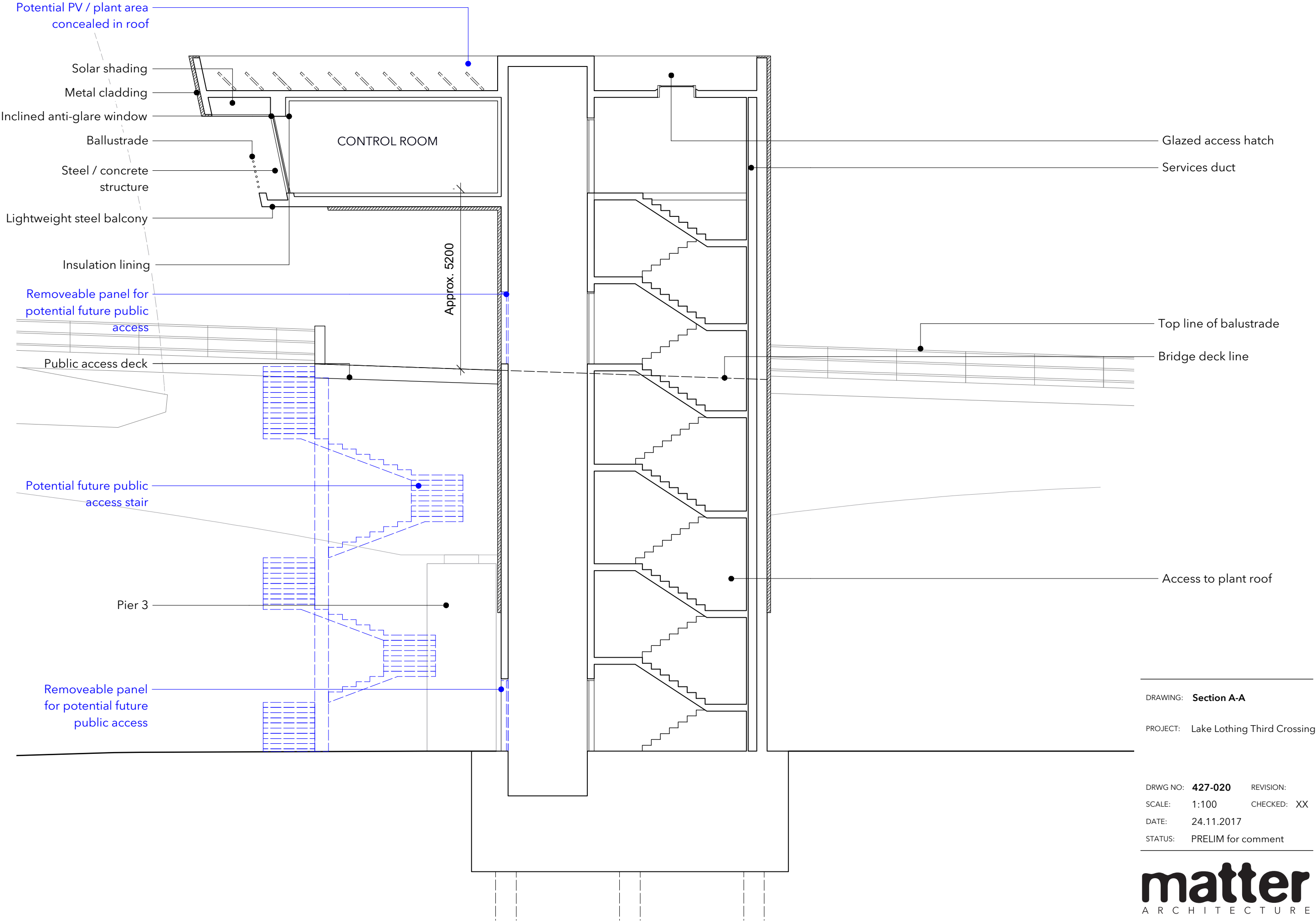
PROJECT: Lake Lothing Third Crossing

DRWG NO: **427-012** REVISION:
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STATUS: PRELIM for comment

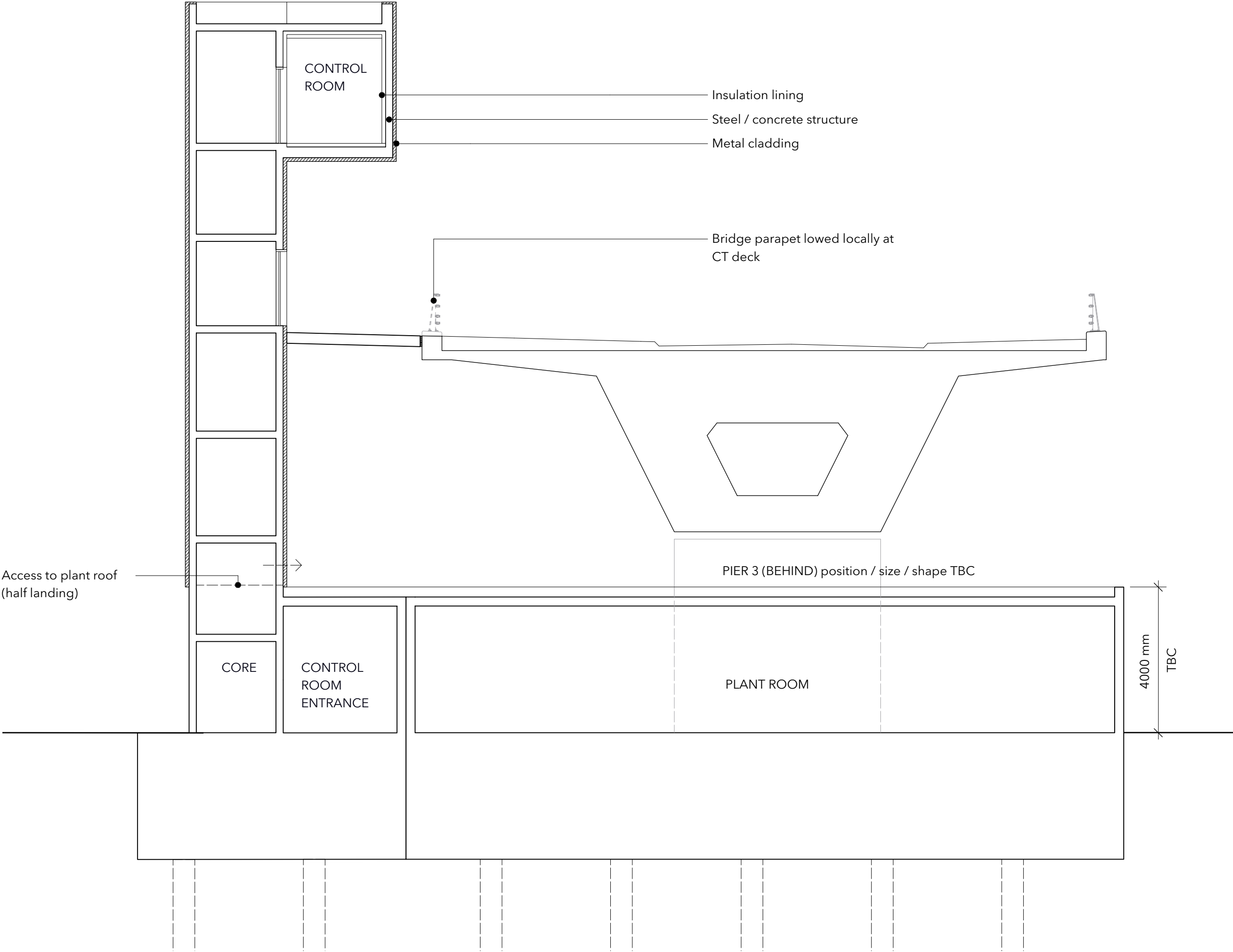
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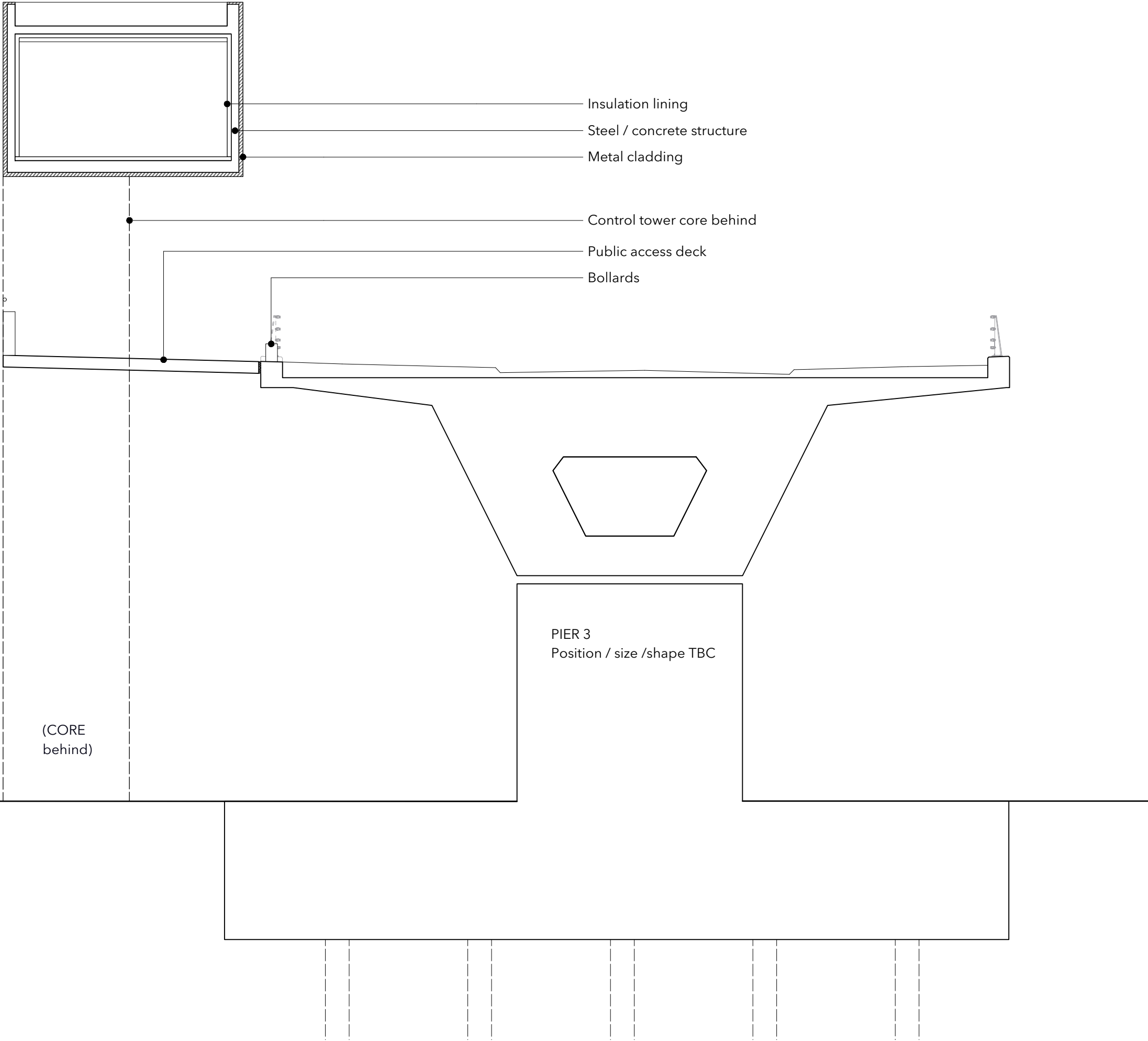


DRAWING: **Section B-B (through core)**

PROJECT: Lake Lothing Third Crossing

DRWG NO: **427-021** REVISION:
SCALE: 1:100 CHECKED: XX
DATE: 24.11.2017
STATUS: PRELIM for comment

NOTES:



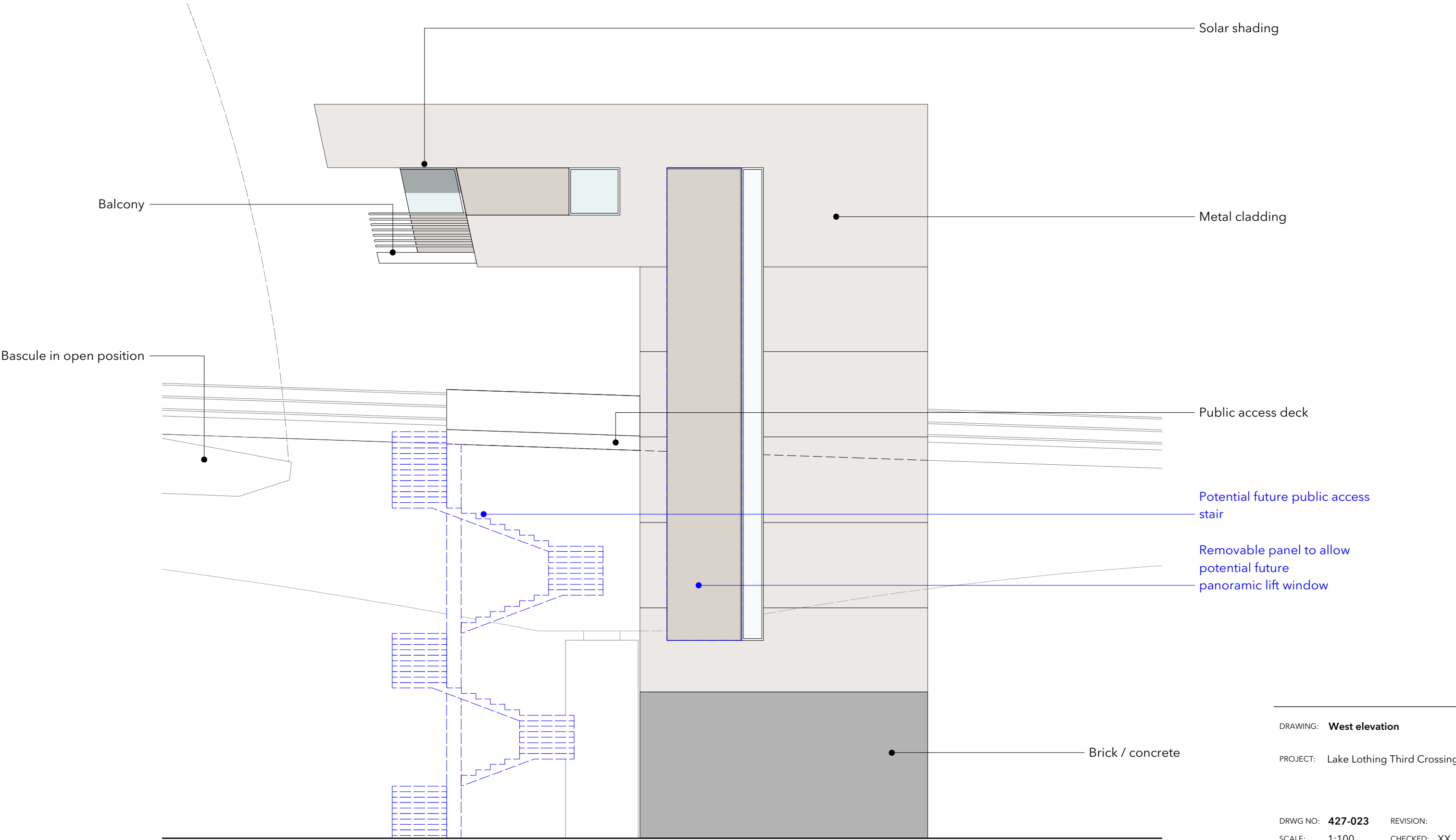
DRAWING: **Section C-C (through Pier 3)**

PROJECT: Lake Lothing Third Crossing

DRWG NO: **427-022** REVISION:
SCALE: 1:100 CHECKED: XX
DATE: 24.11.2017
STATUS: PRELIM for comment

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WEST ELEVATION

DRAWING: **West elevation**

PROJECT: Lake Lothing Third Crossing

DRWG NO: **427-023**

REVISION:

SCALE: 1:100

CHECKED: XX

DATE: 24.11.2017

STATUS: PRELIM for comment

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DRAWING: **East elevation**

PROJECT: Lake Lothing Third Crossing

DRWG NO: 427-024

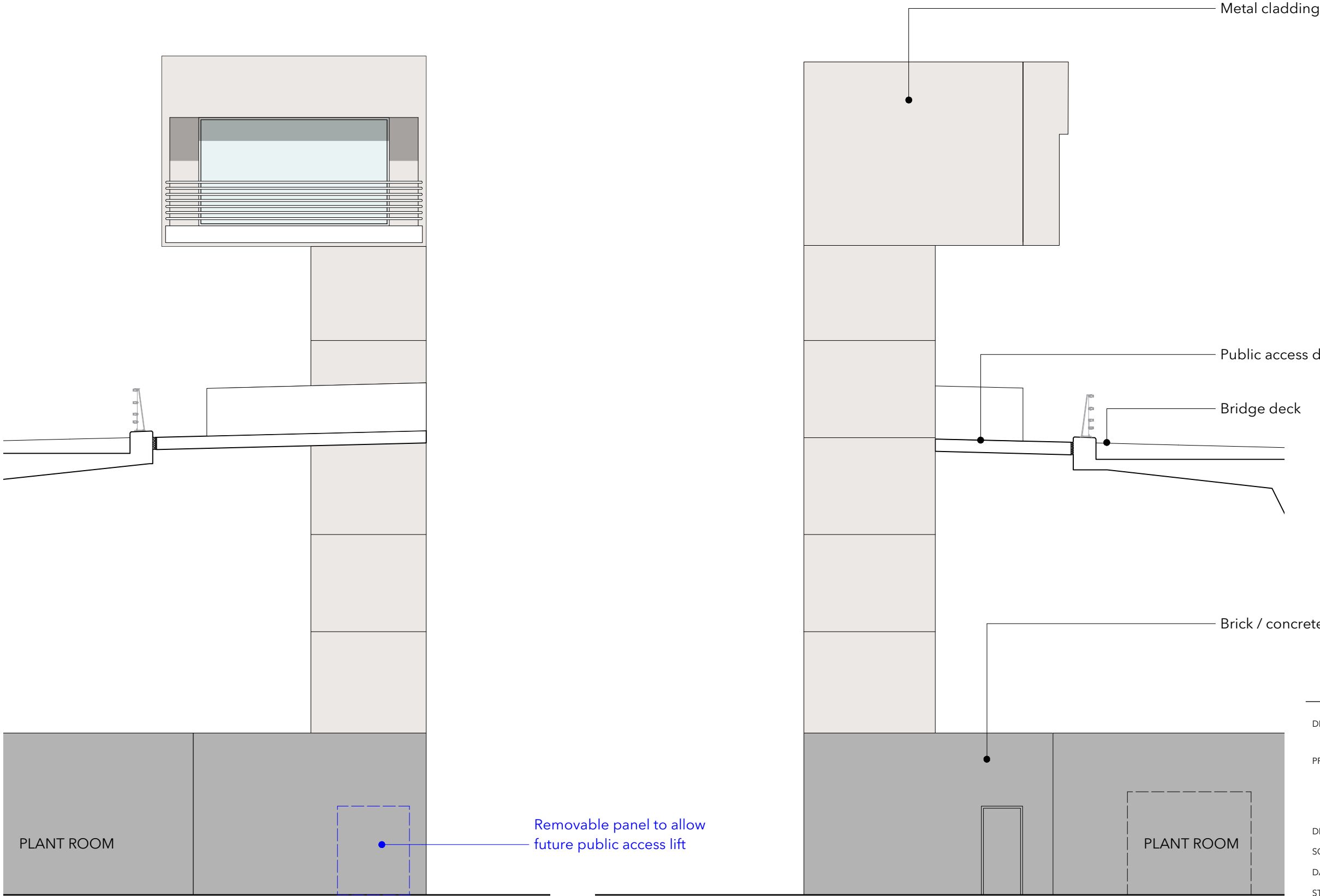
REVISION:

SCALE: 1:100

CHECKED: XX

DATE: 24.11.2017

STATUS: PRELIM for comment



DRAWING: **North / south elevation**

PROJECT: Lake Lothing Third Crossing

DRWG NO: **427-025** REVISION:
SCALE: 1:100 CHECKED: XX
DATE: 24.11.2017
STATUS: PRELIM for comment

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3.11 Outline specification

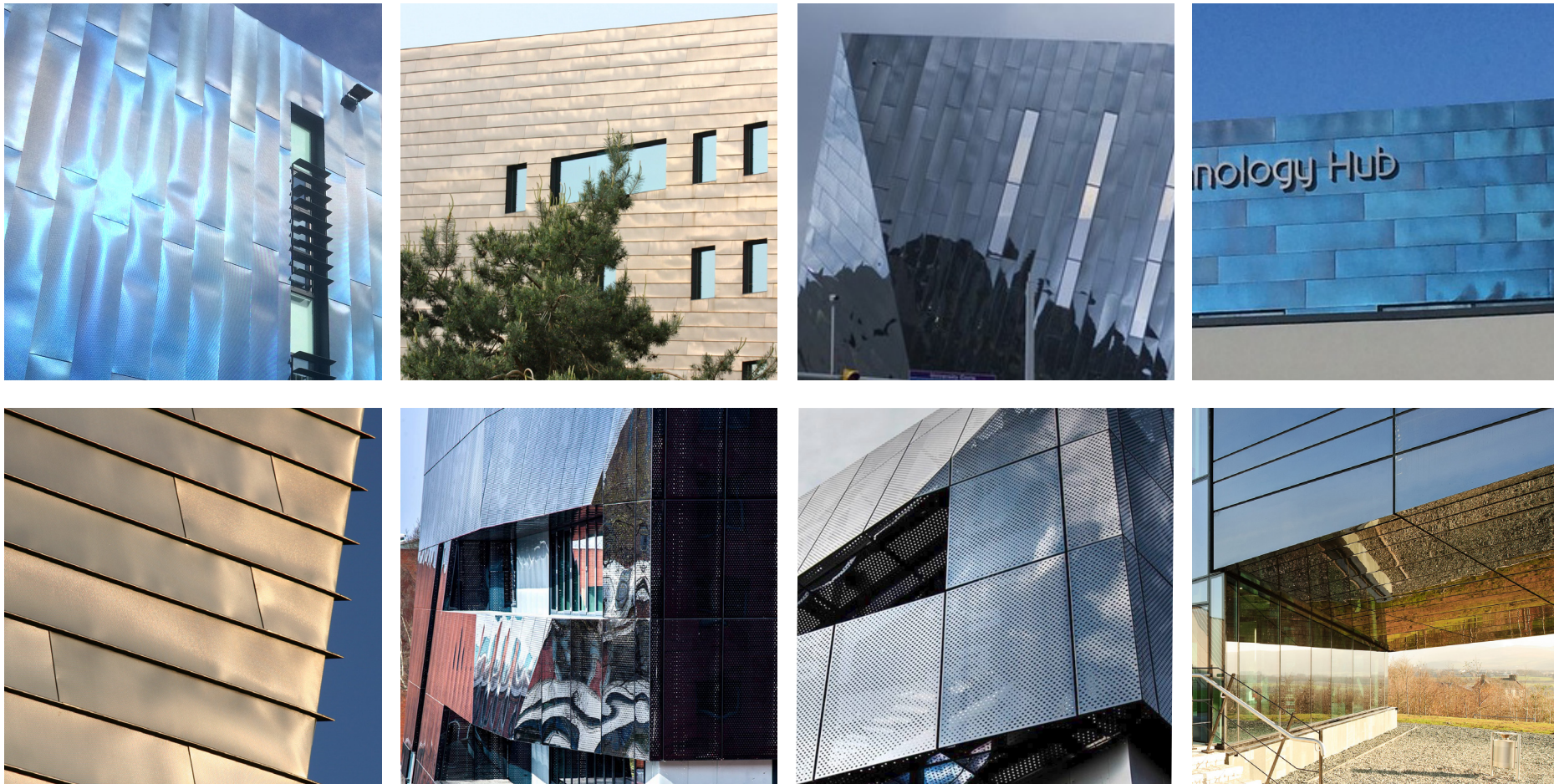
BRIDGE CONTRACT:

Generally	All works to conform to requirements of the Building Regulations and relevant British Standards.
Structure	Steel or concrete structure to suit.
Enclosure	Sealed enclosure to suit structure and cladding. Internal insulated lining to Control Room only.
Windows	Double glazed windows with inclined anti-glare front section.
Doors	External security doors, finish to match cladding.
Plant room doors	Security roller shutters.
Lower level cladding	Dark engineering brick or concrete.
Upper level cladding	Coloured/patterned grade 316 stainless steel rainscreen cladding as Rimex Metals 'Colourtex'. 'Paladin' pattern generally, 'Mirror' finish to soffit over public deck.
Roofs	Flat roof with provision for maintenance access. Glazed access hatch in CT roof.
Public deck	Paving to match bridge walkways. Steel parapet and wall panel for display/artwork.
Operator stair	Steel/concrete internal stairway with metal handrails/balustrades.
Lift	Secure 8 person wheelchair standard lift. Shaft oversized to allow future addition of 13-person. Shaft could be even larger if allowance required for larger future lift. Knock-out panels to allow addition of separate public access from north at quay and bridge level and of window to west in shaft and car.
Services	Connections for electricity, data, water, rainwater and foul drainage
Lighting	Recessed lighting in soffit over public deck area. Allowance for lighting to compound, plant room and circulation areas.

POTENTIAL FUTURE ADDITION OF PUBLIC ACCESS:

Lift access	Shaft sized to allow potential conversion of lift car to 13-person (or larger).
Access	Potential removal of knock-out panels and addition of second doors at quay and bridge level to allow public access to lift (dual access, separately controlled).
Lift window	Potential removal of knock-out panels and addition of panoramic window to west elevation with corresponding window in lift car.
Stair access	Access deck has removable parapet panel to allow addition of external public stair from quayside to bridge level.

4.0 Cladding



4.1 Proposed cladding

The proposed cladding to the control tower is **coloured stainless steel**, utilising **Grade316** stainless steel installed in thin gauge ($\pm 0.6\text{mm}$) sheet as a simple rainscreen over the contractor's chosen structure/substrate.

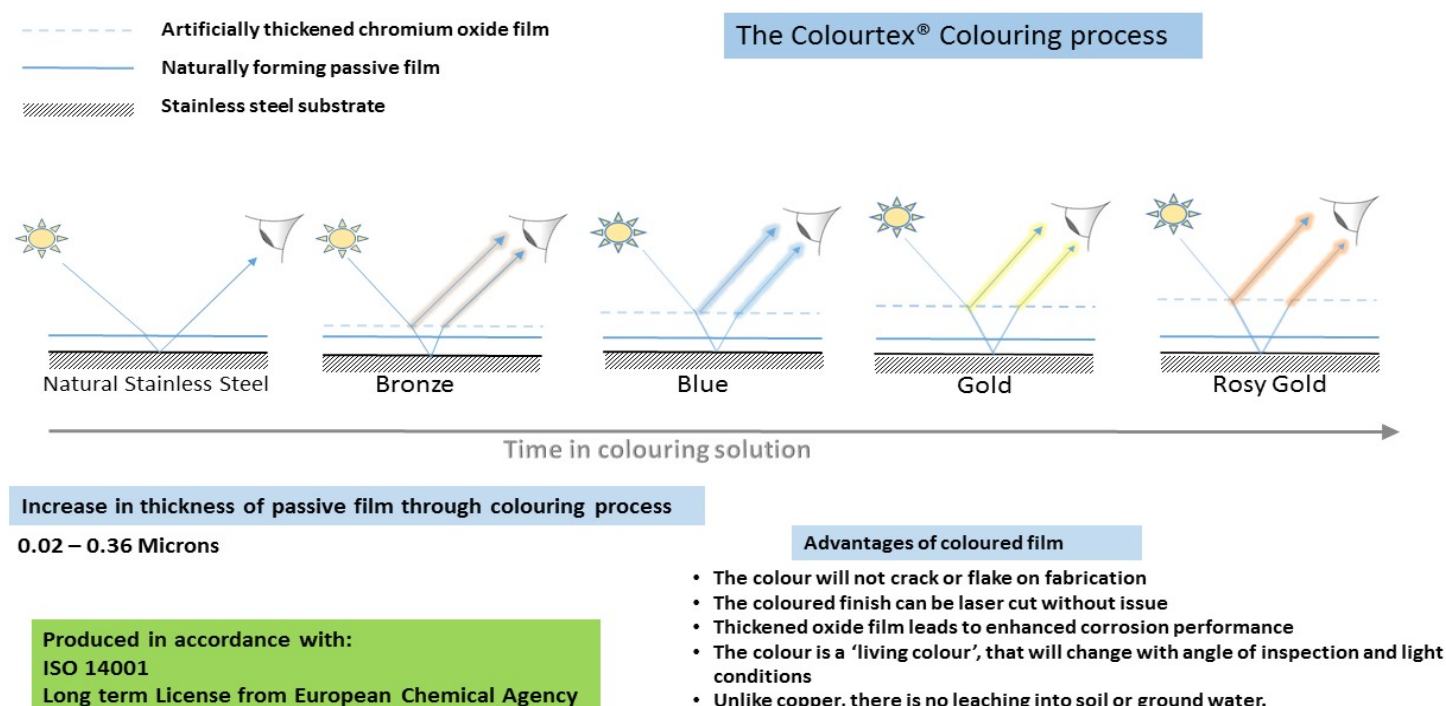
The material has been selected for its **durability** in the marine environment and its intriguing **shifting appearance** in different light conditions.

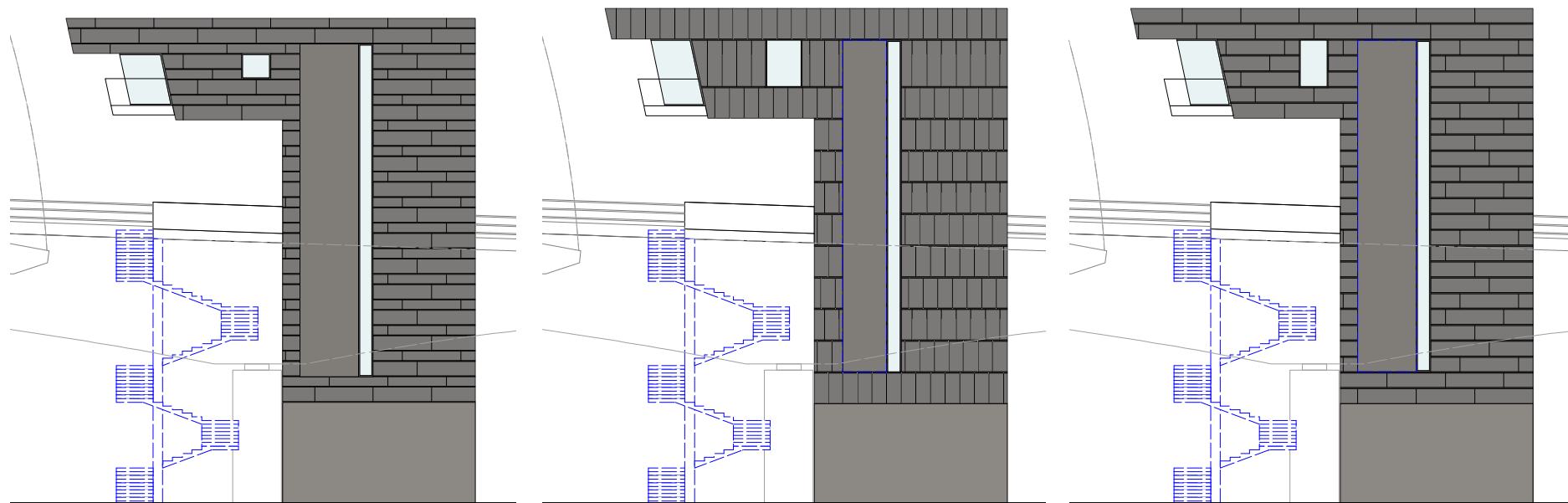
Stainless steel has a natural passive and transparent chromium oxide layer, which gives the material its corrosion resistance. The colouring process immerses the steel in a hot aqueous solution of colouring chemicals, which results in the thickening of the oxide layer. Although the oxide layer is transparent the colours are produced by the physics of **light interference** and are obtained through the separation of the light spectrum as light is reflected off the surface of the metal and the surface of the oxide layer to give the impression of colour, which varies in different lighting conditions.

Subtle variety in appearance can be achieved by choice of different combinations of **colour** (the oxide layer), surface **texture** (from mirror to matt) and use of different **patterns**- each modulating light reflectance at different scales.

As the process does not involve any paint, pigment or dyes the colour is impervious to ultra violet light and completely colourfast. The thicker oxide layer that results in the dark bronze/black colours increases the stainless steel's resistance to corrosion.

The coloured stainless steel is manufactured in the UK and has been widely used around the world over many year.





Cladding studies

4.2 Cladding studies

Various options for layout and finishes of the proposed coloured stainless steel cladding are being undertaken.

The proposed cladding will be described in more detail in the Design Guidance after further exploration with potential manufacturers and fabricators, and sample testing.

