

Evidence Submitted by Charles Martin to Planning Inspectorate Open Floor Meeting 12th January 2023.

Relating to the Proposed Alternative of Retaining A12 Junction 20A Southwest-Bound.

1. Personal Information.

My name is Charles Martin and I am speaking as an individual resident of Boreham, Essex and I am a member of the Boreham Conservation Society (BCS). I am a retired chartered civil engineer with some 35 years' experience in highway design and construction.

2. BCS have been very active in opposing the closure of Junction 20A Southwest-bound and in conjunction with the Society, I have produced an alternative design that would continue to allow B1137 traffic to enter the A12 southwest-bound at this location.

3. BCS member and Chairman Bill Kyle has had detailed discussions/correspondence over many months with National Highways (NH) regarding the projected increase in traffic through Boreham. I do not propose to add to this discussion here, safe in the knowledge that Mr Kyle has made a presentation on the matter.

4. My response to the NH consultation in February 2022 detailed my objection to the proposed closure of Junction 20A. I only intend to summarise those details here for completeness, as I assume the Planning Inspectorate already has this information. If this is not the case then I can provide a copy of my February 2022 submission.

5. In my response in February 2022, I outlined, in sketch format, my proposal for a "small" (compact) roundabout on the B1137. At that time I had no access to 1:2500 plans, only the public consultation material, which was at unknown scale. As a consequence, my sketch indicated in a very schematic way what could be a possibility. I would note that I have received no direct communication from NH on my alternative proposal.

6. Early discussions/information revealed NH's stance, that keeping Junction 20A open Southwest-bound would be a "disproportionate response" to the forecast increase in traffic through Boreham. This stance by NH is very unreasonable, as why should the residents of Boreham suffer simply because of an unsubstantiated statement by NH. It is my view that NH are not prepared to investigate my alternative due to financial reasons and/or project timescales.

7. However not to be deterred, after a request to NH in the Autumn 2022 for more accurate plans, they were kind enough to forward me a set of 1:2500 plans. Using these new plans, I have been able to consider my design in more detail. I admit that my revised proposals put to you today are still considered more of a sketch than detailed engineering plans, as NH would not provide me with 1:500 scale plans.

8. However using all the public information available, including NH plans and the Design Manual for Roads and Bridges, I believe I have produced a viable alternative for the treatment of Junction 20A Southwest-bound. I do not propose that Junction 20A Northeast-bound remains open.

9. When I first raised my initial concept of a roundabout junction at this location at one of NH's exhibitions, I was told that a roundabout with an Inscribed Circle Diameter (ICD) of 60 metres would be required. This, in my view, is far in excess of what is needed.
10. My proposal is for a roundabout with an ICD of 28metres, a central island of 4metres and an over-run apron of 1metre. I have used the DMRB document CD116 – Geometric Design of Roundabouts to give the basic parameters of size. I propose single lane entries. (Refer to Appendix A for design parameters)
11. In addition to the above roundabout proposal, I have endeavoured to indicate a suitable on-slip merge to the proposed 3 lane A12. Using DMRB documents: CD 122 – Geometric Design of Grade Separated Junctions and CD 123 - Geometric Design of At-Grade Priority and Signal Controlled Junctions. In my view, the parameters within CD 122, though mainly used for grade separated junctions, would also apply to an at-grade junction. I have also carried out a cross-check with CD 123 at grade junctions to determine the relative scales of each design.
12. The basic parameters for the on-slip from CD 123 (sections 5.26 and 5.26.1) indicate for a 120kph major dual through route, a merge taper of 110 metres plus a 40metre hatched nosing with a back nosing width of 2 metres is required. Total length of 150 metres.
13. In this case, in my view, it is more appropriate to use CD 122 for this element of the design. I have not been able to find detailed hourly flows for the 3 lane A12 in any documents provided by NH, therefore some assumptions and local traffic counts have been necessary.
14. Using figure 3.12a - All Purpose Road Merging Diagram, I have assumed an A12 a.m. peak flow of 3500vph, together with a B1137 entering flow a.m. peak of 400vph. (I have carried out my own short 10 minute traffic survey per lane factored up to support these assumptions see Appendix A). These figures equate to Area A on the diagram producing a simple on-slip layout 3.14a Option1. Section 3.21, Table 3.21 for 120kph A12 gives a taper length of 150metres with a hatched nosing of 85metres and a back nosing width of 3 metres. Total length 235 metres. This length will comfortably fit between the entry and Crix Overbridge.
15. Bearing in mind the scale of the A12, I feel that the length of 235metres derived from CD122 is preferable to the length of 150metres derived from CD123. However, I would note that both appear to be acceptable from the documents.
16. Having established the basic parameters for a roundabout junction and an on-slip merge, I now move onto the location of the roundabout on the B1137.
17. I have produced 3 Options (see Appendix B), which all start from the general premise of the existing northeast-bound lane of the B1137 to Hatfield Peverel being abandoned to give scope to move the proposed roundabout off-line to a degree.
18. I have attempted to minimise the effect on the Crix House boundary wall, which NH have stressed is part of the curtilage of Crix House and may therefore require listed building consent to alter. With more detailed design any effect on this wall could be removed or be much reduced. I note that the wall is in poor condition at this location.

19. My design Options 1 and 3 will have minimal effect on the last isolated section of the above wall northeast of the entrance gate to Crix House. It is hoped, detailed design of Option 2 at large scale could result in the wall being unaffected.
20. As part of NH's scheme design, the isolated meadow adjacent to the existing Junction 20A is to be laid out as land needed for a flood attenuation pond. As such it is assumed that this land will be acquired. Option 1 and 3 both utilise part of this land for the proposed roundabout. Whereas Option 2 moves the roundabout nearer to the River Ter bridge and would mean extra land take and a possible greater effect on the nearby cottages.
21. My preferred layout is Option 3. This gives a good entry deflection on all arms of the roundabout and would (along with all Options) accommodate the rare movement from the B1137 northeast bound back onto the A12. It is envisaged that some earthworks and regrading of the existing A12 cutting will be required to incorporate the necessary nosing and merge taper. It is noted that there are some telecommunication utilities on the B1137 verge and these may require diverting. It may be possible to avoid utility diversions by constructing a simple retaining wall within this cutting slope. There could also be a need for a small retaining wall adjacent to the A12 carriageway near the exit from the proposed roundabout to accommodate any level differences.
22. NH have quite rightly stressed that the existing priority junction layout has been a factor in personal injury accidents on the B1137. My roundabout proposal reduces/removes this risk.
23. In conclusion, in my view it is possible to produce a design at this location that will enable Junction 20A south-west bound to remain open. I therefore request that the Planning Inspector instructs NH to provide a detailed design along the lines of those described above, as they have failed to convince me that that it is not a possible solution. You will then be in a position to make a reasoned judgement as to whether you feel Junction 20A southwest bound should remain open, thus removing the extra forecast traffic through Boreham Village.

Associated Documents:-

- Appendix A. DMRB document summaries and calculations.
- Appendix B. Option Plans 1,2 and 3 (Not to Scale scanned files attached, hard copies to scale are available on request)

Charles Martin

Document Date 10th January 2023

Addendum:-

Post 6:30 pm Open Floor Meeting Note 13th January 2023:-

During my presentation, I informed The Examining Authority Panel that NH had not given me the courtesy of a direct response to my earlier February 2022 submission. NH were very quick to find me after the meeting and advised me that they had responded. When I asked where it was, I was told it was within a very large document "Applicant's Responses to Representations, Appendix B Page 539". I find this level of service unacceptable and poor practice. I have never been advised that I have to struggle through all the web site information to find the relevant document and NH's response. All it would take is to send an email with the response, or at the very minimum, direct me to the correct document and location within it.

I appreciate that NH probably have large amounts of data to process for DCO Applications but good business practice would make the whole process much easier to follow by the consultees. I get the impression that NH are hiding behind the process and only focussing on the Planning Inspectorate's requirements and ignoring the general public.

Appendix A

CD 123 Version 2.2.0 – Geometric Design of At Grade Priority and Signal Controlled Junctions.

This document has been considered as the junction is strictly “at grade” but elements of a grade separated junctions may also apply.

Page 37 Section 5.26 and 5.26.1 indicate for 120kph major dual a merge taper of 110 metres will be required. Plus a 40metre nose and back nose width of 2metres giving a total length of 150metres.

CD 122 Version 1.1.1 – Geometric Design of Grade Separated Junctions.

Section 3.8 gives a maximum major route flow of 1600vph per lane, giving for 3 lanes 4800 vph total.

Actual traffic flow on the A12 is stated to be up to 90,000 vpd 2 way along the A12 between Chelmsford and Marks Tey. I have not been able to establish the flows exactly at Junction 20A from information provided by NH.

However assume peak hour traffic is say 10% of daily flow giving 9000vph 2 way.

Say 60/40 split am peak gives 5000 vph

I initially assumed a more modest flow of 4000vph which is mid-range for 3 lanes. However see below for local survey results.

Again, initially I assumed the side road entry flow is 400vph which is the best estimate from information provided in public documents.

The above figures have been verified by my own local 10 minute per lane traffic counts taken between 07:30 and 08:00 am 10th January 2023, revealing the following:-

A12 Lane 2	1842 vph
A12 Lane 1	1494 vph
A12 Total	3336 vph
On Slip from B1137	432 vph

Using Figure 3.12a All Purpose Road Merging Diagram

These figures equate to area “A” on the diagram giving a simple Fig3.14(a) Layout A Option 1

The detail of this layout is described below.

Section 3.21 Table 3.21 gives the following:

Taper length for 120kph	=150 metres
Nosing length	= 85metres
Total Length	= 235metres
Width of back nosing= 85/30	= 3metres

This is achievable within the distance available from the proposed Junction 20A entry nosing to Crix overbridge.

It is appreciated that the on-slip merging flows may change. This is due to the possible redirection of some traffic from the Maldon direction entering the B1137 at the Duke of Wellington junction and turning northeast towards the new proposed junction between Hatfield Peverel and Witham. However without the benefit of detailed traffic modelling, I cannot determine this possible change. Albeit my view is that a large element of traffic will continue to turn left southwest onto the B1137 at the Duke of Wellington junction.

CD 116 – Geometric Design of Roundabouts Revision2

Compact Roundabout ICD between 28 and 36metres with a central island at least 4metres diameter. Include an overrun apron of 1metre around the central island.

Design vehicle 16.5metre long articulated lorry.

Section2.3.2 - Compact Roundabout may be used if 50mph restriction and AADT less than 8000vpd 2 way.

Section 2.3.3 Compact roundabout may be provided if the speed is restricted to 40mph AADT less than 8000vpd.

Therefore 40 or 50mph restriction would be appropriate.

Note 1 – Single lane entries/exits

Section 3.7 – Central island at least 4metres

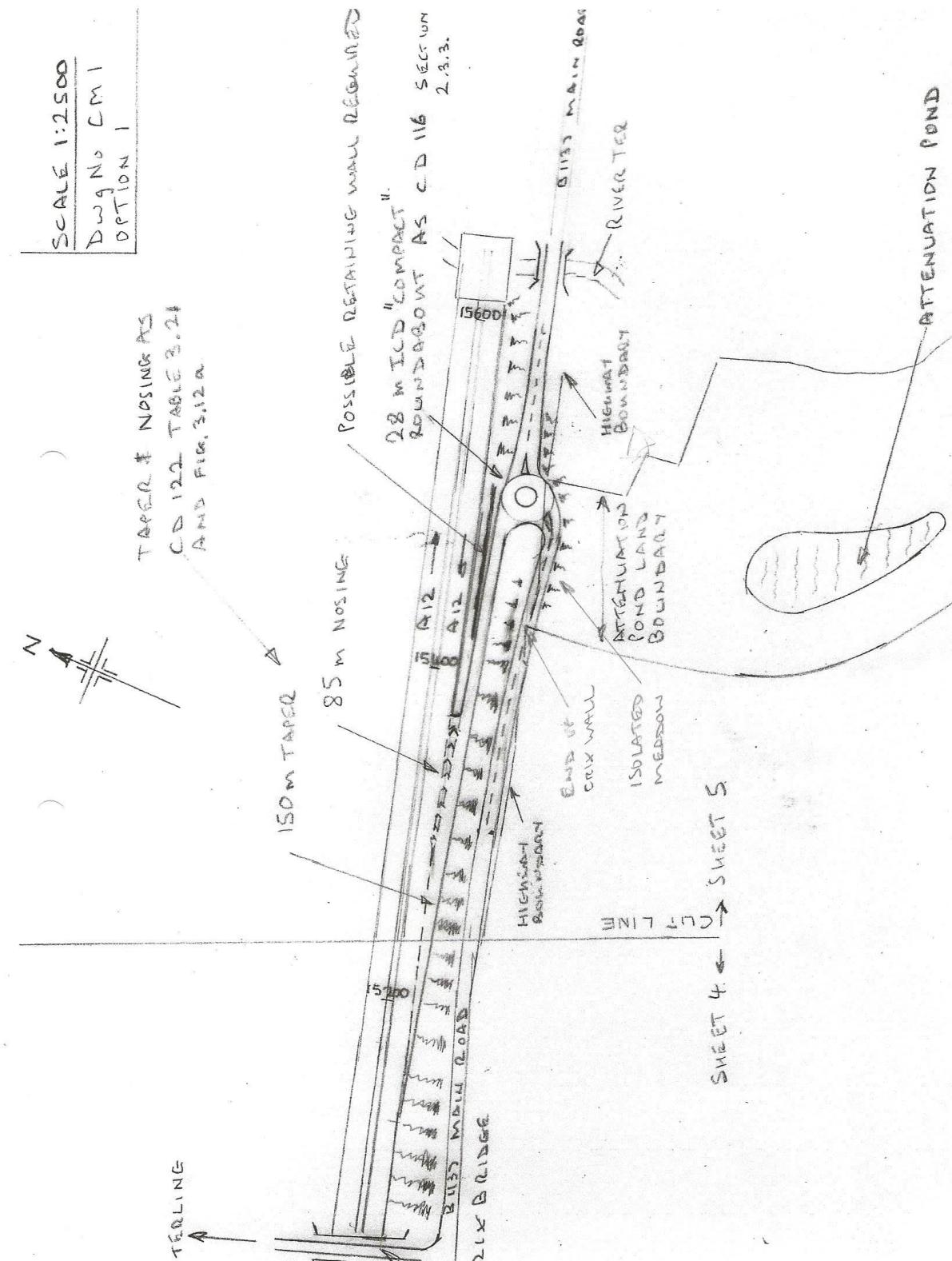
Fig 3.8.1NI and Table 3.8.1NI for ICD of 28metres the island should be 4metres diameter with and over-run apron Radius 3metres giving and apron of 1metre around the island.

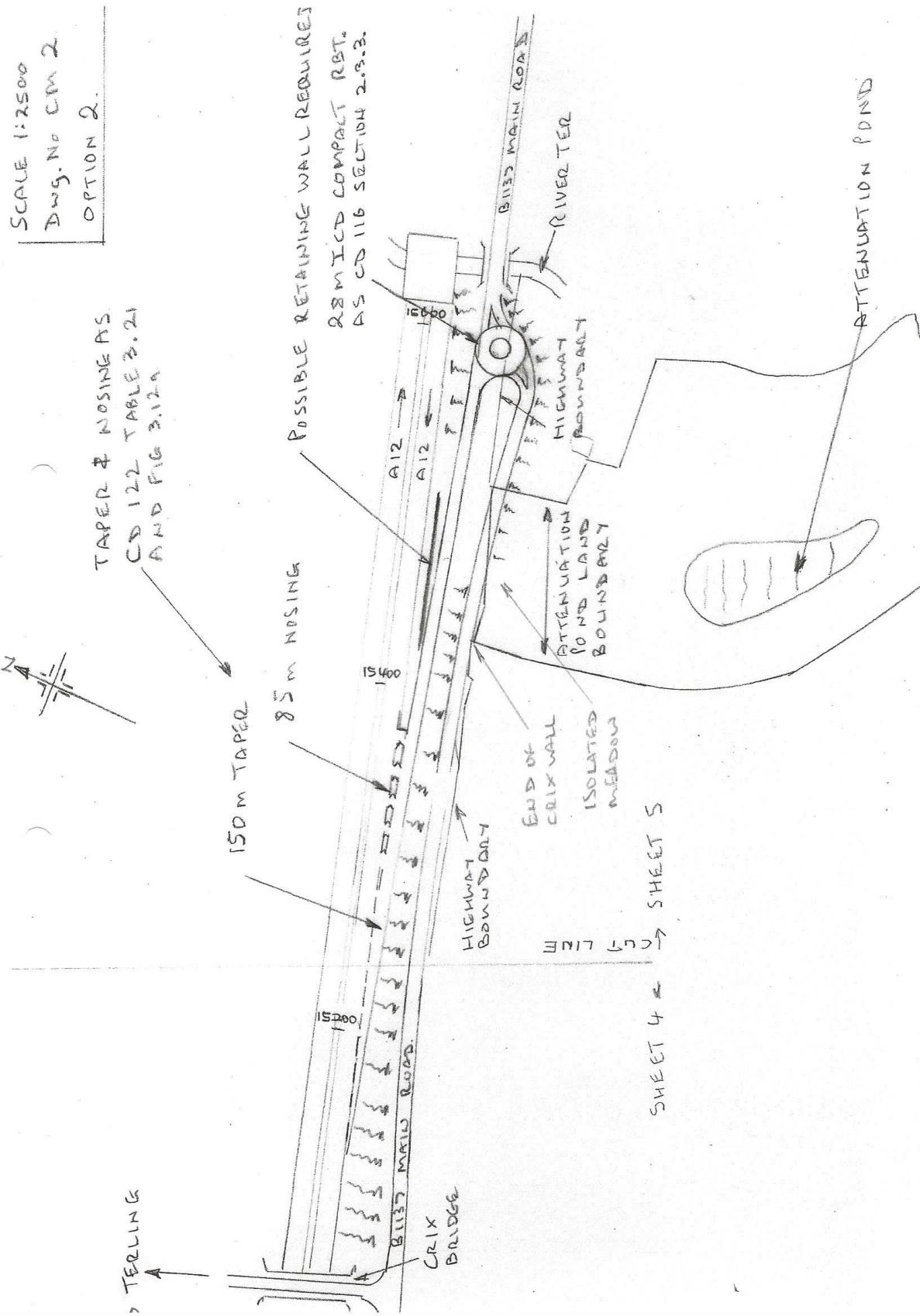
With careful design an entry radius of less than 100metres can be achieved thus restricting entry speeds.

Visibility is not a problem as both approaches are from downhill positions.

Appendix B

Scanned Options 1,2 and 3 (these plans are not to scale, hard copies to scale are available)





SCALE 1:2500
Dwg No. C-103
Oct 10, 1963

TABLE 2. NOISE AS
CD 122 TABLE 3.21
DUE 8/15 3.12 a

