

GENERAL NOTES

1. This drawing is to be read in conjunction with all relevant Engineers and Architects drawings and specification that should be used to verify layout, setting out, finishes etc. Any discrepancies are to be brought to the attention of the Architect and Structural Engineer prior to construction.
2. Work to figured dimensions only. All dimensions are in millimetres unless noted otherwise.
3. Do not scale from the drawings.
4. The Contractor is to inform the Architect and Structural Engineer if the existing fabric, including foundations, is opened up and found to be inadequate, unsuitable to support the proposed works, or at variance from the details shown on the drawings.
5. The Contractor should note that he is fully responsible for undertaking surveys of the existing building to ensure existing building elements as shown on the drawings are accurate.
6. Items noted on the drawings "to be confirmed on site" are to be exposed by the Contractor for inspection by the Structural Engineer at the earliest opportunity.
7. Do not cut any holes or chases through any structural members without first obtaining the written consent of the Structural Engineer.
8. For Contractor designed elements that require cast-in fixings R.T.A. to be informed prior to reinforcement order.
8. Refer to Architect's drawings for:
 - a. Site, building and setting out grids.
 - b. Details of all rebates, arises, chamfers, cast in fixings etc.
 - c. Details of all damp proofing, insulation and sealants.
 - d. Location and details of required surface finishes.
9. Refer to services drawings for the following information:
 - a. Drainage layouts and details and levels.
 - b. Builders work details
 - c. Service pit requirements.
10. Contractor to inform R.T.A. prior to reinforcement order of any Contractor designed elements that require cast-in fixings into structure designed by R.T.A.
11. Slip membrane shall be minimum 250µm polythene U.N.O.

CONCRETE

1. Concrete in contact with ground to be DS4-FND4**-C32/40 - minimum cement content of 400 kg/m³ and maximum water/cement ratio of 0.40. Else DS1-FND2-C32/40 in accordance with BS8500. Minimum cement content of 340 kg/m³ and maximum water/cement ratio of 0.50. Maximum aggregate size 20mm. Concrete to be in accordance with the National Structural Concrete Specification.
2. Materials and workmanship are to comply generally with BS 8110-1 and BS 8000-2.
3. Formed and unformed finishes: Refer to Architects specification.
4. Concrete level tolerance to be in accordance with Architects specification.
5. Concrete grade GEN.1 to be used for blinding, mass fill etc.
6. Cover to concrete in contact with the ground to be 50mm else 25mm U.N.O.
7. All reinforcement to be grade 500B or C to BS 8666:2005. Min lap length to be 40 x bar diameter.
8. All reinforced concrete and mass concrete to be cast against shuttered or concrete blinded faces. All shutters to be fully designed by Contractor. Existing walls must not be surcharged.
9. All holes in reinforced concrete are to be formed.
10. No cutting, coring or removal of placed concrete is permitted without prior agreement of Richard Tant Associates.
11. The position and details of all construction joints not shown on the drawings are to be agreed with Richard Tant Associates in good time.
12. Concrete receiving water proofing slurry to be either blast tracked or pressure washed at high pressure 230bar to remove latent defects to waterproofing designer's specification.
13. The Contractor shall provide details of all admixtures to be used in the concrete and agree their use with the Engineer before any concrete is delivered to site.
14. Concrete for padstones is to be 2:3:6 (cement : fine sand : coarse sand) nominal mix, with OPC and 10mm max aggregate.
15. Ready mixed concrete must be obtained from a plant which holds a current Certificate of Accreditation under the Quality Scheme for Ready Mixed Concrete.
16. Site-mixed concrete may be used when agreed with the Engineer. An agreed pre-batched and bagged proprietary concrete must be used unless an alternative site batched concrete has been agreed with the Engineer.
17. Do not place concrete when the ambient air temperature is less than 5°C and take all necessary measures to ensure that the temperature of the placed concrete will not fall below 5°C for the specified curing period.
18. Concrete Cubes to be tested for compressive strength for all reinforced concrete elements. 3 samples per pour or per 50m³. One 7 day test, one 28 test and one sample for future testing if required. All tests to be carried out by UKAS accredited laboratory or equivalent. Testing to BS EN 206-1, annex B and BS 8500-1, annex B.
19. The Contractor is to provide suitable curing for all concrete elements to comply with the requirements of BS 8110-1:1997, Table 6.1.
20. All holes shall be formed and all inserts cast in at the time of pouring concrete. No part of the concrete works shall be drilled or cut away without the approval of the Structural Engineer.
21. Reinforcement shall be fixed adequately using tying wire or steel clips. Concrete cover is to be as specified on the drawings. Chairs and spacers are to be provided as necessary to maintain the specified cover.
22. Unless noted otherwise on drawings, all reinforcement is to be lapped 40d (where d is diameter of the larger bar).
23. All formwork and supporting members shall be sufficiently strong to resist the pressure of the wet concrete and to ensure that the specified tolerances for the finished work are achieved. Formwork and supporting structure to be designed by the Contractor.
24. Unless otherwise specified by the Structural Engineer or Architect the formwork shall be such that the resulting concrete finish shall be Type A of Clause 6.2.7.3 of BS 8110-1:1997, i.e.: Type A finish. This finish is obtained by the use of properly designed formwork or moulds of timber, plywood, plastics, concrete or steel. Small blemishes caused by entrapped air or water may be expected, but the surface should be free from voids, honeycombing and other blemishes. Prior to casting of concrete the Contractor is to confirm finish required from the Architect in writing.
25. The minimum period before striking formwork shall be in accordance with BS 8110-1:1997 Table 6.2.
26. All reinforced concrete to be cast against shuttered or concrete blinded faces. All shutters to be fully designed by Contractor. Existing walls must not be surcharged.

REBAR ESTIMATE FOR COSTING

- | | |
|--------------|-----------|
| • Raft Slab: | 130 kg/m3 |
| • Walls: | 225kg/m3 |
| • Columns : | 300 kg/m3 |
| • Beams: | 300 kg/m3 |
| • Slab: | 225 kg/m3 |
| • Underpin: | 200 kg/m3 |

MASONRY

1. Masonry below ground to be built in either blockwork with a min. compressive strength of 10 N/mm² and with a min. density of 1500 kg/m³ or Class 'B' Engineering bricks both to be laid in Class (i) or (ii) mortar in accordance with BS 5628.
2. All external brickwork is to be in facing brick as specified by the Architect & laid in class (iii) mortar.
3. All masonry to be laid in accordance with good practice as stated in NBS/C guidelines & BS 5628: Code of Practice for Masonry.
4. Timber wall plates to be strapped down using M2.5 x 30 galvanised M.S. 'L' straps at Max. 2m ctrs. Straps to be at least 1000mm long & screwed to wall with Min. 4 Number no.10 x 50mm long screws, unless noted otherwise.
5. Brick ties to be ST1 stainless steel by 'Ancon Ltd' or similar approved, unless noted otherwise.
6. All masonry units to be class FL.
7. Individual masonry units to be 20kg or less.
8. New blockwork is to be minimum strength 7.0 N/mm².
9. Brickwork and blockwork are to be laid properly bonded as agreed with the Architect and fully bonded into existing work.
10. Do not use frozen materials or lay masonry when the ambient air temperature is at or below 3°C and falling or unless it is at least 1°C and rising.
11. Cavity wall ties shall be stainless steel flat double triangle ties to BS 1243 spaced at 450c/s vertically or 6 courses, 750c/s horizontally staggered, and at 225c/s vertically or 3 courses 150mm from all openings, corners and reveals to BS5268 unless noted otherwise. Minimum embedment to be 50mm into each masonry leaf. Contractor to adopt appropriate ties where required that do not compromise water proofing system.
12. Wall ties elsewhere are to be stainless steel flat double triangle ties, to BS 1243, as noted on the drawings. Minimum to accommodate water proofing system embedment to be 50mm into each masonry leaf. Contractor to adopt appropriate ties where required that do not compromise water proofing system.
13. Bricks and blocks shall not be stored on any floor without first obtaining consent from the Engineer. The Contractor shall ensure that the loadings imposed on the permanent works by the storage of materials do not overstress any part of the permanent works or cause excessive deflection and not to exceed 1.5kN/m².
14. In dry weather, bricks are to be soaked in water before being laid and tops of walls to be raised are to be similarly soaked before work is recommenced.
15. Brickwork and blockwork is to be carried up in a uniform manner and is to be raked back and not toothed up, no section rising more than one metre above the remainder. Brickwork built with standard 65mm bricks shall rise at the rate of four courses to 300mm. No more than sixteen courses shall be built in a day without prior permission of the Engineer.
16. Crack control brick reinforcement is to be provided over doors, over and under windows and at changes in profile (e.g. where the building steps from two storeys to one storey), as follows: 2 layers of BRC Bricklor or Brickforce inthe two bed joint immediately adjacent to the opening. To extend 600mm beyond the opening onboth sides and 600mm either side of the change in profile.
17. Vertical movement joints should be provided in masonry walls to minimise the risk of major cracking, as shown in the following table:

Material	Joint Width (mm)	Normal Spacing
Clay brick	16	12m (15m maximum)
Calcium silicate brick	10	7.5 to 9m
Concrete block and brick	10	6m
Any masonry parapet wall	10	Half the above spacing and 1.5m from corners (double the frequency)
18. The spacing of the first movement joint from a return should not be more than half of the above dimension. Provide flat straight stainless steel ties within the joint at 225mm vertical centres de-bonded over one half. Joints to be filled with suitable compressible material with minimum 10mm deep weather proof sealant to the external leaf. In cavity walls, provide cavity wall ties (as clause 11), at 225mm centres vertically within 225mm of either side of the joint. Position of joints to be agreed with the Architect prior to construction.
18. Steel columns, posts and proprietary windposts to be tied to internal block leaf within cavity walls using Halfen HTS framing cramps at 225mm vertical centres, or similar approved product, fixed to steel in accordance with manufacturers specification.
19. Proprietary wall starter systems such as Furfix or similar may be used to the new masonry extensions to existing masonry in locations where approved by the Structural Engineer.
20. Use proprietary head restraints as detailed by Halfen or Ancon to tie tops of internal block walls to the underside of floor slabs.
21. Slip membrane shall be minimum 250µm polythene U.N.O.

STEELWORK

1. The Contractor to design all steel connections from loads provided by RTA. The design, fabrication and erection of the structural steelwork is to be in accordance with the current version of BS 5950 and the latest edition of the National Structural Steelwork Specification for Building Construction, and all clauses, including appendices are deemed to be part of this specification.
2. All structural steel sections are to be Grade S355 JR to the applicable code from the following list; BS 4-1, BS EN 10210-2.
3. All bolts are to be grade 8.8 Black Bolts to BS 4190 and BS EN 20898 unless shown otherwise on the drawings.
4. All welding is to comply with BS EN 1011 Parts 1 & 2. Site welding shall not be permitted except with the written approval of the Structural Engineer. Where permitted, all site welding to be tested in accordance with the National Structural Steelwork Specification. All site weld test reports to be submitted to the Structural Engineer at least 10 working days prior to the covering of the site welded areas with permanent finishes.
5. All welds are to be full strength butt welds unless noted otherwise on the drawings. Carry out additional weld testing in accordance with the National Structural Steelwork Specification for Building Construction on any critical welds specified by the Structural Engineer.
6. The steelwork fabricator is to obtain dimensions from site. Setting out dimensions are to be obtained from the Architect's drawings. Shop fabrication drawings showing layout, connections and fixing details, are to be submitted to the Engineer for comment at least two weeks before any fabrication is carried out.
7. All painting shall be carried out in accordance with BS 5493, clauses 4.6 and 5.5 of BS 5950: Part 2 and the paint manufacturer's instructions. After preparation by blast cleaning to Sa 2½ to BS 7079: Part A1, all surfaces, which shall be dry, shall be painted with one coat of zinc phosphate primer (100 microns dry film thickness (dft) Leigh's Paints Epigrip C400V3). This coat should be applied in the works with any subsequent damage made good on site. Steelwork in cavities is to be painted, in addition, with 1 coat 125 micron dft black bituminous paint (Leigh's Paints Jetrone). A similar compatible paint specification may be substituted by the Contractor if approved by the Engineer.
8. Where indicated on the drawings the steelwork and fixings shall be hot dipped galvanised to BS 729 in order to give a uniform zinc deposit of at least 100 microns.
9. Galvanised steelwork that is to be painted should then be treated as follows:
 - De-grease with an emulsifying agent, i.e. washing-up detergent.
 - Lightly abrade surface.
 - Paint with one coat of etch primer (Leigh's Paints K179) brushing to 10 microns dft.
 - A minimum of 4 hours later and a maximum of 48 hours later, paint with one coat of undercoat (Leigh's Paints Metagrip L654) to 50 microns dft and one finish coat (Leigh's Paints K267 M10, light grey) to 50 microns dft.
10. Where steelwork is galvanised, in order to minimise problems with Liquid Metal Assisted Cracking (LMAC), the following restrictions should be adhered to for all connections designed by the Contractor:
 - Partial end plates – Avoid: use full end plates or bolted cleat connections.
 - Part depth stiffeners – Avoid: use full depth stiffeners welded with intermittent fillet welds.
 - Use intermittent fillet welds for attachment of brackets.
- Prior to erection or application of other coatings, all galvanised structural steelwork is to be visually inspected for cracks or indications of LMAC cracking. Inspection is to be carried out by a suitably qualified person trained and competent in visual inspection for LMAC. Where suspected LMAC defects are identified inform the Engineer immediately.
11. Fire protection to all steelwork is to be to the Architect's details. Any structural steel elements to be left exposed in the permanent condition are to be protected using intumescent paint system as specified by Leigh's Paints to suit the steel section size, and level of fire protection required by the Architect.
12. Unless noted otherwise ends of all steelwork built into brickwork are to be concrete encased. Min 50mm concrete cover unless noted otherwise.
13. Unless noted otherwise, steel frames within box frames installed to form openings in existing masonry walls are to be bolted to the existing masonry using M12 resin anchors at 600mm c/c staggered vertically. Use RAWL R-KEM+ resin system or similar approved.
14. Base plates to be grouted in accordance with manufactures instructions, minimum compressive strength to be 50 N/mm², unless noted otherwise.
15. Steel beams to have a bearing of 100mm on to padstones, unless noted otherwise.
16. All structural hollow sections are produced in accordance with standard BS EN 10210:2006, hot finished S355 J2H.
17. Cold formed hollow section not to be used.
18. All steelwork built in external walls to be coated with appropriate corrosion protection coating carried out as clause 7 and to extend 300mm internally.

FOUNDATIONS

1. New foundations have either been designed using load bearing concrete piles as shown on Richard Tant Associates piling layout and loads drawing, refer to the piling performance specification on the drawing, or on the ground floor drawing or underpinning drawing.
2. If the Building Control Officer requests amendments to the foundations or if conditions differ from those noted above, the Contract Administrator and Structural Engineer are to be notified immediately. The Contractor shall not proceed without receiving instructions from the Contract Administrator.
3. Foundations are to be cast symmetrically about piers, stanchions, or walls, unless noted otherwise on the drawings.

WATERPROOFING

1. The Contractor is responsible for the design, detailing and installation of all waterproofing products including workmanship.
2. The Contractor is to design the waterproofing to the basement assuming that there will be two means of defence against ground water ingress into the basement throughout.

PILING - CAST INSITU CONCRETE PILES TO BE CFA NOT DRIVEN

1. The general design for the piles shall be in accordance with BS 8004 - the Code of Practice for Foundations.
2. No pile shall be more than 75mm off the true centre position and vertical errors shall not exceed 40mm per 3m depth of pile.
3. All pile loads given in the Pile Schedule are unfactored Safe Working Loads (SWL). A minimum factor of safety of 2.6 in compression and 3.0 in tension is required on all pile loads.
4. Integrity test using a sonic impulse method employed by N. D. Technology (023 8046 5992) to be applied to all cast-insitu concrete piles. Testing to be carried out at least seven days after casting.
5. The piles are to be cast to a minimum of 200mm above the designed cut-off level.
6. Vertical reinforcement in all piles shall project a minimum of 40 times the bar diameter above the designed cut-off level and bent over horizontally into the top of the pile caps, ground beams or structural slabs.
7. The piling designer shall carry out an asset search and confirm location of any assets within the proposed piling locations and issue to the design team prior to starting works.
8. All pile locations shall be probed and any obstructions found (except live services) shall be removed by main Contractor and voids backfilled with compacted hoggin.
9. Piles including contiguous shall be designed and specified by a specialist.
10. All piles shall be bored and not driven.
11. Soils report to be carried out by piling specialist and to include for a sulphates test and to be issued to R.T.A. prior to any concrete order. Concrete to be suitably specified for possible sulphates.
12. Positive values are compressive forces, negative values bracketed are uplift forces i.e. tension forces.
13. Refer to sulphate conditions in CGL factual report dated June 2022 and piles to be designed accordingly.

ADDITIONAL NOTES

1. Refer to Architect's details for fire protection to structural elements.
2. Contractor to ensure no loss of ground below extg foundations where new footings abut all voids to be filled solid with min C20 concrete.
3. Refer to Architect's details for: drainage details, damp course membrane details and waterproofing.
4. Contractor to take full responsibility for all temporary works including design and erection.
5. Temporary works to be checked by specialist prior to any demo works.
6. We note the following regarding ground gas. Ref. CGL letter dated 22 June 2022 the risk to future site occupiers from ground gas is considered low as the site is considered to confirm CSI and no ground gas protection measures are proposed. It is recommended the absence of gas protection measures is approved by the project warrantors and building control prior to commencing construction as additional monitoring visits may be requested.

EXCAVATION AND FILLING

1. A number of trial pits and boreholes have been excavated and records of them are available and are issued with the tender documents. Refer to Site Investigation & Basement Impact Assessment Report dated April 2015 prepared by GEA Ltd. The Contractor should make arrangements to complete any further site investigation he deems necessary.
2. Before beginning any excavation the Contractor must ensure that he has located any live services in the neighbourhood of the intended excavation.
3. No excavations shall be deeper than 3 metres of an existing foundation is to be taken below the level of the existing foundation unless a method statement has been agreed in writing with the Engineer.
4. The Contractor must not excavate below the level of the underside of a party wall foundation within 3 metres, or undermine the bearing of a Party Wall foundation within a 45 degree line from the edge of the base within 6 metres until all necessary Party Wall awards are in place.
5. The Engineer and Building Control Officer shall be given the opportunity of examining all excavations, filling and hard-core before they are concreted or covered up. The Contractor shall give at least 24 hours' notice of when excavations will be ready for inspection. If a good foundation bearing is not obtained at the level shown, the Engineer is to be informed.
6. Excavations shall not be left exposed longer than necessary in order to avoid deterioration from the weather or other causes, and if necessary they should be protected. In clay formations the excavations shall not be left exposed for more than 24 hours. If the formation deteriorates it shall be cleaned out and reformed to the Engineer's satisfaction before any concrete is placed.
7. The Engineer is to be informed immediately if any significant change in strata occurs at formation level.
8. Hard-core for filling shall consist of selected clean broken stone, concrete, hard sound brick, slag or other approved materials, and shall be chemically inert. The materials shall be broken down to a maximum 75mm gauge with a sufficient proportion of fines for thorough compaction. Hard-core shall be well consolidated by means of roller, vibrating plate or mechanical punner. Care shall be taken that no damage is caused to foundation walls and services.

LINTELS

1. Precast concrete lintels are to be to BS 5977-2 by Naylor Lintels Ltd, Tel. 0800 542 4192. Sizes and types as indicated on the drawings. End bearing lengths are to be at least 150mm for spans up to 1.5m, and 225mm for spans up to 2m, unless noted otherwise on the drawings.
2. Galvanised steel lintels are to be to BS 5977-2 by Caradon Catnic Ltd, Pontgwindy Industrial Estate, Caerphilly, Mid Glamorgan CF83 2WJ, Telephone 01222 337900. Sizes and types as indicated on the drawings. End bearing lengths are to be at least 150mm for spans up to 1.5m, and 225mm for spans up to 2m, unless noted otherwise on the drawings.
3. Pre-fabricated masonry lintels to BS 5977-2 to be by Bulmer Brick Cutting to be designed for the loads on RTA drawings.
4. The Contractor shall obtain the Contract Administrator's written approval, prior to commencement of the work, to the use of lintels by alternative manufacturers to those listed above.

MATERIALS AND WORKMANSHIP

1. All articles, materials and goods shall be new and of good quality, suitable for the required purpose and shall conform to the appropriate British Standard where such exists. Where references to the above are made it shall be inferred that the latest edition applies, together with subsequent amendments, unless otherwise specified.
2. The Contractor is to ensure no deleterious materials are used.

STABILITY

1. The Contractor is to accept full responsibility for the stability and structural integrity of the works during the Contract and provide temporary support as necessary. He shall also prevent overloading of any completed or partially completed elements.

DEMOLITION CONSTRAINTS

1. The nature and extent of demolition works are shown on the Architect's drawings. The Contractor is to note the engineering constraints given below and refer to the demolition schedule.
 - a. The Contractor shall submit and have approved a detailed method statement for the sequence of demolition and new build work before any work commences on site.
 - b. The Contractor is to integrate the temporary works during demolition to ensure that the stability of the existing structure is maintained at all times over the course of the works. Associated method statement and calculations to be submitted prior to work commencing on site.
 - c. Do not cut or break out existing foundations without the engineer's approval.

TEMPORARY WORKS

1. The Contractor is entirely responsible for maintaining the stability of all existing buildings and structures, within and adjacent to the works, and of all the works from the date for possession of the site until practical completion of the works.
2. The Contractor shall design, install and maintain all necessary temporary works and shall submit proposals for temporary supports and sequence of construction for the works, to the Structural Engineer and Contract Administrator at least 10 working days prior to starting on site. These proposals shall be supported by design calculations unless agreed otherwise by the Structural Engineer in writing.

TOLERANCES

1. All tolerances are to be agreed with the Architect, and the Contractor will be responsible for ensuring that sufficient tolerances are provided and integrated throughout all elements of the works.
2. The Contractor is to take account of tolerances detailed elsewhere on the drawings and appended Specifications when complying with the above clause.
3. Unless otherwise indicated on the drawings the setting out dimensions and levels of the finished works shall be within the maximum tolerances given below:

Maximum Tolerance
All dimensions of 3m and over: +/- 5mm
All dimensions less than 3m: +/- 3mm

UNDERPINNING

1. The Contractor shall be responsible for ensuring that his operations do not in any way impair the safety or condition of the existing structure or the adjacent properties. He shall provide any temporary supports required for this purpose and shall carefully inspect the condition of the structure both before and during the execution of the work and immediately inform the Architect if he considers that any more stringent procedure than that specified is necessary.
2. Before starting the work the Contractor is to check for any services that could be damaged by the underpinning work and shall provide for the maintenance of drainage services during the underpinning operation and for the reinstatement of any services interrupted or disturbed by the excavations.
3. Underpinning is to be carried out in short sections not exceeding 1000mm in length, in the numbered sequence shown on the drawings unless noted otherwise.
4. Projecting portions of the existing footings are to be carefully cut off where directed and the underside of the footings are to be cleaned and hacked free of any dirt, soil or loose material before underpinning.
5. The Engineer and Building Control Officer shall be given the opportunity of examining all excavations, prior to any underpinning being carried out.
6. The body of the reinforced concrete underpinning is to be constructed in designated concrete RC40 in accordance with BS8500 and BS EN 206-1, and is to be cast to the widths and depths shown on the drawings. As far as practicable excavation and concreting of any section of underpinning shall be carried out on the same day. Un-concreted sections shall be kept covered to prevent the ingress of water. Refer to the specification above for the mix for the reinforced concrete underpins.
7. The reinforced concrete is to be stopped off approximately 100mm (unless noted otherwise) below the underside of the existing footing, and the final pinning up over the whole extent of the latter is to be carried out with a semi-dry fine concrete, well rammed in as soon as possible after the foundation has set hard. The pining-up concrete is to consist of 1 part by volume of sulphate resistant cement to 3 parts of aggregate (well graded from 10mm maximum size down to fine sand) with a water/cement ratio by weight of 0.35 with Fosroc Cebex 100 additive.
8. Excavation to any section of underpinning shall not be commenced until at least 48 hours after completion of any adjacent section of the work.
9. The joint between adjacent sections of underpinning is to be formed by creating a rough surface against which the first section is cast. Then, having thoroughly cleaned the exposed concrete face, the adjacent section may be cast and no less than 6 B12 dowel bars used spaced uniformly resin fixed into the adjacent pin unless noted otherwise.
10. The Contractor shall prepare a Sequence of Work and submit it to the Contract Administrator for his comments prior to the commencement of the work.
11. The Contractor is to keep a record of the sequence and dimensions of the underpinning actually carried out, including details of excavation, casting concrete and pinning up for each section.
12. Refer to specific underpinning notes on the underpinning drawings and details.
13. The main contractor is to employ a specialist sub-contractor, who is a member of the 'Association of Specialist Underpinning Contractors' to carry out the underpinning work and associated temporary works.
14. The main contractor must employ a specialist engineer to determine an underpinning installation sequence, and design the required temporary works scheme for the underpinning.
15. Prior to, and during the works the appointed specialists are to fulfil their duties under Construction (Design and Management) Regulations 2015 and produce relevant method statements and guidance notes to all parties concerned with the project regarding their design portion.
16. The contractor shall provide a method statement outlining their proposed method and sequence of underpinning works.

SUGGESTED SEQUENCE FOR UNDERPINNING FOR EXISTING WALLS ONLY.

(FOR SUGGESTED SEQUENCE FOR PAD UNDERPINNING REFER TO 5295-PSM01 & 02).

1. Excavate stools type 1 (maximum stool length 1000mm) & fit sacrificial vertical props. refer to * below
 2. Fit joggle joint as required to form key to adjoining stools to approval of building inspector.
 3. After formation level has been approved by building inspector (& engineer if required) cast underpinning to concrete to within 75mm of soffit of extg foundation
 4. Wait until concrete has sufficiently matured for a minimum of 24 hours
 5. Fill 75mm (nominal) gap with cement/sharp sand (1:3) & Fosroc Cebex 100 expanding plasticising grout admixture by Fosroc, mixed hand damp & rammed in solid
 6. Wait until dry pack has matured for a min of 24 hours (or 48 hours if work is to be carried out on adjoining stools)
 7. Repeat 1-6 for stools type 2
 8. Repeat 1-6 for stools type 3
 9. Repeat 1-6 for stools type 4
 10. Repeat 1-6 for stools type 5
- (i.e. suggested underpinning sequence - 1,2,3,4,5)

The underpinning sequence shown above is a suggestion only & the contractor may submit alternative proposals for consideration by "Richard Tant Associates"

The contractor is to undertake all necessary precautions to safely uphold the extg structure & excavation sides at all times during the course of the works

The contractor is to ensure that ground beneath the floor slab is undisturbed & any remaining voids are filled solid with concrete

* Where underpinning in the corners and/or if labourers are working under wall sacrificial vertical props are to be used to support the above masonry

Notes.

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REV	AMENDMENTS			CHECKED

PROJECT
Broxwood View
Barrie House

TITLE
Notes

ARCHITECTS
Carbogno Ceneda Architects

DRAWING No.	DATE
5295-P01	13.10.22
	SCALE As shown @ A1
	DRAWN AR
	CHECKED RT
	REVIEWED -


Feasibility Scheme for Comment Only
Do not order materials from this drawing.






Pile No.	Safe Working Load (kN)	Horizontal shear (kN)
PT1	85	15
PT2	85	15
PT3	85	15
PT4	85	15
PT5	160	20
PT6	160	20
PT7	160	20
PT8	160	20
PT9	85	15
PT10	85	15
PT11	85	15
PT12	85	15

All loads are unfactored S.W.L.
All piles to have a tensile capacity of 5 kN.
Cut off 50mm above cradle formation level.

For continuation refer to drg. 5295-P03

 : R.C. retaining wall.
For wall thickness refer to plan.

 : Mass concrete underpin.

	: R.C. underpin. For wall thickness refer to plan.
	: Suggested Sequence of Underpinning (1,2,3,4,5) Refer to Suggested Sequence of Underpinning, drg. 5295-P01.

For piling note - refer to drg. 5295-P01.

Secant piles locations shown indicatively. Pile locations and loads to be determined in detailed design. Layout may change

Refer to 5295-PSM01 & 02 for suggested pad underpin & cradle temp support.

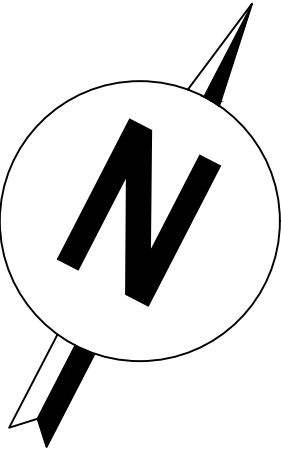
Proposed Partly Basement

Scale 1 : 50

Pile Schedule	
Pile No.	Safe Working Load (kN)
P1	250
P2	250
P3	250
P4	250
P5	100

All loads are unfactored S.W.L.
All piles to have a tensile capacity of 25 kN.
Safe horizontal shear at cut off level to be 10 kN for all piles.

Feasibility Scheme for Comment Only
Do not order materials from this drawing.



Notes.

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NOTES

- This drawing is to be read in conjunction with the specification and all relevant Engineers and Architects drawings.
- Work to figured dimensions only.
- For general notes see drawing 5295 - P01.

V.	AMENDMENTS	BY	DATE

PROJECT

Broxwood View Barrie House

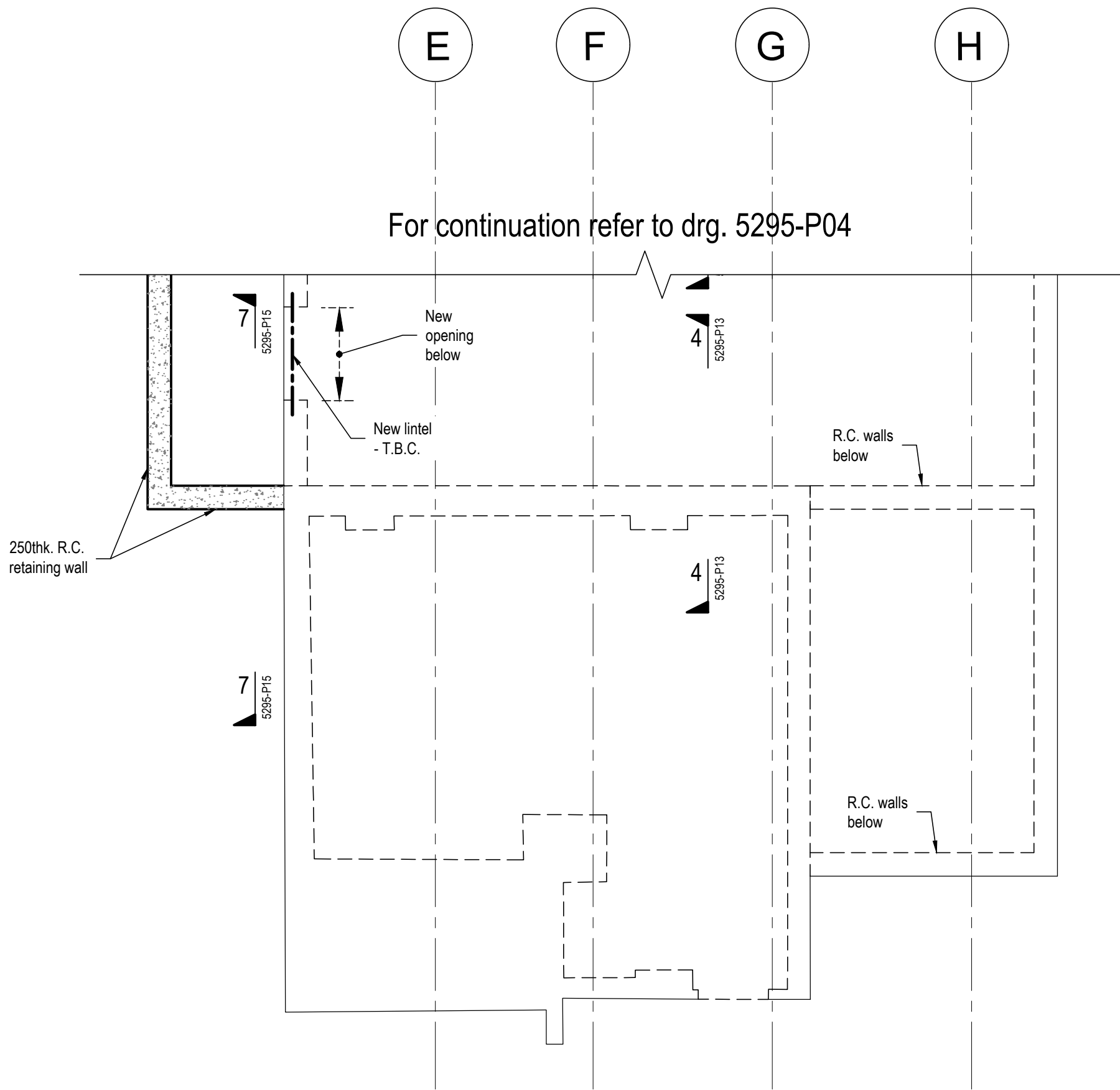
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Sheet 1/2

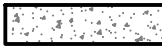
ARCHITECTS
Carbogno Ceneda Architects

RAWING No.
5295-P04

DATE	13.10.22
SCALE	As shown @ A1
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Feasibility Scheme for Comment Only
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 : R.C. wall - refer to plan for wall thickness.

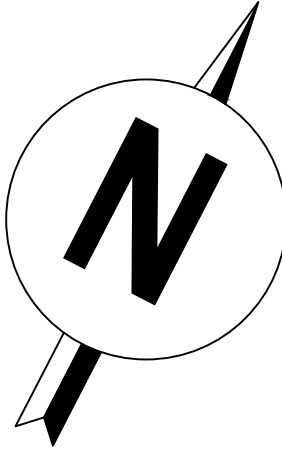
Proposed Partly Ground Floor
Scale 1 : 50

Notes.

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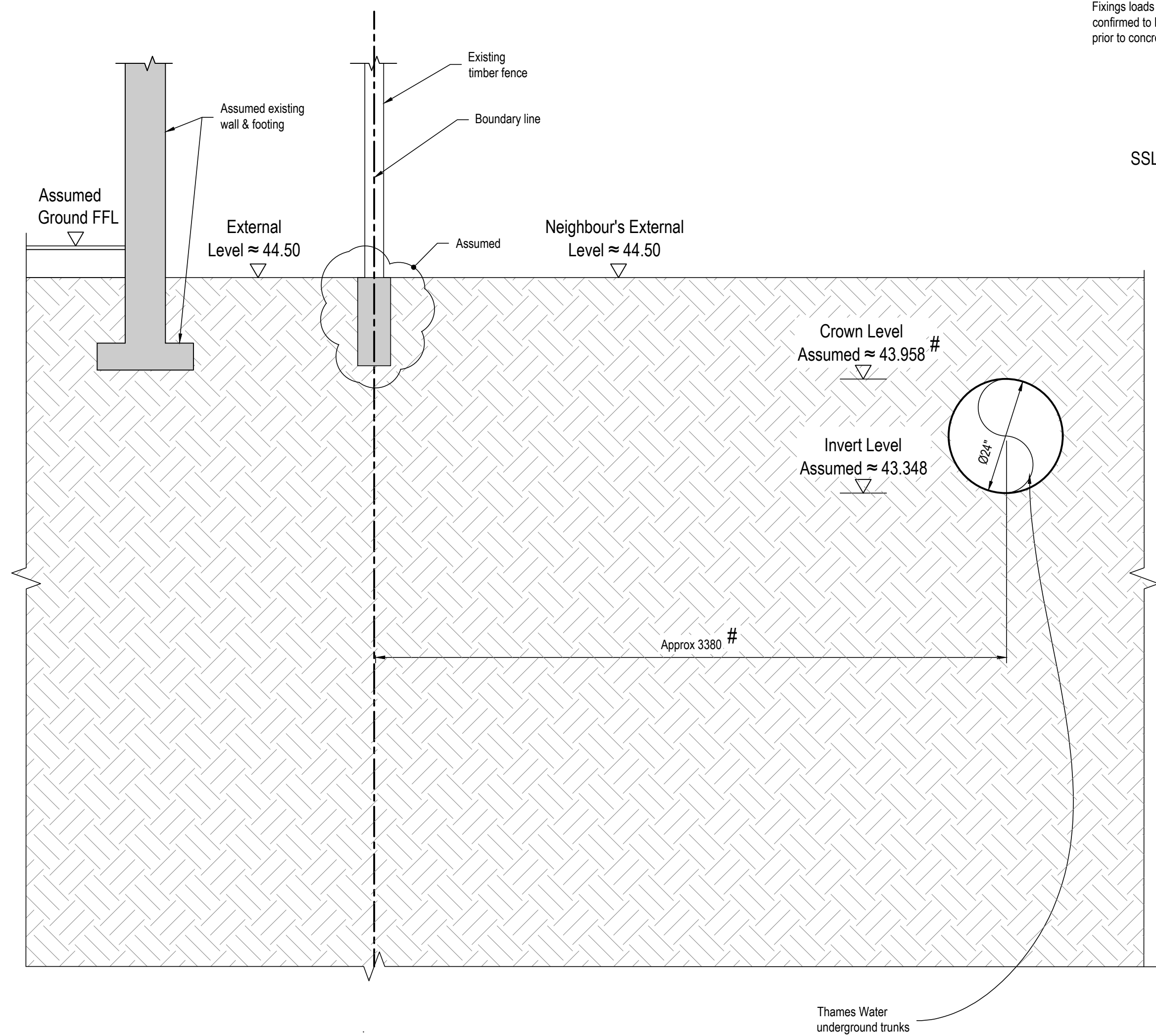
PROJECT
Broxwood View Barrie House

TITLE
Proposed Ground Floor Sheet 2/2

ARCHITECTS
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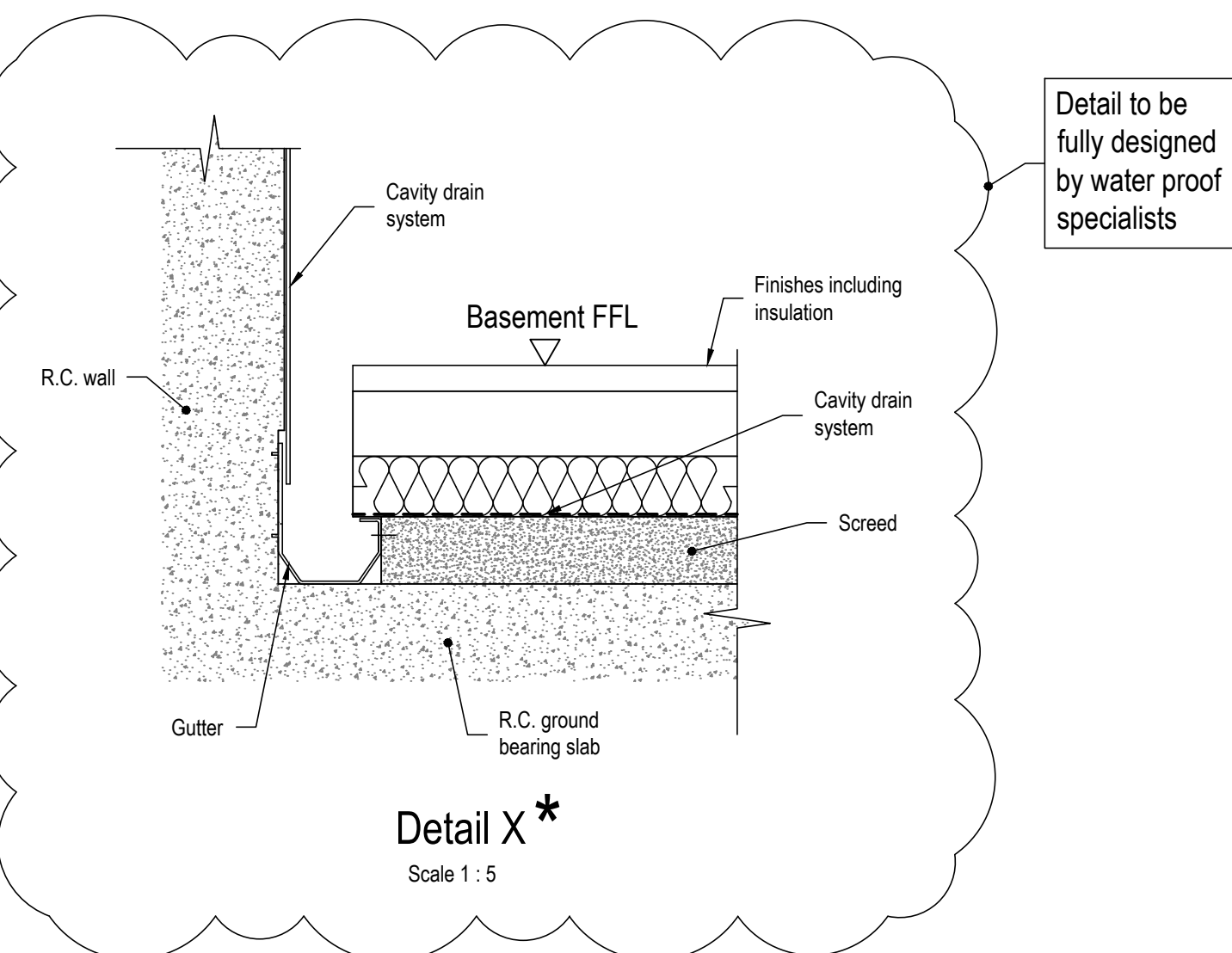
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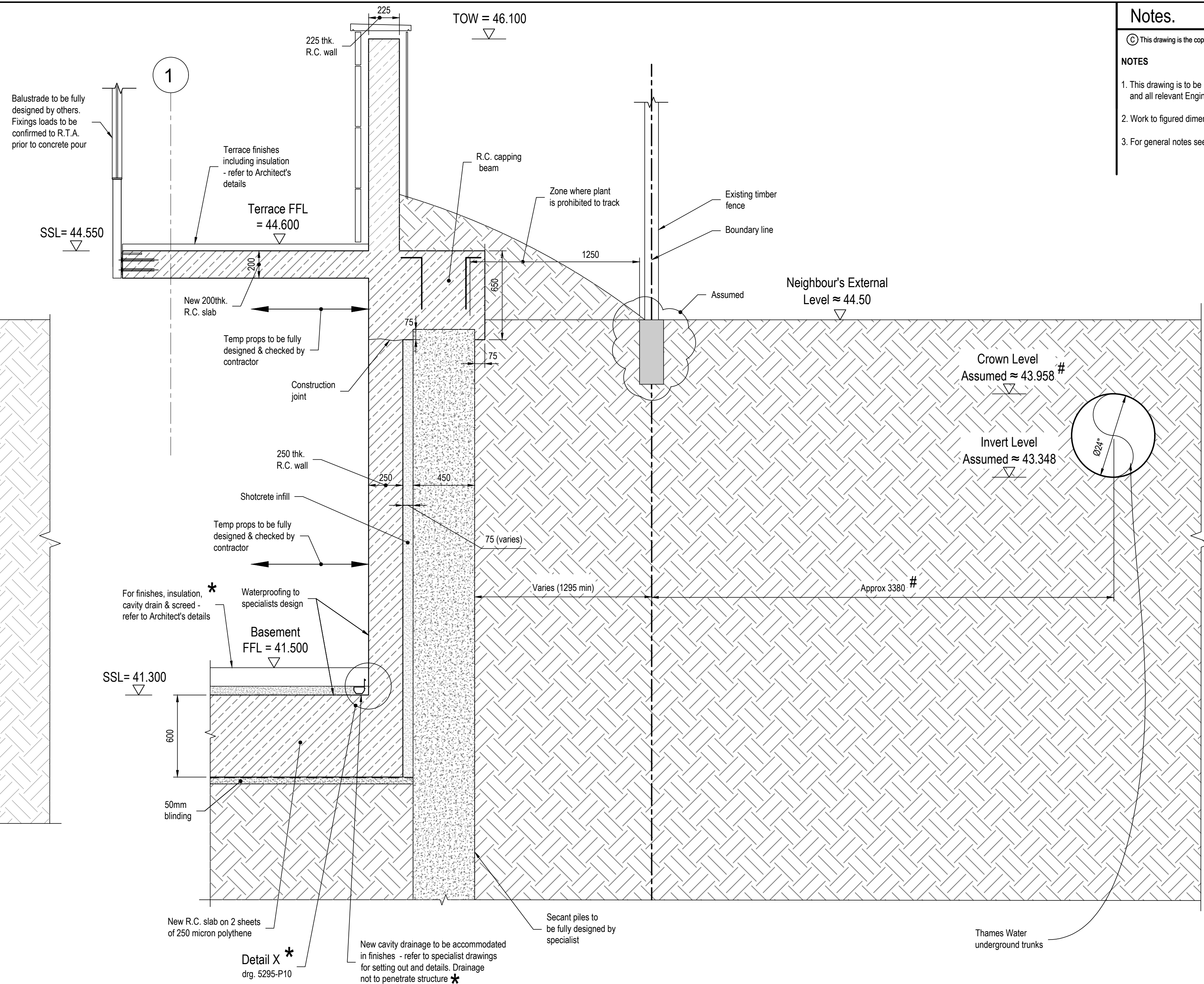


:Taken from Midland Survey LTD drg. U07932.

Existing Section 1-1
Scale 1 : 20



Detail X *
Scale 1 : 5



:Taken from Midland Survey LTD drg. U07932.

Proposed Section 1-1
Scale 1 : 20

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PROJECT
Broxwood View
Barrie House

TITLE
Section 1-1

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5295-P10	13.10.22
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PROJECT
Broxwood View
Barrie House

TITLE
Section 2-2

ARCHITECTS
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5295-P11	SCALE As shown @ A1
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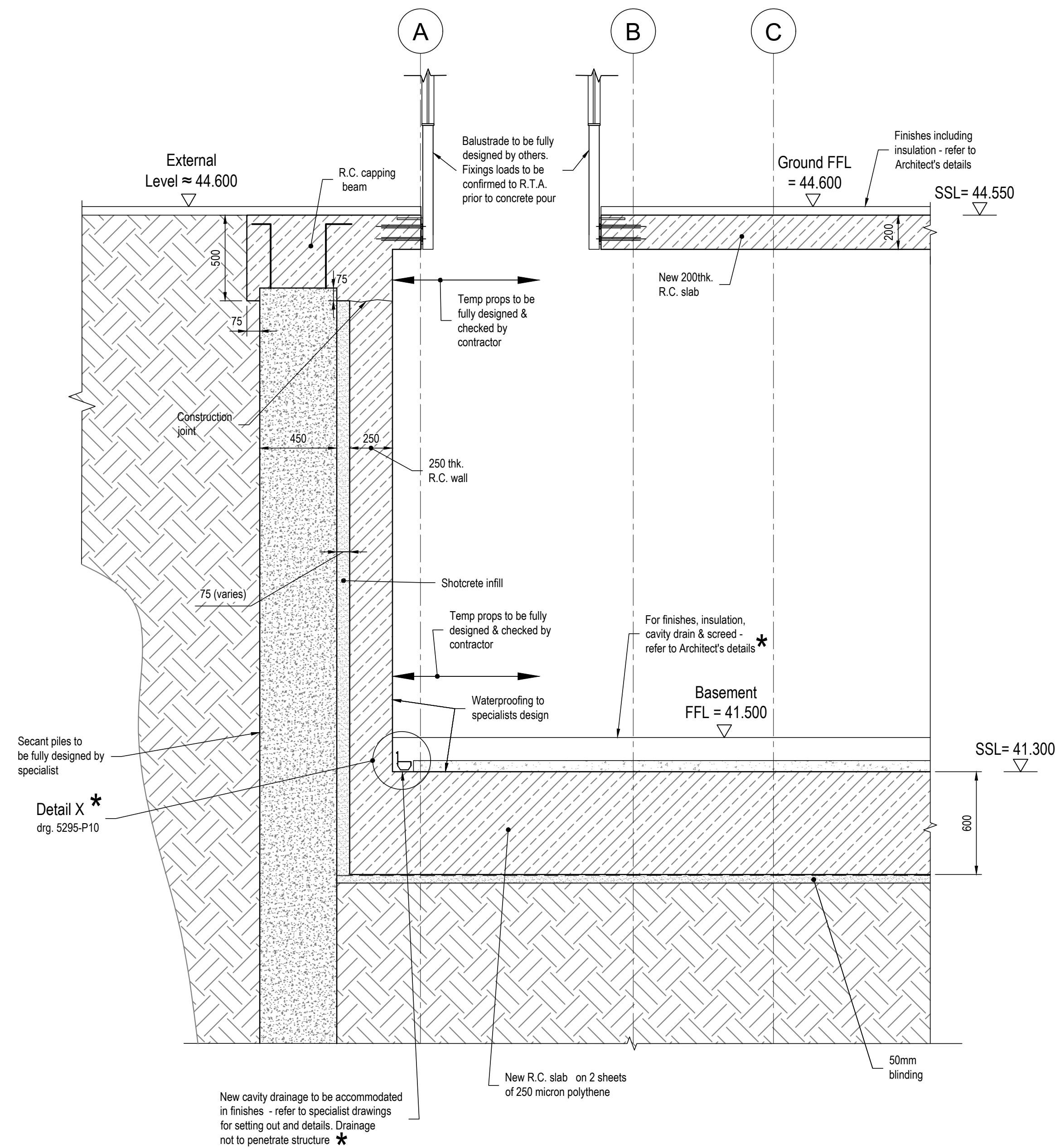
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Waterproofing to
specialists design.

Section 3-3
Scale 1 : 20

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PROJECT
Broxwood View Barrie House

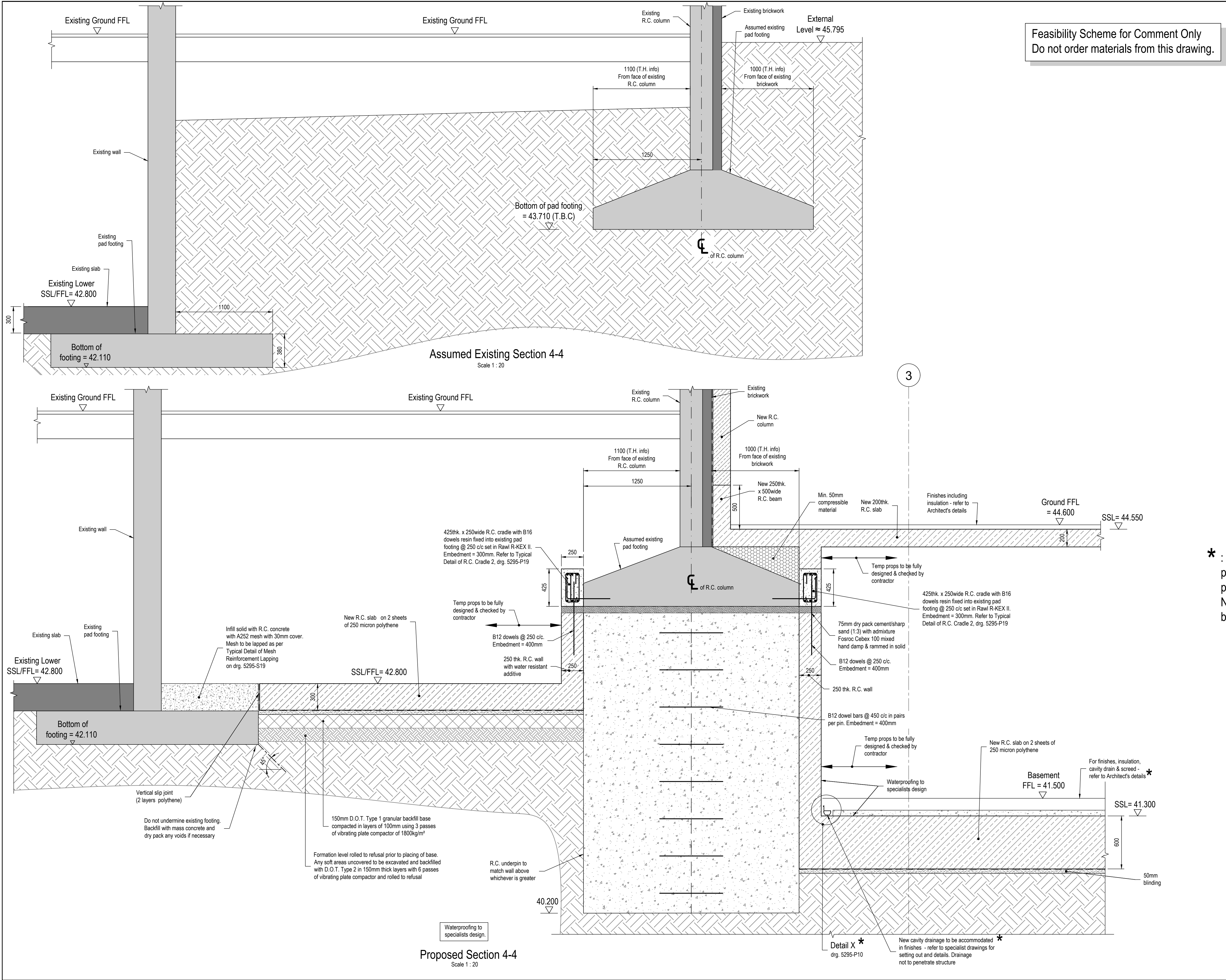
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Section 3-3

ARCHITECTS
Carbogno Ceneda Architects

DRAWING No.	DATE
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REV	AMENDMENTS	BY	DATE	CHECKED
PROJECT				
Broxwood View Barrie House				
TITLE				
Section 4-4				
ARCHITECTS				
Carbogno Ceneda Architects				
DRAWING No.		DATE		
5295-P13		13.10.22		
SCALE		As shown @ A1		
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Richard Tant Associates Consulting Civil & Structural Engineers 54 LUSON STREET LONDON NW1 3DP TEL: 020 7724 1000 FAX: 020 7724 8885 info@richardtantassociates.com				



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PROJECT
Broxwood View
Barrie House

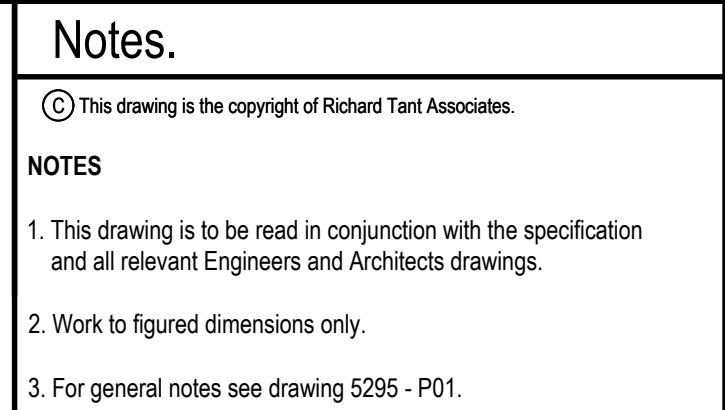
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Sections 5-5 & 6-6

ARCHITECTS
Carbogno Ceneda Architects

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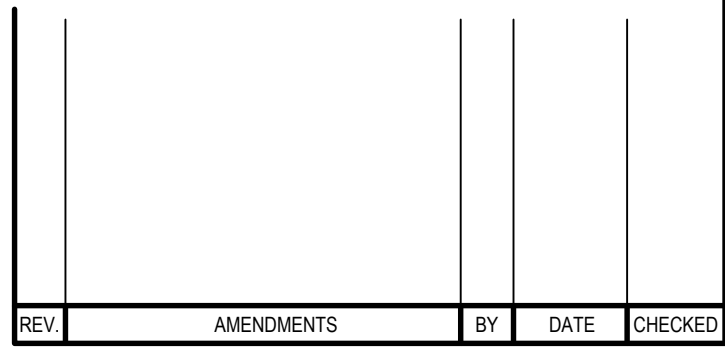
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DATE	13.10.22
SCALE	As shown @ A1
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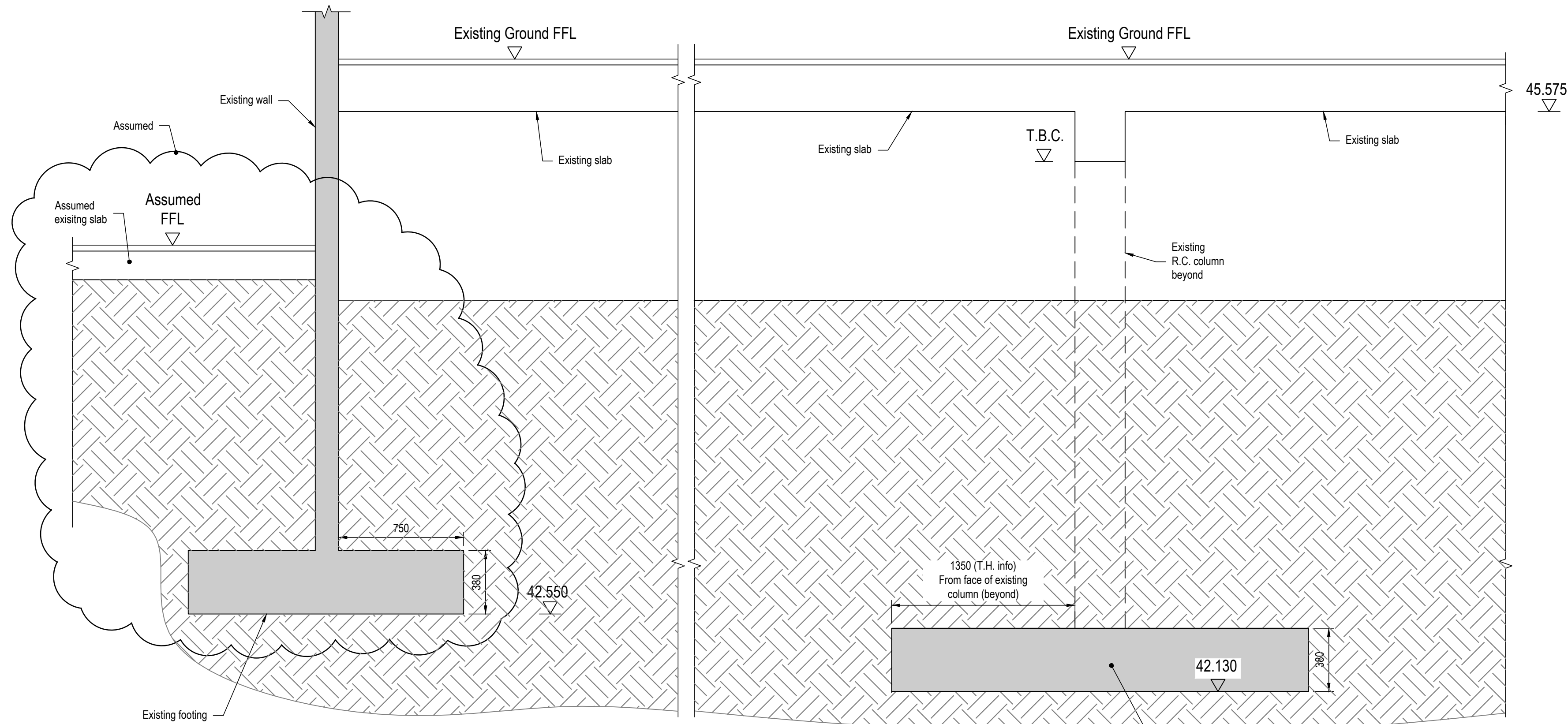


PROJECT
Broxwood View
Barrie House

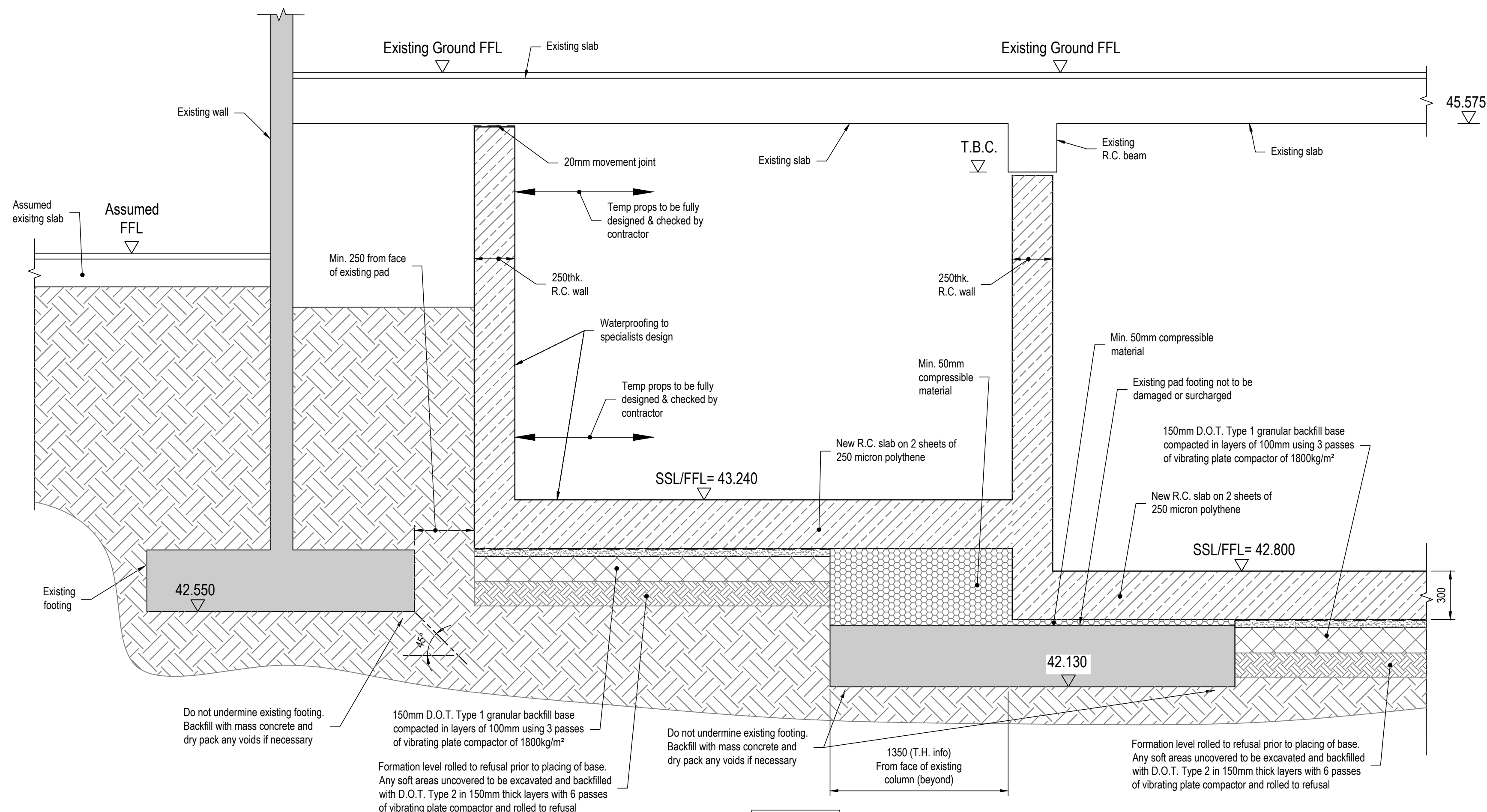
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Sections 7-7 & 8-8

ARCHITECTS
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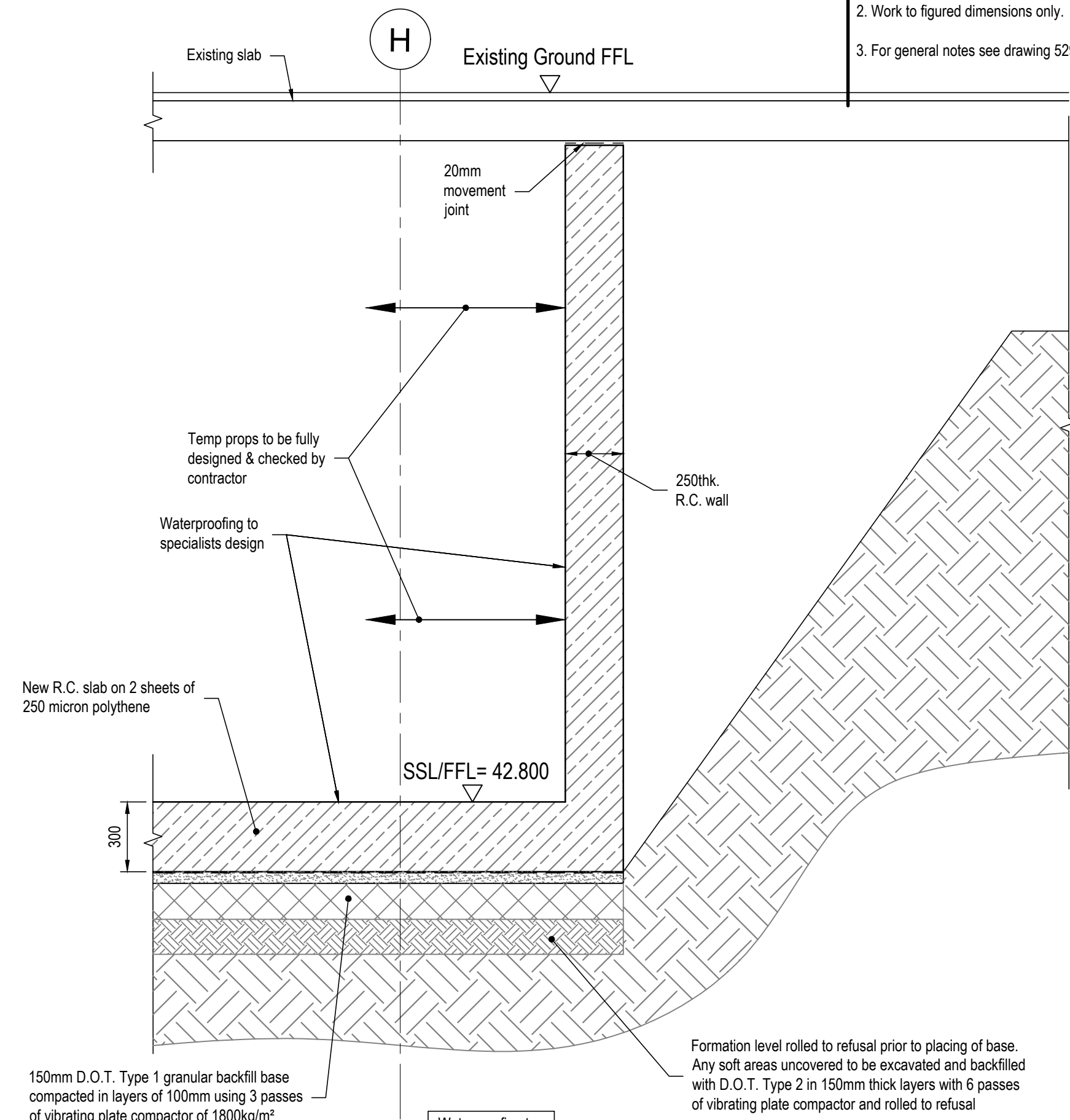
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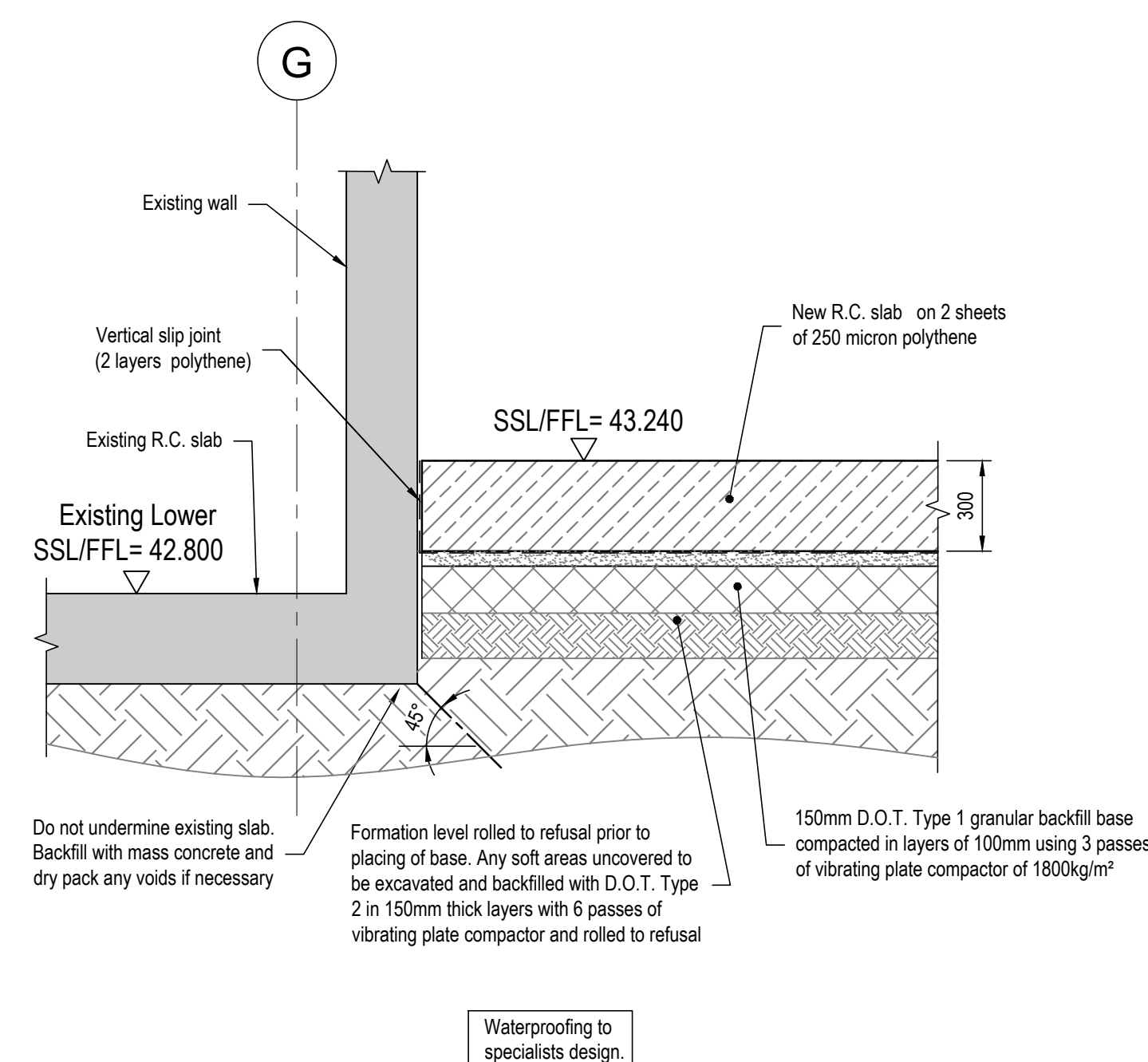
Assumed Existing Section 9-9
Scale 1 : 20



Proposed Section 9-9
Scale 1 : 20



Section 10-10
Scale 1 : 20



Section 11-11
Scale 1 : 20

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PROJECT
Broxwood View
Barrie House

TITLE
Sections 9-9, 10-10 & 11-11

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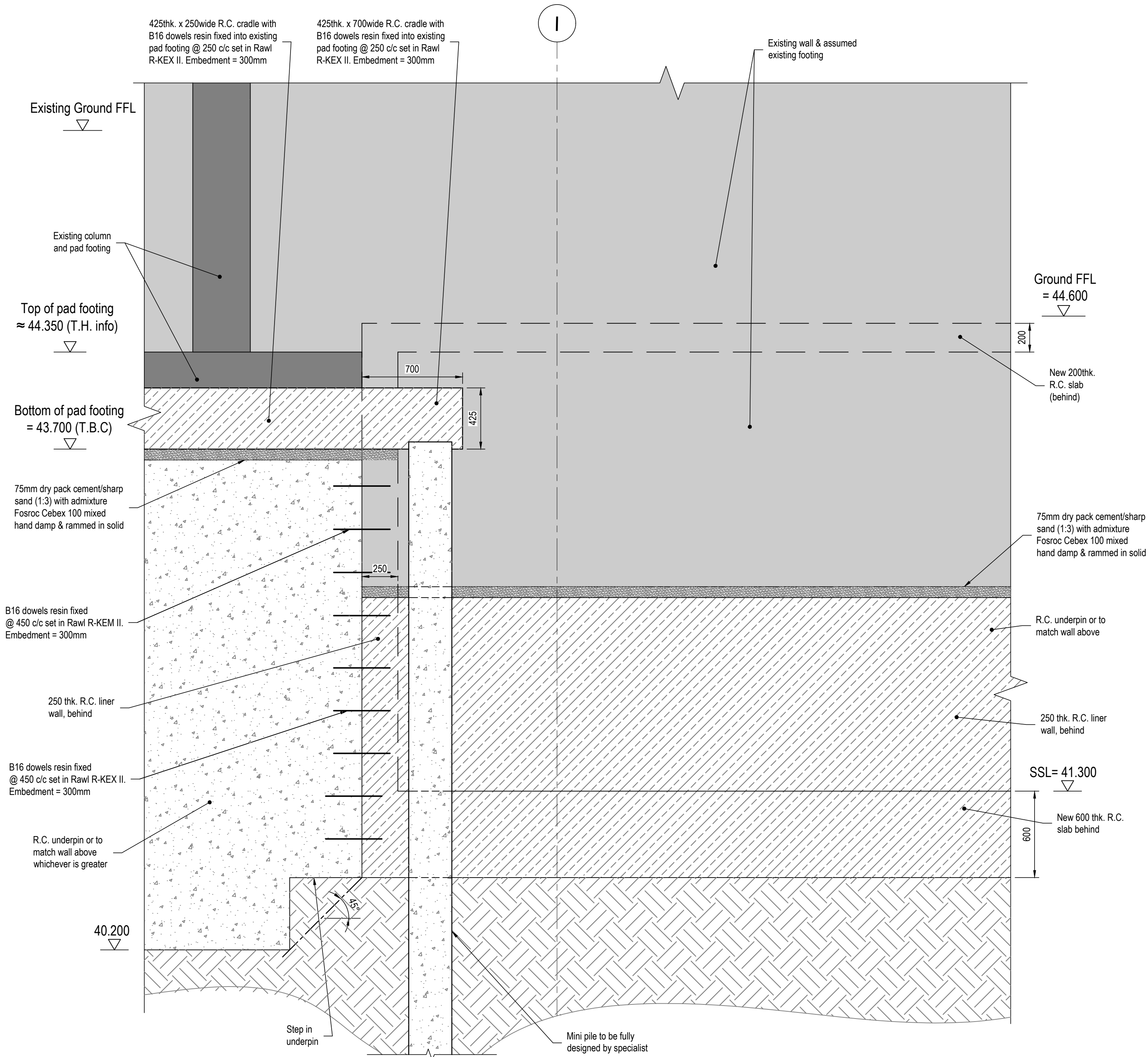
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Section 13-13
Scale 1 : 20

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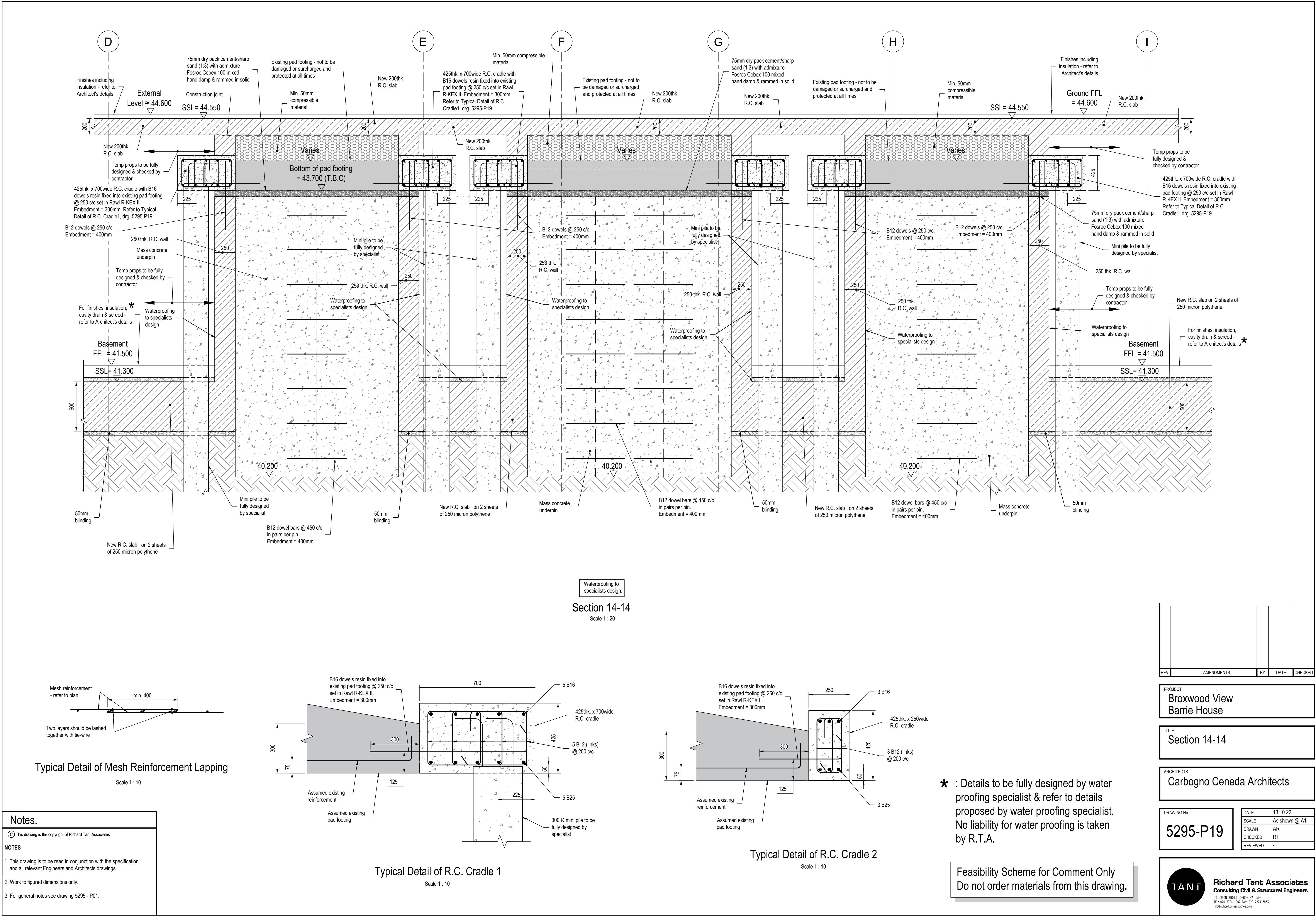
PROJECT
Broxwood View
Barrie House

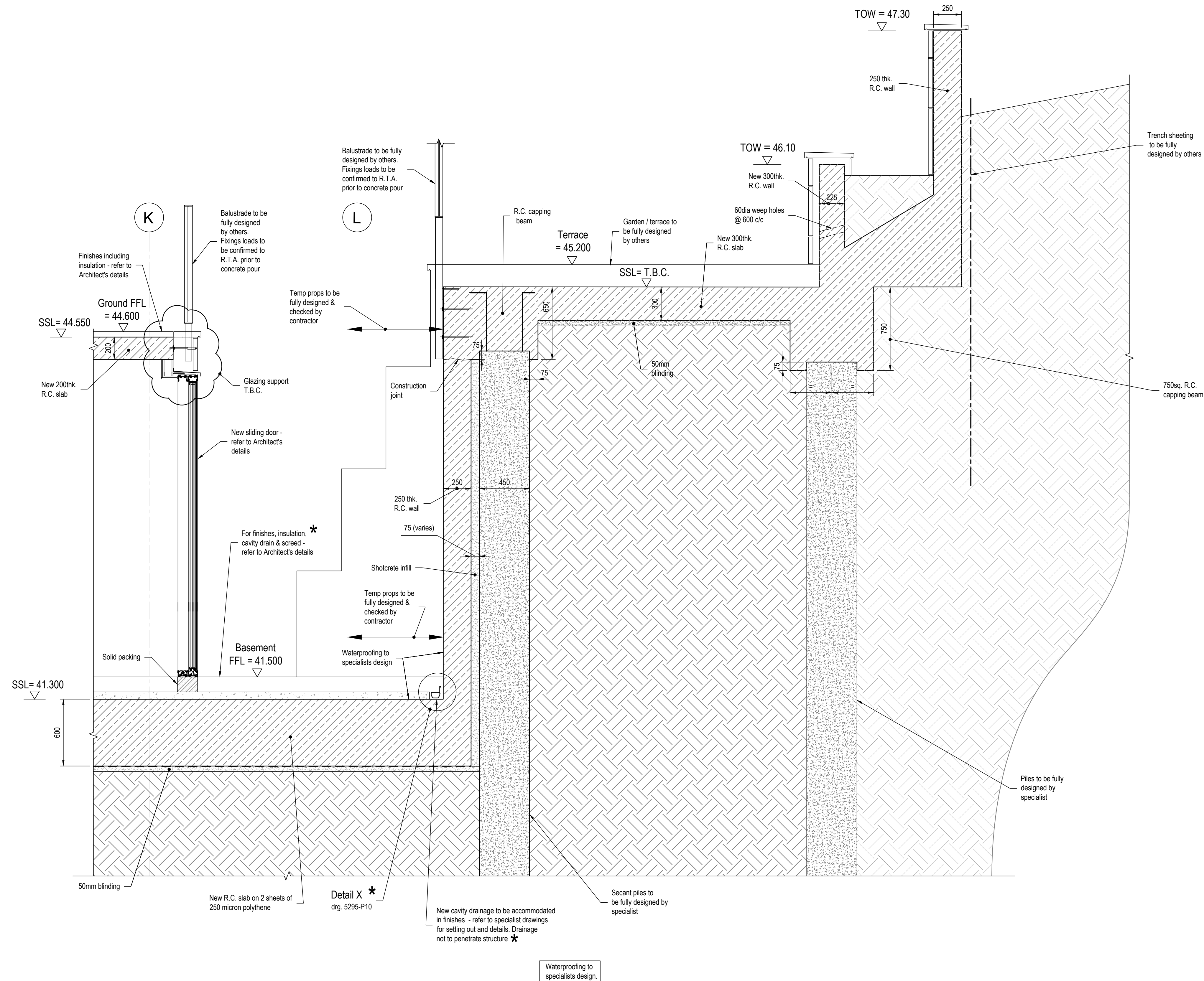
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Section 13-13

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5295-P18	13.10.22
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PROJECT
Broxwood View
Barrie House

TITLE
Section 15-15

ARCHITECTS
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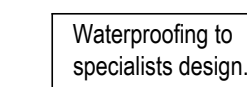
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Section 16-16
Scale 1 : 20

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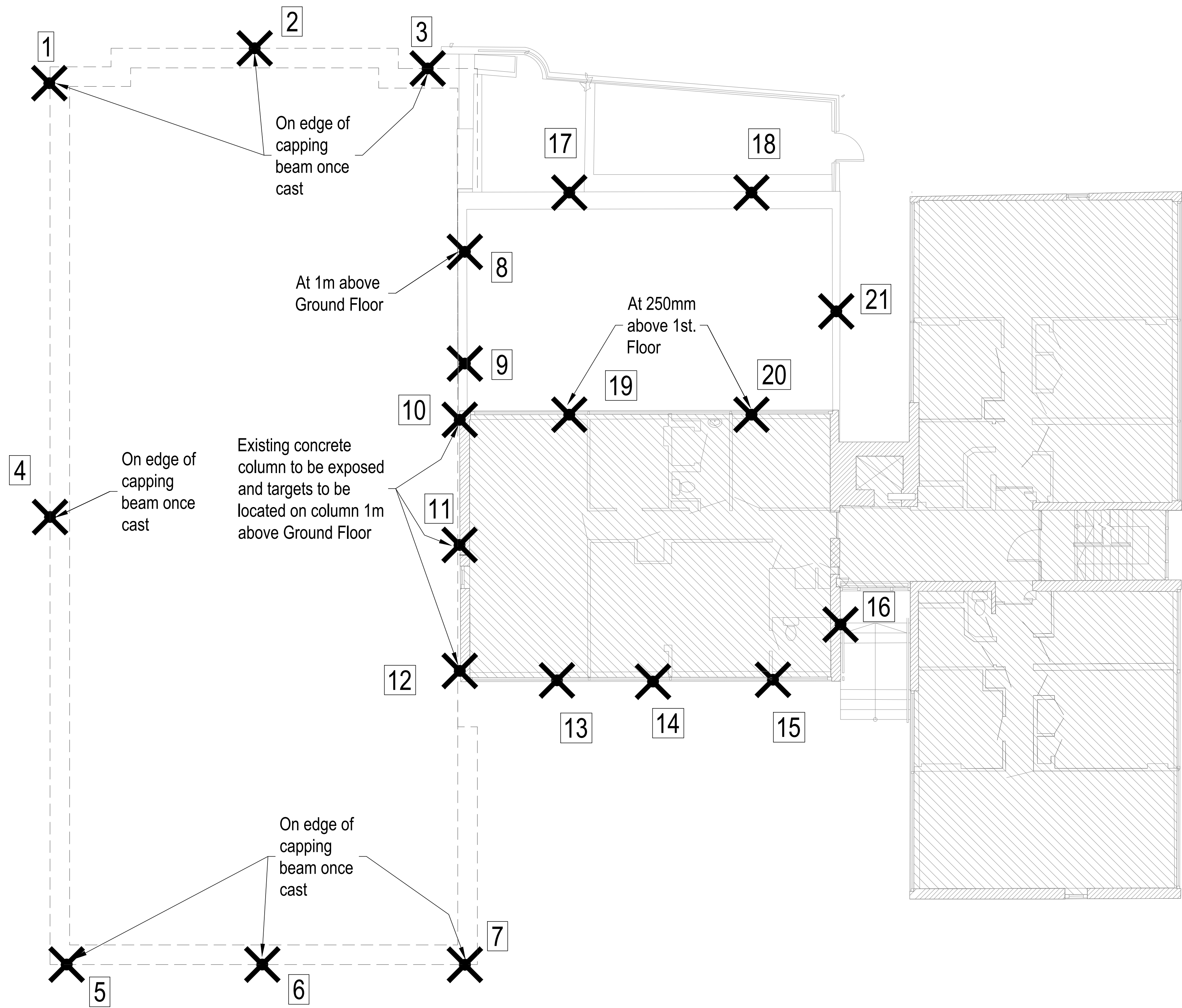
PROJECT
Broxwood View
Barrie House

TITLE	Section 16-16
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ARCHITECTS
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DRAWING No.	DATE	13.10.22
5295-P21	SCALE	As shown @ A1
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The monitoring locations shown above are suggested locations, to be confirmed. Monitoring points will be set 250mm above existing ground floor level where possible U.N.O.

X :Monitoring points.

1st. Floor Plan
Not to Scale

Actions to be taken by the design team and the contractor if these trigger levels are reached are summarised in the table below.			
Actions			
Alert level	Movement in any direction	Design team	Contractor
Green	≤4mm	Continue to review monitoring as normal.	Continue work as programmed and monitor as normal.
Amber	>4mm ≤8mm	a. Review monitoring results with contractor. b. Review contractors amber action plan. c. Make comments on contractor's proposals and discuss with CA.	Contractor to implement amber level action plan this should include the following: a. Recheck monitoring to confirm readings. b. Review method of working and highlight any activity relating to measured movements. c. Propose revised methodology in to reduce trend in increasing movements. d. Agree revised proposal with CA prior to implementing. e. Increase frequency of monitoring.
Red	>8mm	a. Review monitoring results with contractor. b. Review contractors red level action plan. c. Make comments on contractor's proposals and discuss with CA. d. Carry out condition survey with PW surveyor on affected buildings.	Contractor to implement his red level action plan. This should include the following: a. Make works safe. b. Stop works. c. Recheck monitoring to confirm readings. d. Install additional temporary works where required. e. Submit new methodology / proposals to stop further movements. f. Agree revised proposals with CA prior to implementing . g. Increase frequency of monitoring.

Monitoring works to be commenced 2 months before works start on site for targets 8 to 21 inclusive, to establish a baseline and record pre-construction movements. A minimum of 3 readings should be obtained during an initial 3 week period and then a reading every 2 weeks.

When piling and ground works commence readings are to be taken on a weekly basis. This frequency of reading will be retained until 1 month after completion of the ground floor slab.

Except during pad underpinning, when readings are to be taken daily and continued for 1 week after the final dry pack has cured.

1 month after the Ground Floor slab is cast, readings to be reduced to a monthly basis until completion of the main structure works.

Readings to be submitted to design team including structural engineer as soon as possible after the reading is taken.

The accuracy of the monitoring equipment for reading horizontal and vertical movements is to be 1.5mm or better.

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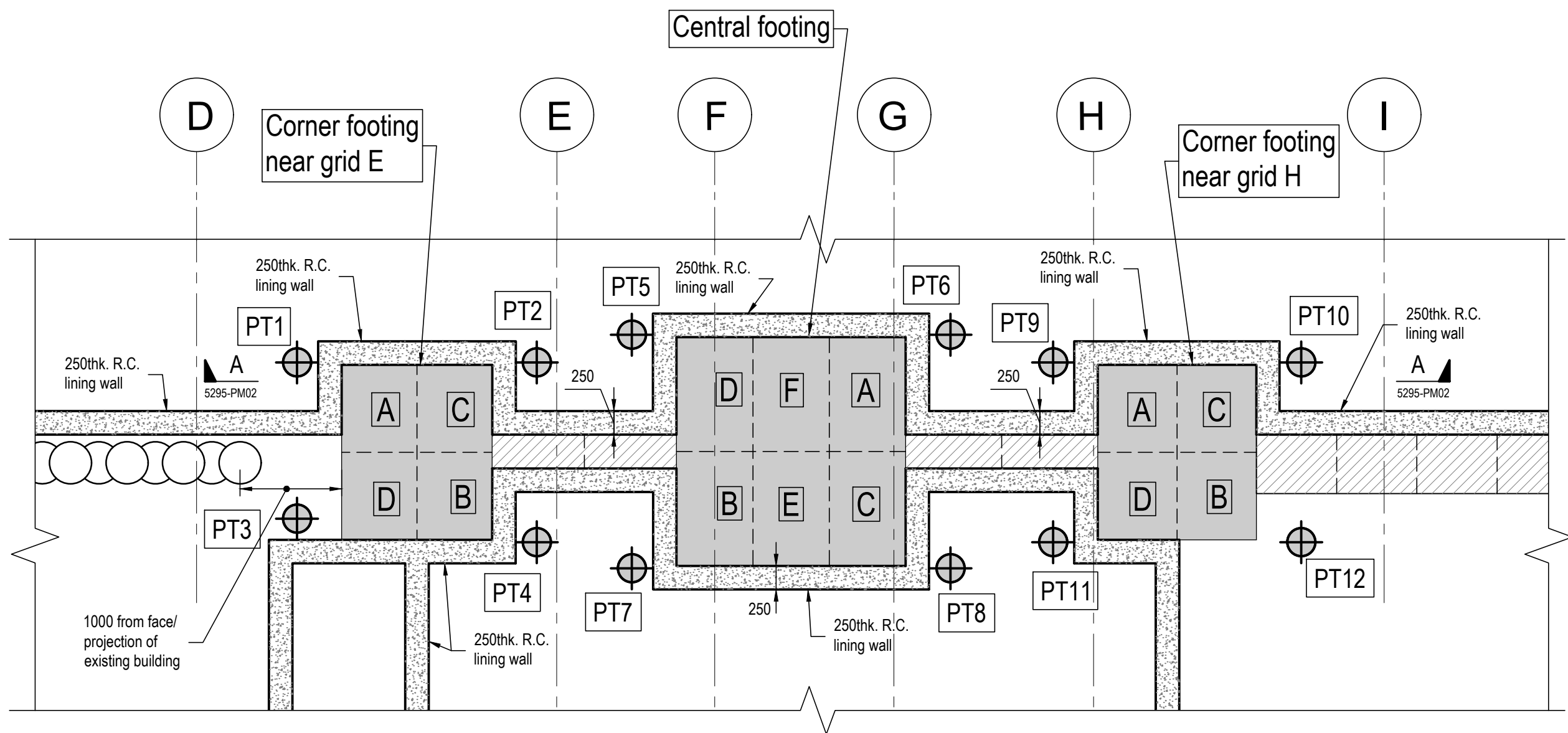
PROJECT
Broxwood View Barrie House

TITLE
Movement Monitoring

ARCHITECTS
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5295-PM01	13.10.2022
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	-

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300 Ø Mini Pile Schedule		
Pile No.	Safe Working Load (kN)	Horizontal shear (kN)
PT1	85	15
PT2	85	15
PT3	85	15
PT4	85	15
PT5	160	20
PT6	160	20
PT7	160	20
PT8	160	20
PT9	85	15
PT10	85	15
PT11	85	15
PT12	85	15

All loads are unfactored S.W.L.
All piles to have a tensile capacity of 5 kN.
Cut off 50mm above cradle formation level.

: R.C. wall - refer to plan for wall thickness.

: 300Ø mini piles to be fully designed by specialist. Depth of piles to be confirmed by piling designer.

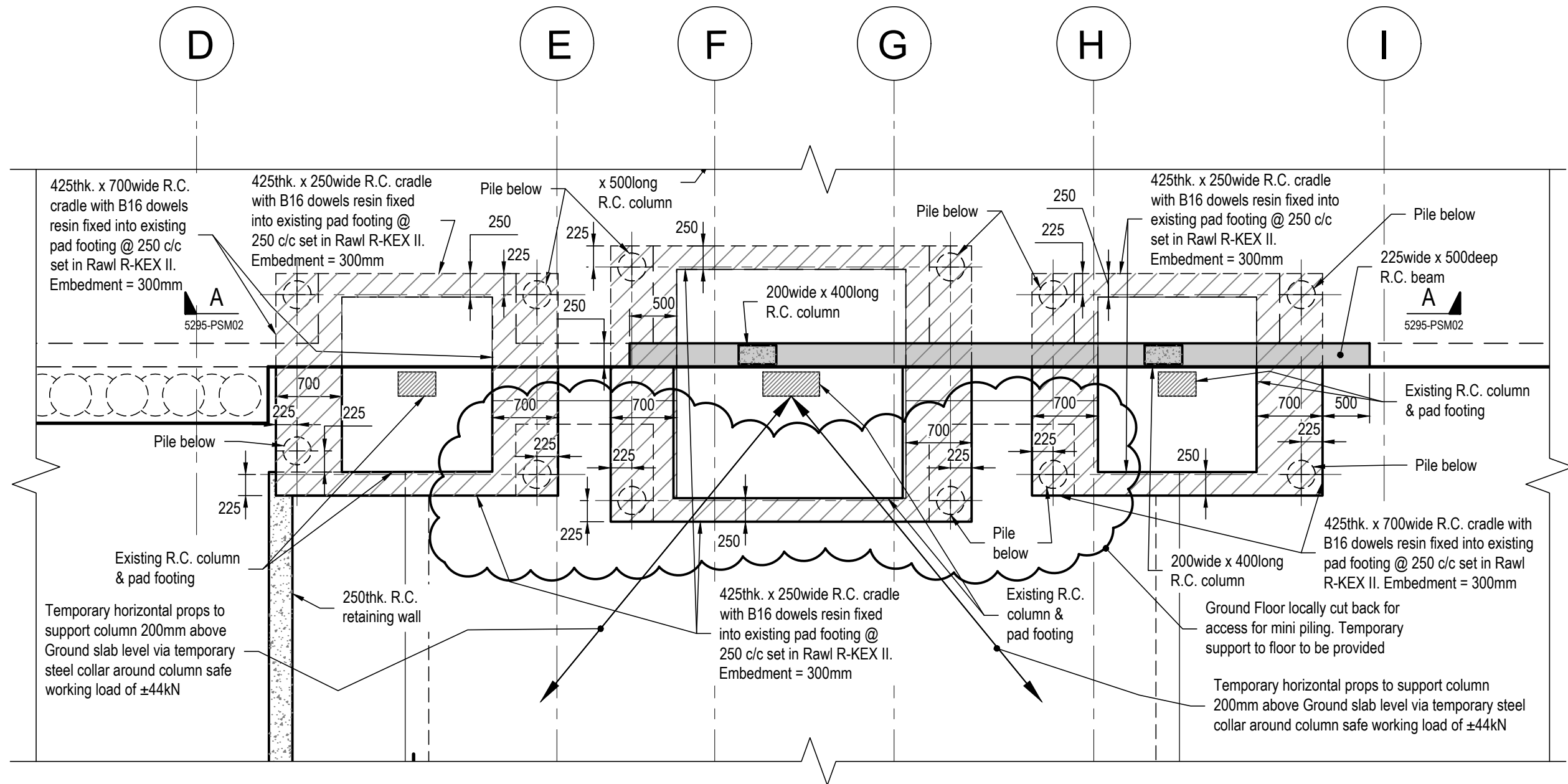
: R.C. underpin.

: Mass concrete underpin.

: Suggested Sequence of Underpinning (A,B,C,D,E,F).

Indicative Proposed Partly Basement

Scale 1 : 50



: R.C. wall - refer to plan for wall thickness.

Indicative Proposed Partly Ground Floor

Scale 1 : 50

Broxwood Improved Construction Sequence - Based on BIA from Parmabrook Section 9

STAGE 1 – SITE SET UP

- Mobilisation and prepare site with all necessary hoarding and associated health and safety and security requirements.
- Locate all existing services and identify those affected by the new works and take necessary actions as required by M+E engineer, drainage engineer and Thames Water.
- Check all boundary conditions are as to be expected and report any variations to the engineer.
- Submit temporary works proposals to engineer for comment.

STAGE 2 – INSTALLATION OF PILES

- Install secant pile wall. Prop as set out in contractor method statement.
- Construct pile capping beam with starter bars for liner wall.
- Temp prop & install temp collar to column & laterally prop then & remove Ground Floor slab locally to enable mini pile installation.
- Mini piles installation.
- Commence excavation to facilitate access to existing pad footings to be underpinned in next stage.
- Install R.C. cradle.

STAGE 3 – EXCAVATION OF BACKFILL IN UNDERCROFT BELOW EXISTING BLOCK

- Excavate to allow access to pad footing for underpinning, while maintain 45 degree bearing zone to ensure the pad it supported at all times.

STAGE 4 –UNDERPIN OF CENTRAL FOOTING TO FORMATION LEVEL +40.20

- The central pad footings will be underpinned in 6 hits on plan, and 1 hit vertically.
- 1st. series of the underpins will be excavated with the necessary temporary work installed.
- Casting of the A pin will commence in accordance with the specification.
 1. Excavate pin type A & fit sacrificial vertical props.
 2. After formation level has been approved by building inspector (& engineer if required) cast underpinning to concrete to within 75mm of soffit of existing pad footing.
 3. Wait until concrete has sufficiently matured for a minimum of 24 hours.
 4. Fill 75mm (nominal) gap with cement/sharp sand (1:3) & Fosroc Cebex 100 expanding plasticising grout admixture by Fosroc, mixed hand damp & rammed in solid.
 5. Wait until dry pack has matured for a min of 48 hours.
 6. Repeat 1-5 for pin type B,C,D,E & F.
- Provide continuous lateral temporary restraints to underpins at a min of 2 levels.
- Excavated soil is removed throughout the process.

STAGE 5 – UNDERPIN OF CORNER FOOTING NEAR GRID H TO FORMATION LEVEL +40.20

- The corner pad footings will be underpinned in 4 hits on plan, and 1 hit vertically. The pads will be underpinned separately.
- The underpins will be excavated with the necessary temporary work installed.
- Casting of the A pin will commence in accordance with the specification.
 1. Excavate pin type A & fit sacrificial vertical props.
 2. After formation level has been approved by building inspector (& engineer if required) cast underpinning to concrete to within 75mm of soffit of existing pad footing.
 3. Wait until concrete has sufficiently matured for a minimum of 24 hours.
 4. Fill 75mm (nominal) gap with cement/sharp sand (1:3) & Fosroc Cebex 100 expanding plasticising grout admixture by Fosroc, mixed hand damp & rammed in solid.
 5. Wait until dry pack has matured for a min of 48 hours.
 6. Repeat 1-5 for pin type B,C & D.
- Provide continuous lateral temporary restraints to underpins at a min of 2 levels.
- Excavated soil is removed throughout the process.

STAGE 6 – UNDERPIN OF CORNER FOOTING NEAR GRID E TO FORMATION LEVEL +40.20

- The corner pad footings will be underpinned in 4 hits on plan, and 1 hit vertically. The pads will be underpinned separately.
- The underpins will be excavated with the necessary temporary work installed.
- Casting of the A pin will commence in accordance with the specification.
 1. Excavate pin type A & fit sacrificial vertical props.
 2. After formation level has been approved by building inspector (& engineer if required) cast underpinning to concrete to within 75mm of soffit of existing pad footing.
 3. Wait until concrete has sufficiently matured for a minimum of 24 hours.
 4. Fill 75mm (nominal) gap with cement/sharp sand (1:3) & Fosroc Cebex 100 expanding plasticising grout admixture by Fosroc, mixed hand damp & rammed in solid.
 5. Wait until dry pack has matured for a min of 48 hours.
 6. Repeat 1-5 for pin type B,C & D.
- Provide continuous lateral temporary restraints to underpins at a min of 2 levels.
- Excavated soil is removed throughout the process.

STAGE 7 – CAST BASEMENT SLAB AND WALLS

- Once the excavation reaches the formation level throughout prepare the basement raft slab reinforcement including starter bars for the RC walls and columns extending up, pour concrete and allow curing.
- Prepare shuttering and reinforcement for new perimeter and internal walls and columns from basement to lower ground floor level, pour concrete and allow curing.

STAGE 8 – CAST GROUND FLOOR SLAB AND REMOVE PROPPING

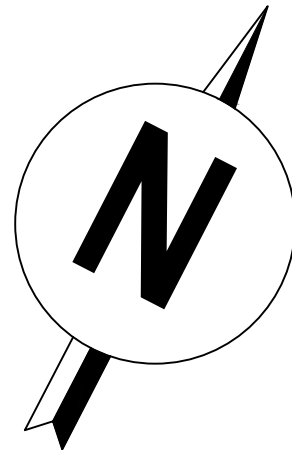
- Prepare the suspended ground floor slab reinforcement, pour concrete and allow curing.
- At this stage the propping installed at basement level can be removed
- Prepare shuttering and reinforcement for new perimeter and internal walls and columns from ground floor level, pour concrete and allow curing.

STAGE 9 – BEGIN CONSTRUCTION OF SUPERSTRUCTURE

- Continue with the RC frame until the structure is completed.

Notes.

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Suggested Method of Works

This suggested method is a suggestion only and the contractor may submit alternative proposals. The method of works and all temporary works including design and erection are to be the full responsibility of the main contractor.

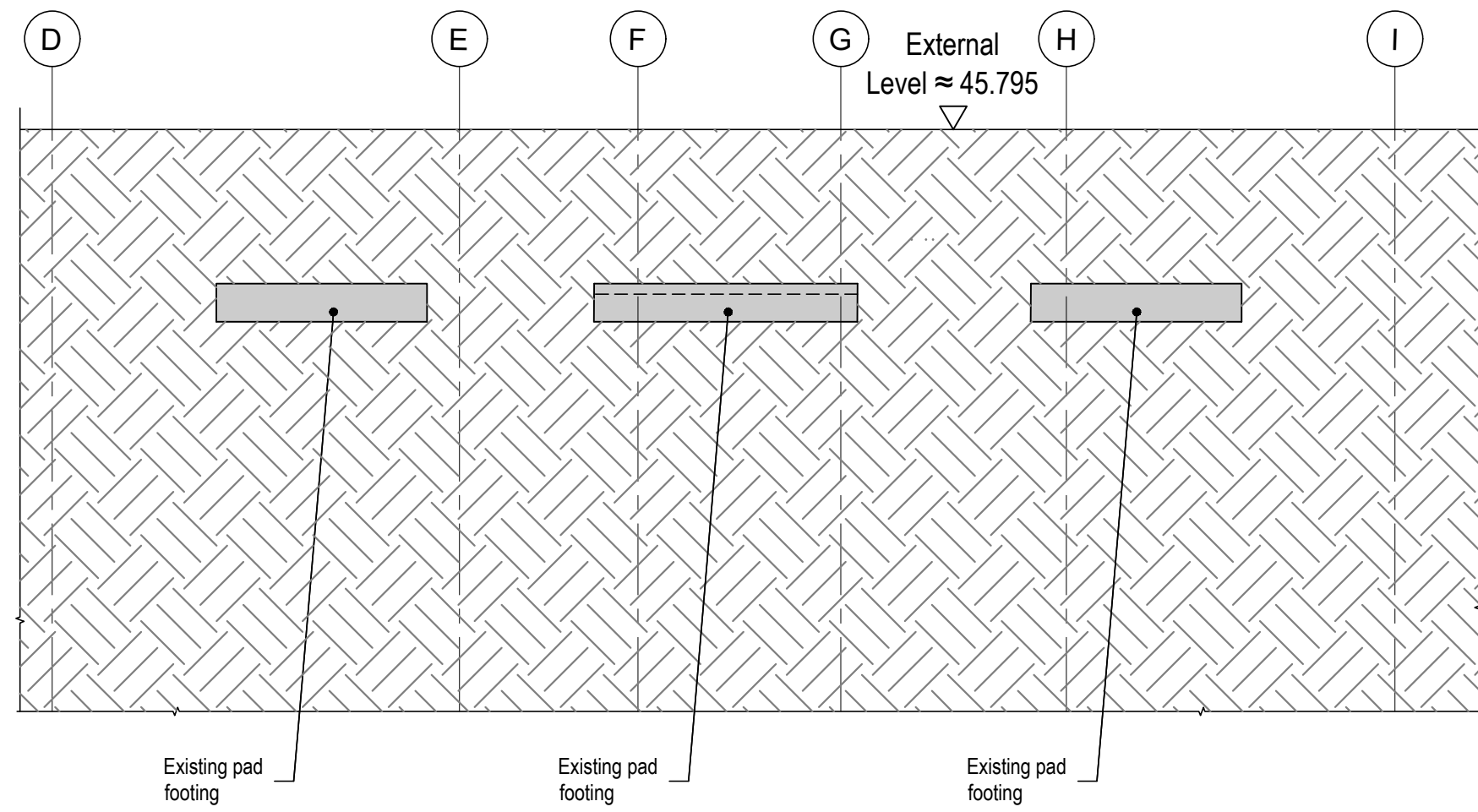
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PROJECT
Broxwood View Barrie House

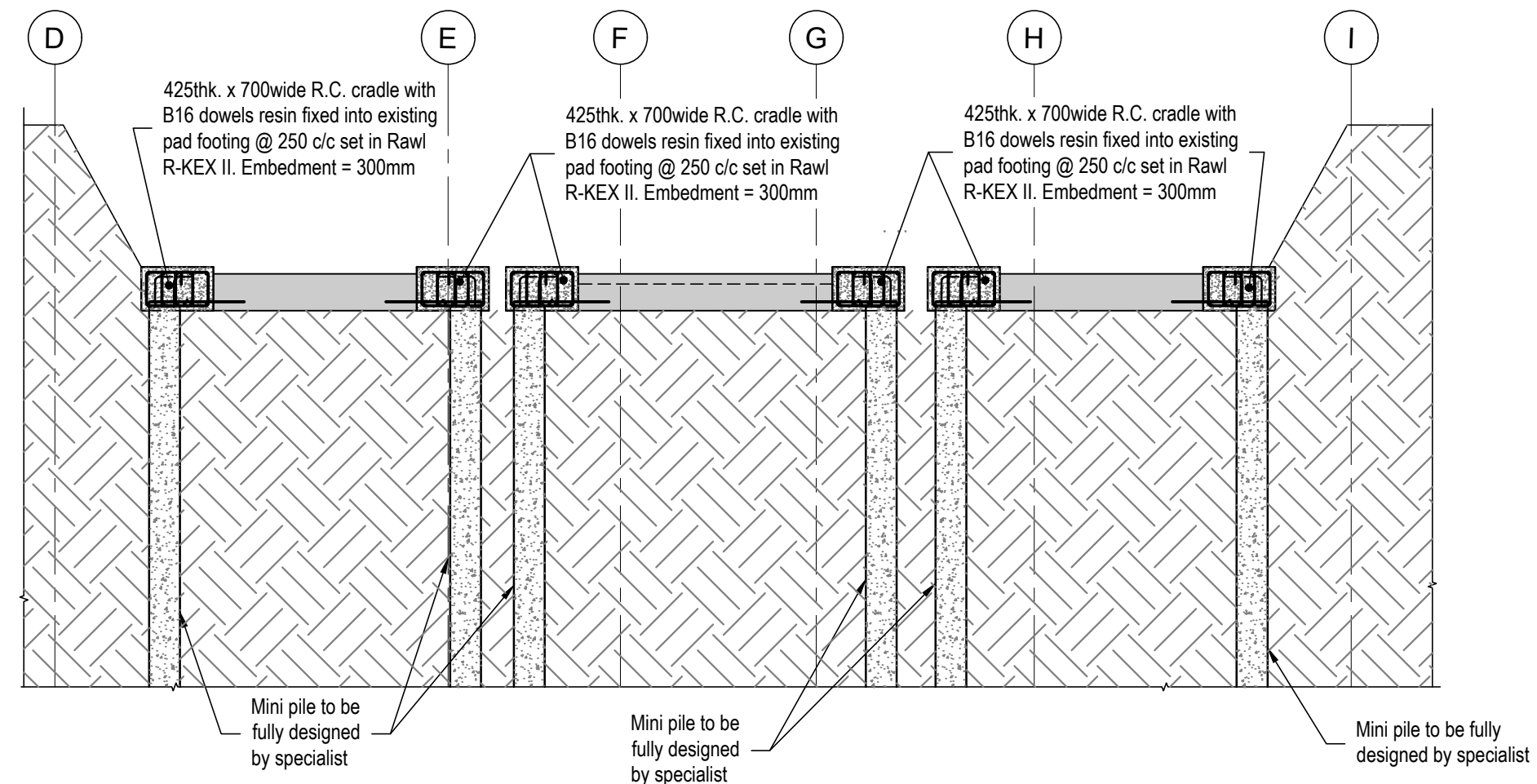
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Suggested Method of Works 1

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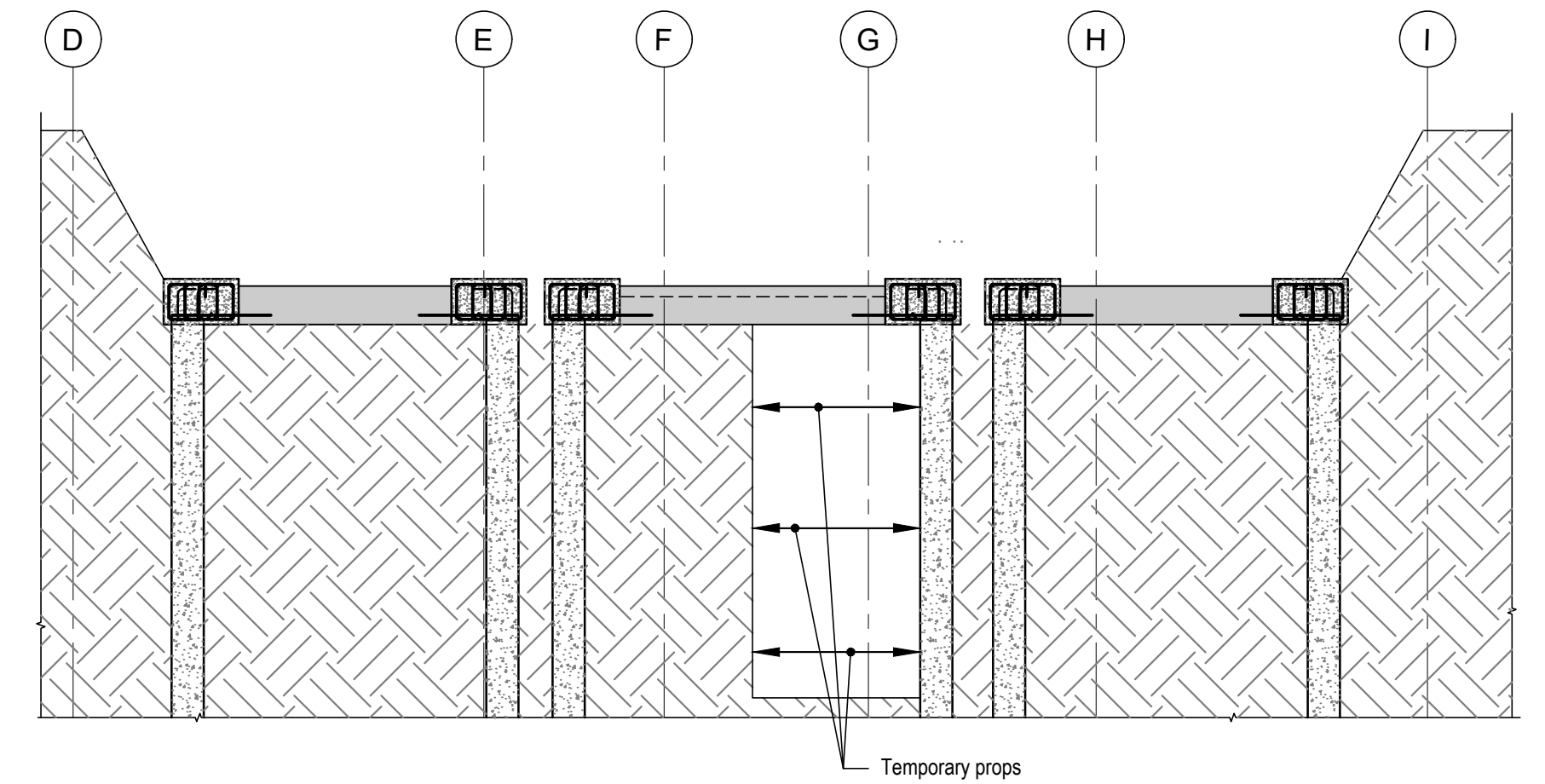
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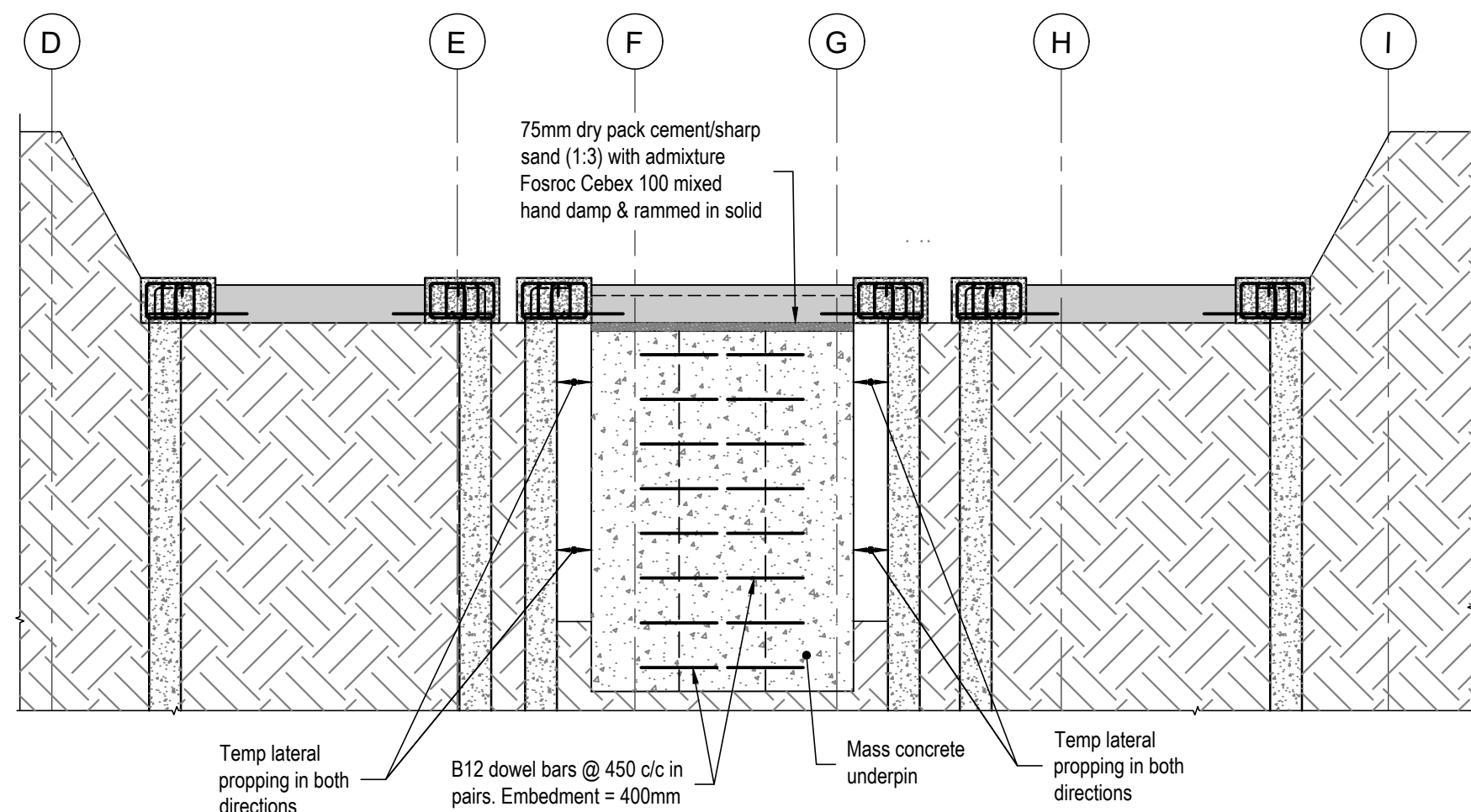
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Existing Section A-A



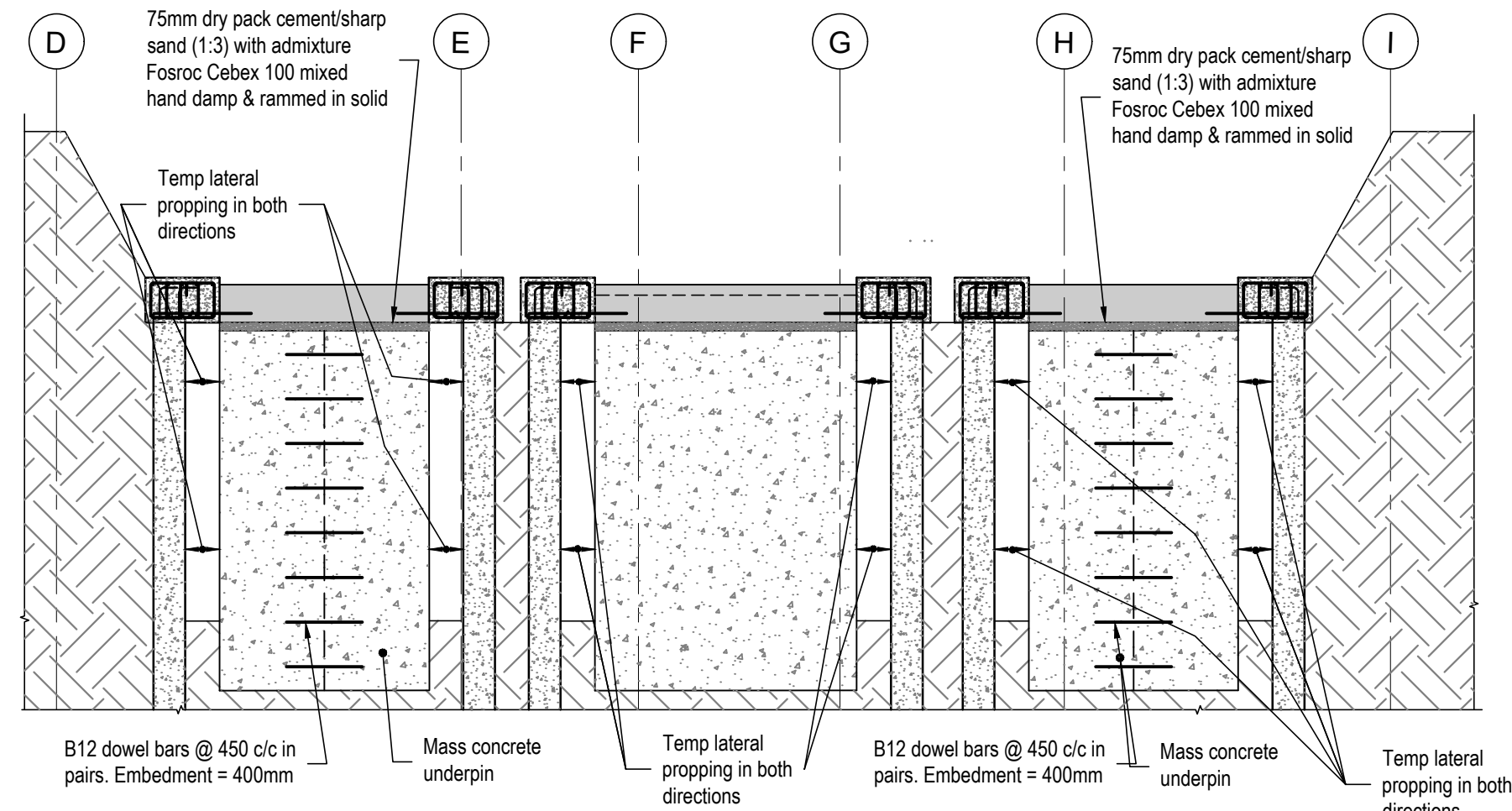
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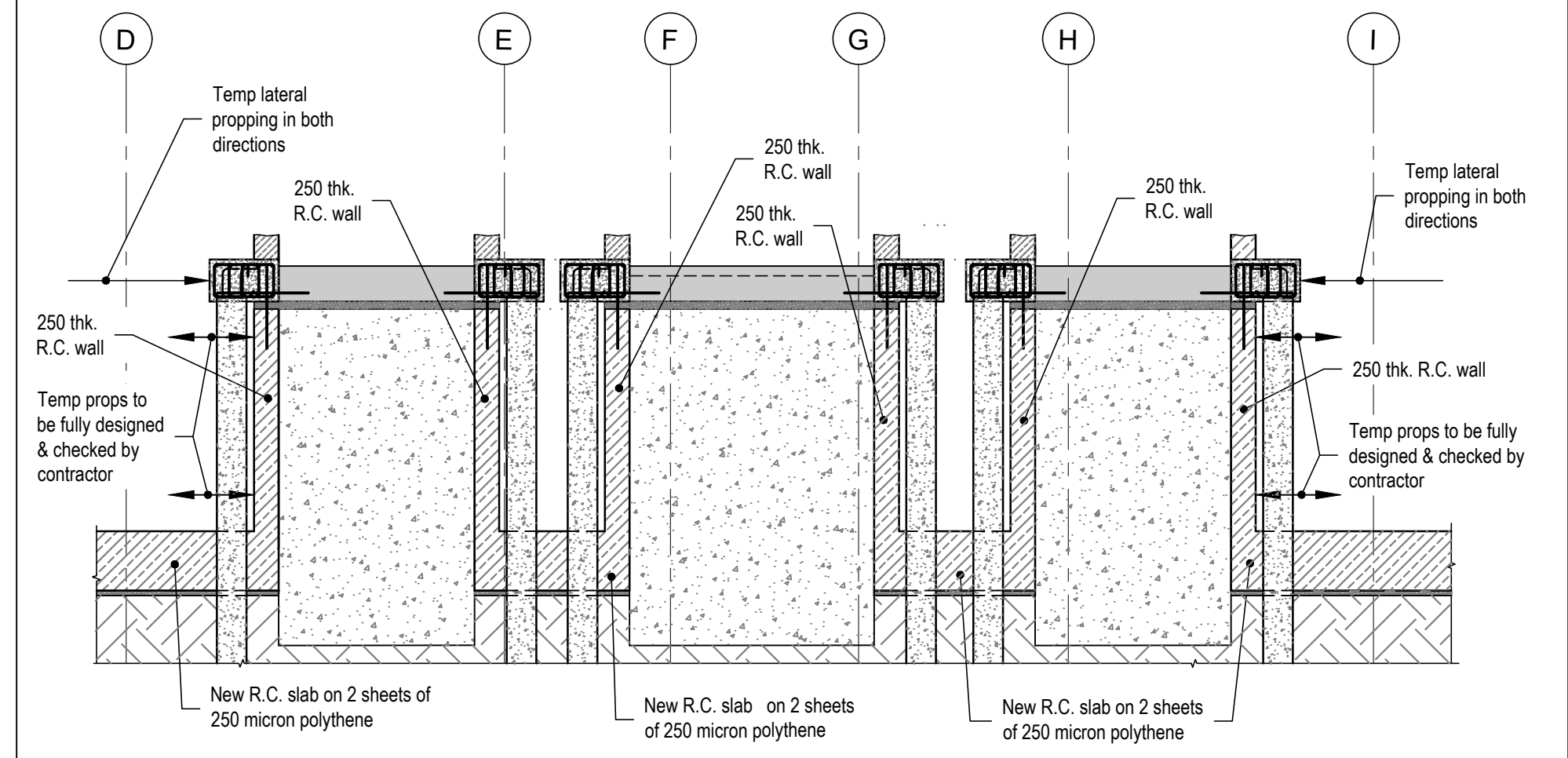
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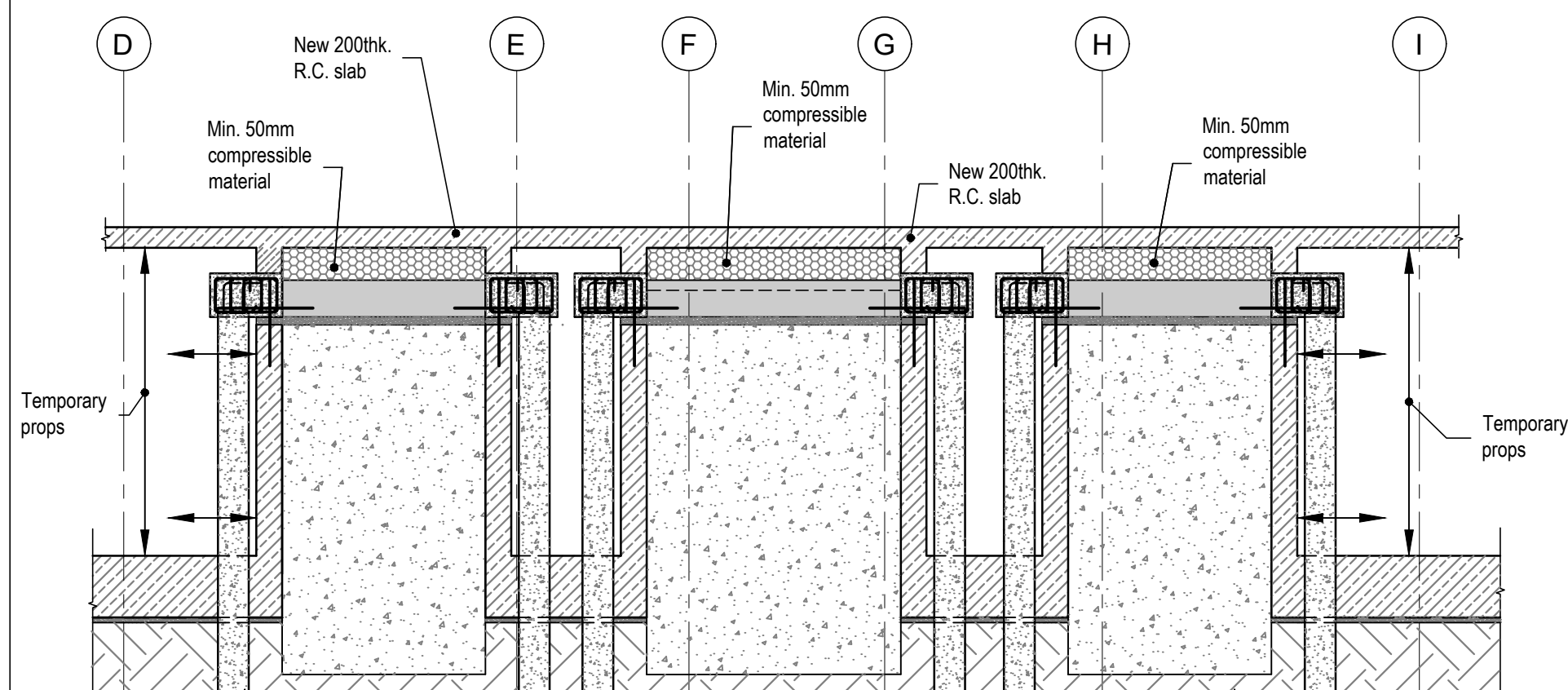
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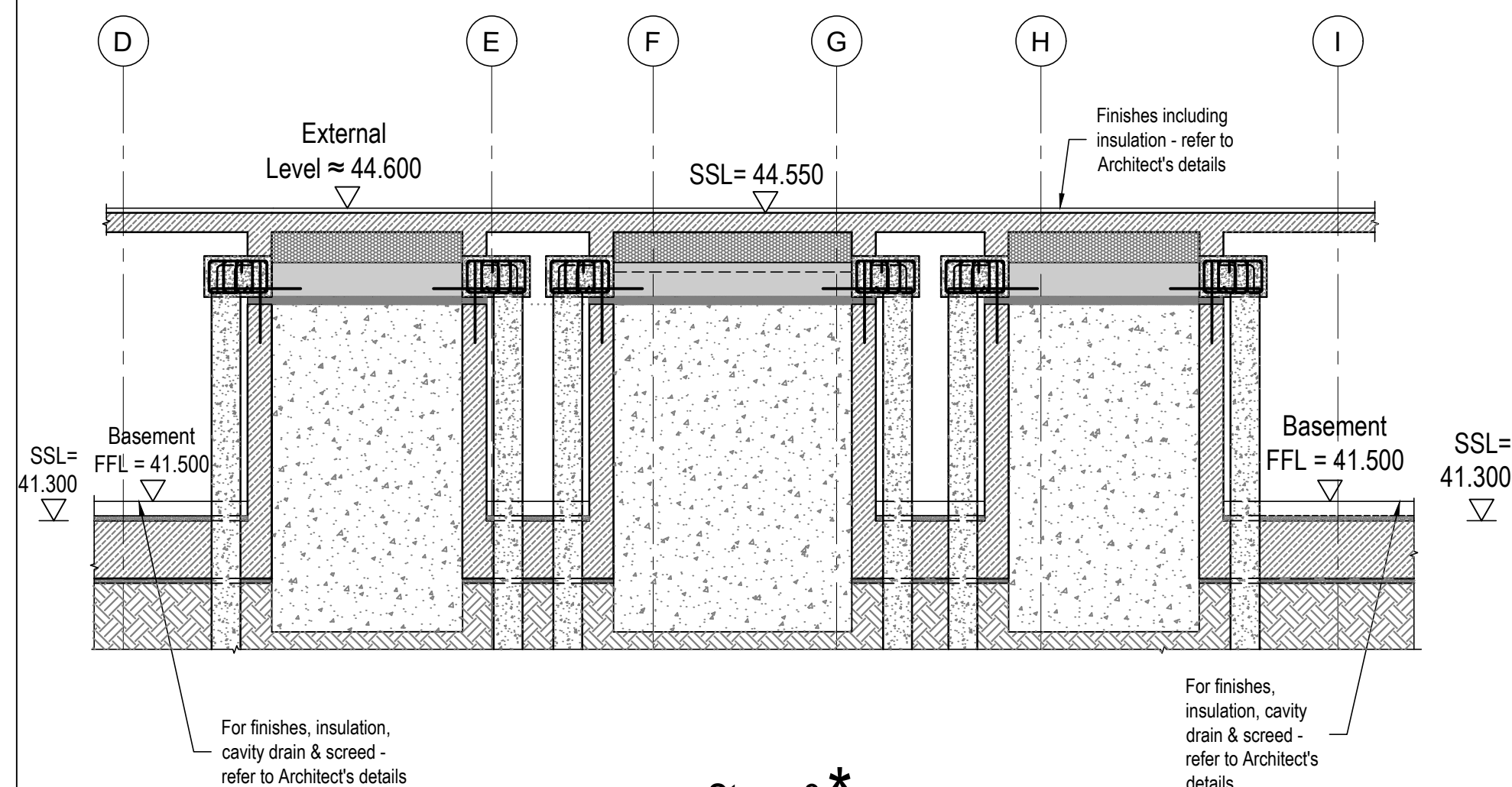
Stage 5*



Stage 6*



Stage 7*



Stage 8*
Proposed Section A-A

Suggested Method of Works

This suggested method is a suggestion only and the contractor may submit alternative proposals. The method of works and all temporary works including design and erection are to be the full responsibility of the main contractor.

* : refer to notes on section sequence, drg. 5295-PSM01

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PROJECT
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Barrie House

TITLE
Suggested Method of Works 2

ARCHITECTS
Carbogno Ceneda Architects

DRAWING No.	DATE
5295-PSM02	12.10.2022
	SCALE As shown @ A1
	DRAWN AR
	CHECKED RT
	REVIEWED -

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