Green Structural Engineering

45 ELSWORTHY ROAD

LONDON

CONSTRUCTION METHOD STATEMENT

(Planning Purposes Only)

June 2024

Project Ref: 20230188

REVISION HISTORY

Rev	Purpose	Date	Issued By	Approved
0	Initial Issue – For Planning Purposes Only	08/07/2024	MP	AA
01	Initial Issue – For Planning Purposes Only	15/07/2024	MP	AA

CONTENTS

1.0 INTRODUCTION

This Temporary Works Package details the overall sequence and procedures for the proposed basement construction under the main house and over property renovations at No. 45 Elsworthy Road. Some of the procedures involve needle and propping, pynford stooling, basement retaining wall propping and support of existing structure. The Temporary Works Package is to be read in conjunction with the drawings and information listed below:

WOLFF ARCHITECTS EXISTING, PROPOSED AND DEMOLITION DRAWINGS

2333 PL-001	0	Site Location Plan
2333 PL-002	0	Existing Site Plan
2333 PL-150	0	Existing Plans
2333 PL-151	0	Existing Plans
2333 PL-152	0	Existing Plans
2333 PL-160	0	Existing Elevations
2333 PL-170	0	Existing Sections
2333 PL-199	0	Proposed Site Plan
2333 PL-200	0	Proposed Plans
2333 PL-201	0	Proposed Plans
2333 PL-202	0	Proposed Plans
2333 PL-300	0	Proposed Elevations
2333 PL-310	0	Proposed Sections

GREEN STRUCTURAL ENGINEERING PERMANENT WORKS DRAWINGS (PROJECT REF 20230188)

PW-11	P2	Proposed Basement Plan
PW-12	P2	Proposed Ground Floor Plan
PW-13	P2	Proposed First Floor Plan
PW-14	P2	Proposed Second Floor Plan
PW-15	P2	Proposed Roof Plan
PW-16	P1	Proposed Sections

GSE TEMPORARY WORKS DRAWINGS (PROJECT REF 20230188)

TW_001 to TW_004	P1	Temporary Works Intent
MS/01 to MS/04	P1	Typical Construction Sequence
TD/01	P1	Excavation Support Details
SC/01	P1	Neelde Prop With Plunge Column Intent

2.0 DESIGN BRIEF

Green Structural Engineering Limited (GSE) have been appointed to advise on the temporary works required to allow for the redevelopment and extension works to the existing property and basement at No. 45 Elsworthy Road.

The proposed works involve the redevelopment and extension of the existing detached property to include rear extensions at ground floor, with modifications to the first and second-floor level as well as the existing basement layout.

The works will be carried with the aid of needle and props on plunge columns which will support the rear elevation walls during construction. The underpins to the existing retained walls are to be formed in a two-stage sequence based on hit and miss sequence.

Permanent works design has been performed by GSE, please refer to relevant drawings and documents listed as in Section 1 of this document.

SCOPE OF WORKS

For GSE to satisfy the brief and issue sufficient information for the Submission the following tasks are to be complete:

- Construction Sequence Document
- Sequence Drawings – Identifying General Arrangement of procedures on site and proposed temporary works layout. (TW_001-004)
- Sequence Drawings - Sequence Drawings in section identifying procedures through construction at critical boundaries with adjacent structures, highways, or pedestrian areas.

2.1 SITE INFORMATION

The current site is located at 45 Elsworthy Road, NW3 3BS, in the London Borough of Camden, in Inner London, and is within the Elsworthy Conservation Area. The site is roughly rectangular in plan, measuring approximately 52m x 28m. The property is a two-storey detached dwelling, including accommodation in the roof eaves and at the lower ground floor.

45 Elsworthy Road is bounded by:

- Elsworthy Road to the North (Front Elevation)
- Primrose Hill to the South (Rear Elevation)
- Dethatched of similar use and construction to the East & West (43 & 47) respectively.

2.2 GEOTECHNICAL INFORMATION

Further to a review of the Preliminary Basement Impact Assessment Report by Chelmer Global Ltd, initial borehole locations investigated show that the existing house is founded on Made Ground up to a depth of 3.2m which is underlain by London Clay Formation to an 8m depth tested.
Key:
Yellow – Made Ground
Orange – London Clay

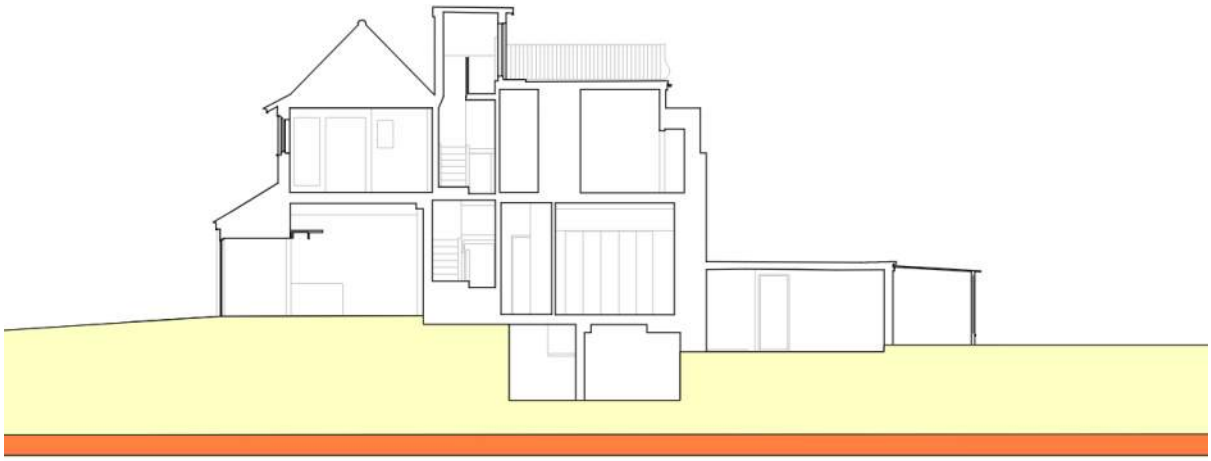


Figure 1- Indicative visual Interpretation of variation of strata across site

2.3 PROPOSED SUBSTRUCTURE DEVELOPMENT

The proposed scope of works is to extend the existing basement footprint across and beyond the entire footprint of the main house. The proposed basement construction consists of the following;

- 2 Stage underpinning to form the basement retaining wall along the front and flank elevations.
- Formation of internal piles required to support temporary plunge columns.
- Formation of contiguous piles and liner wall along the proposed rear elevations.
- Formation of remaining internal piles and pile caps.
- New basement slab.

2.4 PROPOSED SUPERSTRUCTURE DEVELOPMENT

The proposed works involve the redevelopment and extension of the existing detached property to include rear extension at ground, mondifications at first and second-floor levels with extensions and modifications to the existing basement layout.

3.0 OVERALL CONSTRUCTION SEQUENCE

The following sequence has been assumed in the temporary works design and corresponds to stages and sequencing shown on GSE drawings TW_001–004, MS/01-04, TD/01 and SC/01

Notes:

- ***Existing structure and including existing joist span directions to be confirmed by contractor on site prior to construction.***
- ***Debris needs to be regularly cleared form the site. Do not store debris on the existing floors as this may overload the existing structure. Temporary storage or demolition arising on the existing floor is to be limited to 1kPa.***
- **All existing openings in load bearing walls are to be packed with timber and plywood sheeting.**
- ***All existing openings in load bearing walls are to be packed with timber and plywood sheeting.***
- ***During Construction, ground water should not be encountered except for trapped pockets, see GSE dewatering method statement for details. However, if groundwater is encountered and requires the pumping of significant amounts of water, contractor must inform GSE. GSE to review quantities being removed to avoid adjacent loss of fines.***

Stage 0.0

- Existing condition.
- Site set up + welfare to be installed.
- Timber pack the existing window openings on all load bearing elevations.
- Confirm CDM queries on GSE permanent works drawings.

Stage 1.0 – see drawing TW_001

- Remove all internal non-load-bearing stud walls and existing timber floors at Ground Floor Level.
- Carefully dismantle and remove all single-storey non-load-bearing construction at the rear and front elevations.
- Excavate and cast stage 1 underpins to existing walls along the front and flank elevations in a hit-and-miss sequence. First stage depth of front retaining wall to be formed monolithically within a shored trench excavation.
- Use soil excavated from stage 1 underpins to backfill the existing basement in the temporary condition.

Stage 2.0 - see drawing TW_002

- Bore and cast new piles with plunge columns at locations shown below. (piles to be cast in concrete up to cut off level, then in-filled with pea shingle up to existing ground level)
- Install Needle Beams and bridge beams between plunge columns as shown below.
- Install New Beam 1 along spine wall adopting a pynford beam technique.
- Install New Beams 2 & 3 along existing front elevation wall using pynford stooling method.
- Bore and cast 4 No internal piles (piles to be cast in concrete up to cut off level, then in-filled with pea shingle up to existing ground level) and commence with contiguous piled wall at the rear.

Stage 3.0 – see drawing TW_003

- Prior to commencing with stage 2 underpinning install needle beams above first floor level off bridge beams already installed. Ensure plunge columns are laced and braced.
- Commence with the remainder of the Stage 2 underpins in a hit and miss sequence to the as built stage 1 pins. Propping back to the berm as construction progresses.

Stage 4.0 – see drawing TW_004

- Cast remaining piles across site and remaining length of contiguous piled wall.
- Form capping beam at the head of the cantilevered contiguous wall.
- Commence with the remainder of the stage 2 underpins in a hit-and-miss sequence to the as-built stage 1 pins. Propping back to the berm to be provided as excavation progresses.
- Reduce general excavation across site to 1.0m below top of the retaining structures and install shoring across site at higher level, as shown. Hydraulic props to be installed along the piled wall.
- Further commence with reduction of berm to 1.0m above formation level, then install lower level shoring as shown below.
- Once all shoring has been installed, the remainder of the berm can be reduced to formation level and services to be laid.
- Cast basement raft across the entire basement.
- Once the basement raft has cured and reached sufficient strength, remove lower level of propping.
- Contractor to commence in a bottom-up fashion for the remainder of construction.

Underpin Construction Sequence (2 stage)

1. The reinforced concrete underpins are to be constructed in the bays shown on GSE drawing series 20230188 - TW_001 to TW_004, with each underpin section no more than 1.0 m wide. No adjacent underpin to be constructed within a 48-hour period. The construction sequence of each section will be as follows below.
2. An underpin section will be locally excavated. The excavation faces will be shored with trench sheets and trench props. Edge protection consisting of 4" x 2" timber posts, double handrails and toe boards will be erected around the excavation.
3. The base of the Stage 1 underpin section will be poured on the same day. The length of the base to be constructed will be in accordance with the temporary works engineer's drawings.
4. On the following day, the stem of the Stage 1 underpin section will be poured up to 50 – 75 mm below the underside of the existing footing.
5. Once the concrete has achieved sufficient strength (min. 24 hours) then dry pack between the top of the wall and the underside of the existing foundation.
6. Once the dry pack has gained sufficient strength (min. 48 hours), any protruding existing footing will be carefully trimmed back flush with the face of the wall above using hand tools.
7. Backfill the excavation in layers and compact.
8. Repeat the above process to complete the construction of Stage 1 underpins.

9. Complete works outlined on sketches TW_002 to TW_004, to enable the formation of Stage 2 underpinning.

10. Commence stage 2 underpin construction.
11. An underpin section will be locally excavated. The excavation faces will be shored with trench sheets and trench props. Edge protection consisting of 4" x 2" timber posts, double handrails and toe boards will be erected around the excavation. (Stage 2 underpin to be staggered to stage 1 underpin).
12. The base of the stage 2 underpin section will be poured on the same day. The length of the base to be constructed will be in accordance with the structural engineer's drawings.
13. On the following day, the stem of the stage 2 underpin section will be poured up to 50 – 75 mm below the underside of the stage 1 underpin base.
14. Once the concrete has achieved sufficient strength (min. 24 hours) then dry pack between the top of the wall and the underside of the existing foundation.
15. Once the dry pack has gained sufficient strength (min. 48 hours), any protruding stage 1 footing will be carefully trimmed back flush with the face of the wall above using hand tools.
16. Repeat the process to complete the construction of stage 2 underpins.

17. Reduce general excavation across site to 1.0m below top of retaining structures and install high-level propping in all locations (as shown on TW_004).
18. Proceed with further excavation across site, down to 1.0m above formation level and install lower-level shoring (as shown on TW_005).
19. Once all temporary shoring is installed, reduce the berm to formation level, lay services and then cast basement raft across entire basement.
20. Once basement raft has cured and reached sufficient strength, lower-level propping can be removed.

4.0 INSPECTION OF TEMPORARY WORKS

Once the temporary works have been installed, they will be inspected by the Temporary Works Supervisor to verify that they have been correctly installed according to the drawings and they are providing support and stability to the works, as intended.

Prepared by	Checked by
	
Matt Paulden **Green Structural Engineering Ltd** **June 2024**	**Arash Aini** **Green Structural Engineering Ltd** **APRIL 2024**

APPENDICES

The following appendices are included with this report:

- GSE Temporary Works Drawings.

APPENDIX A

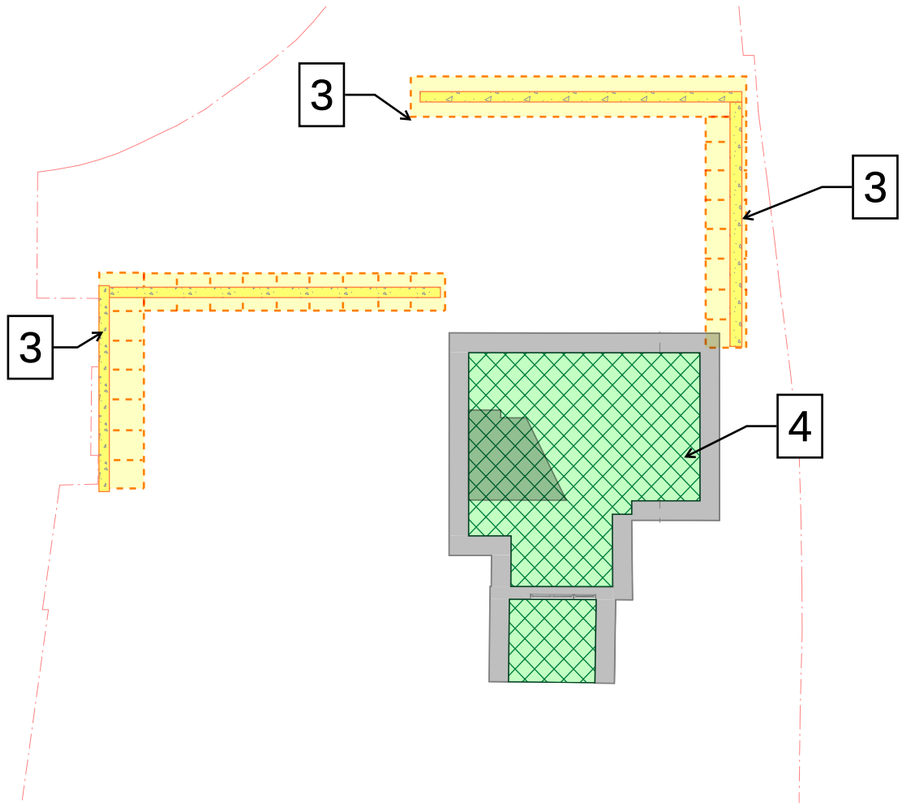
GSE TEMPORARY

WORKS DRAWINGS

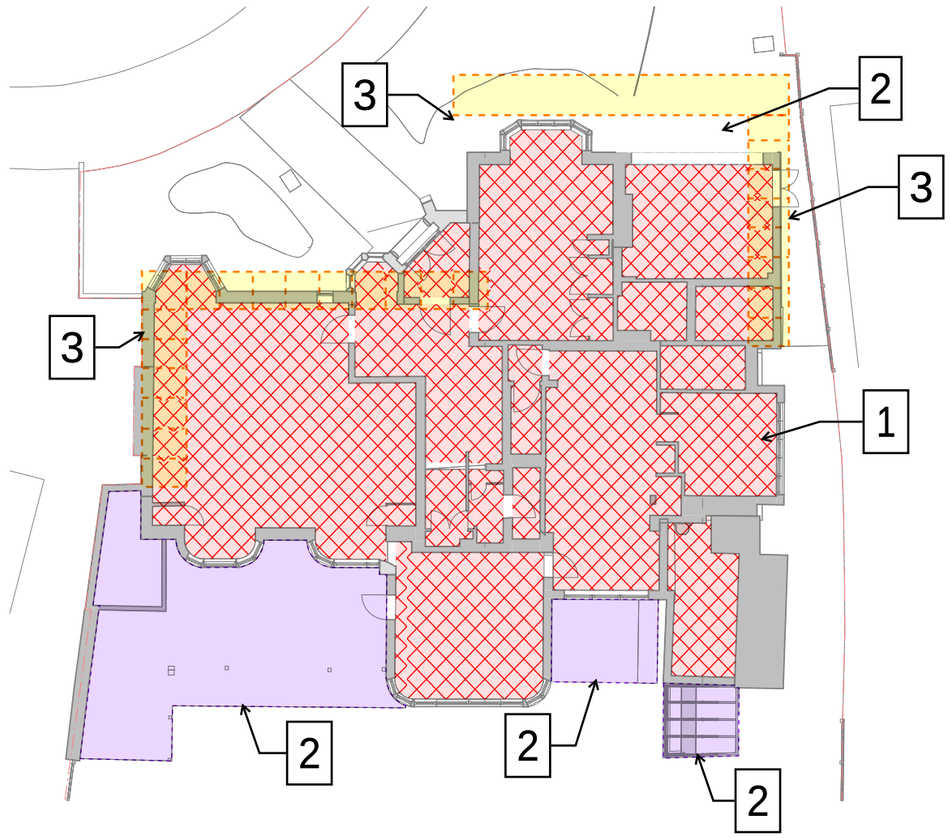
(INTENT)

NOTES:
1) Provide supports to all faces of excavations at all times.
2) Contractor is to provide piling mats for all piling rig routes and pile locations.

Outline Sequence-Stage 1:
1) Remove all internal non load-bearing stud walls and existing timber floors at Ground Floor Level.
2) Carefully dismantle and remove all single-storey non load-bearing construction at the rear and front elevations.
3) Excavate and cast Stage 1 underpins to existing walls along front and flank elevations in a hit-and-miss sequence. First stage depth of front retaining wall to be formed monolithically within a shored trench excavation. All stage underpin sections to be shored back to the central berm.
4) Use soil excavated from stage 1 underpins to backfill the existing basement in temporary condition.



B Basement Floor Demolition and Temporary Works Plan



0 Ground Floor Demolition and Temporary Works Plan

45 Elsworthy Road, NW3 3BS — **20230188**

REV.	DATE	REVISION NOTES	TECH.	CHECKED
P01	12/04/2024	ISSUED FOR INFORMATION ONLY.	AK	AA
P02	05/07/2024	ISSUED FOR INFORMATION ONLY.	MP	AA

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020 3405 3120

Temporary Works Intent - Stage 1

TECHNICIAN	ENGINEER	DATE	PAPER SIZE	SCALE	DRAWING NO.	REV.
	MP	12/04/24	A3	NTS	TW_001	P02

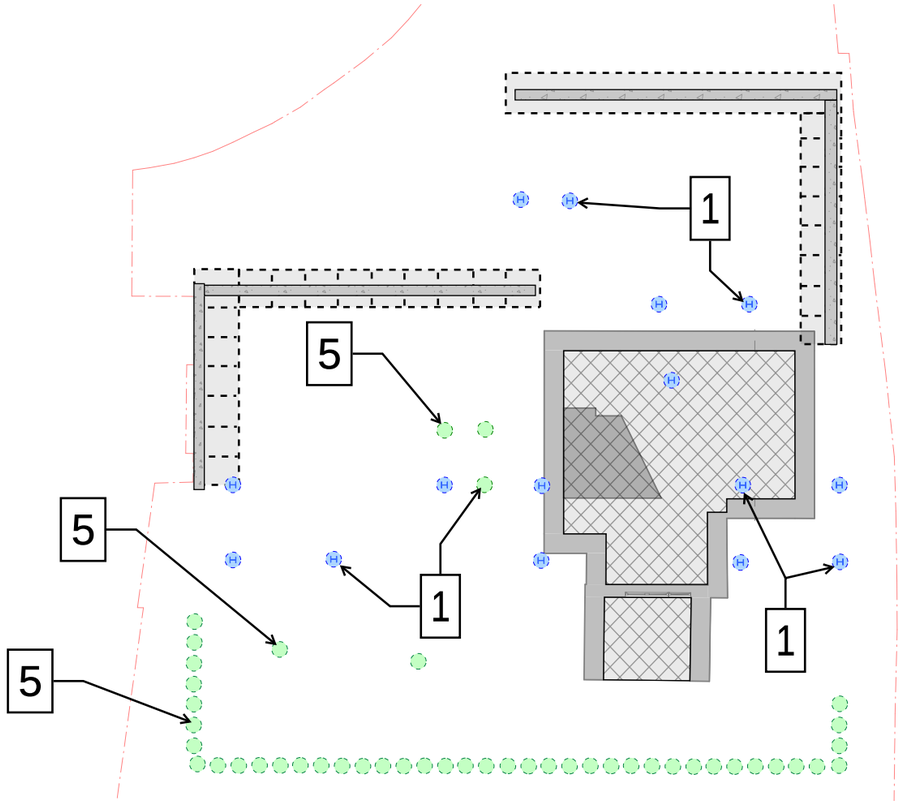
PRELIMINARY

NOTES:

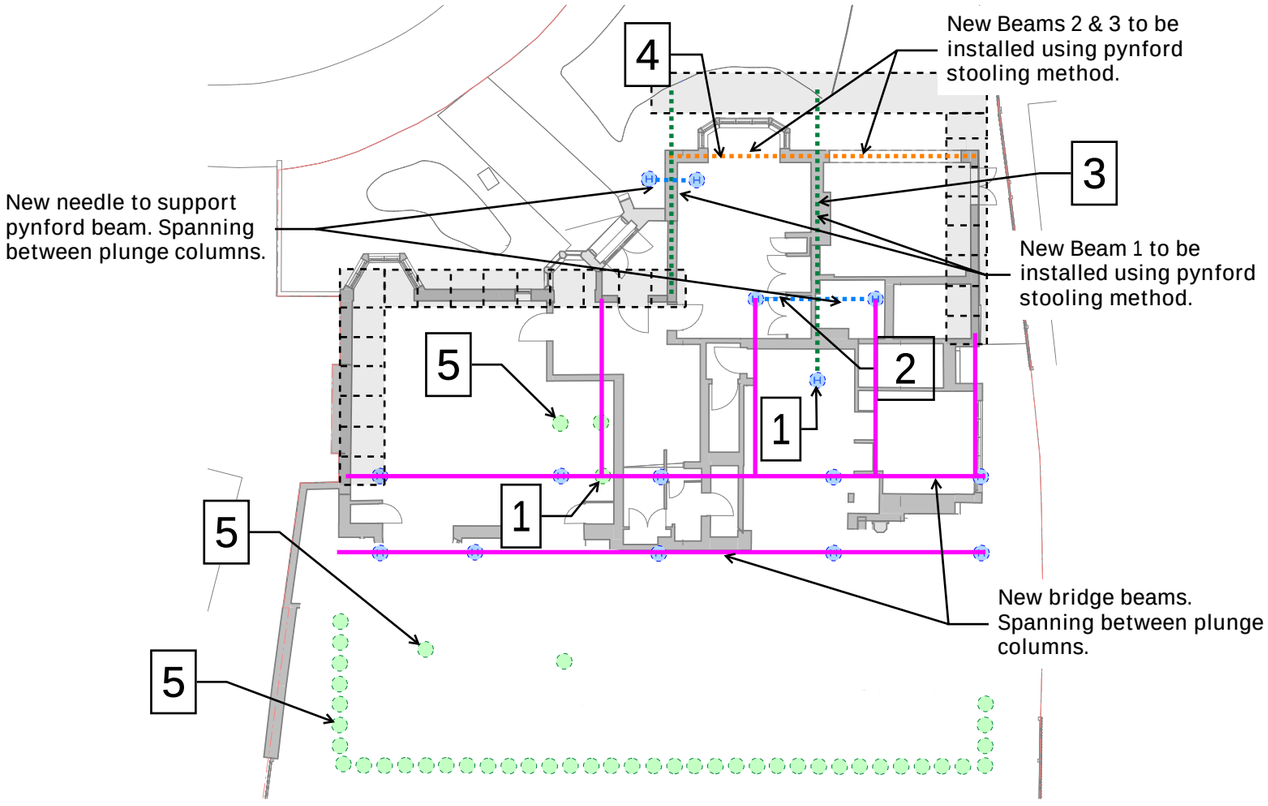
1) Contractor is to provide piling mats for all piling rig routes and pile locations.
2) Contractor is to remove locally individual joists to allow for piling at location of proposed lift core.
3) Floor joists to be propped and supported where required

Outline Sequence- Stage 2:

1) Bore and cast new piles with plunge columns at locations shown below. (piles to be cast in concrete up to cut off level, then in-filled with pea shingle up to existing ground level)
2) Install Needle Beams and bridge beams between plunge columns as shown below.
3) Install New Beam 1 along spine wall adopting a pynford beam technique.
4) Install New Beams 2 & 3 along existing front elevation wall using pynford stooling method.
5) Bore and cast 4 No internal piles (piles to be cast in concrete up to cut off level, then in-filled with pea shingle up to existing ground level) and commence with contiguous piled wall at the rear.



B Basement Floor Demolition and Temporary Works Plan



0 Ground Floor Demolition and Temporary Works Plan

45 Elsworthy Road, NW3 3BS — **20230188**

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Temporary Works Intent t - Stage 2 — *PRELIMINARY*

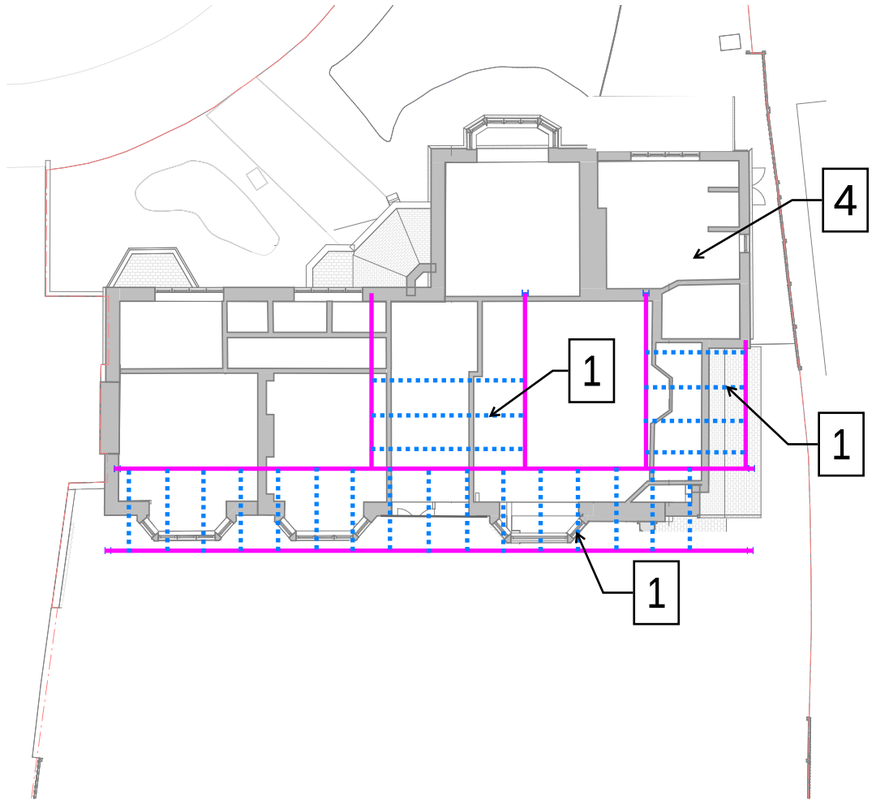
TECHNICIAN	ENGINEER	DATE	PAPER SIZE	SCALE	DRAWING NO.	REV.
	MP	12/04/24	A3	NTS	TW_002	P02

NOTES:

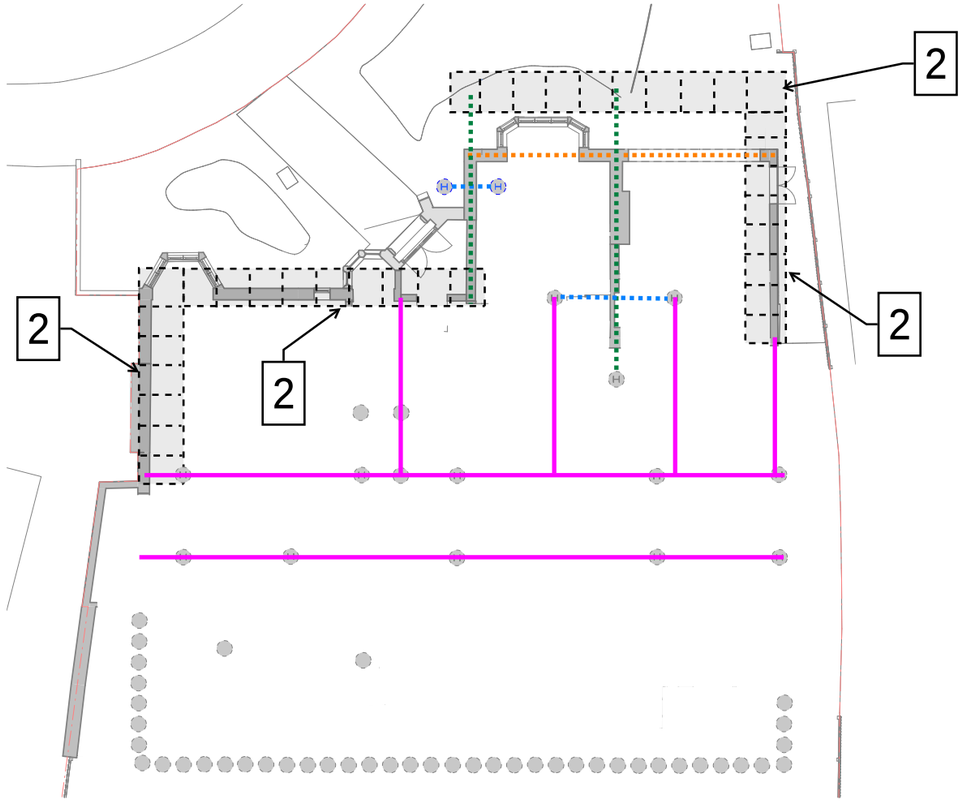
1) Contractor is to provide piling mats for all piling rig routes and pile locations.
2) Contractor is to remove locally individual joists to allow for piling at location of proposed lift core.
3) Floor joists to be propped and supported where required

Outline Sequence-Stage 3:

1) Prior to commencing with stage 2 underpinning install needle beams above first floor level off bridge beams already installed. Ensure plunge columns are laced and braced.
2) Commence with the remainder of the Stage 2 underpins in a hit and miss sequence to the as built stage 1 pins. Propping back to the berm as construction progresses.



B First Floor Temporary Works Plan



0 Ground Floor Demolition and Temporary Works Plan

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER GSE DRAWINGS & RELEVANT PROJECT DOCUMENTS.
DO NOT SCALE FROM THIS DRAWING. THIS DRAWING IS SUBJECT TO COPYRIGHT.
THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL SITE DIMENSIONS BEFORE COMMENCING ANY WORK.
ALL DIMENSIONS IN mm UNLESS OTHERWISE NOTED. ALL DIMENSIONS & LEVELS TO BE CONFIRMED BY ARCHITECT. SETTING OUT TO BE CONFIRMED ON SITE.

45 Elsworthy Road, NW3 3BS — **20230188**

REV.	DATE	REVISION NOTES	TECH.	CHECKED
P01	12/04/2024	ISSUED FOR INFORMATION ONLY.	AK	AA
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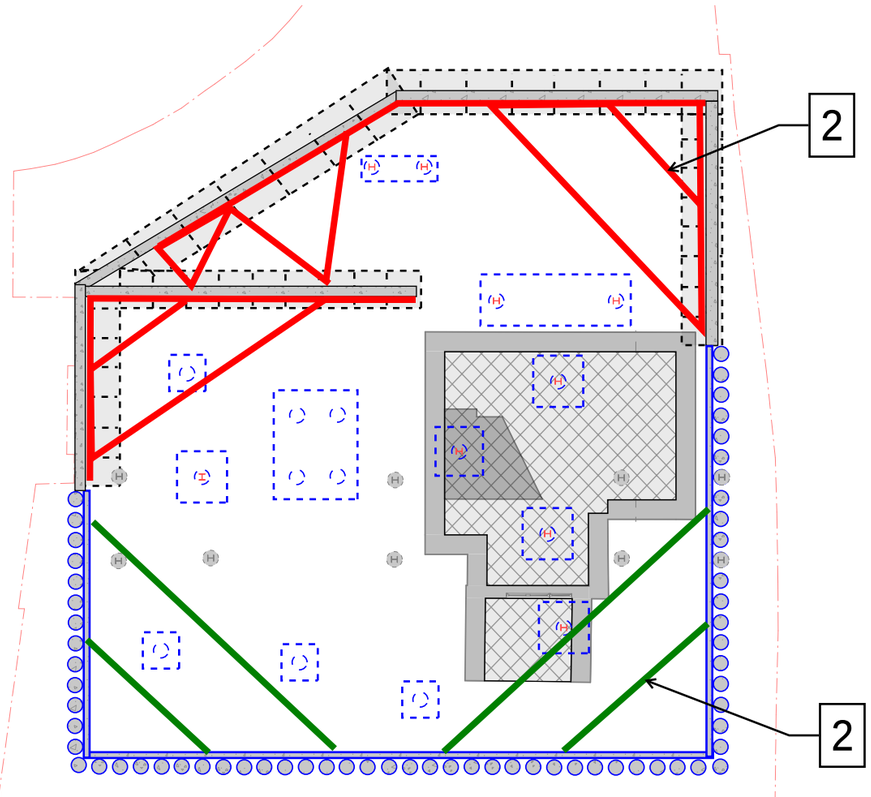
Temporary Works Intent t - Stage 3

TECHNICIAN	ENGINEER	DATE	PAPER SIZE	SCALE	DRAWING NO.	REV.
	MP	12/04/24	A3	NTS	TW_003	P02

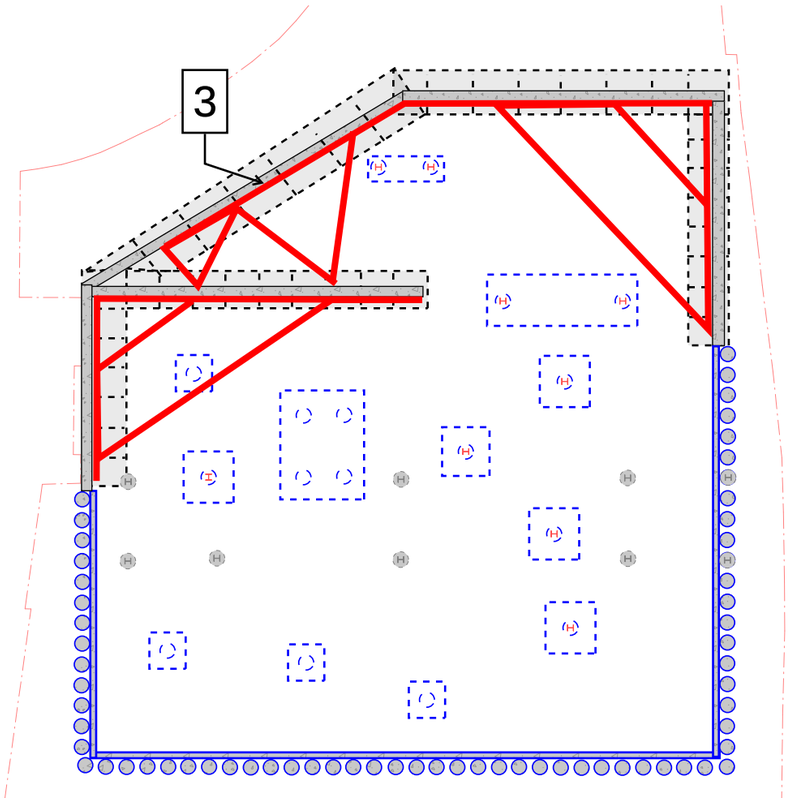
PRELIMINARY

Outline Sequence-4:

1) Cast remaining piles across site and remaining length of contiguous piled wall. Form Capping Beam at the head of the cantilevered contiguous wall.
2) Reduce general excavation across site to 1.0m below top of the retaining structures and install shoring across site at higher level,as shown below. Hydraulic props to be installed along the piled wall.
3) Further commence with reduction of berm to 1.0m above formation level and install lower level shoring as shown below.
4) Once all shoring has been installed, the remainder of the berm can be reduced to formation level and services to be laid.
5) Cast basement raft across the entire basement. Once the basement raft slab has cured and reached sufficient strength lower level propping can be struck.
6) Contractor to commence in a bottom up fashion for the remainder of construction.



B Basement Propping Layout -High Level



B Basement Propping Layout- Low Level

NOTES:

1) Soil excavated from new underpins is to be used for backfilling of the existing basement in temporary condition.
2) Provide supports to all faces of excavations at all times.

45 Elsworthy Road, NW3 3BS

REV.	DATE	REVISION NOTES	TECH.	CHECKED
P01	12/04/2024	ISSUED FOR INFORMATION ONLY.	AK	AA
P02	05/07/2024	ISSUED FOR INFORMATION ONLY.	MP	AA

20230188

REV.	DATE	REVISION NOTES	TECH.	CHECKED

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Temporary Works Intent t - Stage 4

PRELIMINARY

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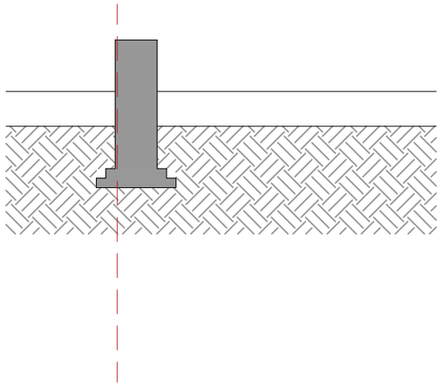
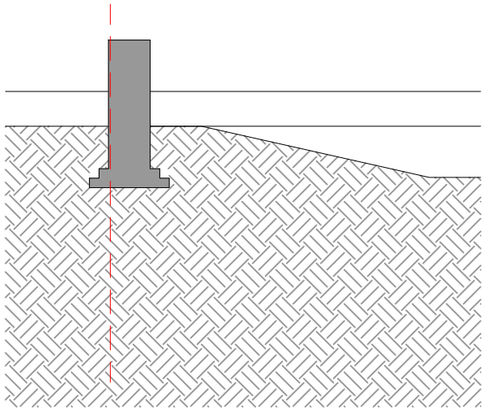
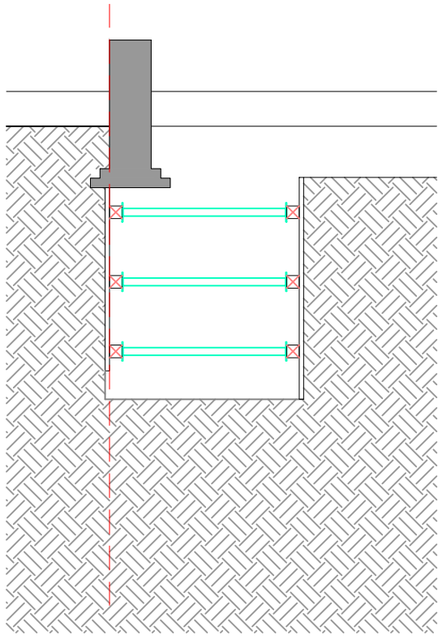


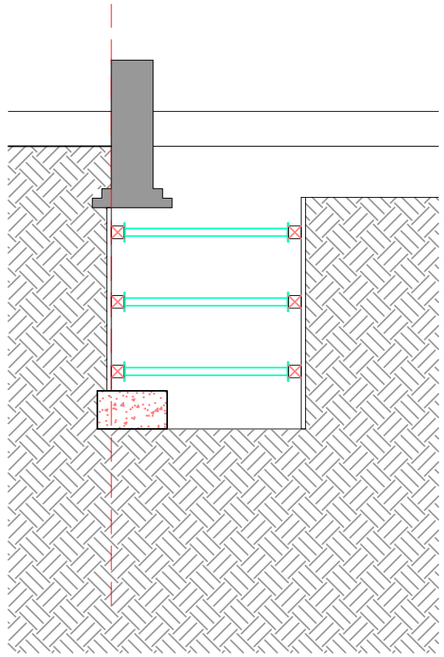
Stage 0
Existing condition.



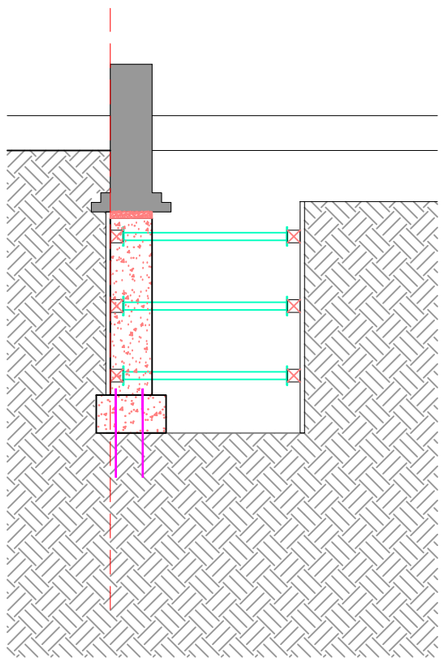
Stage 1
General level reduction
Install vertical temporary support as the dig progresses.



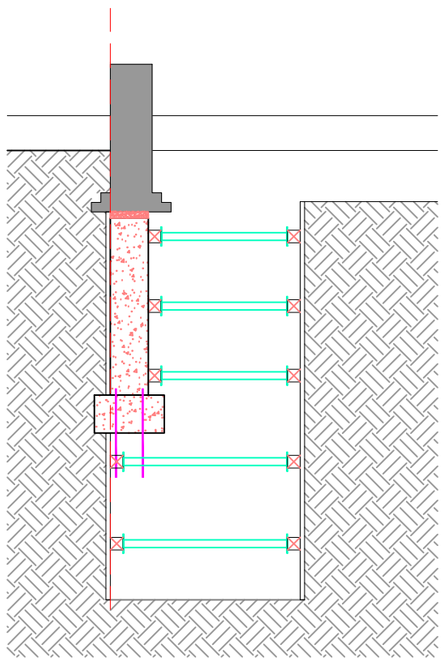
Stage 2
Excavate to form stage 1 underpin.



Stage 3
Concrete base of stage 1 underpin.

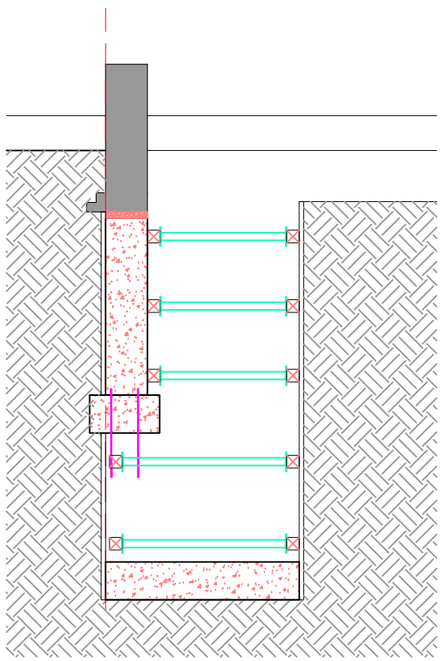


Stage 4
Erect shutter concrete stem of stage 1 underpin. Ensure starter bars for stage 2 underpin wall connection are installed.

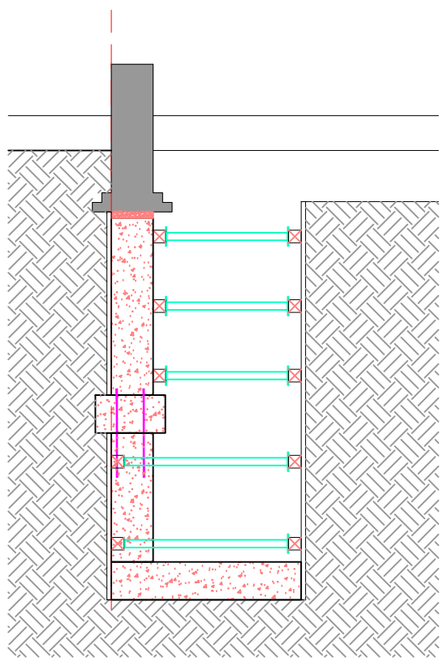


Stage 5
Strike shutter when concrete has gained sufficient strength, drypack, Trim- off projecting footing, re-prop until basement slab is cast.

Excavate to form stage 2 underpin.



Stage 6
Concrete base of stage 2 underpin.



Stage 7
Erect shutter concrete stem of stage 2 underpin.

SEQUENCE BASED ON HIT AND MISS CONSTRUCTION, FOR 1.0M MAX WIDTH OF UNDERPIN.

45 ELSWORTHY ROAD

P1	14.04.2024	INITIAL ISSUE - FOR PLANNING ONLY

..\..\..\..\Matt.Paulden\Pictures\GSE Logo Drawing Block.png

TYPICAL CONSTRUCTION SEQUENCE SHEET- 1

PRELIMINARY

DRAWN	CHECKED	DATE	PAPER SIZE	SCALE	DRAWING NO.	REV.
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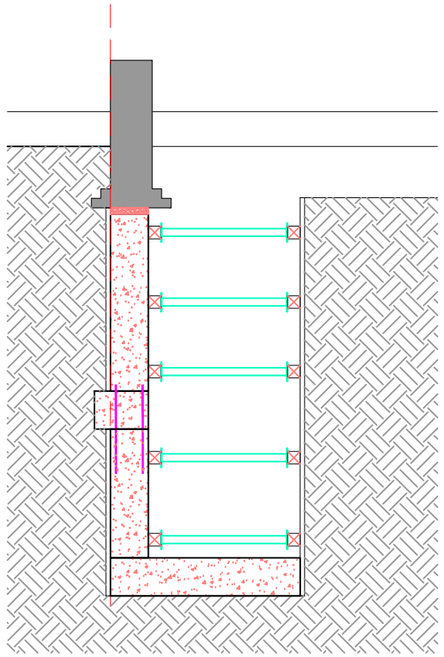
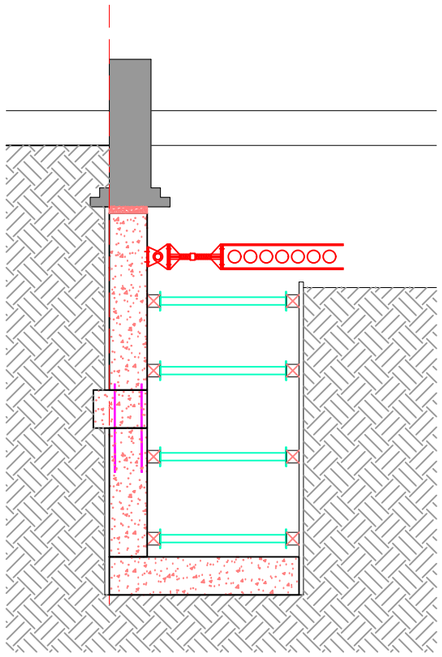
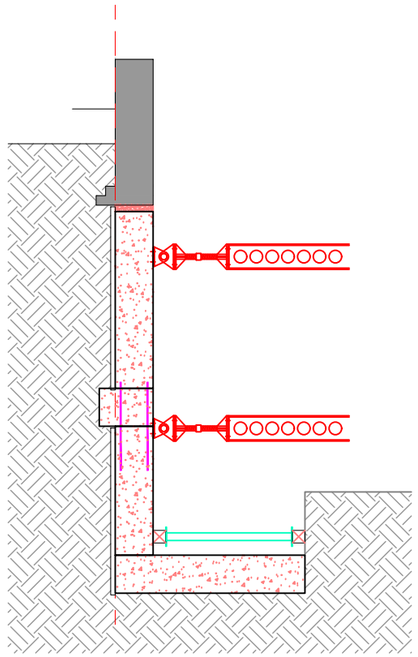


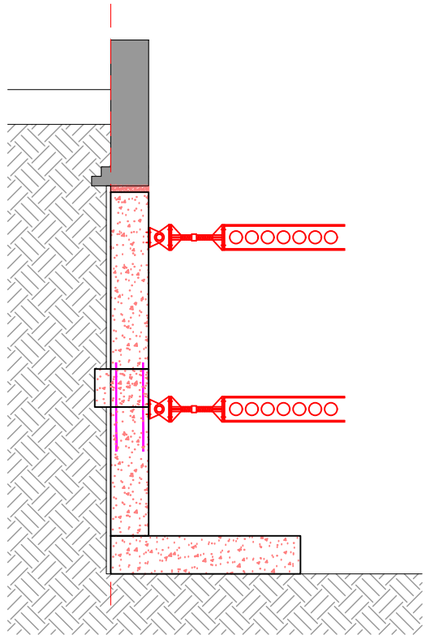
Stage 8
Strike shutter when concrete has gained sufficient strength, drypack, Trim- off projecting footing, re-prop until basement slab is cast.



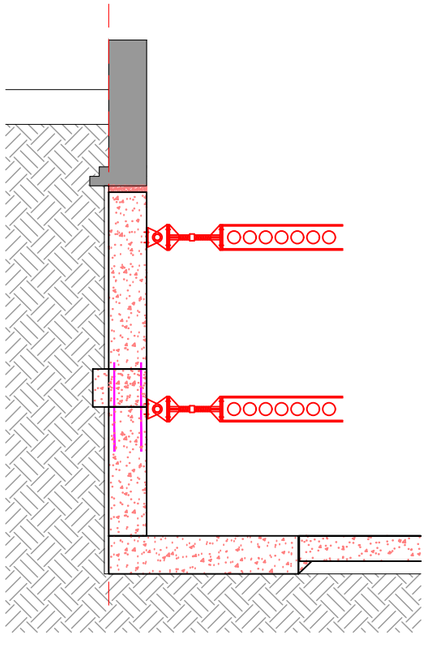
Stage 9
Reduce ground.
Install high level prop where applicable.



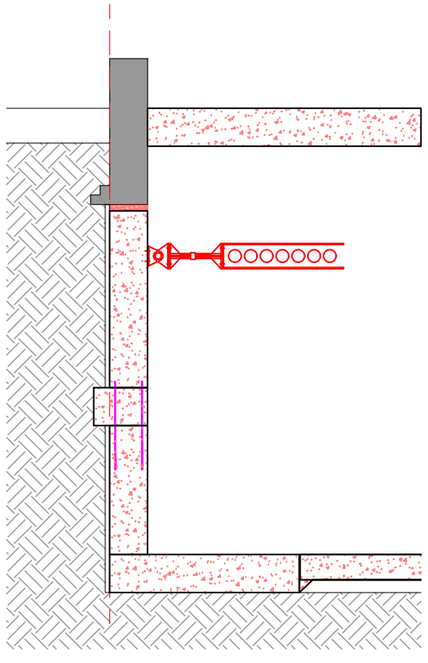
Stage 10
Commence excavation of central berm.
Once excavation is 500mm above formation level, install bottom level props across the site at low level.



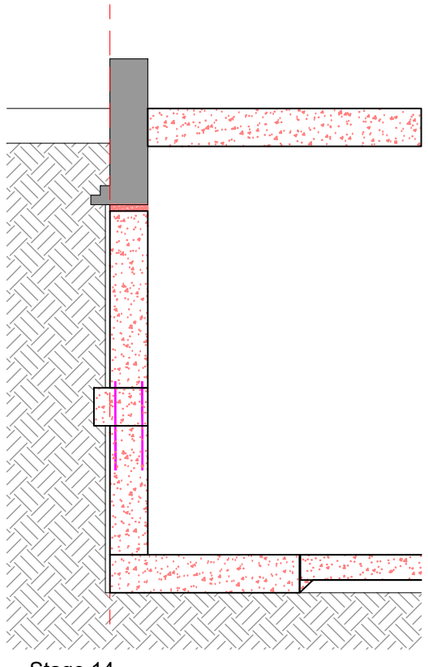
Stage 11
Complete excavation to formation level.
Construct remaining new foundation.
Install under basement services.



Stage 12
Cast basement slab and cure.



Stage 13
Remove bottom level props.
Construct basement walls/ structure and ground floor structure.
Remove top level prop, wherever applicable.
Basement construction complete.



Stage 14
Basement construction complete.

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TYPICAL CONSTRUCTION SEQUENCE SHEET- 2

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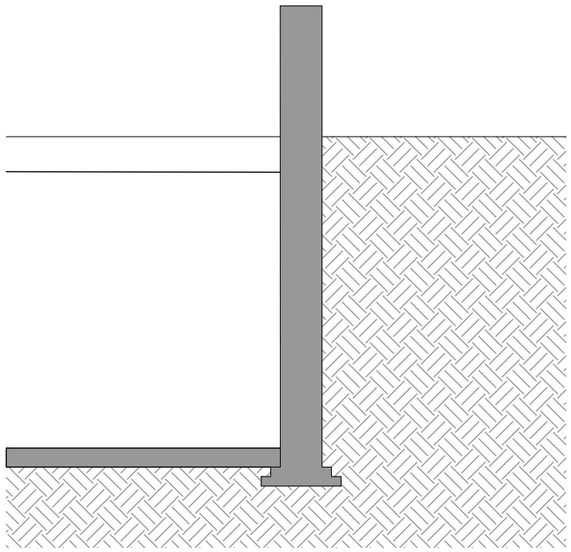
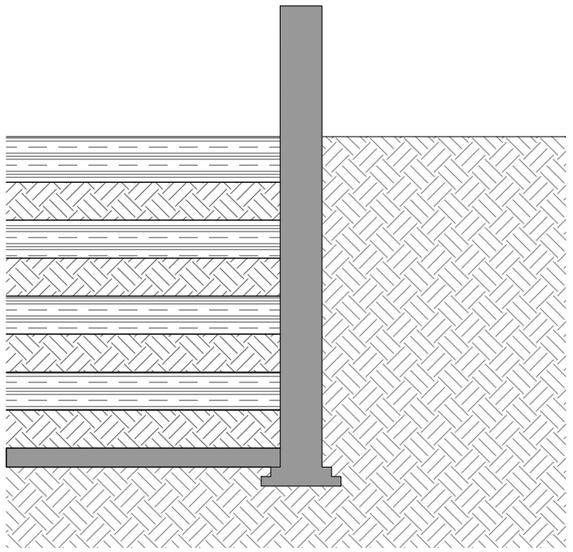
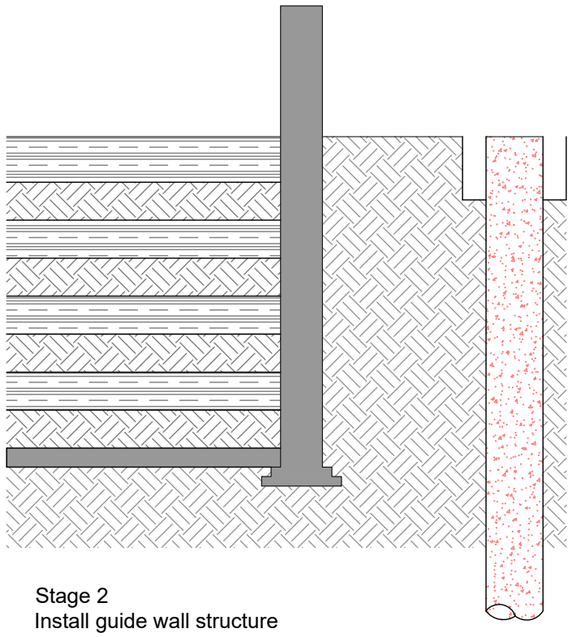
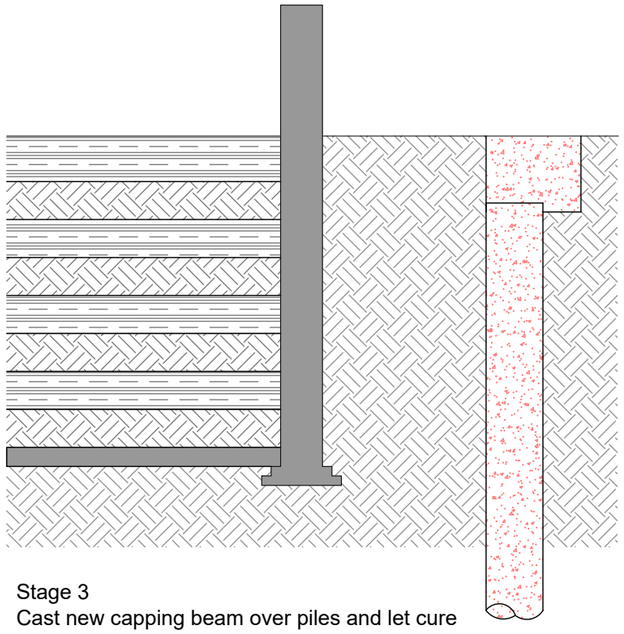


Stage 0
Existing condition.

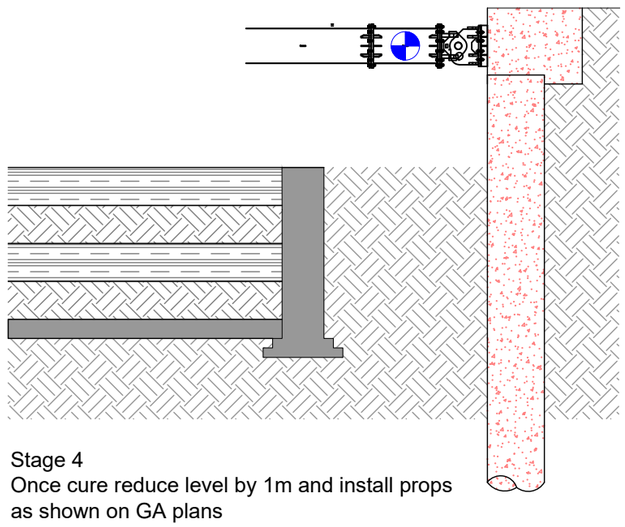




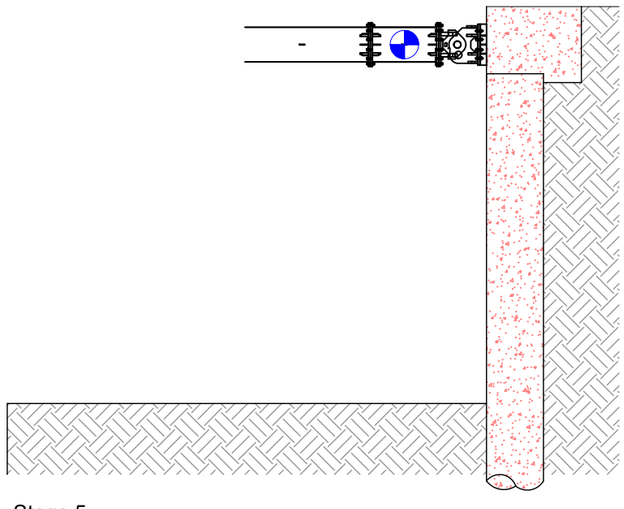
Stage 2
Install guide wall structure
From new piles around perimeter of basement
as shown on GA.



Stage 3
Cast new capping beam over piles and let cure



Stage 4
Once cure reduce level by 1m and install props
as shown on GA plans



Stage 5
Once props are installed reduce level to SSL

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TYPICAL CONSTRUCTION SEQUENCE SHEET- 5

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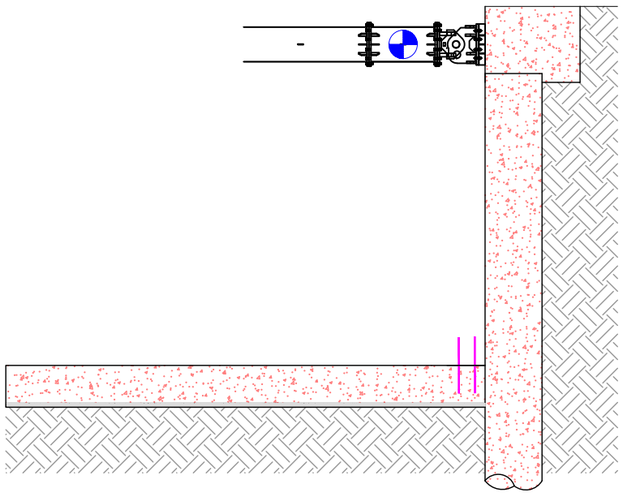
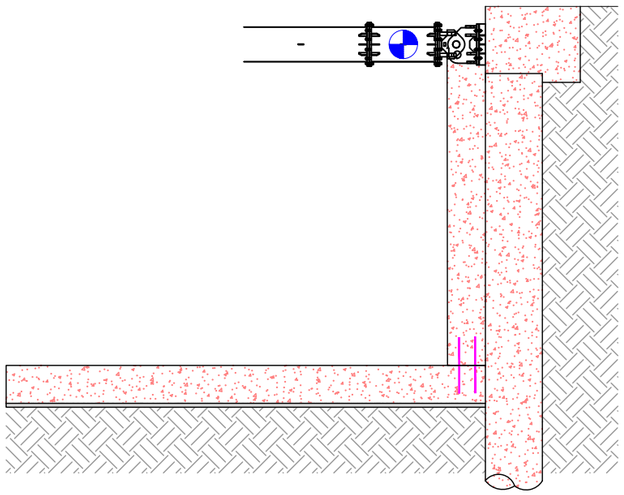
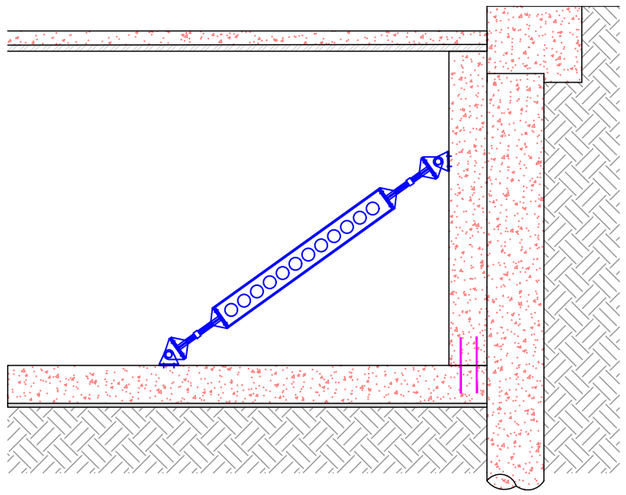


Stage 6
Cast basement raft across the entire basement foot print.



Stage 7
Cast liner wall



Stage8
install raking props to liner wall & remove high level props
Construct composite decking to ground floor level.

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TYPICAL CONSTRUCTION SEQUENCE SHEET- 4

PRELIMINARY

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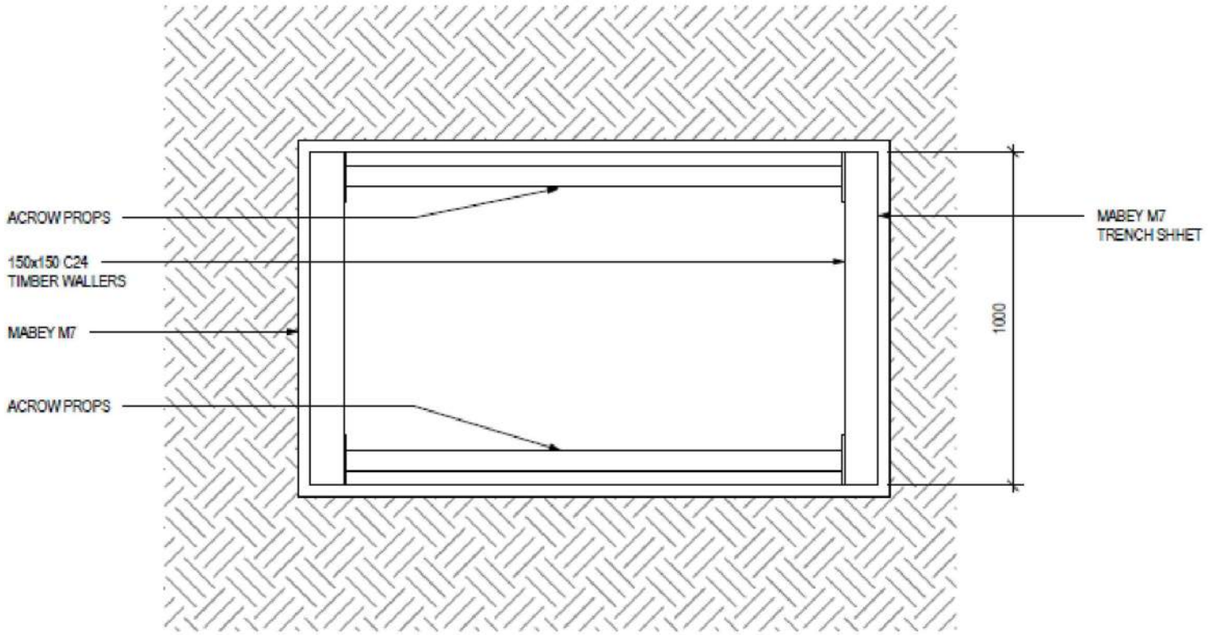
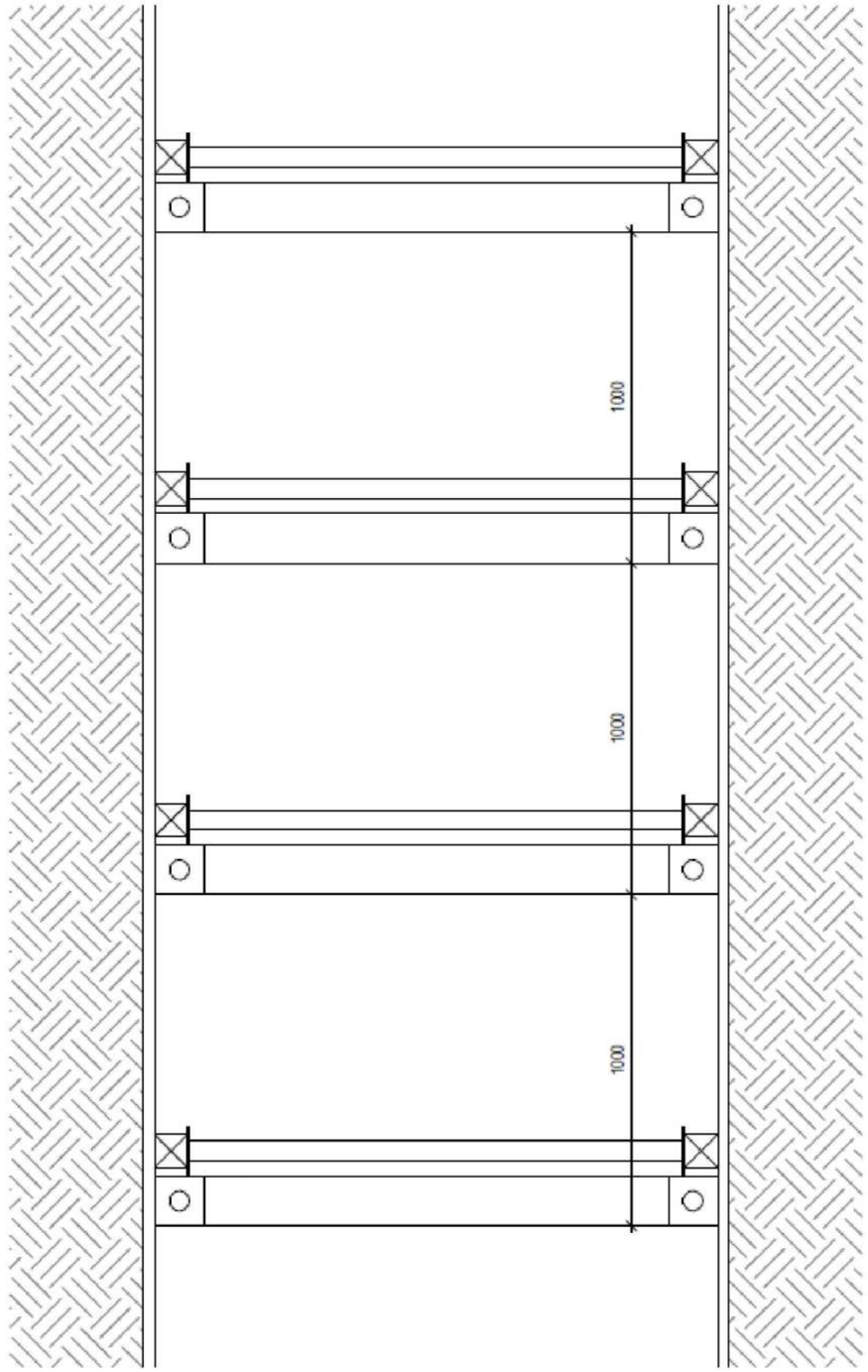
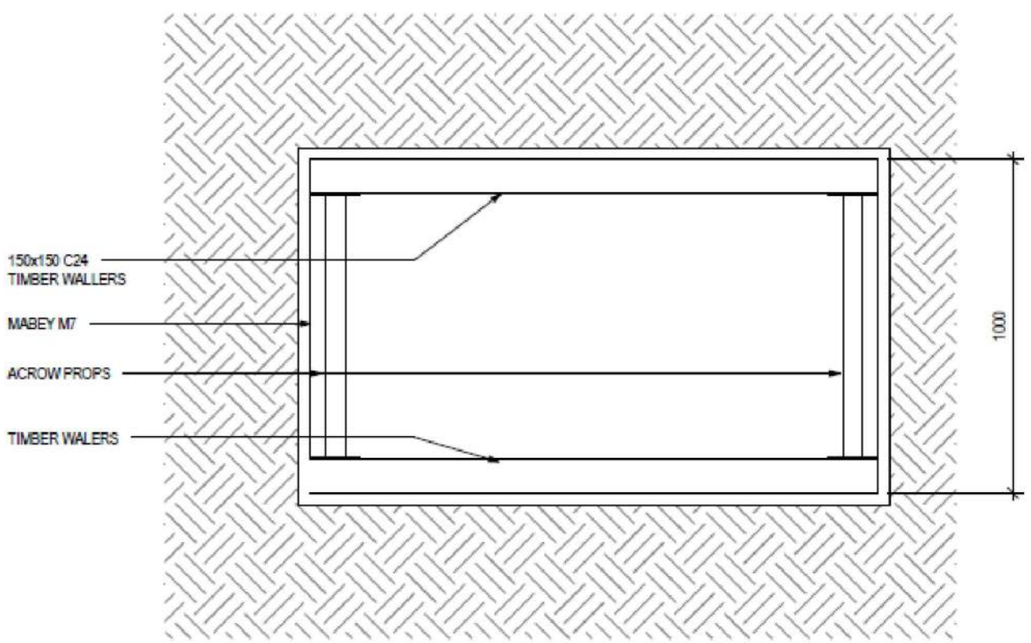


PLAN





PLAN

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EXCAVATION SUPPORT DETAIL: UNDERPINNING

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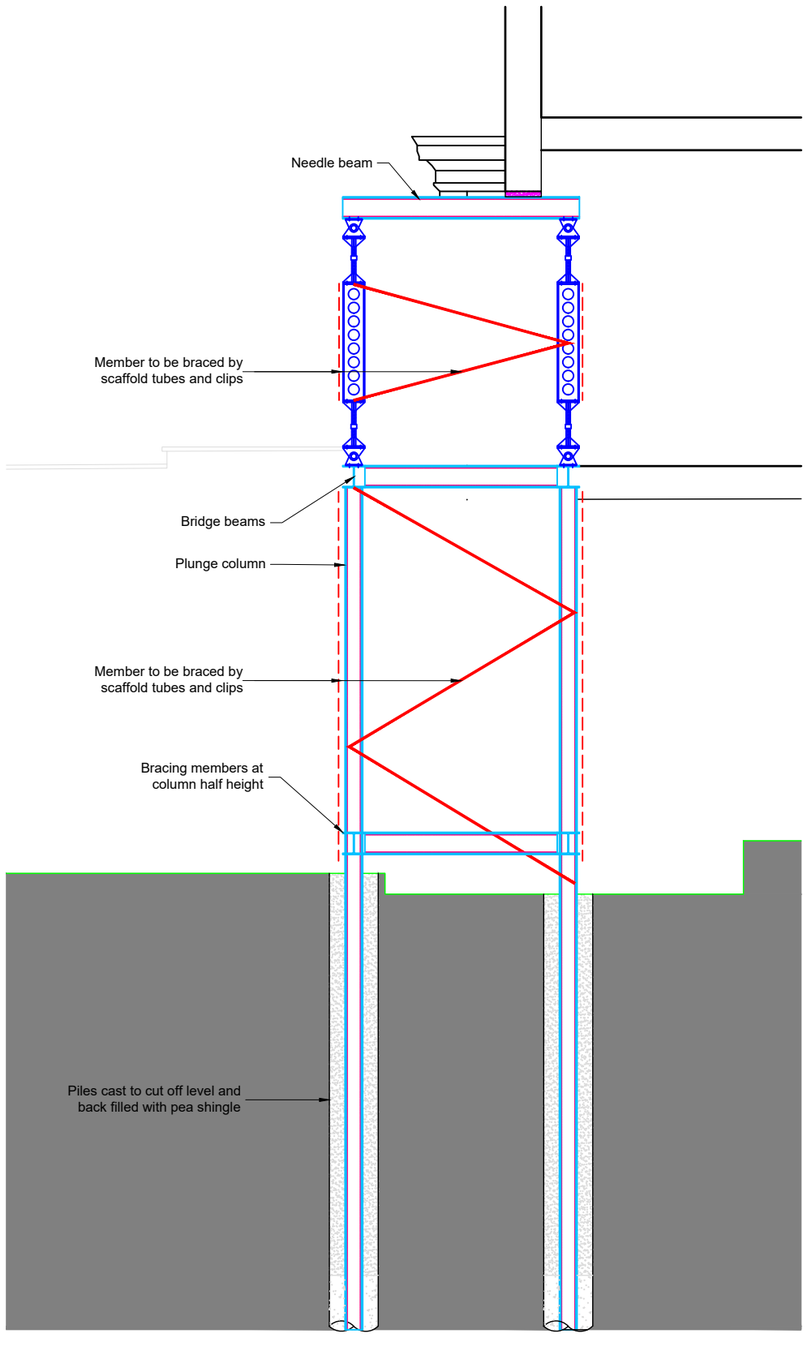

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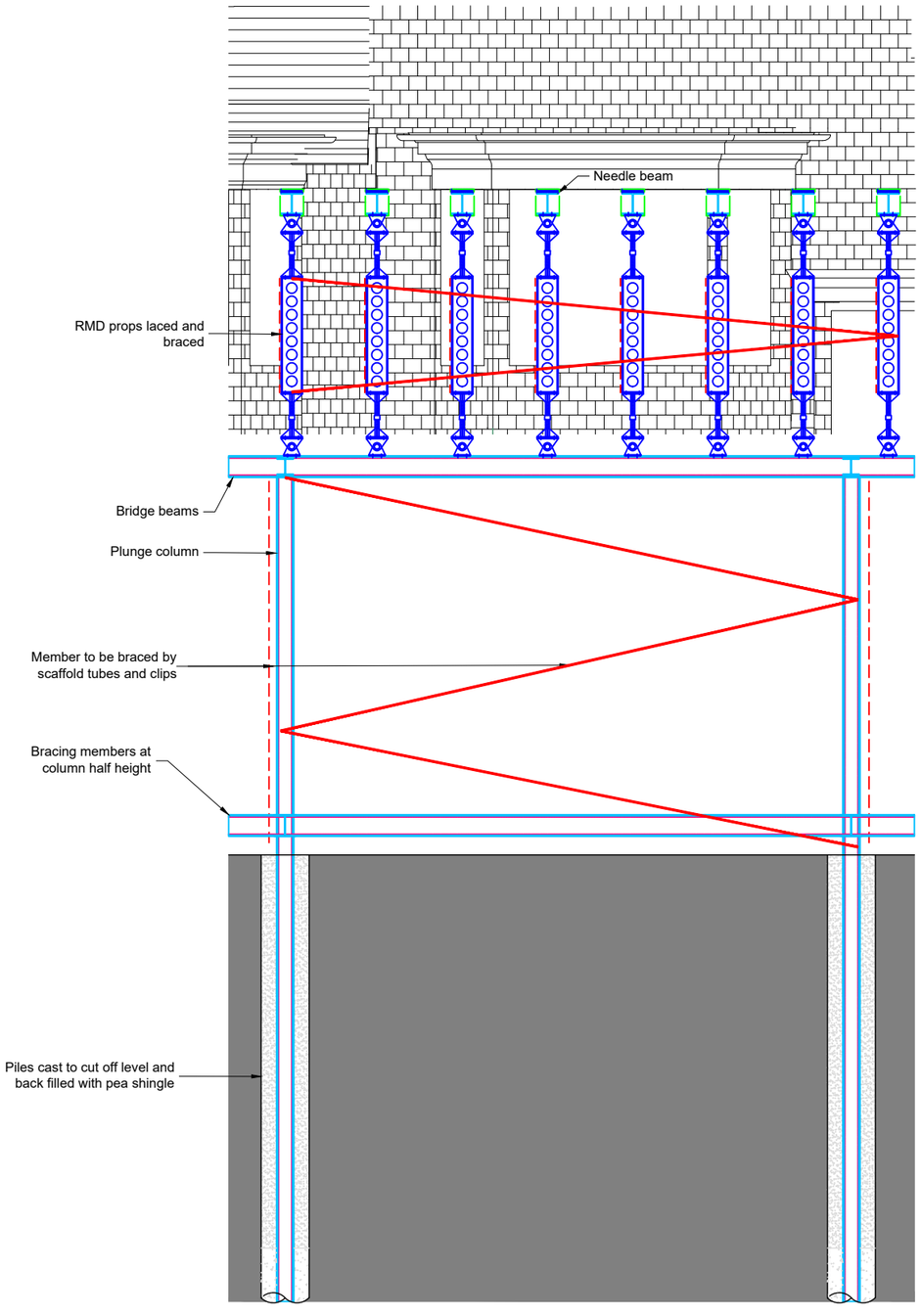

ELEVATION

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NEEDLE PROP WITH PLUNGE COLUMN INTENT

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