

**85 CAMDEN MEWS
LONDON**

**STRUCTURAL ENGINEER'S
CONSTRUCTION METHOD STATEMENT**

INDEX

1.0	Introduction
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1.0 INTRODUCTION

- 1.1 Axiom Structures Limited have been asked to provide construction method statement, sequence of construction works and temporary works details surrounding the proposed basement extension and refurbishment works at the address.
- 1.2 The proposed development comprises construction of a new retrofit single-storey basement under the existing building and part of the rear garden, general refurbishment works to the existing structure in line with Cullinan Studio proposals.
- 1.3 A ground investigation survey, Basement Impact Assessment and associated ground movement analysis were carried out by specialist ground investigation companies. Refer to reports by other for details.
- 1.4 Permanent architectural and structural engineering proposals are as per Cullinan Studio drawings and details.
- 1.5 We have visited site to assess the existing structure for alteration works.
- 1.6 The borehole site investigation was carried out in January 2015 by Southern Testing. The borehole confirmed firm to stiff silty CLAY becoming very stiff CLAY.
- 1.7 As part of our walk round and visual investigation survey of the property, we have not recorded signs of ongoing or historical movement to suggest any subsidence or other foundation problems in existing and adjacent properties. There are a few hedges, trees and other vegetations in the rear garden.

2.0 DETAILS OF PROPOSED CONSTRUCTION

- 2.1 The proposed development involves the construction of the basement under footprint of existing mews house and part of rear garden of the property. Generally the excavation is to be up to about 3.5m below existing ground floor level.

Ground Water

- 2.2 The record information indicated the ground water at depth of 3m below ground level and sits just above the level of very stiff clays and above formation level. Obstruction of below ground water courses is not considered an issue with this development as the site is not within the line or close to underground rivers, refer to BIA for further details.
- 2.3 During construction of underpins, the ground water will be controlled using mechanical pumps and close placed sheets as necessary. When the perimeter underpins are completed than we would expect that as built underpins would stop ground water ingress to the excavation. We consider that some residual perch ground water would be pumped out from temporary sump chambers. Refer to Appendix B for typical sump detail with perforated sides to avoid washout of sands and fine particles from the ground.

Drainage

- 2.4 The subterranean development is to extend to the rear garden, whilst it is likely that the existing drainage system will require upgrading or replacement possibly with the addition of pumps, the development will not impact on any public drainage or existing surface water drainage systems.

Construction Method to Minimise Risk of Movement and Damage to Adjacent Structures

- 2.5 The existing walls and new perimeter basement walls are to be constructed in short sections in hit and miss sequencing. The existing structure is to be back propped to unload the excavation as necessary. The actual process of underpinning can cause some minor cracking in the wall being underpinned and intersecting walls, although if carried out in accordance with the specification and back-propped on completion to minimise the risk of horizontal movement, such movement normally goes undetected.
- 2.6 The permanent structural proposals as detailed by Cullinan Studio will involve the construction of reinforced concrete walls in short sections. New reinforced concrete walls will be monolithically connected to the new reinforced concrete basement slab to provide robust and watertight construction. The underpinning will be constructed in a hit and miss sequence to minimise ground movements. The new basement is a naturally rigid structure and will be designed to accommodate the horizontal ground forces imposed via the underpins to the perimeter, potential for upwards and lateral water pressures as well as the vertical loads from above. This has been explained in more details by Cullinan Studio Basement Impact Assessment and drawings.
- 2.7 An adjacent single-storey garage structure at 83 Camden Mews surcharges the excavation and increased lateral pressure is to be considered in prop calculations. At least two stage underpinning is to be adopted along this boundary line as per detail. Additional horizontal shores maybe required to minimise risk of localised movement in the adjacent structure during excavation.

3.0 METHOD STATEMENT

This method statement is to be read in conjunction with Cullinan Studio structural drawings and Axiom sequence of construction 15005 / TW / sketches and drawings.

SUPERSTRUCTURE AND ENABLING WORKS:

1. Carry out soft strip out in the property. Demolish side and rear single-storey buildings. Review condition and load run downs of the existing structure to foundations.
2. Carry out enabling underpinning works to the critical areas where noted in the drawings (EW) i.e. where new columns support existing structure. Use conventional needles and props to support structure over underpinning shaft to builders details. Place back props against as built underpins or backfill shaft excavation with compacted ground on completion to contractors choice.
3. Install ground and first floor transfer beams (columns and beams) to support existing walls onto enabling foundation bases i.e. as built underpinning. Use conventional fully braced needles and props to support existing structure before permanent steels are in place. Support temporary props onto timber sleeper spreaders to existing ground bearing slabs or temporary bases to builders details.
4. Install back props and temporary bracing to maintain overall stability of the mews house.
5. Demolish remaining existing mews house walls to achieve open plan at ground floor.

BASEMENT CONSTRUCTION:

6. Break remaining existing ground bearing slab and prepare area for underpinning.
7. Underpin perimeter walls with reinforced concrete to formation level. Carry out works in 1-5 hit and miss sequence as per items below.
 - Underpinning to be carried out in maximum 1.2m sections in shaft excavations. Carry out excavations in 0.9m sections along boundary no 83/85, underpinning is to be carried out in at least two vertical stages along this line to minimise movement.
 - Install trench sheeting, struts and walings as excavation proceeds for underpins in shafts.
 - Cast underpinning base and then stem, dry pack on hardened concrete between new and existing foundations.
 - Back prop constructed pins with Acrow Jacks at 1.0m vertical centres. Consider doubled up back propping along boundary 83/85 to account for increased surcharge, subject to detail design.
 - Continue the underpinning to the perimeter until all the underpinning is completed,
8. Reduce earth to about 1.8m below high level props and install horizontal high level shores TW01 as works progressing from back to the front of the property. Install TW01 in trenches, place TW01 at top and bottom of first stage underpins along boundary 83/85.
9. Excavate to formation level. Install push pull props TW02 as works progressing from back to the front of the property. **TW01 and TW02 props have screw jacks to pre-load the props and they are to be periodically checked by the contractor and re-tightened as necessary.**
10. Blind the ground at formation level and control short term heave effects. Place compressible filler as necessary and cast low level slabs.
11. Cast remaining parts of basement slab and ground floor slab; remove props (low and high level) when slabs gained strength.
12. Install remaining superstructure and construct side extension.

APPENDIX A

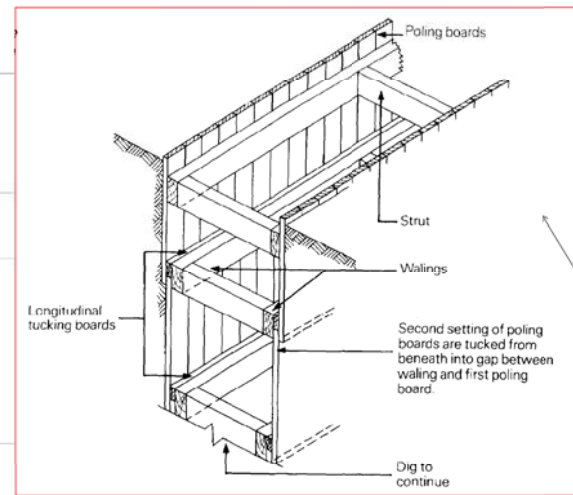
**SEQUENCE OF BASEMENT CONSTRUCTION AND BASEMENT
TEMPORARY WORKS**

15005 TW

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION:	
IN ADDITION TO THE HAZARDS (RISKS) NORMALLY ASSOCIATED WITH THE TYPE OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING:	
Specific Residual Risk:	
Action to be Taken:	

Shaft Shoring: TRADA 1990
 Subject to review of ground conditions on site

- Timber struts = 2x50x150C24 at max. 1.0m vertical crs, spacing(horiz) = 1.2m
- Timber Waling = 225x75C24 at max. 1.0m vertical crs
- 18mm thick ply-board or 225mm wide x 38mm thick timber boards or MGF trench sheets installed at close sheeting to the full width of the 1.2m wide excavation.



2. Install (EW) enabling works underpinning in critical locations. Refer to typical detail for shaft excavation

2. Base under permanent column

2. Temporary Base under back prop

2. Install (EW) enabling works underpinning in critical locations. Refer to typical detail for shaft excavation

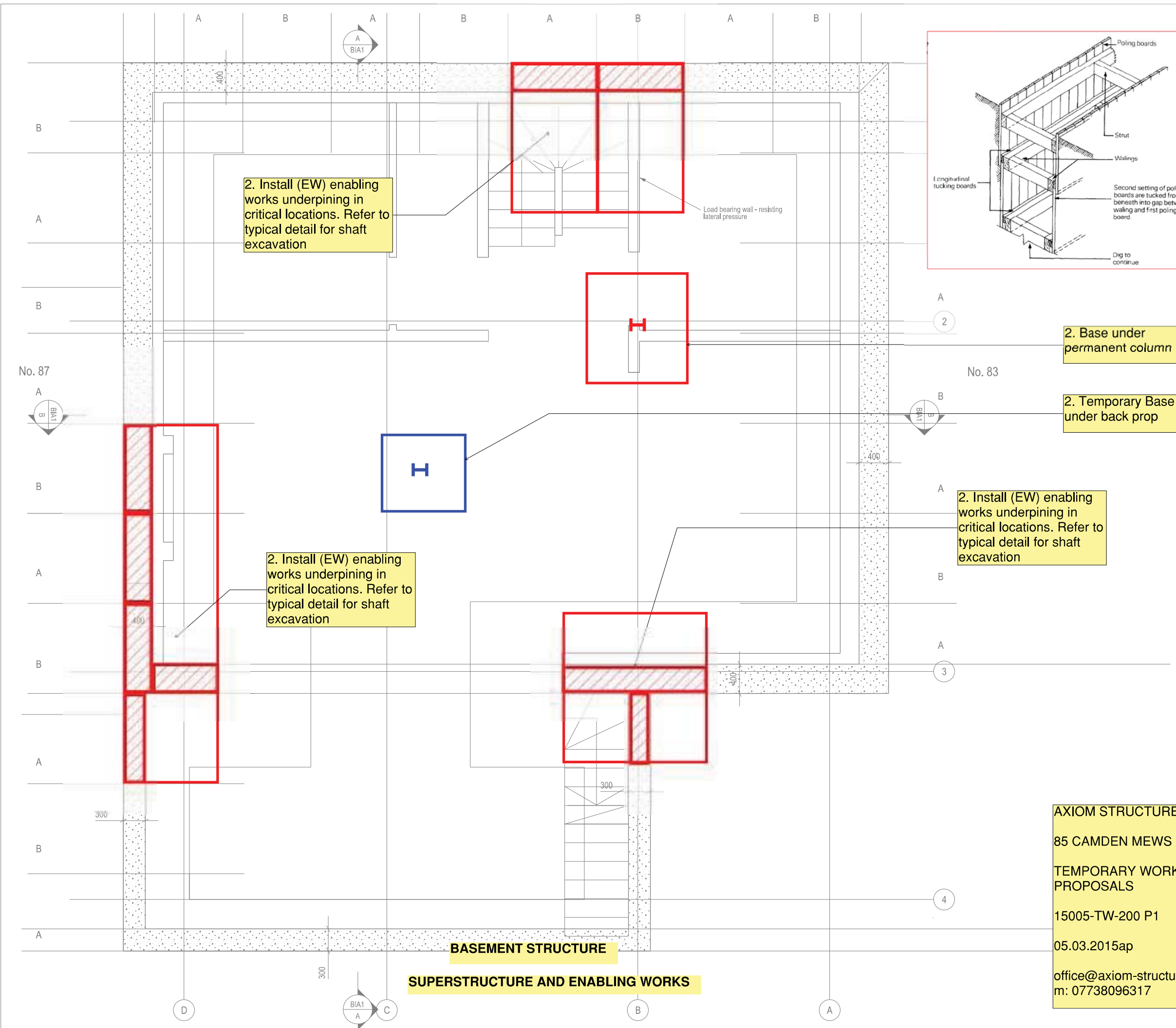
2. Install (EW) enabling works underpinning in critical locations. Refer to typical detail for shaft excavation

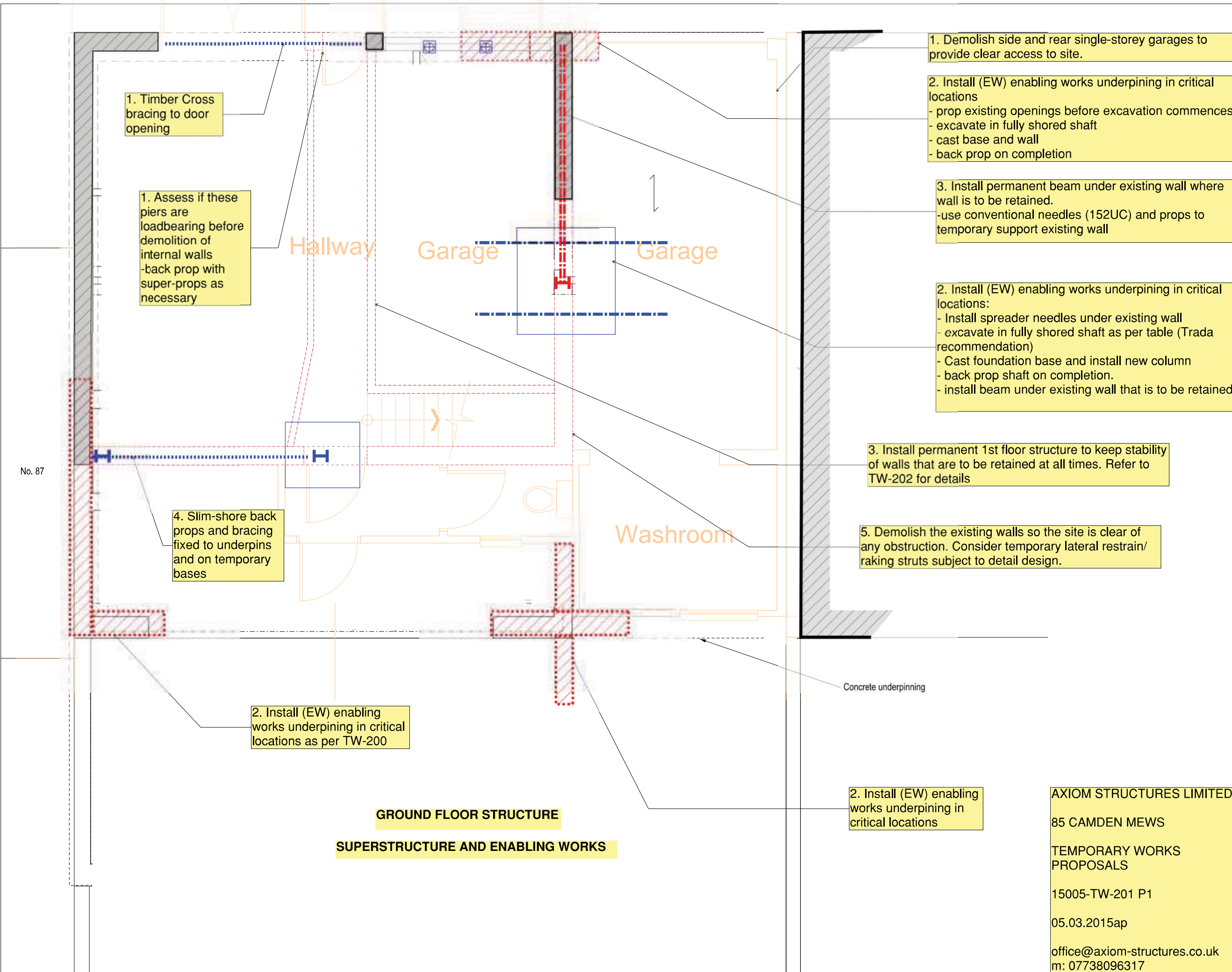
THIS IS A PROPOSED WORKS DRAWING TO SUIT PLANNING CONDITIONS AND IS SUBJECT TO FULL DETAIL DESIGN AND STRUCTURAL CALCULATIONS

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STATUS	DRAWN	CHECKED	
Information	LF	JW	
DRAWING NUMBER		REVISION	
85_CM_BIA_02		A	

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BASEMENT STRUCTURE
SUPERSTRUCTURE AND ENABLING WORKS





1. Timber Cross bracing to door opening

1. Assess if these piers are loadbearing before demolition of internal walls
-back prop with super-props as necessary

4. Slim-shore back props and bracing fixed to underpins and on temporary bases

2. Install (EW) enabling works underpinning in critical locations as per TW-200

**GROUND FLOOR STRUCTURE
SUPERSTRUCTURE AND ENABLING WORKS**

1. Demolish side and rear single-storey garages to provide clear access to site.

2. Install (EW) enabling works underpinning in critical locations
- prop existing openings before excavation commences
- excavate in fully shored shaft
- cast base and wall
- back prop on completion

3. Install permanent beam under existing wall where wall is to be retained.
-use conventional needles (152UC) and props to temporary support existing wall

2. Install (EW) enabling works underpinning in critical locations:
- Install spreader needles under existing wall
- excavate in fully shored shaft as per table (Trada recommendation)
- Cast foundation base and install new column
- back prop shaft on completion.
- install beam under existing wall that is to be retained

3. Install permanent 1st floor structure to keep stability of walls that are to be retained at all times. Refer to TW-202 for details

5. Demolish the existing walls so the site is clear of any obstruction. Consider temporary lateral restrain/raking struts subject to detail design.

Concrete underpinning

2. Install (EW) enabling works underpinning in critical locations

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION:

IN ADDITION TO THE HAZARDS / RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORKS DETAILED ON THIS DRAWING, NOTE THE FOLLOWING:

Significant Residual Risk:

Action to be Taken:

Refer to Health and Safety Plan

NOTES:

REV	DATE	DETAIL	DRN	CHK

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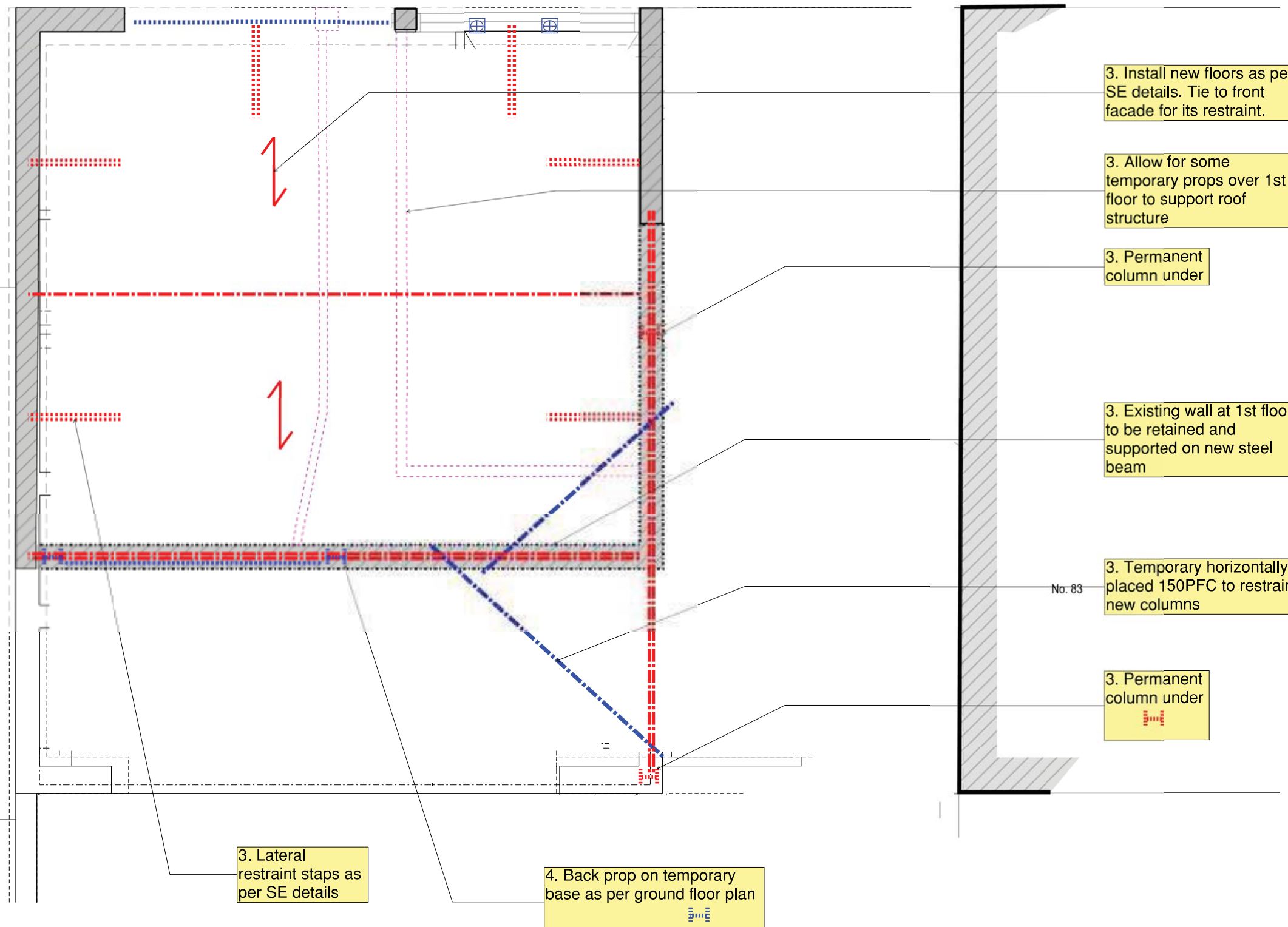
Denotes

	Walls to be retained
	Enabling underpinning in shafts
	Temporary works
	Permanent works as per SE

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FIRST FLOOR STRUCTURE SHOWN ON GROUND FLOOR PLAN
SUPERSTRUCTURE AND ENABLING WORKS

3. Install new floors as per SE details. Tie to front facade for its restraint.

3. Allow for some temporary props over 1st floor to support roof structure

3. Permanent column under

3. Existing wall at 1st floor to be retained and supported on new steel beam

3. Temporary horizontally placed 150PFC to restrain new columns

3. Permanent column under

3. Lateral restraint stays as per SE details

4. Back prop on temporary base as per ground floor plan

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION:

IN ADDITION TO THE HAZARDS / RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORKS DETAILED ON THIS DRAWING, NOTE THE FOLLOWING:

Sprinkler Residual Risk:

Action to be Taken:

Refer to Health and Safety Plan

NOTES:

REV	DATE	DETAIL	DRN	CHK

Walls to be retained

Temporary works

Permanent works as per SE

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85 CAMDEN MEWS

TEMPORARY WORKS PROPOSALS

15005-TW-202 P1

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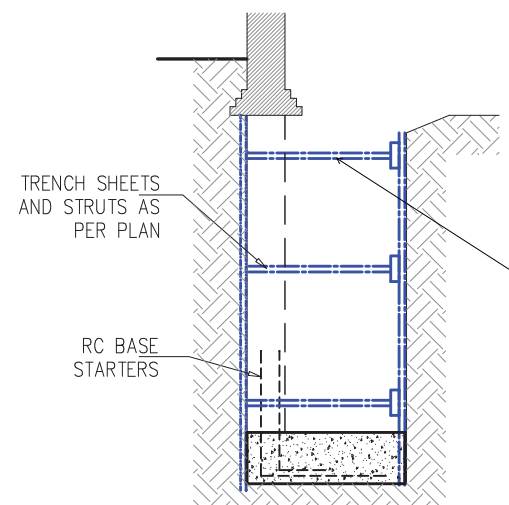
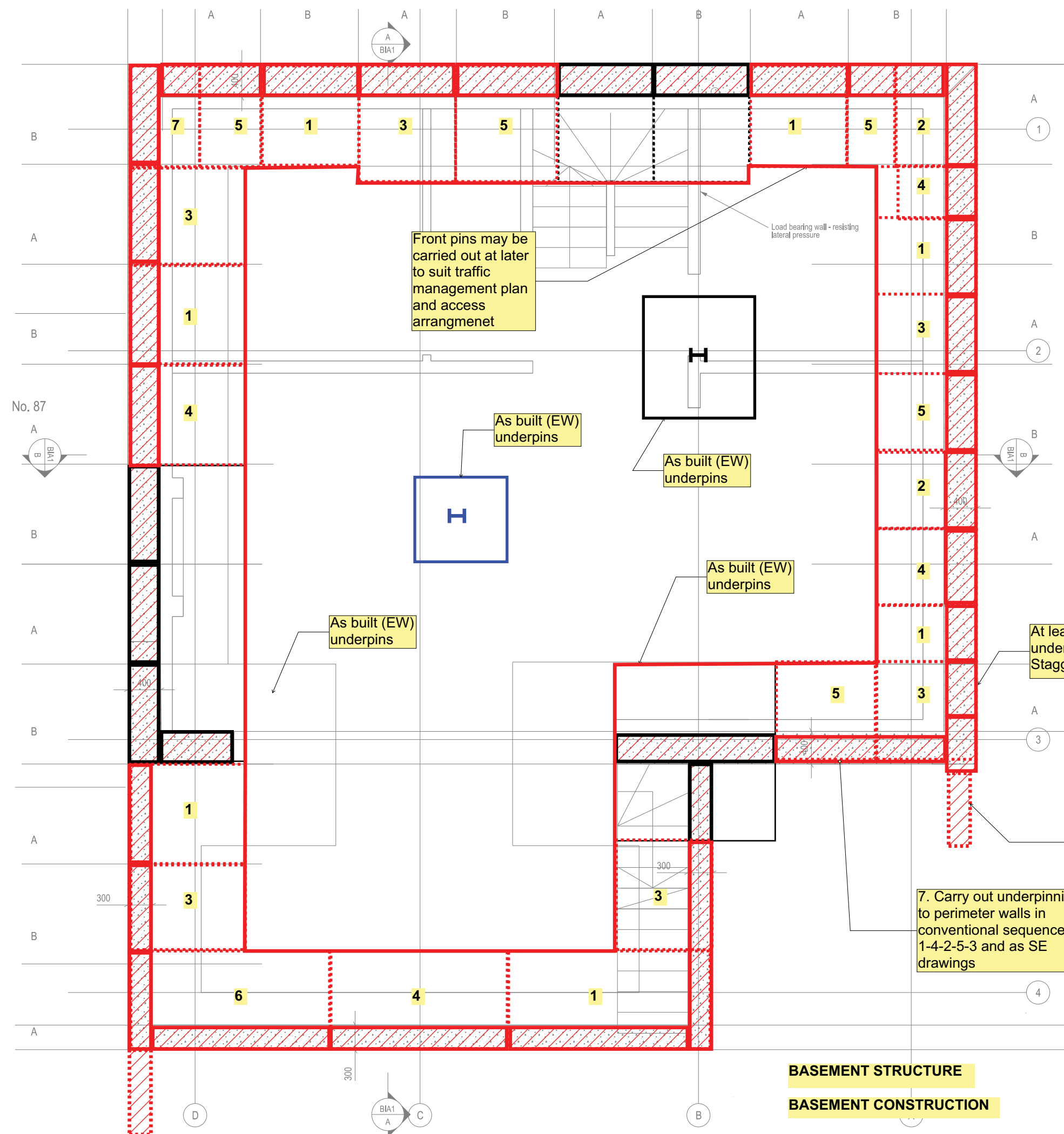
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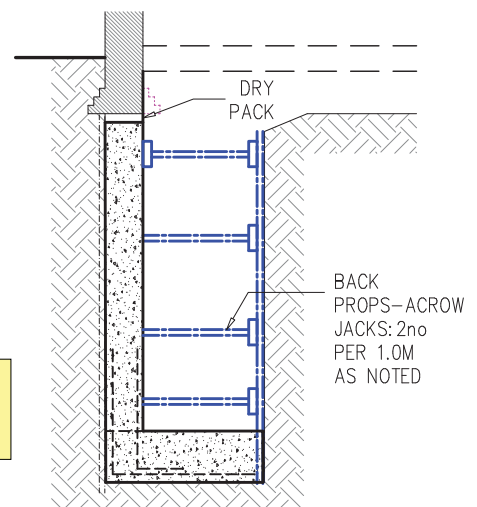
SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION:	
IN ADDITION TO THE HAZARDOUS SUBSTANCES LISTED IN THE PREVIOUS DRAWING, THE FOLLOWING ARE TO BE CONSIDERED:	
Significant Residual Risk:	
Action to be Taken:	



Shaft Shoring: TRADA 1990
 Subject to review of ground conditions on site

- Timber struts = 2x50x150C24 at max. 1.0m vertical crs, spacing(horiz) = 1.2m
- Timber Waling = 225x75C24 at max. 1.0m vertical crs
- 18mm thick ply-board or 225mm wide x 38mm thick timber boards or MGF trench sheets installed at close sheeting to the full width of the 1.2m wide excavation.

TYPICAL SECTION At Junction of 85, 87
 SCALE 1:50 Camden Mews



TYPICAL SECTION At Junction of 85, 87
 SCALE 1:50 Camden Mews

REV	DATE	DETAIL	DRN	CHK
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DRAWING NUMBER	REVISION		
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BASEMENT STRUCTURE
BASEMENT CONSTRUCTION

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As built perimeter underpins in short section. Two Stage as per typical TW-005
 Top and bottom shore to first stage underpinning

TW-01 and TW-02 RMD Mega Shores Push Pull props (high and low level) with s/slim prop jacks (SWL=150kN) at ends or 152UC. Subject to detail design.

Garage structure surcharge the excavation

Underpin Sequence
 A = Nominal 120
 R = Nominal 120

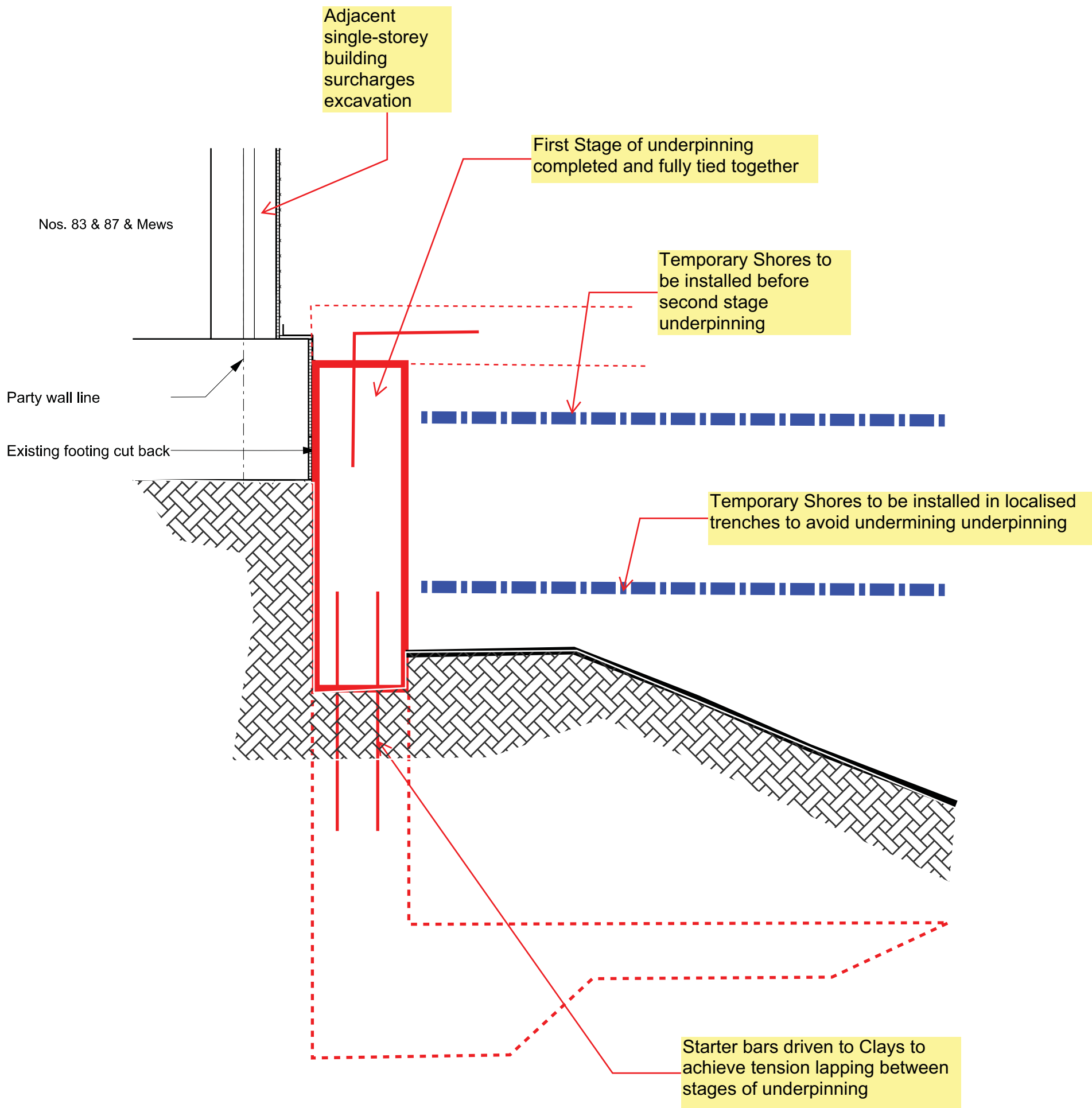
TYPICAL SECTION
 SCALE 1:50
 At Junction of 85, 87 Camden Mews

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PROJECT TITLE 85 CAMDEN MEWS			
DRAWING TITLE Basement Floor Plan: Proposed			
DATE 19.02.15	SCALE 1:25 @A1 1:50 @A3		
STATUS Information	DRAWN LF	CHECKED JW	
DRAWING NUMBER 85_CM_BIA_02	REVISION A		

HIGH AND LOW LEVEL PROPS
BASEMENT STRUCTURE
BASEMENT CONSTRUCTION



A	Detail Section through basement party walls
BIA_03	At Junction of 85, 83 Camden Mews

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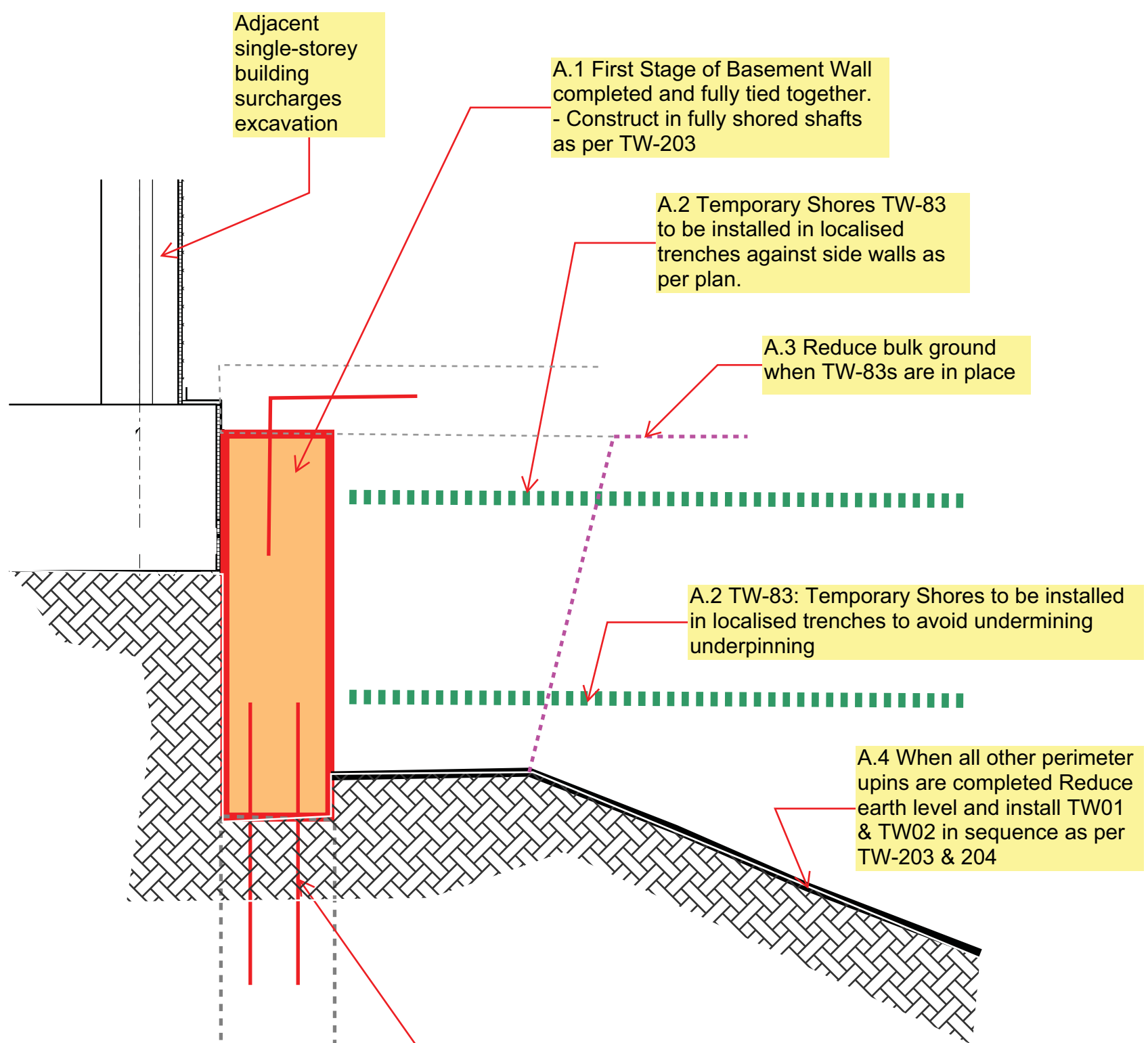
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85_CM_BIA_03	A

PROJECT TITLE	DATE
85 Camden Mews	19.02.15
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Typical Sections: Basement Construction	INFO
	SCALE
	1:20 @A1
DRAWN	CHECKED
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Rev	Date	Revision
A	27.2.15	Underpin pla

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Adjacent single-storey building surcharges excavation

A.1 First Stage of Basement Wall completed and fully tied together. - Construct in fully shored shafts as per TW-203

A.2 Temporary Shores TW-83 to be installed in localised trenches against side walls as per plan.

A.3 Reduce bulk ground when TW-83s are in place

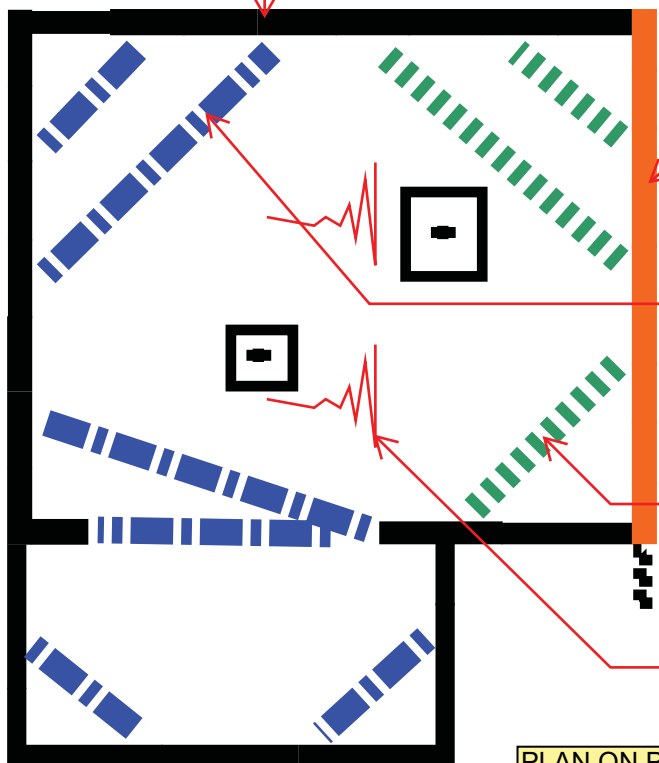
A.2 TW-83: Temporary Shores to be installed in localised trenches to avoid undermining underpinning

A.4 When all other perimeter upins are completed Reduce earth level and install TW01 & TW02 in sequence as per TW-203 & 204

Construction sequence of Basement wall At Junction of 85, 83 Camden Mews

Single stage u/pins as per TW-203

Starter bars driven to Clays to achieve tension lapping between stages of underpinning



Two stage u/pins

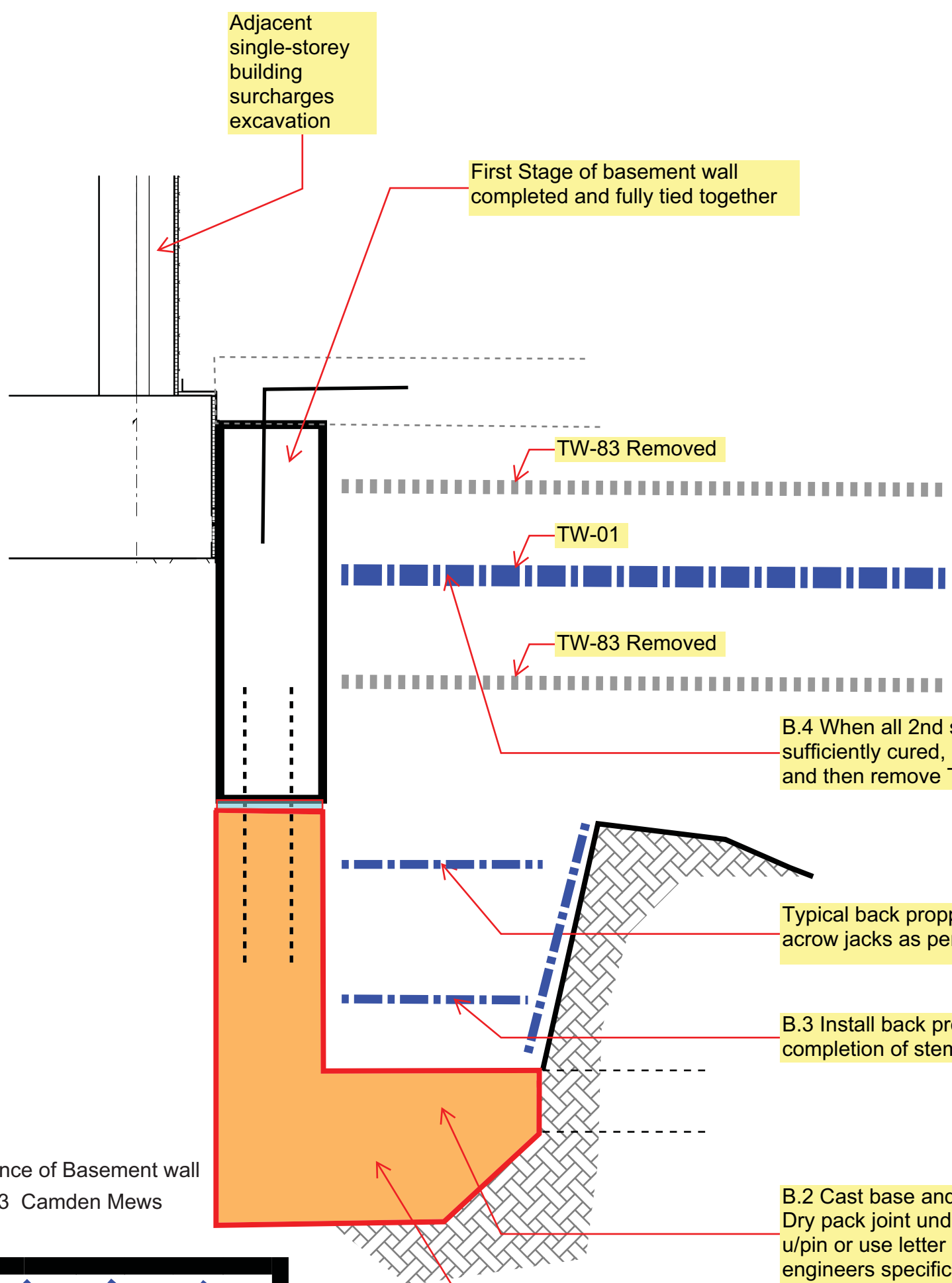
Main TW01 & TW02 as per TW-204, installed up against the as built full depth u/pins

TW83 - Shores to retain first stage underpinning at 83/85 side

Sloping ground to safe angle of repose

PLAN ON PROPS AT 1ST STAGE U/PINS TOWARDS NO 83/85

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Adjacent single-storey building surcharges excavation

First Stage of basement wall completed and fully tied together

TW-83 Removed

TW-01

TW-83 Removed

B.4 When all 2nd stage u/pins sufficiently cured, install TW01 and then remove TW-83

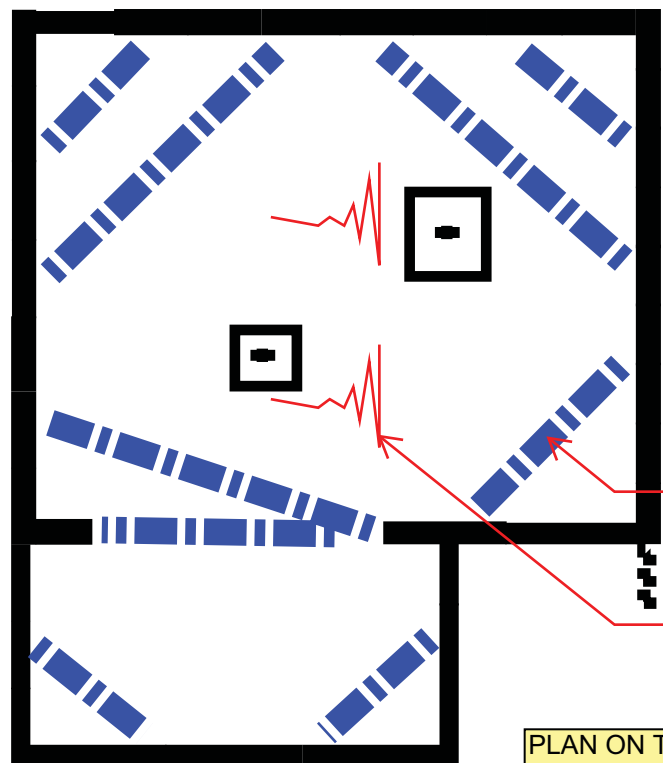
Typical back propping with acrow jacks as per TW-203

B.3 Install back props on completion of stem

B.2 Cast base and then stem. Dry pack joint under stage 1 u/pin or use letter box shutter to engineers specification.

B.1 Excavate 2nd stage u/pins in fully shored localised narrow shafts. individual pins are to be excavated in 1-4-2-5-3 hit and miss sequence.

Construction sequence of Basement wall At Junction of 85, 83 Camden Mews

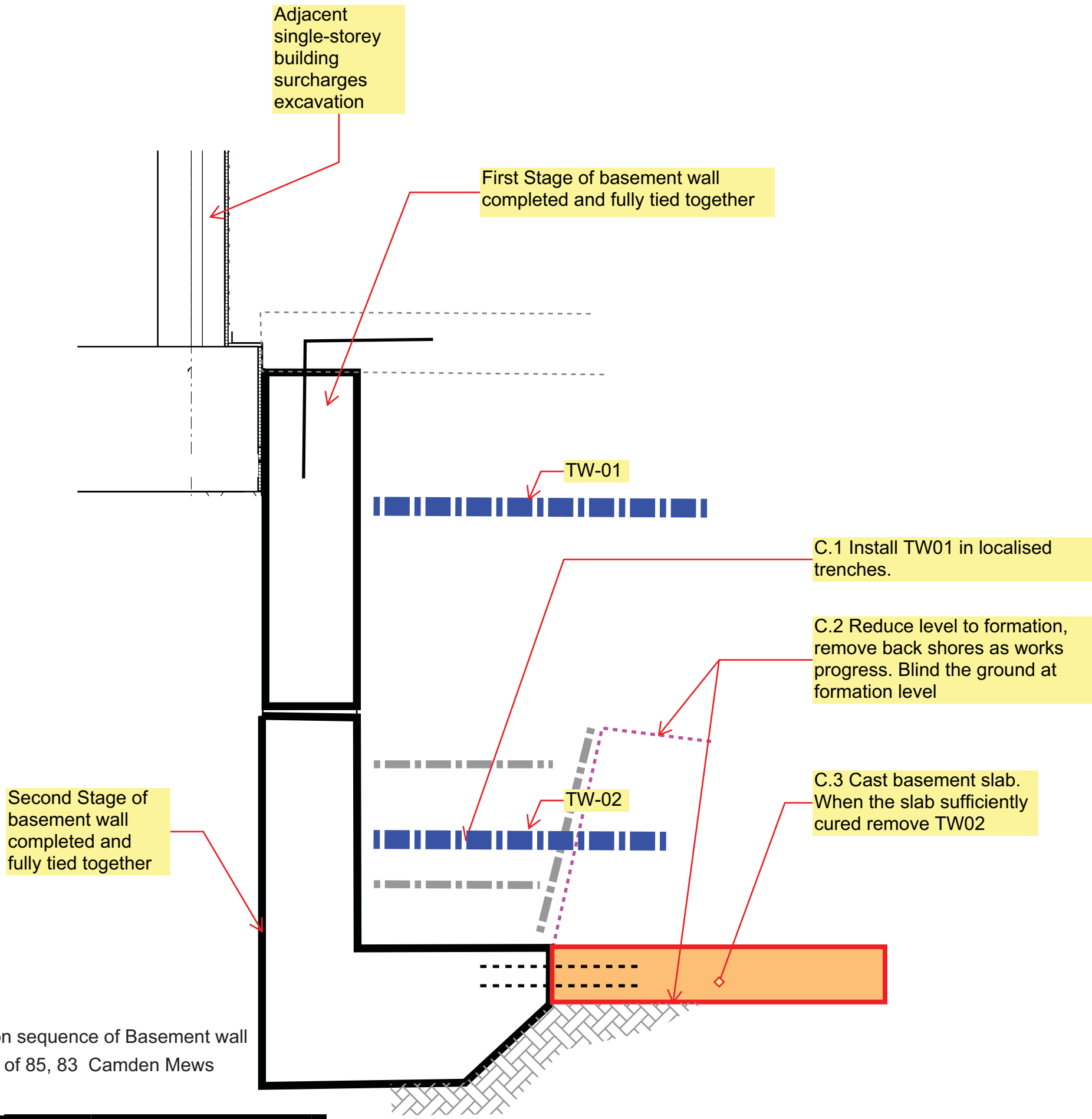


Install TW01 and then remove TW-83

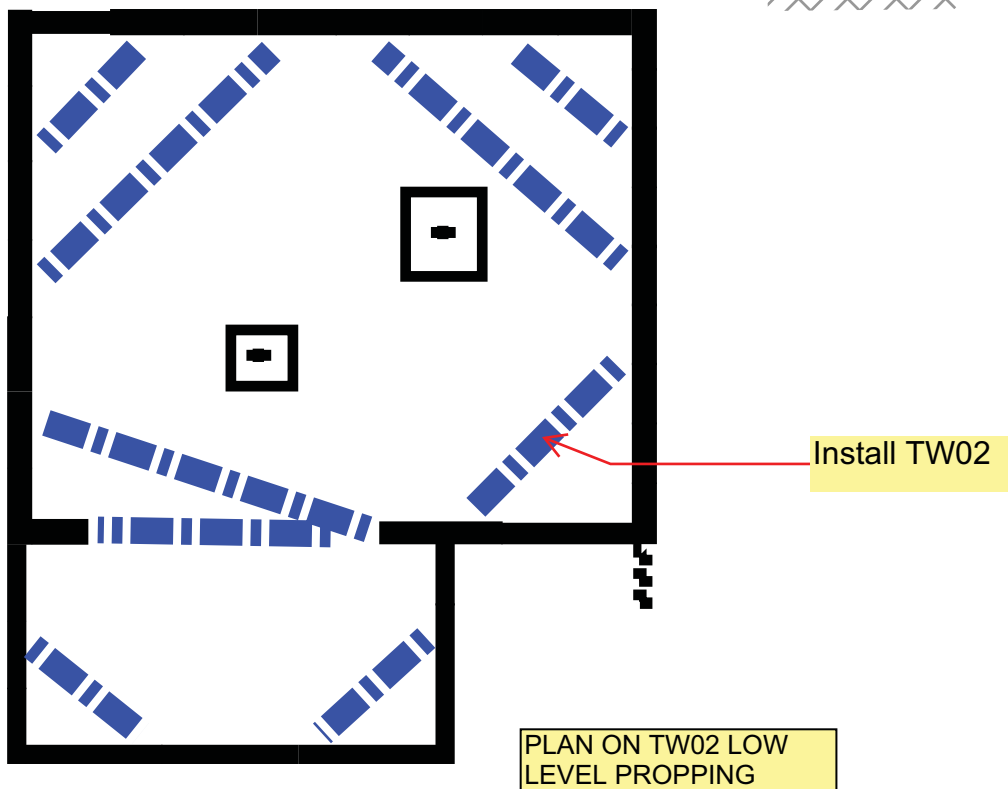
Sloping ground to safe angle of repose

PLAN ON TW01 PROPS WHEN 2ND STAGE U/PINS TOWARDS NO 83/85 ARE COMPLETED

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Construction sequence of Basement wall
At Junction of 85, 83 Camden Mews



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85 CAMDEN MEWS
TEMPORARY WORKS PROPOSALS
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