

28 HARLEY ROAD, LONDON NW3

STRUCTURAL REPORT TO ACCOMPANY PLANNING APPLICATION

1.0 Project Information

- 1.1 The site is located on the west side of Harley Road, London NW3, just to the north of the junction with Wadham Gardens. The existing building is 3 storeys high including rooms in the loft, with a small single storey extension to the rear. Planning permission is being sought for a basement under the footprint of main house only with a light well along the southern flank wall.
- 1.2 Michael Chester & Partners have been appointed to carry out an appraisal of the structural and slope stability aspects of the Basement Impact Assessment (BIA) in line with Camden Planning Guidance CPG4 "Basements and Light Wells".

2.0 Questions arising from CPG4 BIA Slope Stability Screening Flowchart

Following the flow chart for Slope Stability the questions have been evaluated and the responses are as follows –

- Q1: Does the existing site include slopes, natural or man-made, greater than 7 degrees (approximately 1 in 8)?
- No. The site is essentially flat.
- Q2: Will the proposed re-profiling of the landscaping at site change slopes at the property boundary level to more than 7 degrees (approximately 1 in 8)?
- No. The proposed levels around the new building are to remain largely as existing.
- Q3: Does the development neighbour land, including railway cuttings and the like, with a slope greater than 7 degrees (approximately 1 in 8)?
- No.
- Q4: Is the site within a wider hillside setting in which the general slope is greater than 7 degrees (approximately 1 in 8)?
- No.
- Q5: Is the London Clay the shallowest strata on the site?
- Yes. British Geological Survey sheet 256 shows London Clay as the shallowest strata and this has been proved by a site investigation, copy attached in Appendix A as drawing number 15189/SK01.
- Q6: Will any trees be felled as part of the proposed development and/or are any works proposed within any tree protection zones where trees are to be retained?
- No.

Q7: Is there a history of seasonal shrinkage-swell subsidence in the local area, and/or evidence of such effects on the site?

Yes. The building has been underpinned at some stage in the past though it is not known when. There are, however, no obvious signs that the subject building is currently suffering.

Q8: Is the site within 100m of a watercourse or a potential spring line?

"The Lost Rivers of London" by Nicholas Barton indicates two upper tributaries of the Tyburn both running generally north/south, one approximately 100m to 125m to the east of the site and one approximately 100m to 125m to the west. A 1920 geological map generally considered to be more accurate shows the tributary to the west at about 100m distant and the tributary to the east about 250m from the site.

Q9: Is the site within an area of previously worked ground?

No. The site investigation did not encounter any fill materials over the Clay other than those associated with the construction of the underpinning.

Q10: Is the site within an aquifer? If so, will the proposed basement extend beneath the water table such that dewatering may be required during construction?

No, London Clay is not an aquifer, though some minor dewatering may be required for short periods from time to time during construction as a result of water trapped in the top soils and around the existing foundations.

Q11: Is the site within 50m of the Hampstead Heath ponds?

No.

Q12: Is the site within 5m of a highway or pedestrian right of way?

The site is within 5m of a highway and pedestrian right of way but the basement work itself is not. The basement excavations are some 20m from the public highway.

Q13: Will the proposed basement significantly increase the differential depth of foundations relative to the neighbouring properties?

Yes. The foundations to the existing house have been shown to be between 0.5m and 0.6m deep below existing ground level prior to the underpinning. Assuming that founding levels of the adjoining property are similar then foundation depths will be increased by up to 2.5m relative to the neighbouring property.

Q14: Is the site over (or within the exclusion zone of) any tunnels, eg railway lines.

No. The closest Network Rail tunnel runs approximately 70m to the north.

3.0 Slope stability "scoping"

The screening process has identified the following slope stability issue to need further exploration.

Q13: The excavation for the new basement will be approximately 3m deep below current external ground level and this could be approximately 2.5m below the founding level to the neighbour's property. The difference in excavation levels, however, is not considered relevant from a structural point of view as the buildings are not joined so differential movement will not cause structural damage.

4.0 Basement Impact Assessment

- 4.1 The foundations to the existing building have been shown by the site investigation to be between approximately 1.50m and 1.9m below external ground level. Proposed founding level following the construction of the new basement is at about 3.5m below external ground level.
- 4.2 All the walls of the subject property will need to be underpinned to form the basement with the retaining structures being extended out to the south to form the lightwell. This will be done in mass concrete in short lengths in a carefully controlled sequence to ensure that the all structures remain stable and entirely safe at all times. A reinforced concrete retaining wall and slab will be cast in board of the underpinning to complete the basement structure.
- 4.3 Individual sections of underpinning will be designed to be stable with a minimum of temporary propping. This will ease the temporary works requirements and it will help to maintain a clearer site for safer working access.
- 4.4 An assumed construction sequence is summarised on drawing numbers 15189/SK02 to SK04 in Appendix A.
- 4.5 Ground movements as a result of basement constructions are difficult to predict accurately but CIRIA Report 580 and MJ Tomlinson in his book "Foundation Design and Construction" provide guidance on empirical approaches to estimate them. CIRIA 580 states that differential movements are usually more important than total movements and that horizontal movements are usually more damaging than vertical ones. For this reason the two are considered separately below.
- 4.6 It is recognised that some inward yielding of the supported sides of strutted excavations may occur even if structurally stiff props are employed as movements are in large part a function of the supported soils rather than the props themselves. Empirical observations show predicted movements as a ratio of the retained heights and CIRIA 580 indicates a figure of 0.15% for walls wholly embedded in stiff clay such as we have here. The retained height is 3.0m so this gives a figure for the horizontal movement of about 4.5mm.
- 4.7 Similarly, CIRIA 580 provides a figure of 0.1% of the retained height for vertical movements beyond the piling boundary, giving a figure for settlement of approximately 3.0mm.
- 4.8 The settlement profile in cohesive soils is taken to taper to zero in a reasonably linear fashion over about 4 basement depths, so over approximately 12.0m in this instance. Horizontal strains are, therefore, approximately 0.04% which places the damage in Category 0 of Table 2.5 in CIRIA Report 580. Taking in to account the minor settlement also possible as a result of vertical movement it is possible that some damage may occur in Category 1.
- 4.9 Heave as a result of the removal of overburden is not expected to be an issue given the relatively small nature of the excavations. Damage to adjacent properties as a result of these works is, therefore, expected to be minimal.
- 4.10 Based on the above, monitoring of the buildings adjacent to the site is not considered necessary.

Signed,



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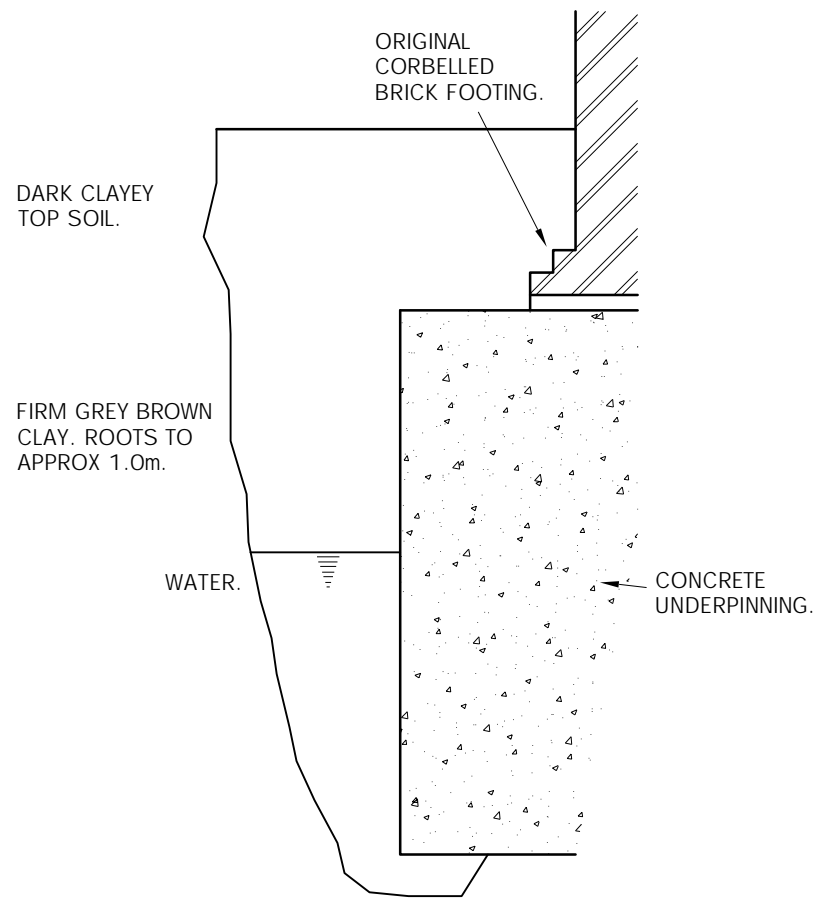
APPENDIX A

28 HARLEY ROAD, LONDON NW3

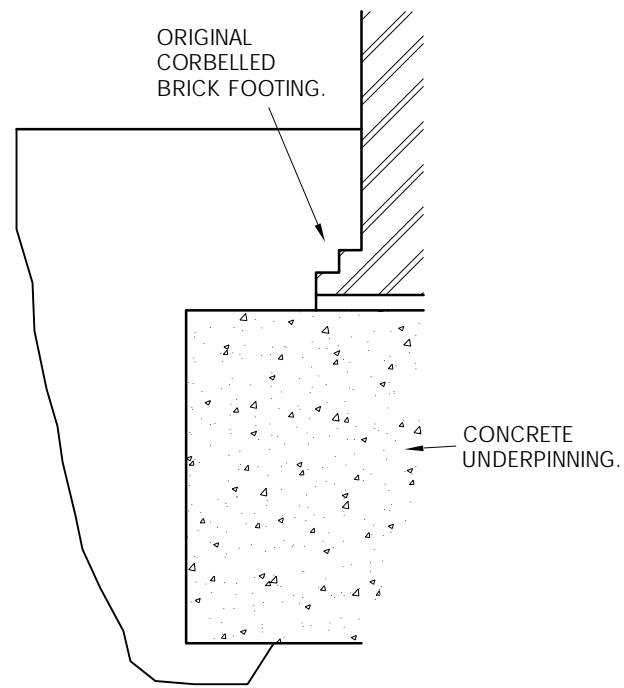
DRAWINGS BY MICHAEL CHESTER & PARTNERS

15189/SK01 Trial pit logs

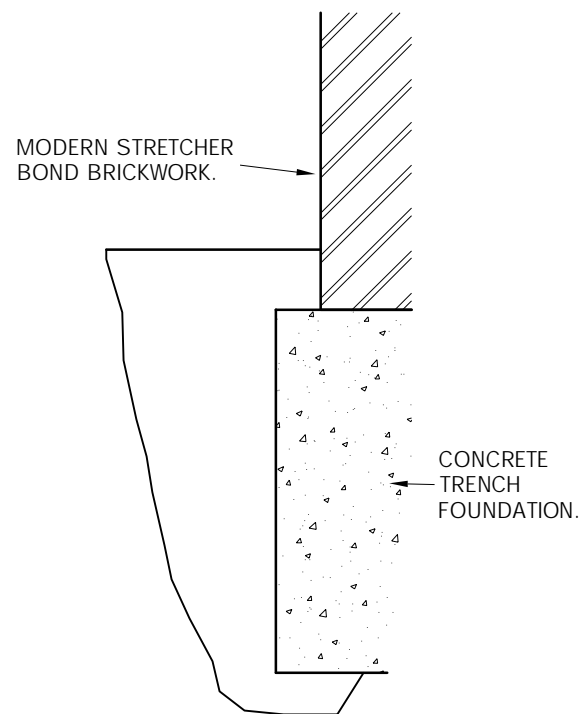
15189/SK02 to SK04 Sequence of Construction



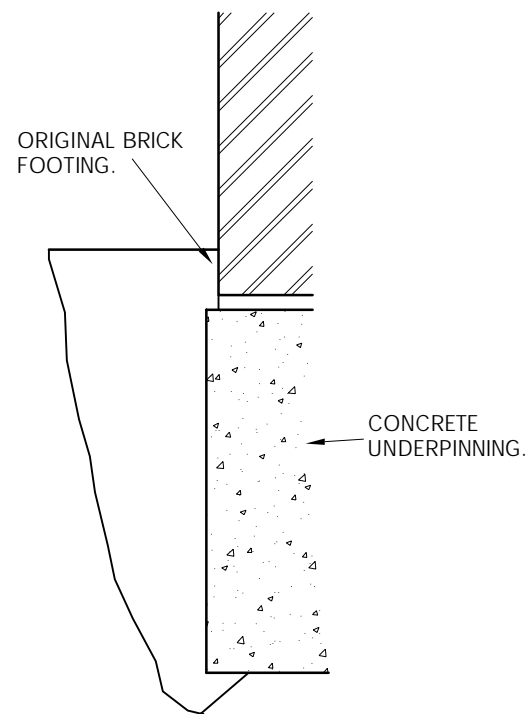
TRIAL PIT TP1



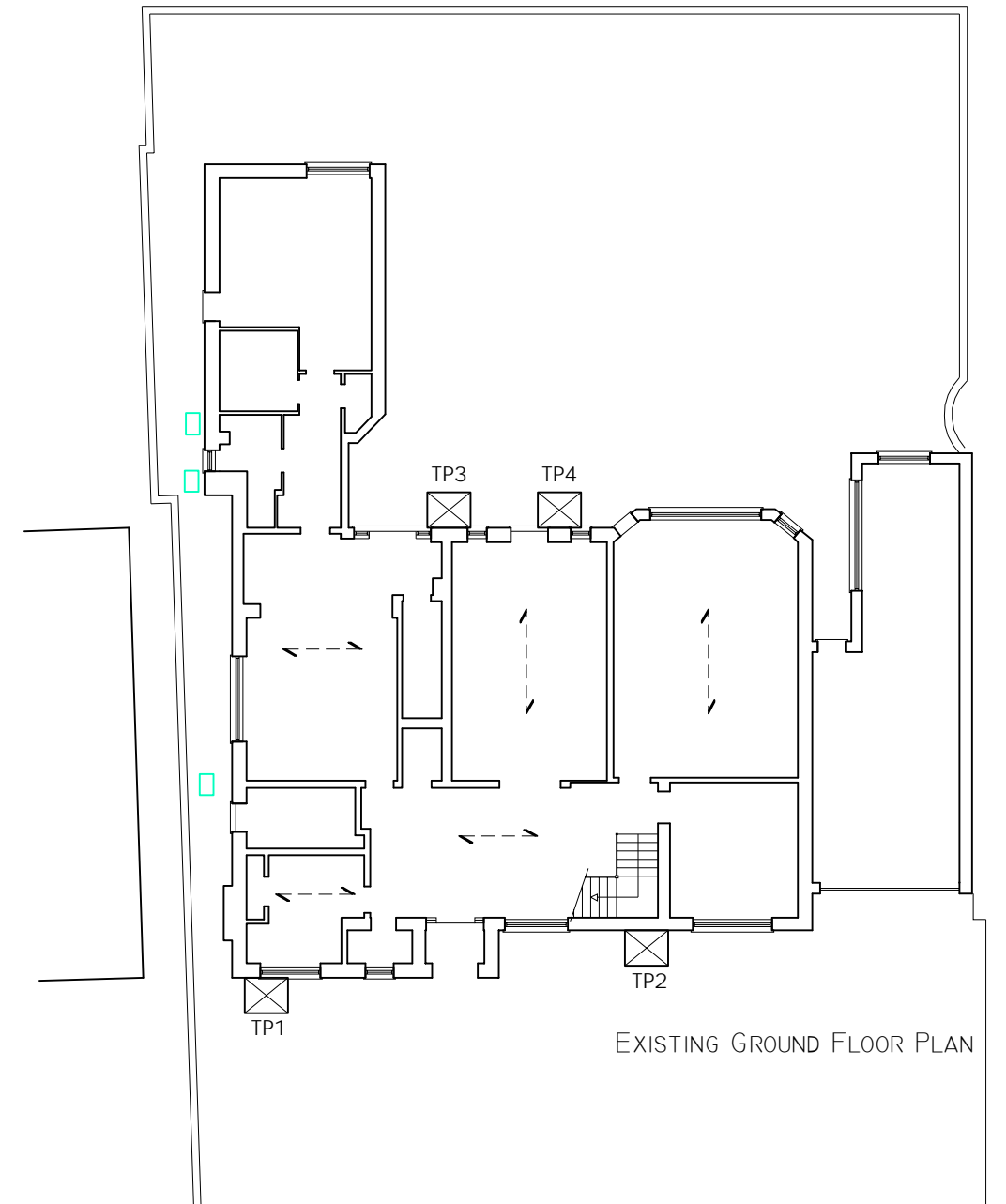
TRIAL PIT TP2



TRIAL PIT TP3



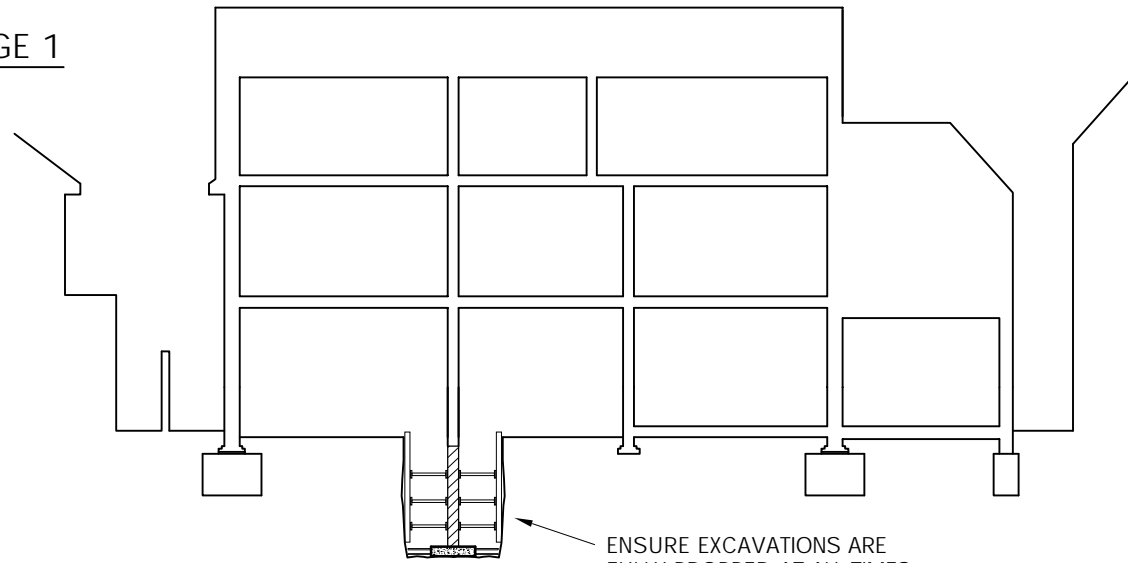
TRIAL PIT TP4



EXISTING GROUND FLOOR PLAN

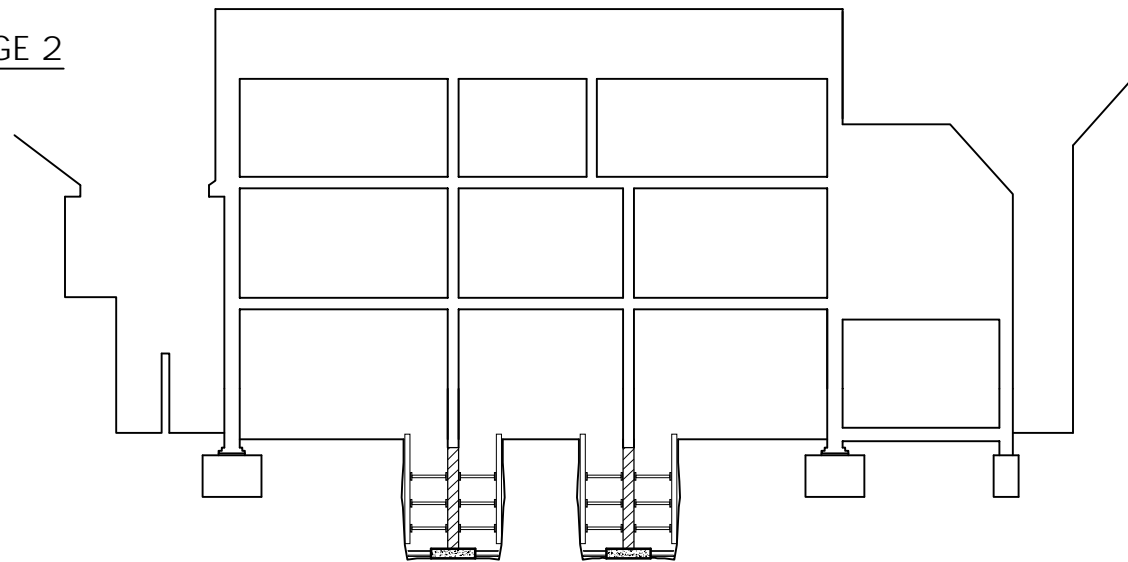
Rev	Date	Alteration			
MICHAEL CHESTER & PARTNERS Consulting Civil and Structural Engineers 8 Hale Lane London NW7 3NX tel 020 8959 9119 fax 020 8959 9662			Date DEC 15	Drg No	Rev
			Drawn DM	15189/SK01	*
			Scale 1:200		
TRIAL PIT RESULTS			Project 28 HARLEY ROAD LONDON NW3		
			Do not scale from this drawing. Dimensions given are in millimetres unless noted otherwise. This drawing must be read in conjunction with all relevant drawings and specifications.		
					A3

STAGE 1

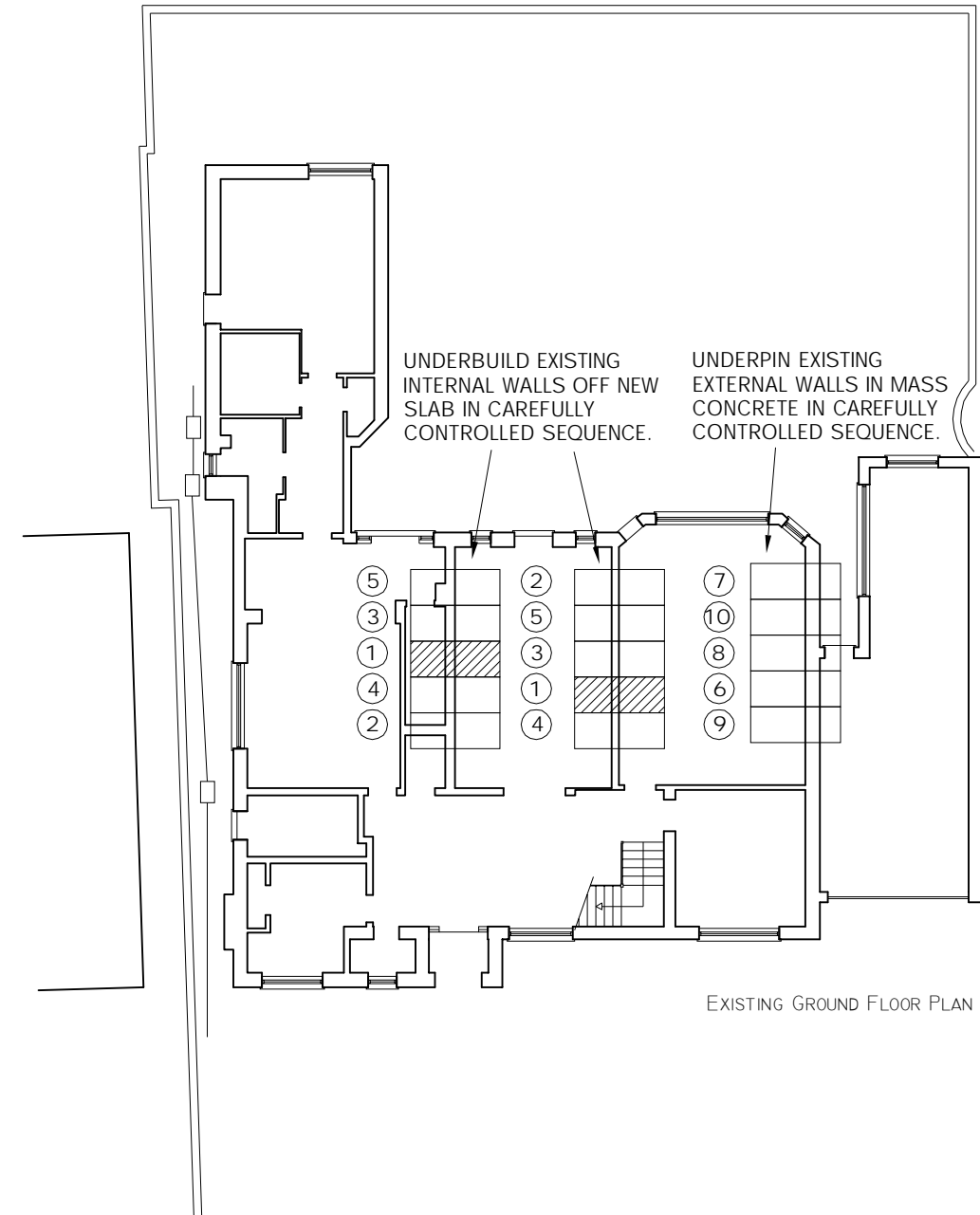
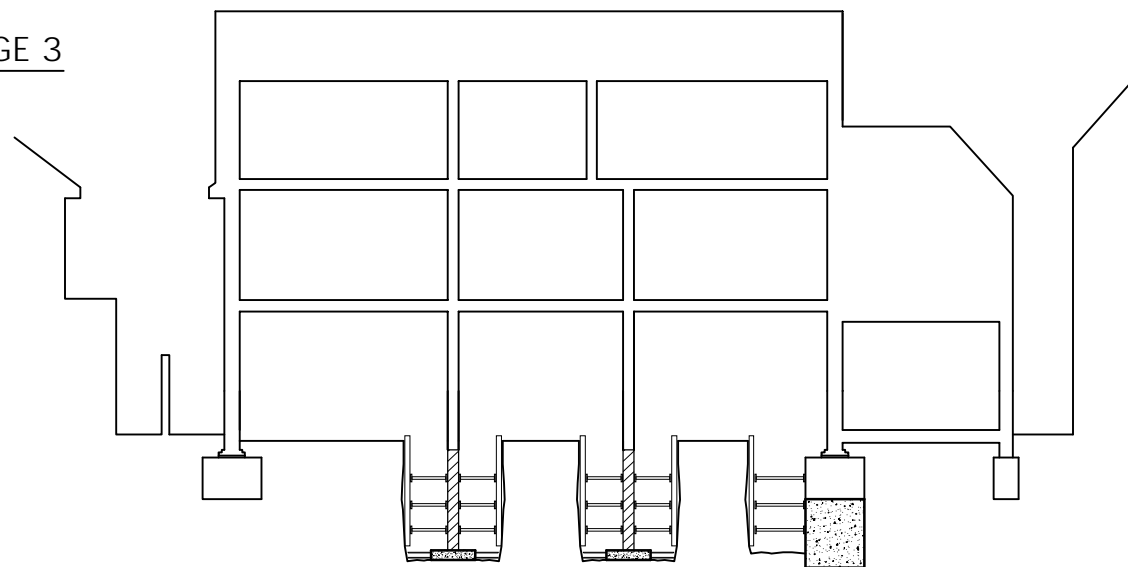


ENSURE EXCAVATIONS ARE FULLY PROPPED AT ALL TIMES TO STABILIZE EARTH FACES AND NEW WALLS.

STAGE 2



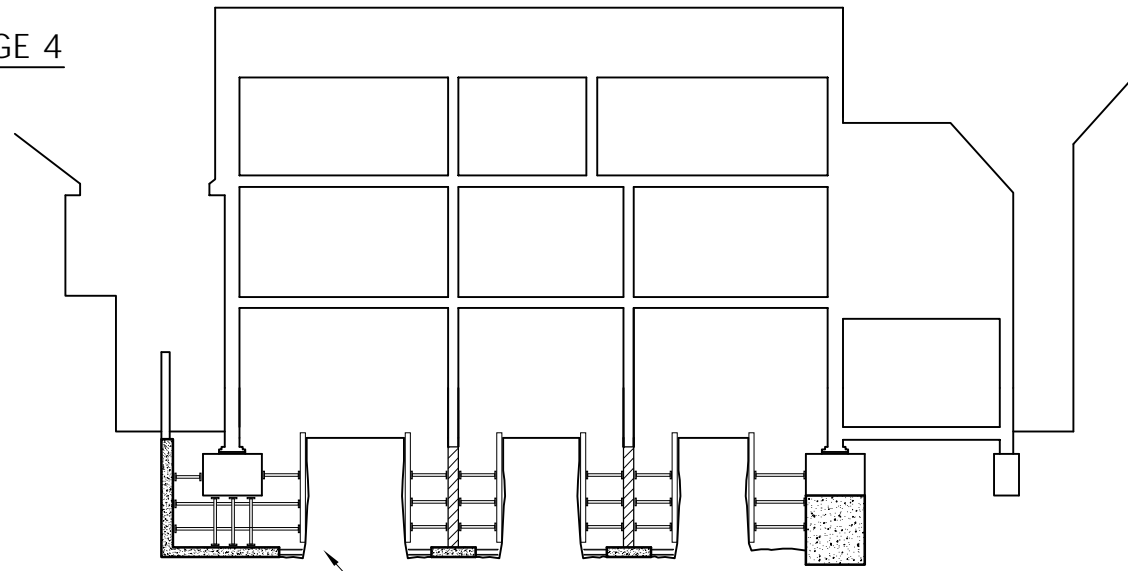
STAGE 3



EXISTING GROUND FLOOR PLAN

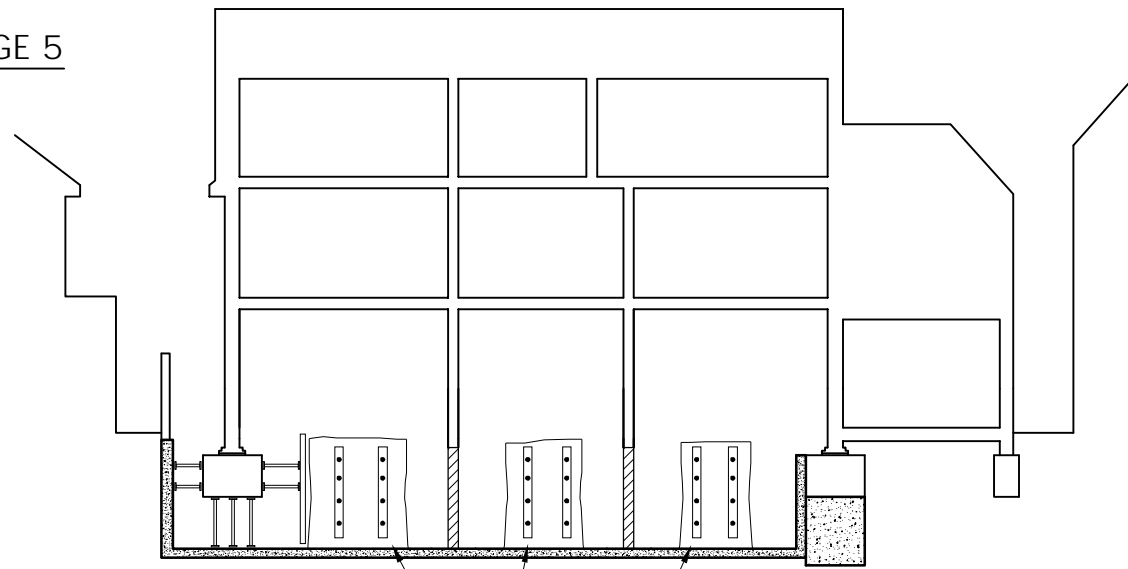
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		Consulting Civil and Structural Engineers		Drawn DM	Drg No 15189/SK02 *
		8 Hale Lane London NW7 3NX tel 020 8959 9119 fax 020 8959 9662		Scale 1:200	
		SEQUENCE OF CONSTRUCTION 1 of 3		Project	
				28 HARLEY ROAD LONDON NW3	
		Do not scale from this drawing. Dimensions given are in millimetres unless noted otherwise. This drawing must be read in conjunction with all relevant drawings and specifications.		PRELIMINARY	
				A3	

STAGE 4

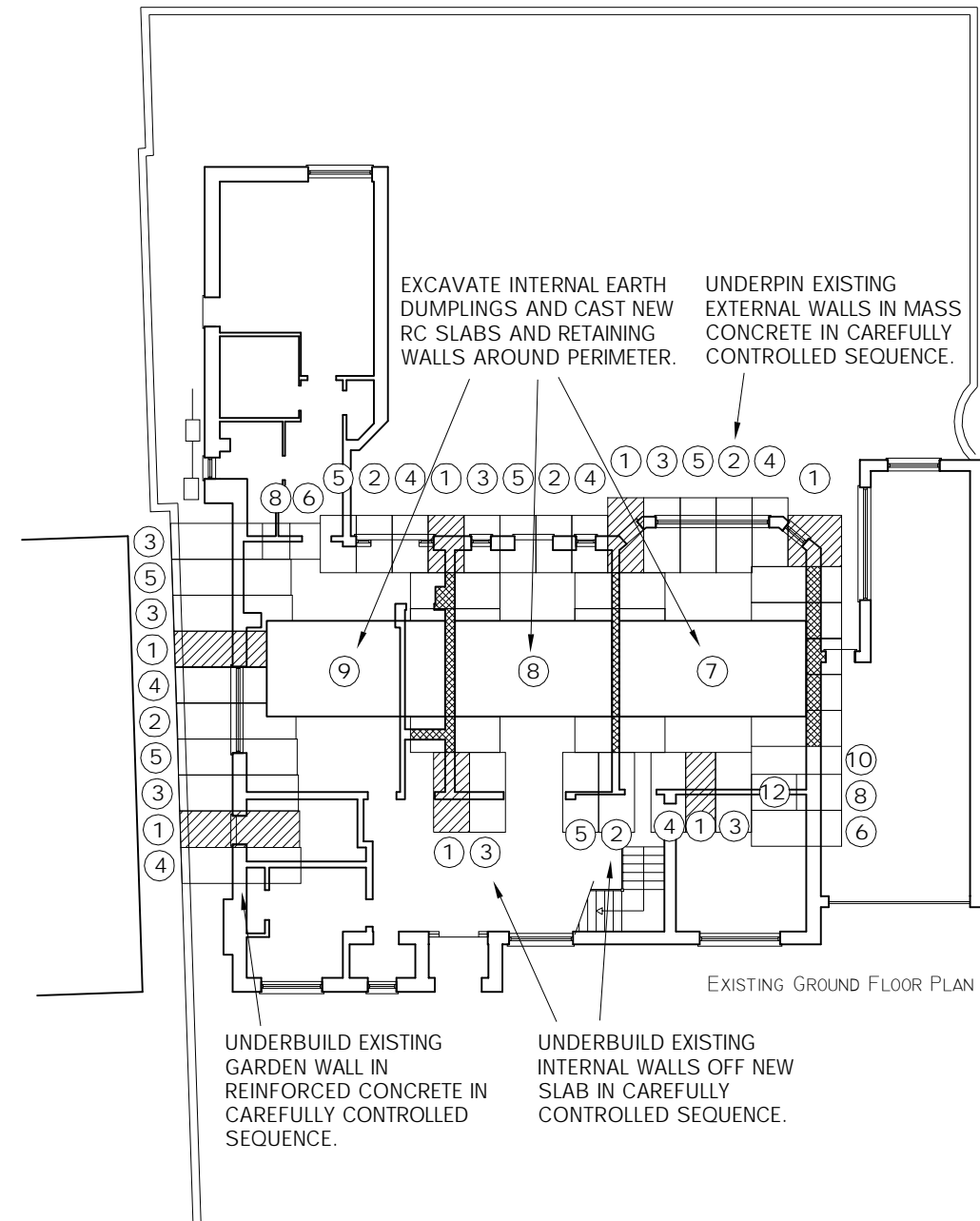


CAREFULLY PROP FLANK WALL OFF NEW SLAB AND BETWEEN EARTH FACE AND RETAINING WALL TO ENSURE STABILITY.

STAGE 5



EXCAVATE EARTH DUMPLINGS ENSURING EXCAVATIONS ARE FULLY PROPPED AT ALL TIMES TO STABILIZE EARTH FACES AND NEW WALLS.



EXCAVATE INTERNAL EARTH DUMPLINGS AND CAST NEW RC SLABS AND RETAINING WALLS AROUND PERIMETER. UNDERPIN EXISTING EXTERNAL WALLS IN MASS CONCRETE IN CAREFULLY CONTROLLED SEQUENCE.

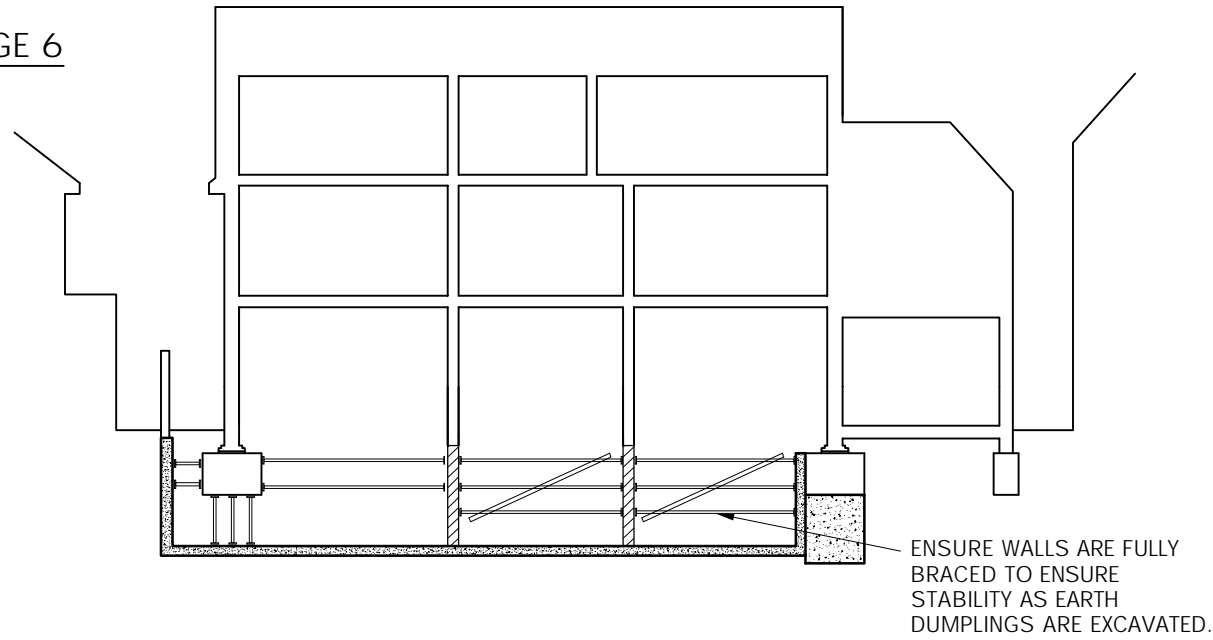
EXISTING GROUND FLOOR PLAN

UNDERBUILD EXISTING GARDEN WALL IN REINFORCED CONCRETE IN CAREFULLY CONTROLLED SEQUENCE.

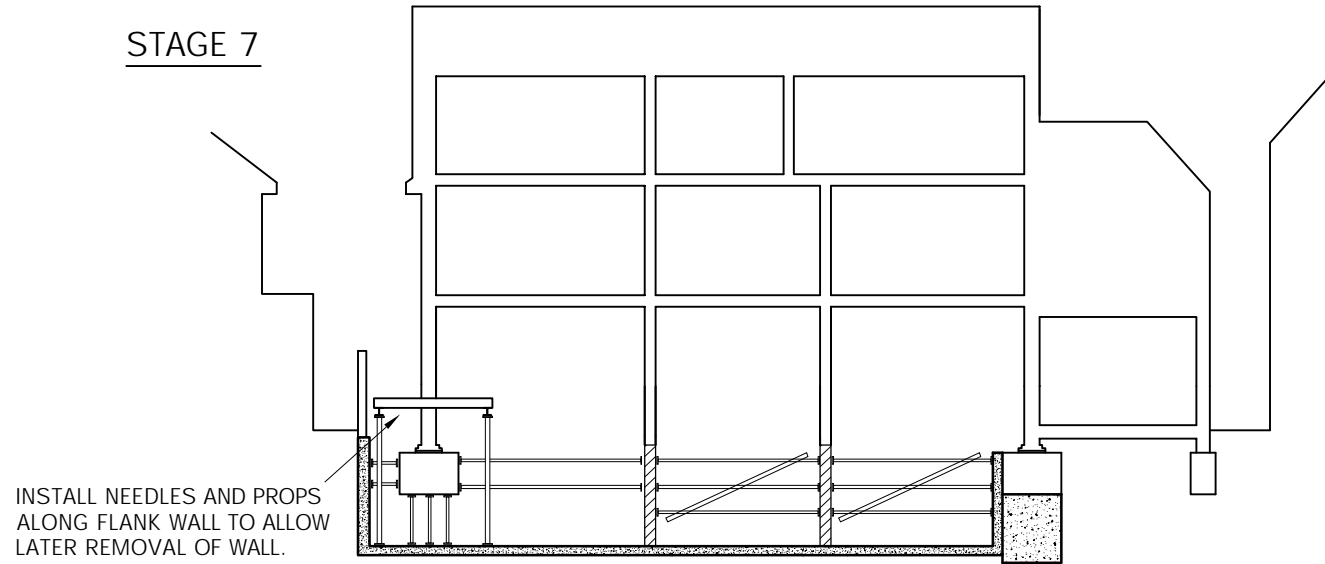
UNDERBUILD EXISTING INTERNAL WALLS OFF NEW SLAB IN CAREFULLY CONTROLLED SEQUENCE.

Rev	Date	Alteration				
<p>MICHAEL CHESTER & PARTNERS Consulting Civil and Structural Engineers</p> <p>8 Hale Lane London NW7 3NX tel 020 8959 9119 fax 020 8959 9662</p>			Date	DEC 15	Drg No	Rev
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			Project			28 HARLEY ROAD LONDON NW3
SEQUENCE OF CONSTRUCTION 2 of 3			PRELIMINARY			A3
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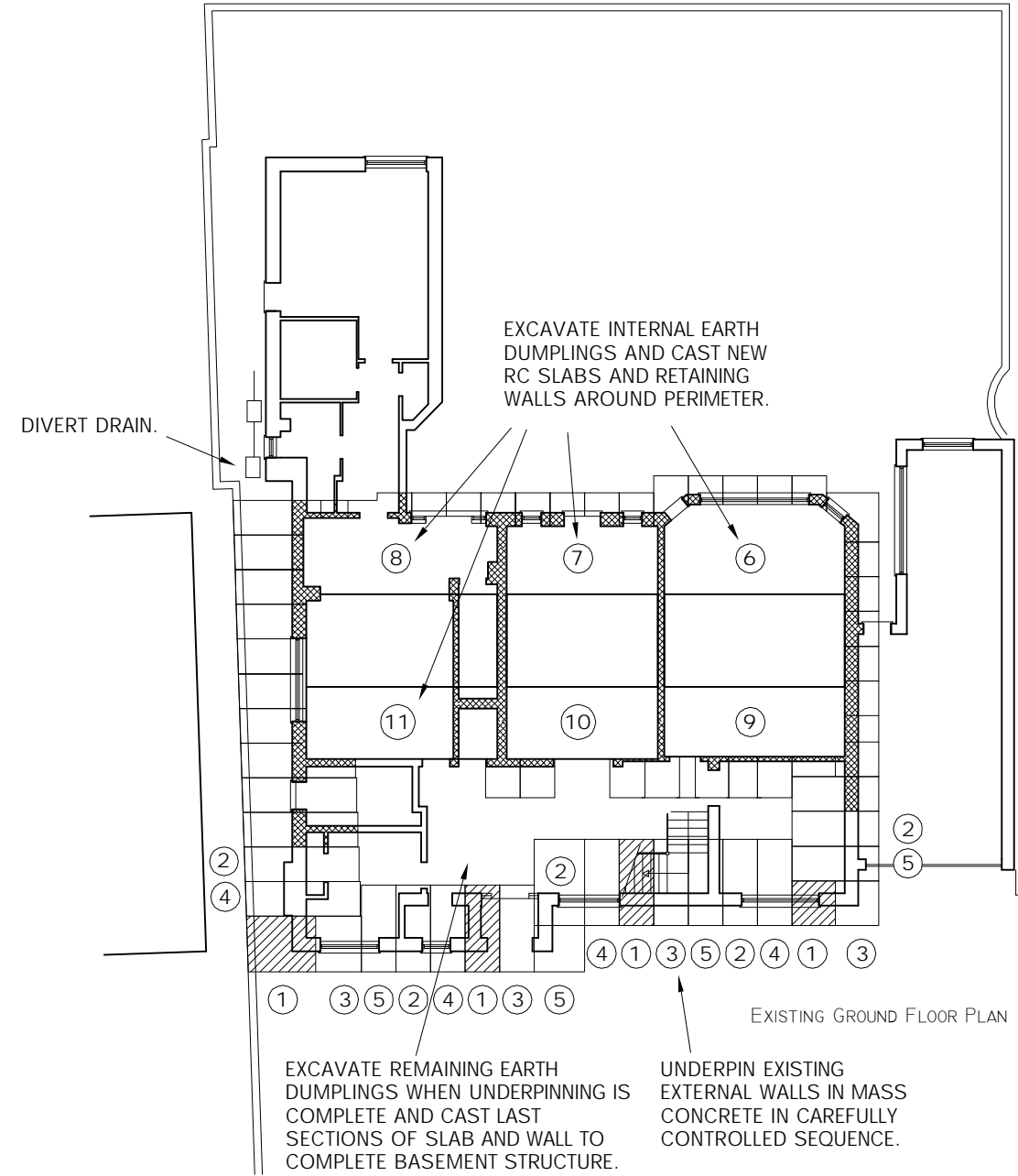
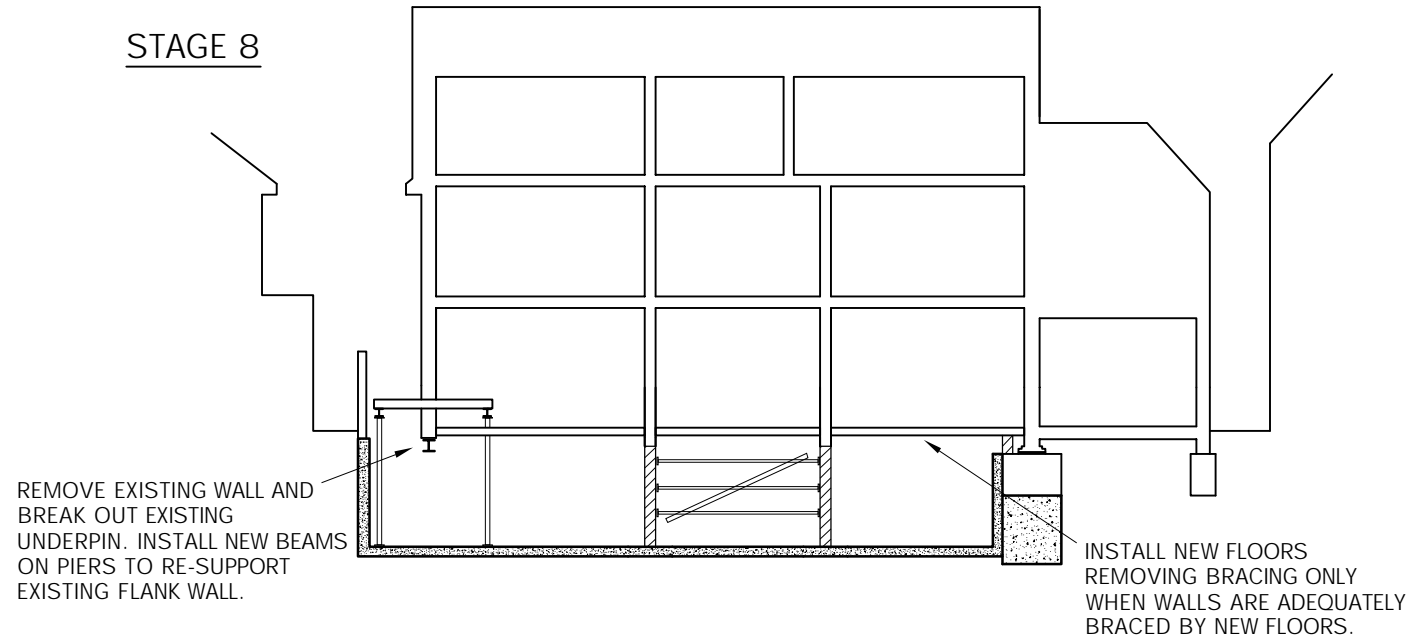
STAGE 6



STAGE 7



STAGE 8



Rev	Date	Alteration				
MICHAEL CHESTER & PARTNERS Consulting Civil and Structural Engineers 8 Hale Lane London NW7 3NX tel 020 8959 9119 fax 020 8959 9662			Date	DEC 15	Drg No	Rev
			Drawn	DM		
			Scale	1:200	Project	
SEQUENCE OF CONSTRUCTION 3 of 3			28 HARLEY ROAD LONDON NW3			
Do not scale from this drawing. Dimensions given are in millimetres unless noted otherwise. This drawing must be read in conjunction with all relevant drawings and specifications.			PRELIMINARY		A3	