Proposed Works to Provide New Basement Below Front Garden, at 42 AVENUE ROAD, LONDON NW8 6HS

INTRODUCTION.

The property is a large four storey detached dwelling probably constructed in the early part of the 20th century.

Basement works have recently been completed below the existing property and under the rear garden.

The new development proposal is to provide basement car garaging within the front garden of the property. Details of the proposals are shown by the relative Greenway Architects drawings.

Existing basements are present below the main house and in the adjacent front garden to no 40 The Avenue.

The purpose of this report / statement is to provide details of the staged BIA as requested by the 'Camden Planning Guidance Basements and Light wells', together with details of the method and sequence of construction.

STAGE 1 - SCREENING FOR BIA

The first stage of the B.I.A. is the identification of any matters of concern which should be investigated. The following follow the three screening flow charts as described in CPG4, which are as follows;

Figure 1. Subterranean (ground water) Flow Screening Chart

Figure 2. Slope Stability Screening Chart

Figure 3. Surface Flow and Flooding Screening Chart.

The 'figures' referred to in the answers are those figures contained within Arup Hydrogeological Report Appendices, and are as follows;

Figure8. Camden Aquifer Designation Map.

Figure 12. Watercourses

Figure 14. Hampstead Heath Surface Water Area and Catchments.

Figure 1. Subterranean (ground water) flow screening chart.

Q1a Is the site located directly above an aquifer ?

NO. See figure 8, site above 'unproductive strata'

Q1b Will the proposed basement extend below the water table surface?

NO. Maximum formation of new basement is at - 6.50m below ground level, site investigation has shown borehole was dry to -15.45m below ground level.

Q2. Is the site within 100m of a watercourse, well or potential spring line?

NO. With reference to figure 12 the site is not within 100m of any of these features.

Q3. Is the site within the catchment of the pond chains on Hampstead Heath.

NO. Refer to figure 14.

Q4. Will the proposed basement development result in a change in the proportion of hard surfaced paved areas.

NO. Basement is below footprint of front garden.

Q5. As part of the site drainage will more surface water than at present be discharged into the ground.

NO. There is no increase in impermeable area at the surface.

Q6. Is the lowest point of the proposed excavation close to or lower than the mean level in any pond or spring line.

NO. There are no nearby ponds or spring lines.

Figure 2. Slope Stability Screening Flow Chart.

Q1. Does the existing site include slopes natural or manmade greater than 7^0

NO.

Q2. Will the proposed re-profiling of the landscaping at site change slopes at the boundary to more than 7^0

NO. There are no re-profiling works.

Q3. Does the development neighbour land have slopes greater than 7^0.

NO

Q4. Is the site within a wider hillside with general slopes greater than 7^0.

NO

Q5 Is the London Clay the shallowest strata on the site.

NO. Site Investigation describes strata as Head Deposits, i.e. Silty sandy gravelly clay which is believed to be the Claygate Beds. This over lays the stiff London Clay

Q6. Will any trees be felled or are any of the works within root zones of protected trees?

YES.

Q7. Is there a history of seasonal shrink swell subsidence in the area? And evidence that this affects the site.

NO. Site examination of buildings did not reveal evidence of subsidence due to shrink / swelling of soils.

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

NO.

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

NO. The site is presently a dwelling within its own land.

Q10. Is the site within an aquifer?

NO. See figure 8, site above 'unproductive strata'

Q11. Is the site within 50m of Hampstead Heath Ponds?

NO.

Q12 Is the site within 5m of a highway or pedestrian Way.

YES. Avenue Road is sited to the front of the property.

Q.13 Will the proposed basement significantly increase the differential depth of foundations to the relative properties.

YES

Q. 14. Is the site over any tunnels?

NO

Figure 3. Surface Flow and Flooding Screening Flowchart.

Q1. Is the site within the catchment of the pond chains on Hampstead Heath.

NO.

Q2. As part of the proposed site drainage will surface water flows be materially changed from the existing route?

NO. The existing surface water routes will not be changed by the development.

Q. 3. Will the proposed basement development result in a change in the proportion of hard surfaced / paved external areas.

NO. The development does not increase the impermeable paved areas.

Q4. Will the basement result in changes to the profiles of the inflows of surface water being received by adjacent properties or downstream watercourses.

NO. The development does not increase the impermeable paved areas.

Q5. Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses.

NO. The presence of the basement structure will not alter the quality of the surface water.

Q6. Is the site in an area known to be at risk of flooding?

YES Camden Planning Guidance on page 29 lists Avenue Road as being flooded in 2002.

Items to be Taken Forward to Stage 2 – Scoping

There are 3 items to be taken forward to the Scoping Stage;

Figure 2. Slope Stability Screening Flow Chart.

Q6. Will any trees be felled or are any of the works within root zones of protected trees?

YES.

Q12 Is the site within 5m of a highway or pedestrian Way.

YES. Avenue Road is sited to the front of the property.

Q.13 Will the proposed basement significantly increase the differential depth of foundations to the relative properties.

YES

Figure 3. Surface Flow and Flooding Screening Flowchart.

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STAGE 2 - SCOPING FOR BIA

Items carried forward from the screening process are identified for potential impact from the proposed scheme and commented upon as necessary.

Figure 2. Slope Stability Screening Flow Chart.

Q6. Will any trees be felled or are any of the works within root zones of protected trees?

YES

Two existing trees are to be retained within front garden, see Landmark Trees Arboriculture Report dated 22 May 2015. Clause 7.3 notes;' Proposals will not have any significant impact on either the retained trees or wider landscape'**.**

Q12 Is the site within 5m of a highway or pedestrian Way.

YES

Sequencing of construction, temporary works to allow construction and permanent design works will take into account highway loadings. This will ensure that there will be no impact upon the use of the public highway.

Q.13 Will the proposed basement significantly increase the differential depth of foundations to the relative properties.

YES

Foundations to neighbouring, but not attached, properties may be founded (subject to existing basements being present) at or around 1.0m below existing ground level. Account of these nearby, higher founded foundations will be taken account of in the design of the basement walls and bases. Existing basements are present under no 42 and in the front garden of no 40.

Prior to works commencing the existing fabric of the neighbouring buildings will be inspected and notes made to identify and record any existing cracks or movement. Monitoring points will be fixed at third points along the party wall, these levelled horizontally and vertically, these would be checked weekly to monitor movement of the party wall.

Differential movements between the underpinned foundations and those on the neighbouring properties will be minimised and controlled through careful structural design and controlled construction, this will ensure that the new works will not structurally impact upon the nearby adjoining property foundations.

Figure 3. Surface Flow and Flooding Scoping Flowchart.

Q6. Is the site in an area known to be at risk of flooding?

YES. Camden Planning Guidance on page 29 lists Avenue Road as being flooded in 2002.

There are no nearby rivers or other water features that would give rise to flooding. The E.A. Flood risk map shows the site to be in zone 1, i.e. no risk of flooding.

This occurred 13 years ago due to surcharge of existing drains during a storm. Clause 6.5 of the 'Camden Flood Risk Management Strategy' note that improvements to the drainage system in this area have been made by Thames Water that are deemed to have solved the probability of local flooding.

No 42 is not at the lowest part of Avenue Road and as such any surcharge flooding to the road will travel away down the road and not have detrimental effect on the basement. The

basement will be protected from water / moisture by an internal cavity drainage layer, (DELTA SYTEM) or similar approved, gravity drainage will not effectively be linked to the basement therefore the external drainage system will not be able to surcharge the new basement.

There will be no increase in surface water output from the property as there is no increase in impermeable areas, the development would not add surface water to any future flooding.

It should be noted that this is not a self contained apartment.

STAGE 3 - SITE INVESTIGATION AND STUDY

The site is assessed as low risk.

A geological desk top study and a site specific borehole have been completed. Site conditions are known to be made ground over the Head Deposits over laying the London Clay. Water seepage was noted at 4.30m below ground level.

STAGE 4 - IMPACT ASSESSMENT

Attribute	Change from baseline	Comment
Geological / land stability	Nil	Ground is flat lying, made ground over firm London Clay.
Hydrogeological	Nil to not significant	The underlying London Clay is effectively impermeable. Any upper made ground will be permeable however any perched water that is in this layer has a path around the proposed development.
Hydrological (surface water)	Nil	There is negligible increase in impermeable area. The lightwell area replace existing areas of hard standing.
Structural to own property	Nil	The existing house has basement foundations that extend down lower than the proposed foundations.
Structural to neighbouring properties / highway	Nil	'The works will be far enough away from the existing lower ground floor foundations to no 44 so as not to have any effect on them.

The impact of the development is considered low and a full geological factual and interpretive report within this BIA is not considered necessary

STRUCTURAL DESIGN PHILOSOPHY

External Walls

External walls not below the roots of the trees will be contigous piles designed as propped cantilevers there wil also be an reinforced concrete lining wall. Both the basement floor and the roof slab act as the props to the piled wall. The walls will be designed using the soil parameters relative to the site. The walls will be designed for a water table at ground level.

The surcharge load allowed on the external walls and roof of the basement will be 10KN/m^2 , or 100KN wheel load, whichever gives the most onerous design case.

Walls below the tree root protection will be reinforced concrete, spanning vertically between the roof and base slab members. The boundary wall to no 44 The Avenue will be constructed this way.

Basement Slab

The slab will be formed in reinforced concrete. It will be designed for uplift due to water or heave pressures from the clay below, or as a clear span as appropriate. Cordek compressible material may be used below the slab to protect ligthly load members from heave. The basement slab will act as a prop to the base of the basement walls.

Design Criteria**.**

Basement walls and bases will be designed using the parameters for the retained soils and bearing soils as indicated by the Site Investigation.. The design is in accordance with BS 8002:1994.

The design will accomodate active and passive earth pressures. Pressure coeficients in the design will adopt ‘ at rest pressures’.

The wall and base in designed for the following

1. Vertical loads from walls above.
2. External walls will be designed with a surcharge load of 10.00KN/m^2.
3. The design adopts a water head behind the wall to ground level.

5Roof slabs will be designed for a surcharge of 10KN/m^2 or a wheel load of 100KN, which ever is most onerous.

The sub soils at new lower ground floor formation level will be London Clay, an SBP of 150KN/m^2 will be used in the design to limit differential foundation movements.

Concrete will generally be grade C35 and Class 2 to BRE Digest 363. Reinforcement will be grade 500N/mm^2.

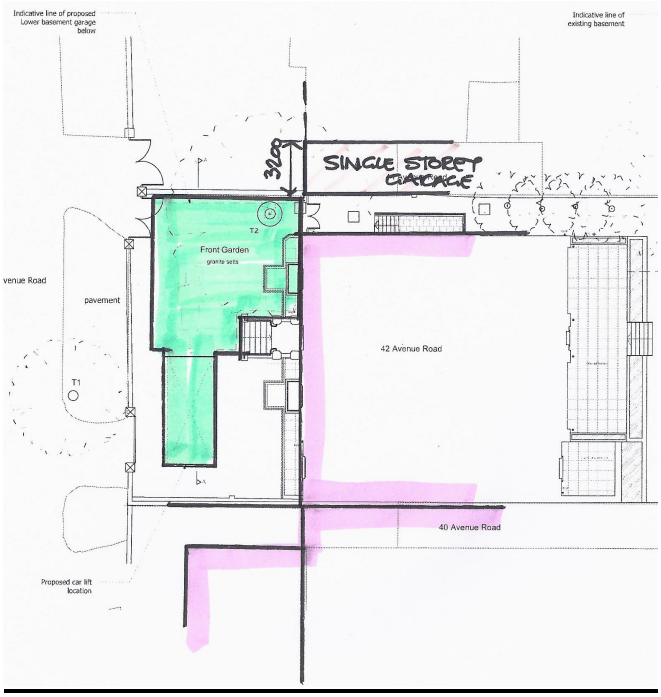
Existing brickwork assumes 7N bricks in a lime mortar, CP.111 gives basic compressive stress for this makeup of 0.45N/mm^2, and therefore allowable bearing stress will be 0.45N/mm^2. Any bearings into existing external or party wall masonry will take account of this allowable stress.

Mortar will be class (ii) or (iii) as required.

Relevant Codes of Practice and British Standards

B.S. 8002	Code of Practise for Retaining Walls
B.S. 8004	Code of Practice For Foundations
B.S. 6031	Code of Practice For Earthworks
B.S. 8110	Structural Use of Concrete
B.S. 5750	Structural Use of Steelwork in Buildings

PREDICTION OF DAMAGE TO SURROUNDING PROPERTY



Existing basements are present in no's 42 and 46 Avenue Road and the new works will not undermine these structures.

The main property of no 44 in 3.2m away from the boundary with no 42 where the works will take place, no 44 also has a lower ground floor and these works to no 42 will no undermine the foundations to the main property of no 44.

The single storey garage to no 44 Avenue Road is adjacent to the works to no 42 and will be undermined by the works.

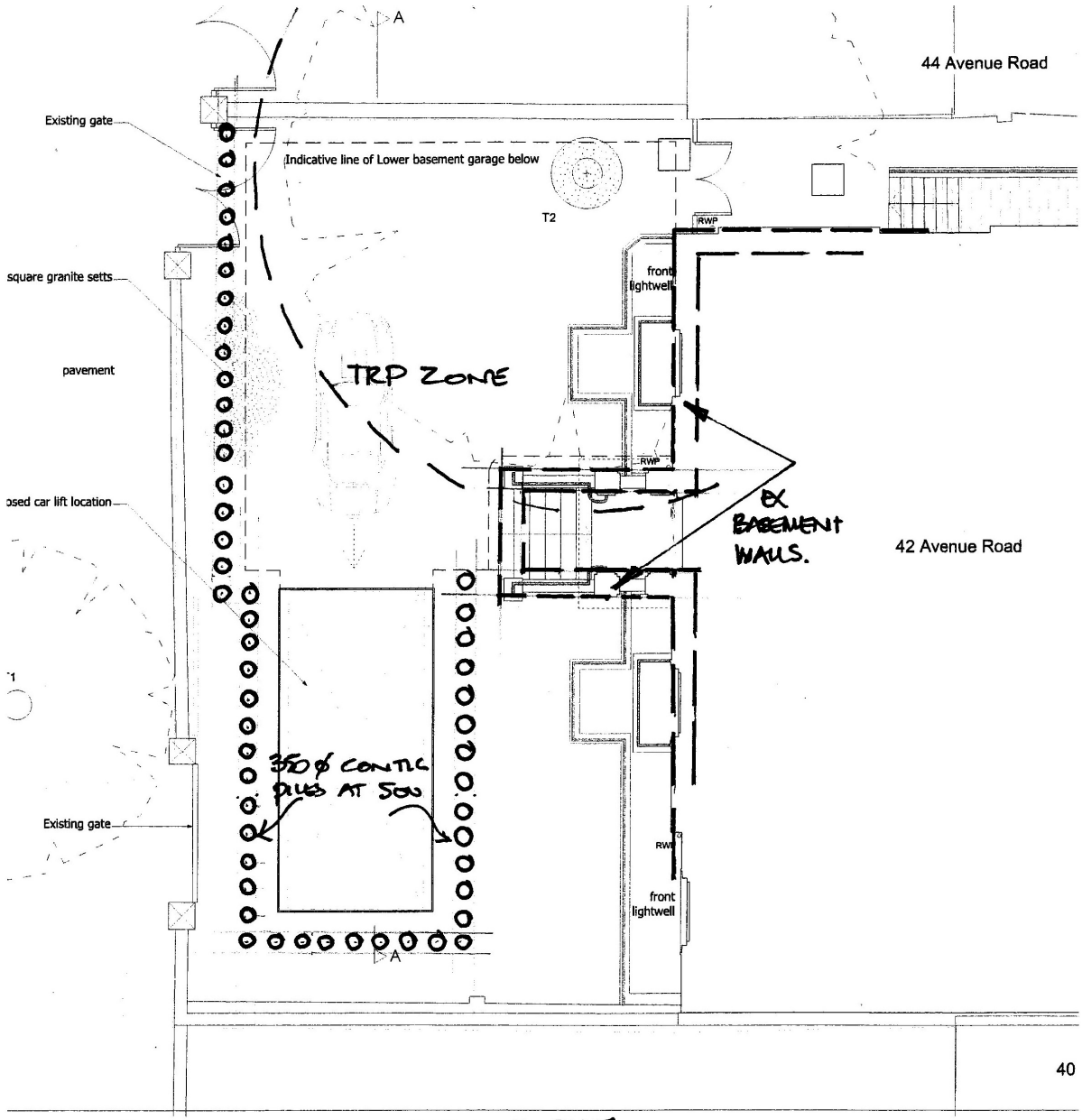
Works to form the basement garage will be carried out below the protected root zone. Works will be sequenced in short sections, soil faces will be continually temporarily laterally or vertically propped to avoid movement of soil during the construction stage. Permanent works will be designed to resist both pressures from the soils or structural loads from nearby buildings as appropriate.

Strict control of the construction method together with the structural design will limit any potential damage to the adjoining garage to categories 0 (nil) or 1 (slight) of the Burland Scale. Or none, or at worst, 'aesthetic' as described by the BRE document for movement in buildings.

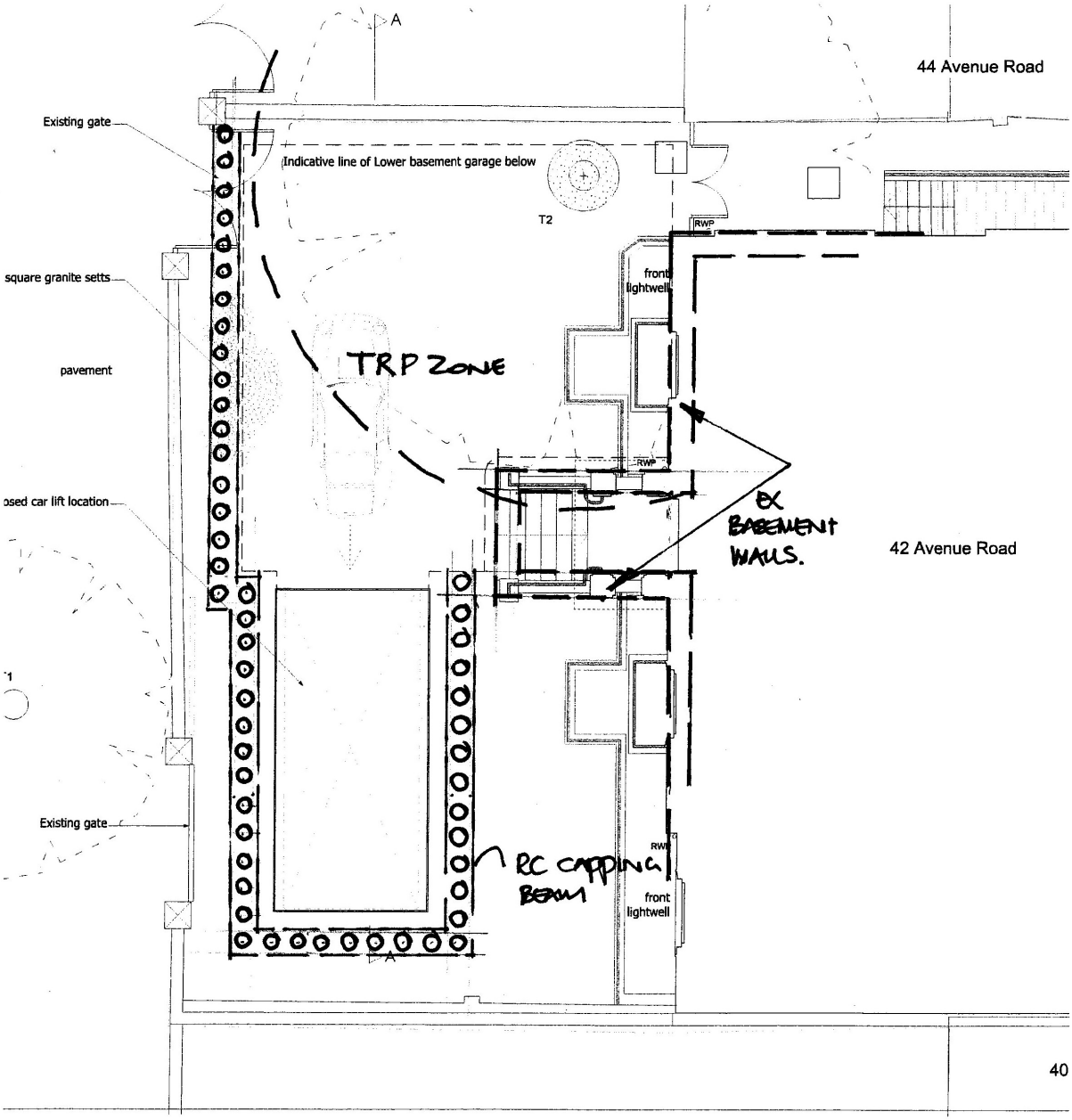
CONSTRUCTION SEQUENCE

1. Site set up will include a hoarding to the front garden; placement for skips will either be made within the front garden or on the public highway subject to Camden approval.
2. The site is only accessible from Avenue Road, and therefore all site deliveries and operations will take place from here. This entrance will be manned throughout operational hours by a banksman to ensure construction deliveries do not pose a risk to other users of Avenue Road.
3. Construct site hoarding, entrance gates to provide protection to passers-by from site operations. Site accommodation including welfare facilities will be confined to the main building throughout the site works.
4. Terminate / protect any incoming services temporarily divert any active drainage.
5. Install any tree protection measures as necessary.
6. Install enclosed skip to front on property and install conveyor to remove excavated soil to discharge soil into skip.
7. Prepare piling platform and commence piling around perimeter of basement.
8. Walls, bases and roof sections will be formed in an agreed sequence, preliminary sequence as shown below
9. The below slab drainage for ground water, sumps and pumps will then be installed prior to the base slab construction.
10. The basement slab (ground – bearing slab) will then be constructed.
11. After the new basement and roof slabs have cured, the cross propping will be removed.
12. A drained – cavity layer will be laid to the slabs and walls.

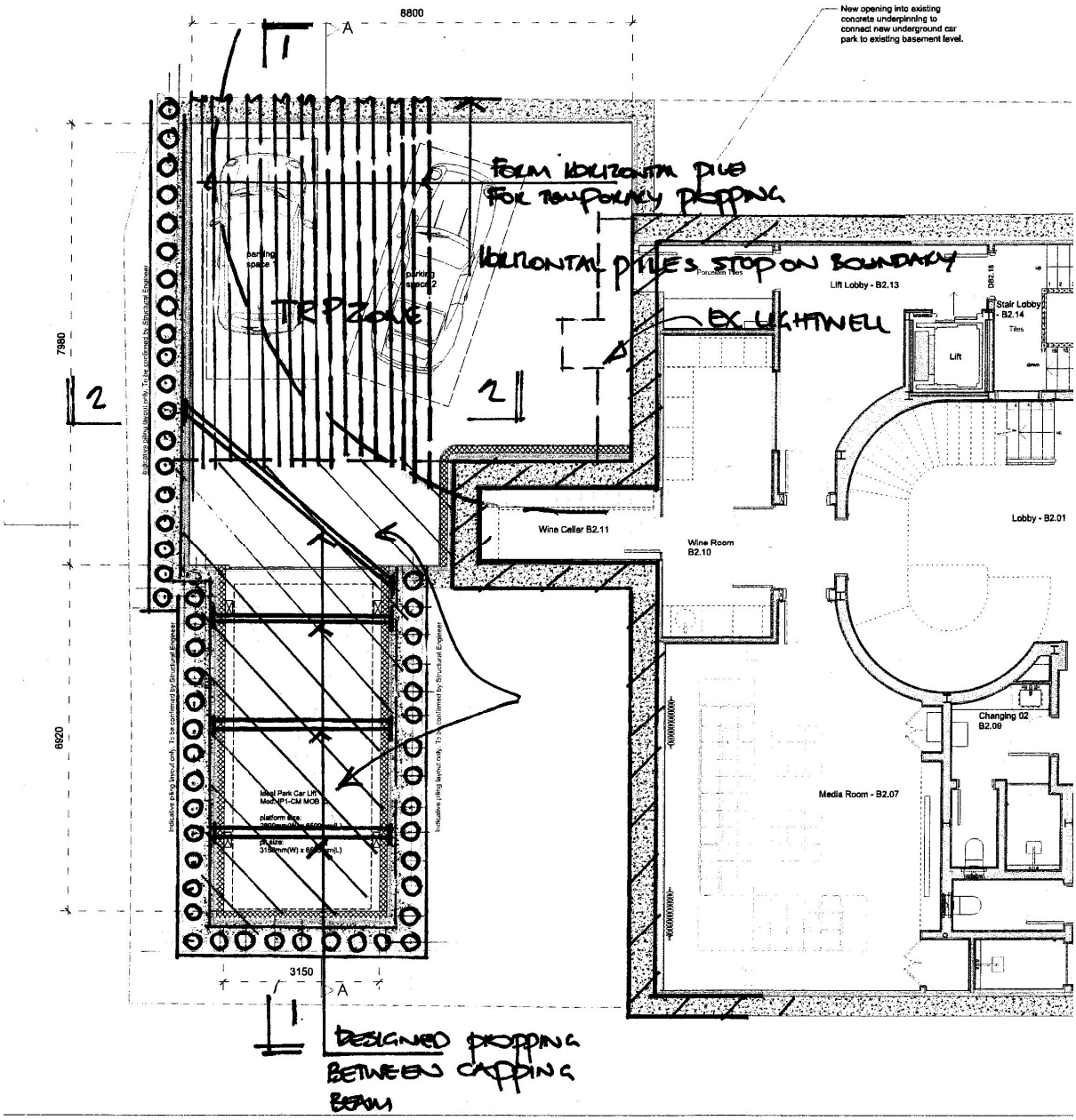
PRELIMINARY SEQUENCE



1. PILING MAT LAID. SET OUT PILES
2. FORM CONTIGUOUS PILES TO SPECIALIST DESIGN
   ASSUME 350ø AT 500 c/c.
   PILES WILL BE DESIGNED IN TEMPORARY CONDITION)
   TO BE CANTILEVER.; PROPPED AT CAPPING BEAM.



3. EXCAVATE & FORM REINFORCED CONCRETE CAPPING BEAM
4. ALLOW CAPPING BEAM TO CURE EXCAVATE TO DESIGNED DEPTH ALLOWING PILES TO ACT AS PURE CANTILEVER. INSERT PROP BETWEEN CAPPING BEAM



5. PROPS TO CAPPING BEAM IN PLACE, COMMENCE BULK EXCAVATION TO RL1.


CAPPING BEAM
HORIZONTAL PILES
Root Protection Area. See Arboricultural repor
2400
Garage
SECTION 1 — 1
0
2.5m
6. PART REDUCE TO RL1, FORM HORIZONTAL TEMPORARY PILES