O2 Masterplan Site, Finchley Road

Basement Impact Assessment

September 2022

Prepared for Landsec (Finchley Road) by Pell Frischmann

Landsec

Pell Frischmann

O2 Finchley Road

Basement Impact Assessment

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2	S4	Post audit revision	July-22	K.Stone /J.Bret	K Stone	A Gaftea
3	S4	Detailed plots updated	Aug-22	J Bret	A Gaftea	M Hitchens
Ref. reference. Rev revision. Suit suitability.						

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Non-Technical Summary	
Site Name	The O2 Masterplan Site
Location	The Site is located in Finchley, within the London Borough of Camden (LBC). It is approximately 5.7 ha in size and currently comprises the O2 Centre, which is arranged over three floors and contains a cinema, a mix of retail units, restaurants and cafes, a health club, a community room and a Sainsbury's store; hard-standing, which is used as a car-park with space for 520 vehicles and a Homebase store, and to the western part of the Site are two purpose-built car showrooms and a builder's merchant.
Development proposal	The three buildings that form part of the detailed planning application, N3E, N4 and N5, will include localised basements within their proposed footprints. The proposed buildings will be of in-situ RC frame construction, with the basement areas constructed within an open excavation with the exception of N3E which will require temporary support for excavation. One of the areas considered in the outline application is currently occupied by the existing O2 Centre. Within the building's footprint, there is an existing half basement with retaining walls on the north and eastern elevations. Consideration is being given to lowering the base slab by 1.0m. The current elevation of Finchley road is 55m AoD and the existing basement extends to 48m AoD. The proposed basement deepening would make the total depth of the basement 8m below the level of Finchley Road.
Ground Conditions	The geology of the area consists of the bedrock of the London Clay Formation present over the whole site. An intrusive investigation has been completed by RSK Ltd. and a factual report has been issued. The borehole logs confirm the presence of the London Clay and record variable thickness of Made Ground across the site.
Screening & Scoping	The screening process identified a number of potential issues which have been carried forward to the scoping stage. The scoping stage identified the potential impacts shown by the screening process to need further investigation. The potential impacts of each of the matters of concern identified in the screening are identified and addressed with appropriate mitigation measures being recommended.
Basement Impact Assessment	A Basement Impact Assessment has been undertaken using best practice methodology in accordance with Camden Planning Guidance: Basements (January 2021). The BIA concluded that the proposed works for the detailed plots N3E, N4 and N5 and the existing basement of the O2 Centre, will not result in any specific issues relating to land or slope instability, detrimental effect on the local hydrogeology and hydrology of the site, nor to have any adverse impact on neighbouring infrastructure. Building damage resulting from ground movements are qualitatively assessed as Category 0. It is however recommended that monitoring points are installed on the existing basement wall and /or levelling points on the adjacent roadways, to verify the anticipated negligible impact of the works on adjacent infrastructure. Similarly, for the construction of block N5 over the existing Thames Water sewer, a ground movement monitoring regime will be in place as part of the build-over agreement. It is noted that the impact of construction works on Thames Water infrastructure is the subject of a separate detailed assessment. With regards to outline plots N3, N6 and N7, these are of sufficient distance from existing infrastructure that open excavations are likely to be feasible with negligible impact but if required, supported excavations will be undertaken. For plot S8, rail infrastructure to the south and existing buildings to the west and north lie within the zone of influence of basement works. For S8 and all the proposed buildings forming part of the outline planning application, the BIA will be updated (or additional BIAs prepared) to reflect the final design proposals at the reserved matters stage.

1 Introduction

This Basement Impact Assessment has been prepared and submitted by Pell Frischmann on behalf of LS (Finchley Road) Limited (the "Applicant"), to support an application made in part in detail and part in outline (the "Application") for the demolition and redevelopment of land encompassing the O2 Centre and associated car park, Homebase store, car showrooms and a Builder's Merchant (the "Site") within the London Borough of Camden ("LBC").

Development Plots N3-E, N4 and N5 and the associated landscaping, access roads and infrastructure form the detailed element of the Application which extends to 1.79ha and these proposals are referred to as the "Detailed Proposals".

The remainder of the Application (comprising Development Plots N1, N2, N3, N6, N7, S1 and S8) is submitted in outline and these proposals are referred to as the "Outline Proposals".

The Detailed Proposals and Outline Proposals together are referred to as the "Proposed Development".

Full details and scope of the Applications is described in the submitted Planning Statement, prepared by Gerald Eve LLP.

This report sets out a Basement Impact Assessment (BIA) which is in accordance with the generic procedures found in Camden Planning Guidance (CPG): Basements to support the policies in the Camden Local Plan 2017.

The aim of the BIA process is to assess if the proposed basement works planned as part of the site development will have a detrimental impact on the surroundings with respect to groundwater, local and regional hydrogeology, land stability, and in particular to assess whether the basement development will affect the stability or integrity of adjacent infrastructure.

A desk study has been undertaken by Pell Frischmann (document reference 104878-PEF-ZZ-XX-RP-GG-600002, dated January 2022) and is referred to where relevant.

1.1 Author's Qualifications

This report has been prepared by Kevin Stone who is a chartered Civil Engineer with over 30 years' experience in geotechnical and geo-environmental engineering and Jerome Bret a Geotechnical Engineer with an MEng Degree in Civil Engineering.

1.2 Scope

The scope of this report is (i) to screen and scope the entire site in general accordance with the CPG basements Jan 2021 (ii) to provide a BIA relevant to the detailed planning application for the plots N3E, N4 & N5. It is noted that significant Thames Water infrastructure runs beneath these plots and a detailed assessment in consultation with Thames Water is currently being prepared.

2 Proposed Development

The Application is for the following Proposed Development:

“Part full and part outline planning permission comprising the following:

Detailed planning permission for Development Plots N3-E, N4, and N5 including demolition of existing above ground structures and associated works, and for residential development (Class C3) and commercial, business and service (Class E) uses in Development Plot N3-E, residential development (Class C3) and local community (Class F2) and commercial, business and service (Class E) uses in Development Plot N4, and residential development (Use Class C3) and commercial, business and service uses (Class E) uses in Development Plot N5 together with all landscaping, public realm, cycle parking and disabled car parking, highway works and infrastructure within and associated with those Development Plots.

Outline planning permission for Development Plots N1, N2, N3, N6, N7, S1 and S8 including the demolition of all existing structures and redevelopment to include residential development (Class C3) commercial, business and service uses (Class E), sui generis leisure uses (including cinema and drinking establishments) together with all landscaping, public realm, cycle parking and disabled car parking, highway works and infrastructure within and associated with those Development Plots.”

The Application is submitted in hybrid form – this means that (part of the application is made in detail and part is made in outline).

The Application site has been subdivided into 10 Development Plots (N3-E, N4 and N5 N1, N2, N3, N6, N7, S1 and S8).

The first three Development Plots (N3-E, N4 and N5), located in the centre of the Site, are submitted in detail, and form the first phase – “Detailed Phases”.

Development Plots S8, N7 and N6 located in the west of the Site are submitted in Outline and form the Second Phase - “Outline Phases West”.

Development Plots N3, N2, N1 and S1 located in the east of the Site are submitted in Outline and form the third Phase – “Outline Phases East”.

The Application site has been subdivided into 10 Plots (N1, N2, N3, N3-E, N4, N5, N6, N7, S1 and S8). These are identified on Parameter Plan. 19066_X_(02)_102. The 10 plots sit within three indicative phases. Phase 1 covers the Detailed Proposals and is located at the centre of the Site. Phase 2 (also referred to as Outline Phases West) and Phase 3 (also referred to as Outline Phases East) form the Outline Proposals.

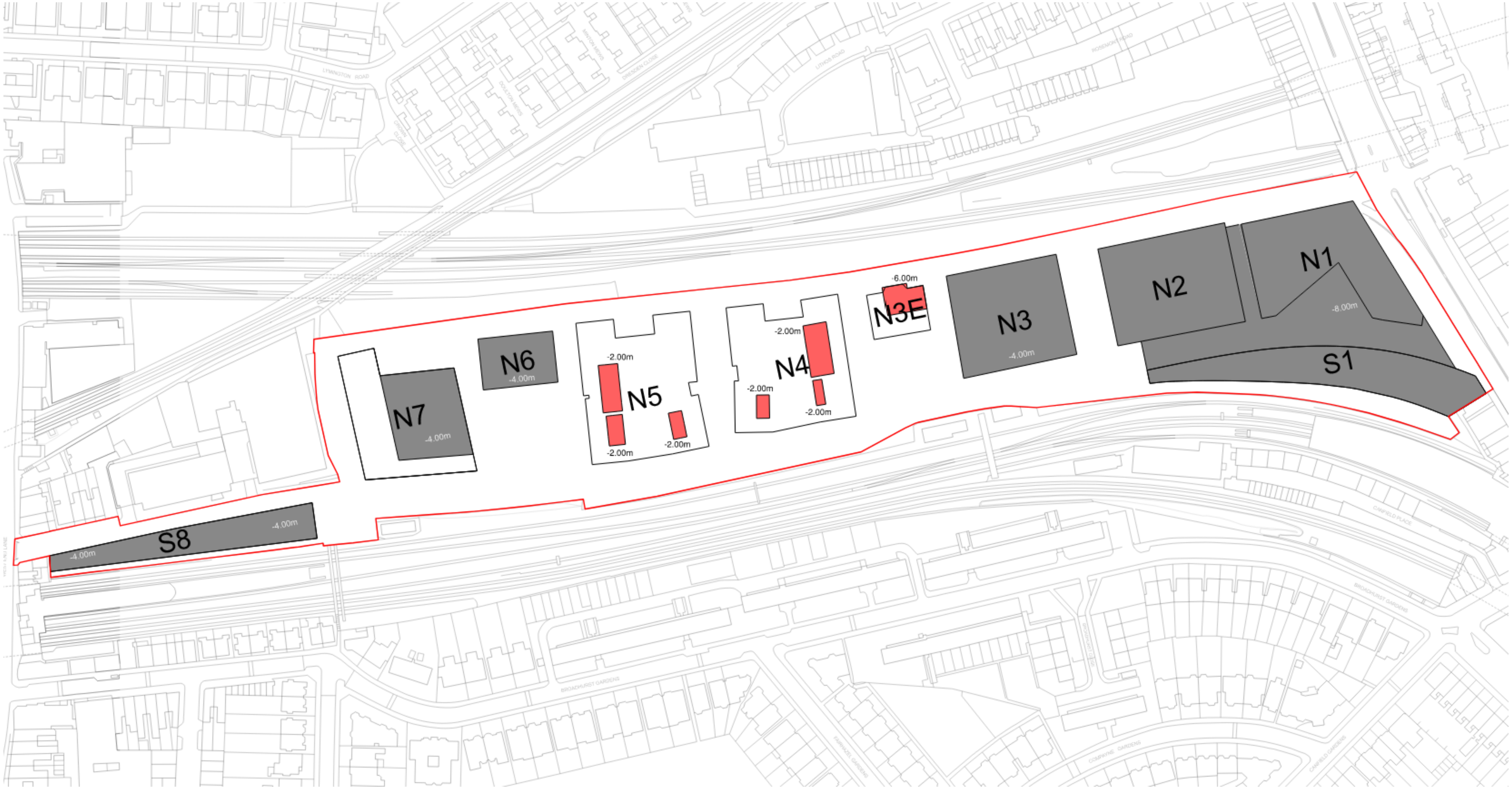


Figure 1 Plot Locations & Proposed Basements

2.1 Detailed Plots

The three buildings that form part of the detailed planning application, N3E, N4 and N5, will include localised basements within their proposed footprints, as shown in Figure 2. These are required in order to provide the space needed for the plant equipment serving the buildings. The proposed buildings will be of in-situ RC frame construction, with the basement areas constructed within an open excavation, with the exception of plot N3E which will require temporary support to excavate (see section 8.2).

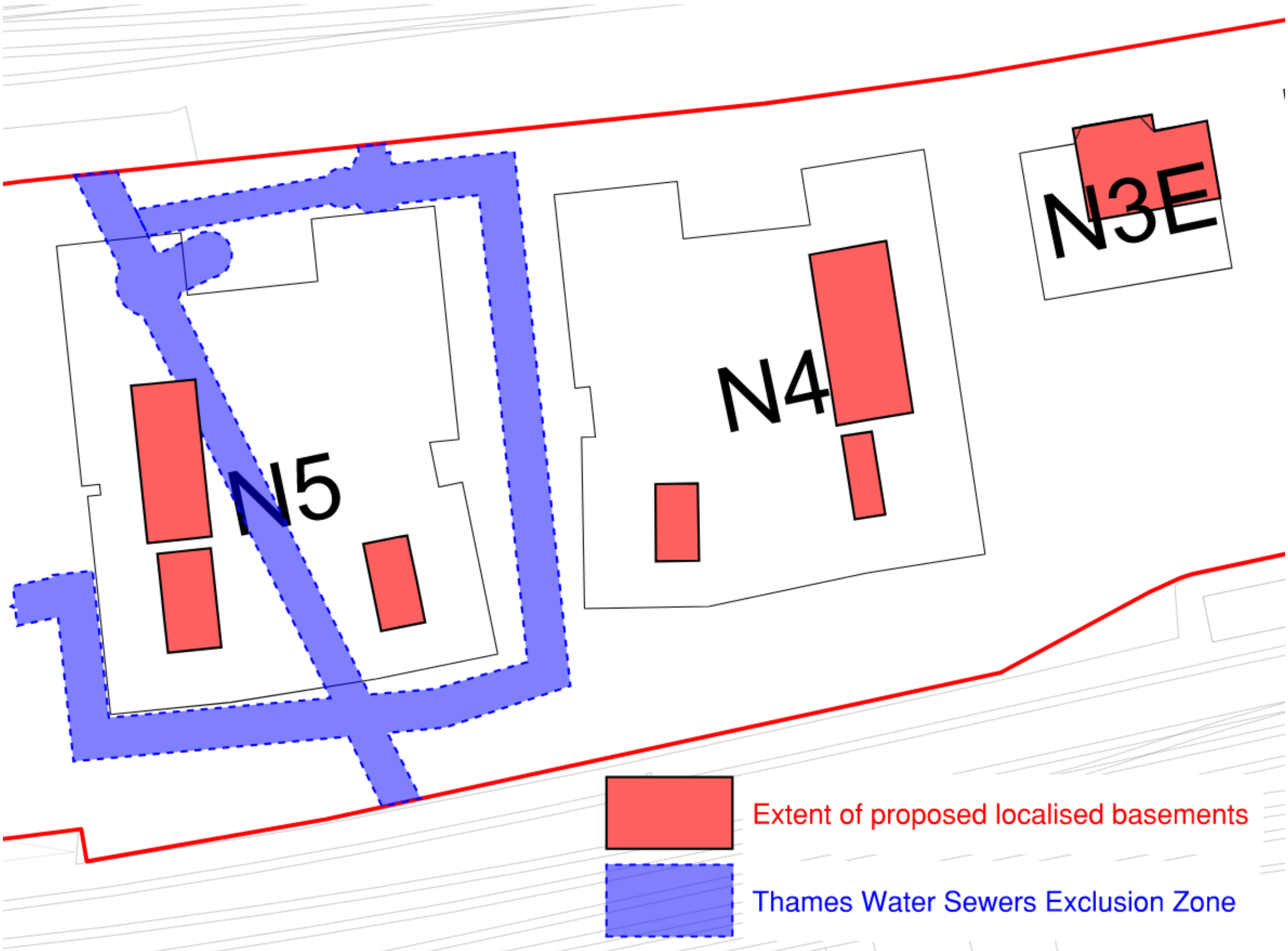


Figure 2 Extent of Proposed Basements for Buildings N3E, N4 & N5

2.2 Outline Plots

The basement proposals for the plots included in the outline application are presented in Figure 1 and the parameter plan 19066_X_(02)_105-Proposed Basement Extents. This shows a maximum allowance that could be considered when the design of these plots will be developed in more detail.

One of the areas considered in the outline application is currently occupied by the existing O2 Centre. This is an existing 2-storey shopping centre located on Finchley Road. It was completed and opened in 1998. Within the building's footprint, there is also an existing half basement with retaining walls on the north and eastern elevations. There is also a full sided basement, however this only covers a small, localised area of the building's footprint (see Figure 3). At the time of writing this report, the proposal was for the internal half basement structure to be demolished, but leaving the perimeter retaining walls, parts of the base slab and the smaller localised basement intact. Consideration is also being given to lowering the base slab by 1.0m to provide additional headroom for delivery vehicles. This would only be required in the proposed car parking area and therefore has no impact on the existing perimeter retaining walls. The current elevation of Finchley road is 55m AoD and the existing basement extends to 48m AoD (see Figure 3). The proposed basement extents would make the total depth of the basement 8m below the level of Finchley Road.

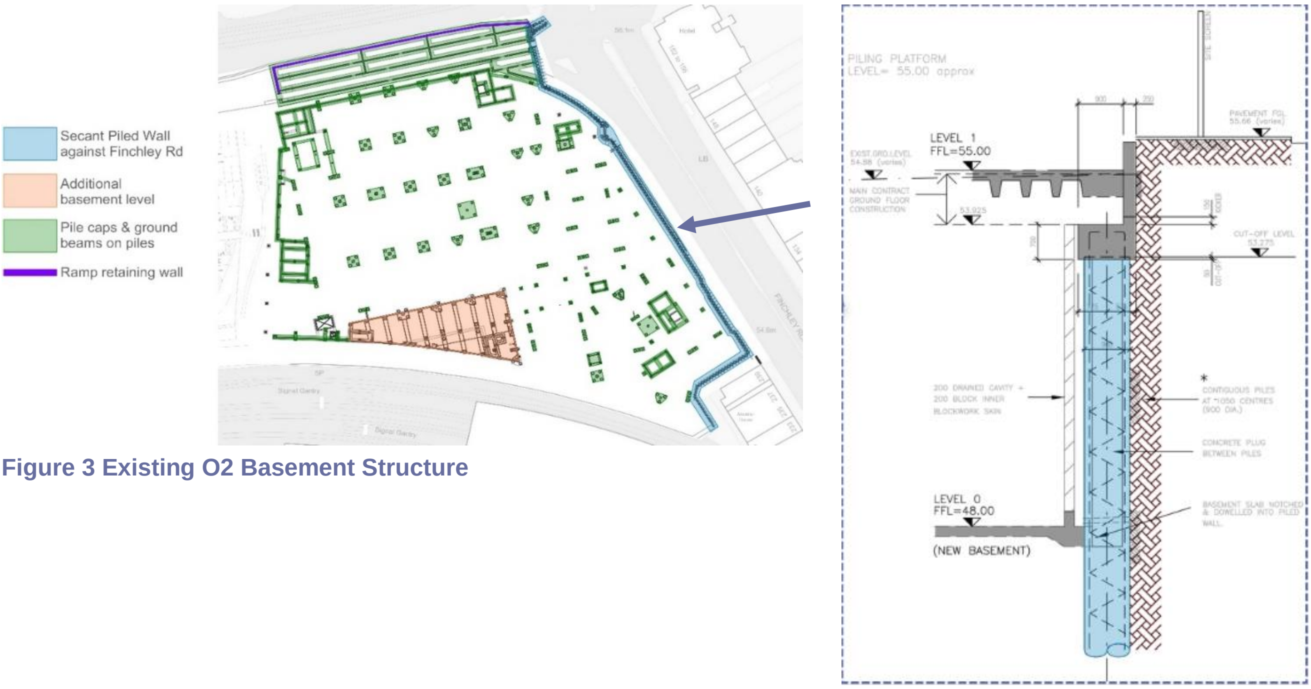


Figure 3 Existing O2 Basement Structure

3 The Site

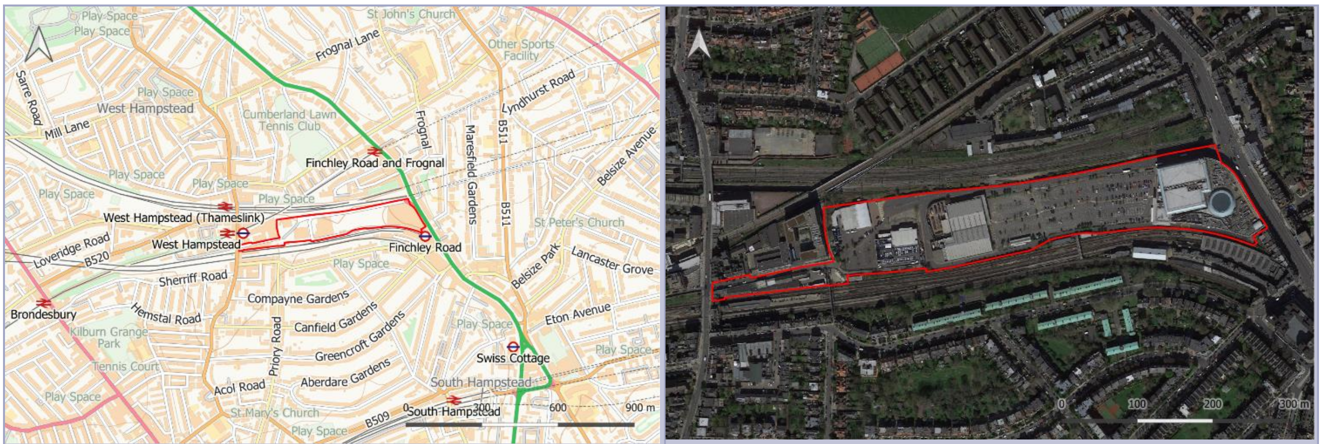
3.1 Location

The Site is located in Finchley, within the London Borough of Camden (LBC). It is bounded by Blackburn Road, which envelops the Site along its southern and northern edge, also extending to the west. Finchley Road (A41) bounds the Site to the east, with Billy Fury Way to the west. The Thameslink Bedford-Brighton railway line runs along the northern edge of the Site, and the London Underground Jubilee and Metropolitan lines run above ground along the southern edge of the Site.

The Site is approximately 5.7 ha in size and currently comprises the O2 Centre, which is arranged over three floors and contains a cinema, a mix of retail units, restaurants and cafes, a health club, a community room and a Sainsbury's store; hard-standing, which is used as a car-park with space for 520 vehicles and a Homebase store, and to the western part of the Site are two purpose-built car showrooms and a builder's merchant.

The land contained within the red line plan comprises the following:

- O2 Centre;
- Associated O2 Centre car park;
- Homebase store;
- Car showrooms; and
- Builder's merchant.



Ordnance Survey (OS) Open Mapping | Google Satellite Image

Figure 4 Site Location

3.2 Geotechnical features

3.2.1 Within the site boundary

The following structures and features lie within the site boundary of the O2 Finchley Road scheme:

- Existing O2 Finchley shopping centre with associated foundations and basement
- Thames Water storm drain and associated buried sewage tunnel at 18m depth (see figure 1 for location)
- Three existing buildings to the west of the site, currently occupies by Homebase, Volkswagen and Audi.
- Builder's depot in the southwestern section of the site

3.2.2 Outside the site boundary

- Thameslink railway land to the north
- Metropolitan and Jubilee lines to the south

- Retaining wall structure lining the boundary between Blackburn Road and the Thameslink railway, reaching up to 5m retained height at the intersection with Finchley Road (A41)
- Bridge structure to the northeast of the site allowing Finchley Road to span over the Thameslink railway lines.
- Bridge structure to the northwest of the site featuring a footbridge and overground train line passing over the Thameslink railway lines.
- 9 storey residential building adjacent to the western site boundary

3.3 Third Party Assets

This section will discuss the third party assets within close proximity to the site boundary which may be affected by the installation of basements on the site.

3.3.1 Railway Assets

The land to the north and to the south of the site is currently occupied by railway infrastructure. For that reason, the distance of the proposed basement to the railway infrastructure has been determined and is presented in Table 1.

Table 1 Proximity of railway assets

Plot	Distance from railway (m)	Closest railway (north/south)
N1 (outline plot)	20	North
N2 (outline plot)	19	North
N3 (outline plot)	21	North
N3E (detailed plot)	25	North
N4 (detailed plot)	26	North
N5 (detailed plot)	25	North
N6 (outline plot)	27	North
N7 (outline plot)	38	South
S1 (outline plot)	11	South
S8 (outline plot)	7	South

3.3.2 Buildings

From the proposed site layout the only potential impact on surrounding buildings is associated with outline plot S8 (see Figure 5). At this location, the proposed basement could extend up to the boundary of the site which is adjacent to small commercial units immediately adjacent to the west, railway tracks 7m to the south and a building 12m to the north. As a consequence, all this infrastructure lies within the potential zone of influence of basement excavation works.

As part of the S8 plot development a detailed basement impact assessment shall therefore be undertaken. With an appropriate construction methodology as discussed in section 5, building damage will be restricted to category 1 or less.

Figure 5 Adjacent infrastructure to plot S8

4 Ground Conditions

4.1 Soil conditions

The published geology of the area is shown on the geological map for North London (Sheet 256), scale 1:50,000), published by the British Geological Survey (BGS) shown in Figure 6. Derivatives of the BGS mapping are included in the Geology Report (Landmark) presented in the Pell Frischmann desk study, and further geological information has also been obtained from the BGS website. This mapping does not record any superficial deposits over the site and indicates the bedrock of the London Clay Formation present over the whole site area.

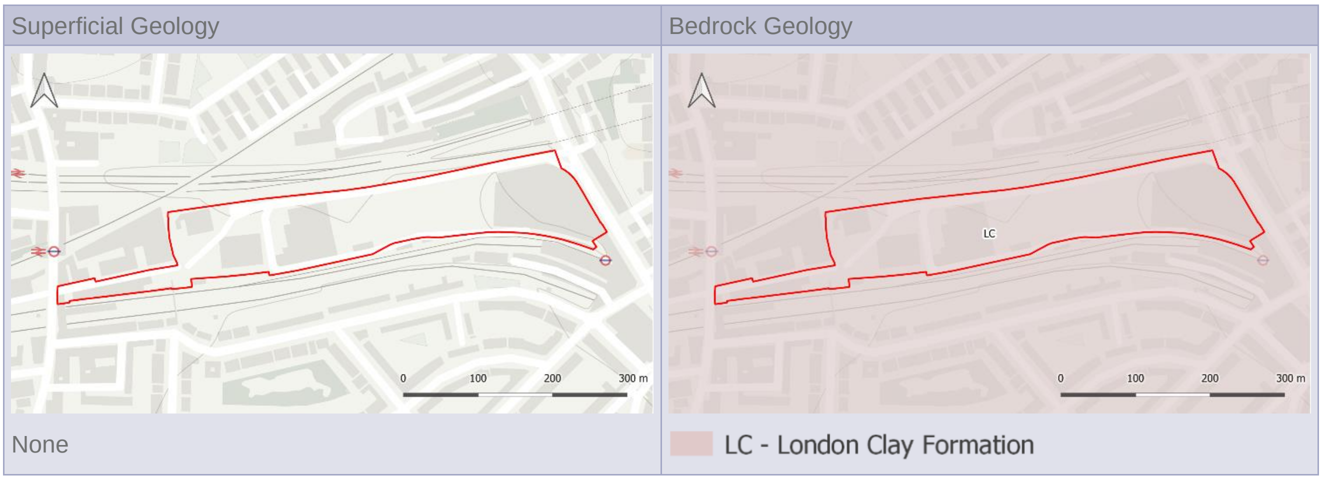


Figure 6 Published Geology

An intrusive investigation has been completed by RSK Ltd. and a factual report has been issued. The borehole logs confirm the presence of the London Clay and record variable thickness of Made Ground across the site. Table 2below presents a summary of the ground encountered at the site.

Table 2 Summary of stratigraphical succession

Stratum	Thickness (m)	Description
Made Ground	0.5 – 2.0	Dark greyish brown locally black silty sandy. Sand is fine to coarse. Gravel is angular to sub-rounded fine to coarse of concrete, flint, brick and mortar with occasional fragments of ceramic pottery.
London Clay	> 60m	Grey CLAY with fine selenite crystals, occasional claystone / mudstone and sand bands. Becoming sandier towards the base of the strata.

The closest borehole (BH05) to the O2 Centre located at the western end of the carpark area recorded a thickness of Made Ground of 0.8m.

4.2 Groundwater and Hydrology

There are no surface water features within 1 km of the site. A former ‘lost river’ of London, assumed to be a tributary of the Westbourne stream may cross the site in the vicinity of the O2 Centre, although it is understood that this is likely is now a sewer.

No groundwater was recorded in the borehole records from the recent RSK investigation. The London Clay present at shallow depth below the Made Ground is an impermeable unproductive stratum defined as having negligible significance for water supply or baseflow to rivers, lakes and wetlands. Consequently, the only ground water that is likely to be present on site will be that associated with pockets of locally perched water within the Made Ground.

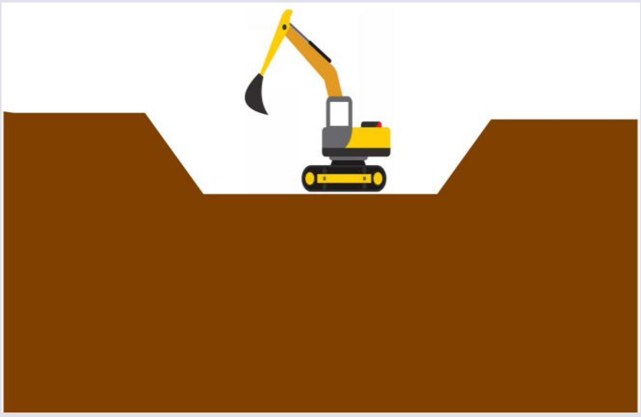
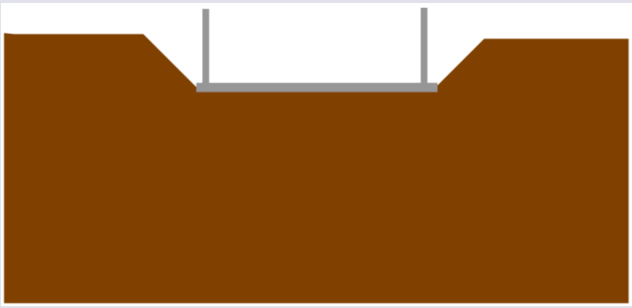
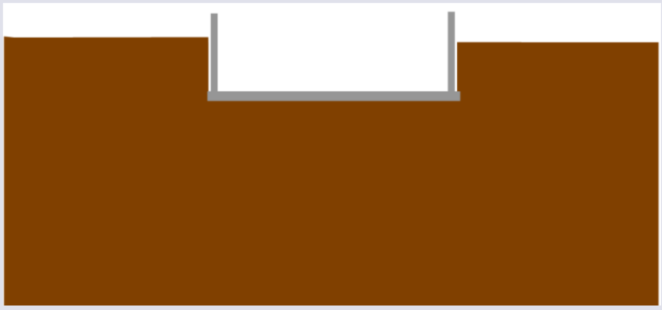
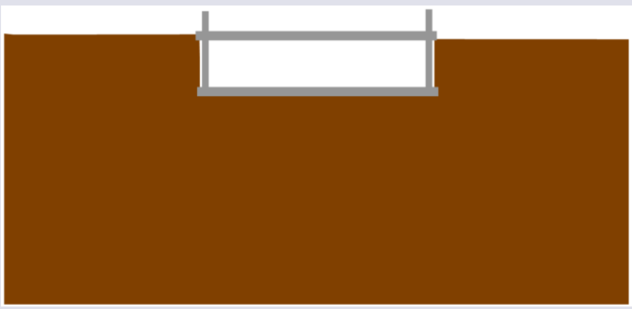
5 Outline Construction Methodology

Two different methodologies will be discussed in this section for the construction of new basements both with and without site constraints at the perimeter of the excavation. It should be noted that a detailed construction method statement will be produced in due course by the Contractor.

5.1 No Site Constraints Methodology

In areas where the site layout allows for the basement excavation works to be undertaken with battered slopes, the following methodology is appropriate for single storey basement installation:

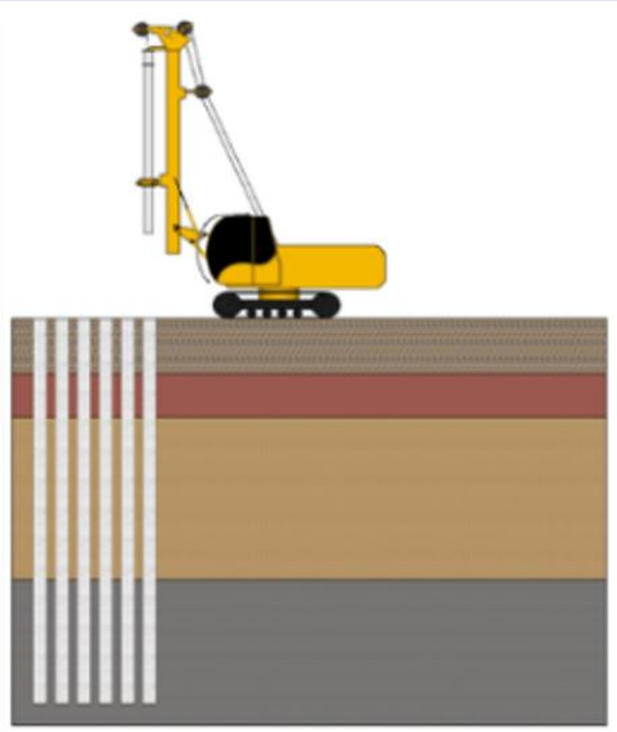
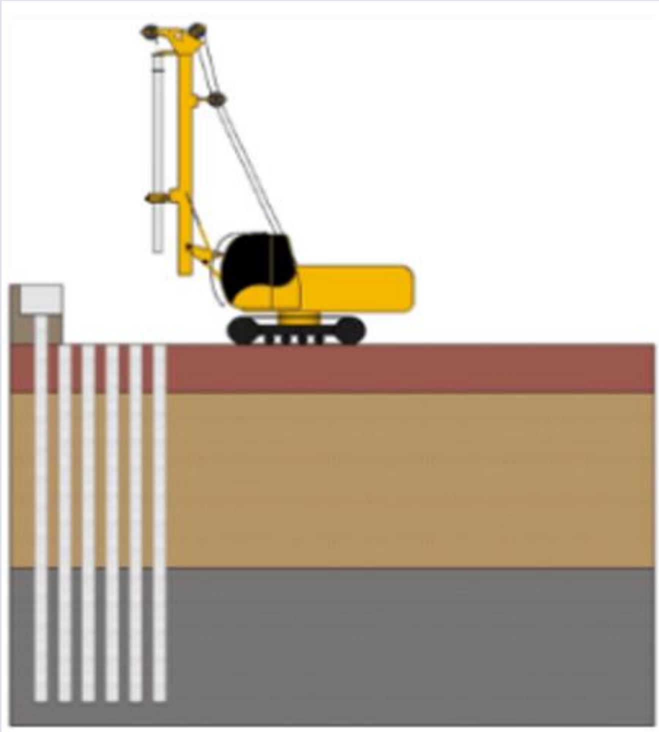
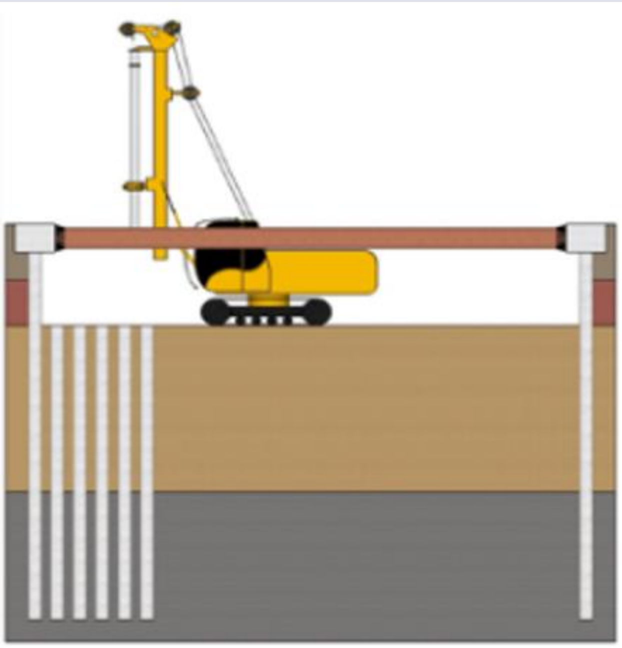
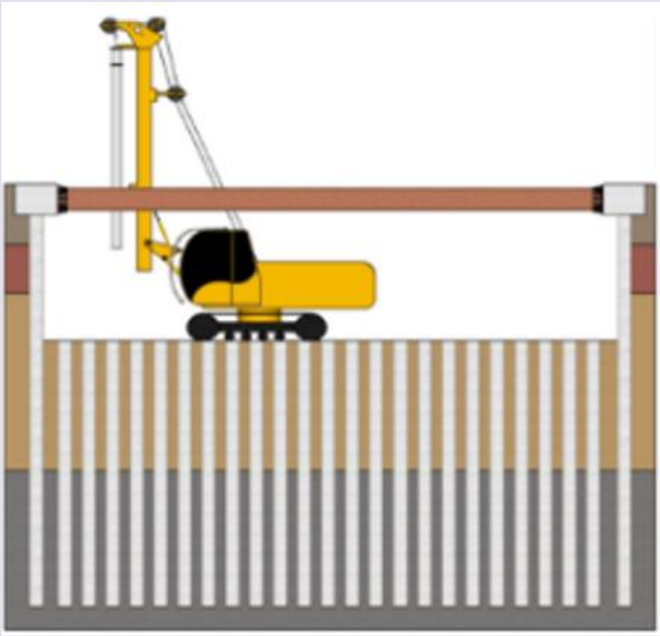
Table 3 Battered slopes excavation

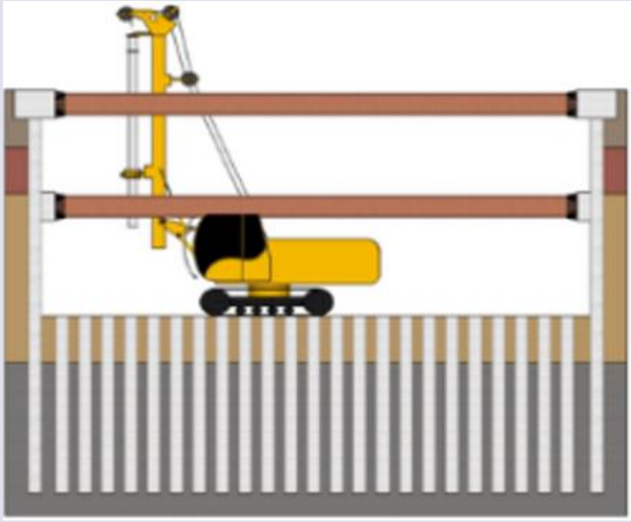
 1- Initial conditions	 2- Battered excavation of basement (1V:2H slopes)
 3- Construction of basement slab and basement walls	 4- Backfilling of excavation to ground level behind walls
 5- Construction of ground floor slab	Note: Stage 4 (backfilling) can be undertaken with the walls supported by raking props or by the casting the ground floor prior to backfilling. In this case the walls would be designed as propped cantilevers.

5.2 Methodology With Site Constrains

Some proposed basement locations do not offer the possibility of excavating using battered slopes due to adjacent infrastructure or services, therefore a bottom-up sequencing of works can be considered as shown below. It should be noted that for the single storey basements currently proposed an intermediate temporary prop would not be required.

Table 4 Bottom-Up Construction Method - Simplified

 1- Install embedded piled retaining wall using steel sheets or concrete secant piles.	 2- Install capping beam and excavate below upper temporary prop level.
 3- Install upper temporary prop	 4- Excavate below temporary prop

	
5- Install additional props if required.	6- Install base slab followed by intermediate floor followed by removal of intermediate temporary prop.

6 Screening

In order to establish the key elements of the BIA that are required, a screening process has been carried out on the proposed development. This process consists of posing a series of questions within a screening flowchart covering the following areas; groundwater flow; land stability; and surface water flow. The questions used below are derived from the flow charts presented in the Camden Planning Guidance: Basements, and are presented in tabular form in the following sections.

6.1 Groundwater Flow

Question	Site specific response
1a. Is the site located directly above an aquifer?	No. The site is underlain by London Clay, an unproductive stratum.
1b. Will the proposed basement extend beneath the water table surface?	Yes. During site investigations, a perched groundwater table was generally present. No deep water table (within the London Clay to the depth of the BHs) was encountered. Refer to RSK site investigation Nov 2021.
2. Is the site within 100m of a watercourse, well (used/disused) or potential spring line?	Yes. It is possible that a 'lost river' associated with the Westbourne stream is within 100m of the basement.
3. Will the proposed basement development result in a change in the proportion of hard surfaced / paved areas?	No. The current area of hardstanding is approximately the same as the proposed area of hardstanding. It is noted that new structures are to be constructed within the current hard-standing car parking area. Any increase in impermeable area and drainage requirements shall be considered in the drainage strategy (ref: 104878-PEF-ZZ-ZZ-RP-D-100017).
4. As part of the site drainage, will more surface water (e.g. rainfall and run-off) than present be discharged to the ground (e.g. via soakaways and / or SUDS)?	See above.
5. Is the lowest point of the excavation (allowing for any drainage and foundation space under the basement floor) close to or lower than, the mean water level in any local pond or spring line?	No

6.2 Ground Stability

Question	Site specific response
1. Does the site include slopes, natural or manmade greater than 7° degrees?	No
2. Will the proposed re-profiling and landscaping at the site change slopes at the property boundary to more than 7°?	No

3. Does the development neighbour land, including railway cuttings and the like, contain slopes greater than 7°?	Yes, there is a 5m retaining structure to the northeast of the site, outside the site boundary.
4. Is the site within a wider hillside setting in which the general slope is greater than 7°?	No
5. Is the London Clay the shallowest strata at the site?	No. The London Clay is overlain be made ground of varying thickness between 1-1.5m, locally up to 3.m thick.
6. 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?	Yes, small trees are present on site as landscaping features.
7. Is there a history of seasonal shrink-swell subsidence in local area and / or evidence of such effects at the site?	No
8. Is the site within 100 m of a watercourse or potential spring line?	Yes
9. Is the site within an area of previously worked ground?	Yes, there is made ground overlying the London Clay which is approx. 1-1.5m thick, locally up to 3.m thick.
10. Is the site within an aquifer?	No
11. Is the site within 5m of a highway or pedestrian right of way?	Yes
12. Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties?	No
13. Is the site over (or within the exclusion zone of) any tunnels, e.g. railway lines?	Yes.

6.3 Surface flow and flooding

Question	Site specific response
1. Is the site within the catchment of the pond chains on Hampstead Heath	No
2. As part of the proposed site drainage, will surface water flows (e.g. volume of rainfall and peak run-off) be materially changed from the existing route.	No
3. Will the proposed basement development result in a change in the proportion of hard surfaced / paved external areas.	No. The current area of hardstanding is approximately the same as the proposed area of hardstanding, see 6.1, item 3.
4. Will the proposed basement development result in changes to the profile of the inflows (instantaneous and long term) of surface water being received by adjacent properties or downstream watercourses.	No
5. Will the proposed basement result in changes to the quantity of surface water being received by adjacent properties or downstream watercourses.	No

6. Is the site in an area identified to have surface water flood risk according to either the Local Flood Risk Management Strategy or the Strategic Flood Risk Assessment or is it at risk of flooding, for example because the proposed basement is below the static water level of a nearby surface water feature.	Yes. It is within an area known to be at risk of surface water flooding. See FRA for detailed assessment (ref: 104878-PEF-ZZ-ZZ-RP-D-100009)

7 Scoping and Potential Impacts

The scoping stage identifies the potential impacts of the proposed scheme that have been shown by the screening process to need further investigation. The potential impacts of each of the matters of concern identified in the screening are identified. The conceptual ground model presented earlier in section 6 together with the Desk Study is considered a suitable basis on which to assess the potential impacts.

The following potential impacts have been identified and will be further assessed in the following basement impact assessment.

7.1 Groundwater Flow

Potential Impact	Possible Consequence
2.The site is within 100 m of a watercourse or potential spring line.	A historic lost river/tributary of the Westbourne stream is likely to run as a culverted sewer within 100m of the site. Since the basement is already constructed there will not be any impact on the existing sewer.

7.2 Ground Stability

Potential Impact	Possible Consequence
3.The development neighbour land, including railway cuttings and the like, contains slopes greater than 7°	The existing retaining structure outside the site boundary is adjacent to the existing O2 Centre which already features appropriate measures. The works will not impact this existing boundary.
6.Trees will be felled as part of the proposed development	Removal of the small landscaping trees will have no impact on ground stability
8. The site is within 100 m of a watercourse or potential spring line	A historic lost river/tributary of the Westbourne stream is likely to run as a culverted sewer within 100m of the site. Since the basement is already constructed there will not be any impact on the existing sewer.
9.The site is within an area of previously worked ground	Some infilled shallow basements might be present but are of no significance to ground stability.
11.The site within 5 m of a highway or pedestrian right of way.	Damage and settlement to adjacent infrastructure may occur as the result of ground movements associated with construction activities.
13.The site is over (or within the exclusion zone of) tunnels and railway lines.	The site is adjacent to NR rail track with some minor incursion of the existing basement into the exclusion zone. It is noted that the local basement area under block N5 overlies an existing deep storm water relief sewer.

7.3 Surface flow and flooding

Potential Impact	Possible Consequence

6.The site is within an area known to be at risk of surface water flooding.	Potential flooding of the basement.

8 Basement Impact Assessment

8.1 Detailed Plots N4 and N5

As noted in section 2.1, the form of construction for the N4 and N5 blocks will be an in-situ concrete frame. A typical cross-section through the basement areas is shown in Figure 7, which shows a concrete box construction, formed of RC retaining walls and a suspended base slab supported on piled foundations. The basement box will be constructed monolithically with the rest of the ground floor slab and therefore act and move as a single frame.

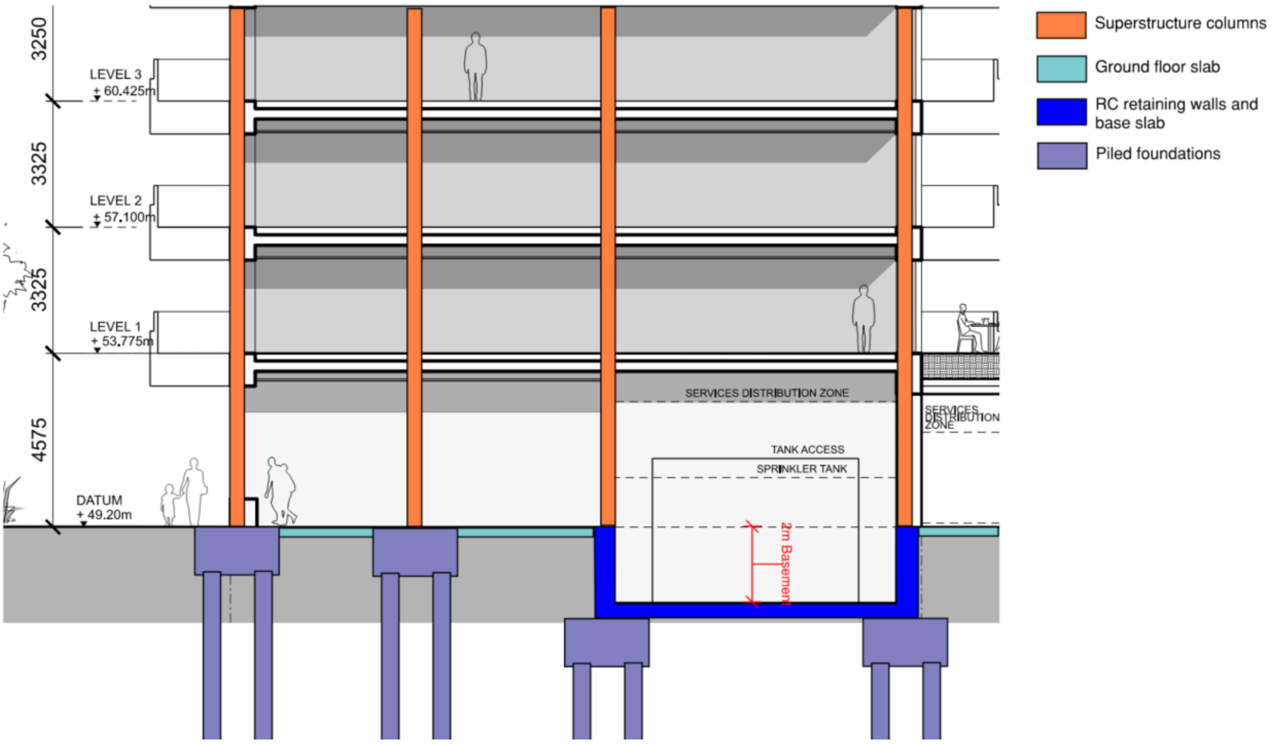


Figure 7 Typical cross-section through proposed basements of N4 and N5

Since the extent of the proposed 2m basements is relatively small in comparison with the footprints of the two buildings, it has been assumed that a simple open excavation will be possible. At the same time, the position of the basements is quite central in relation to the northern and southern boundaries and as a result the impact of the excavation on the adjacent Network Rail and TFL infrastructure assets will be minimal.

Underneath the proposed footprint of block N5, there is a storm relief sewer flowing from north to south, Thames Water reference 8704, running approximately 18m below the ground level, as shown in Figure 2. A formal application for a build-over agreement has been made with Thames Water and the proposed design has been approved in principle. Furthermore, an initial ground movement assessment was carried out for both the construction phase and the permanent condition of the development. This showed that the induced pressures and strains from the new development are within acceptable limits for the underling sewer. The formal sign-off from Thames Water of the build-over agreement is subject to the detailed design and final ground movement assessment.

8.2 Detailed Plot N3E

The basement at plot N3E will be constructed in a similar manner to the basements described in section 8.1 with a monolithic construction resulting in the structure behaving as a single frame. This plot's proposed basement is adjacent to an existing road and has a maximum proposed depth of 6m which implies temporary works will be necessary to complete the excavation.

At this stage, the proposed construction sequence to install the basement is as follows:

- Install a temporary retaining wall around the perimeter of the basement location using a method such as sheet piling
- Excavate to design depth
- Install raking props to ensure the stability of the excavation (see Figure 8)
- Cast permanent retaining wall against sheet piles
- Remove temporary propping
- Remove sheet piles if not included in permanent works design

Figure 8 Example of raking prop application for a sheet piled wall

The above proposed methodology implies a fully enclosed excavation, which will significantly limit the impact on any adjacent operational assets, such as the NR tracks to the North. In addition, Blackburn Rd will be kept operational throughout the entire duration of the works, which is a critical requirement for the logistics of the entire site.

8.3 Existing O2 Centre

It should be noted that this impact assessment refers to works being carried out to an existing basement rather than the excavation and construction of a new basement. As a consequence, ground movements due to excavation and construction of the original basement will have ceased and are not of concern. The proposed works will involve the demolition of the superstructure, the ground floor slab and internal basement walls, leaving the perimeter walls, base slab and bearing piles in place, refer to Figure 9.

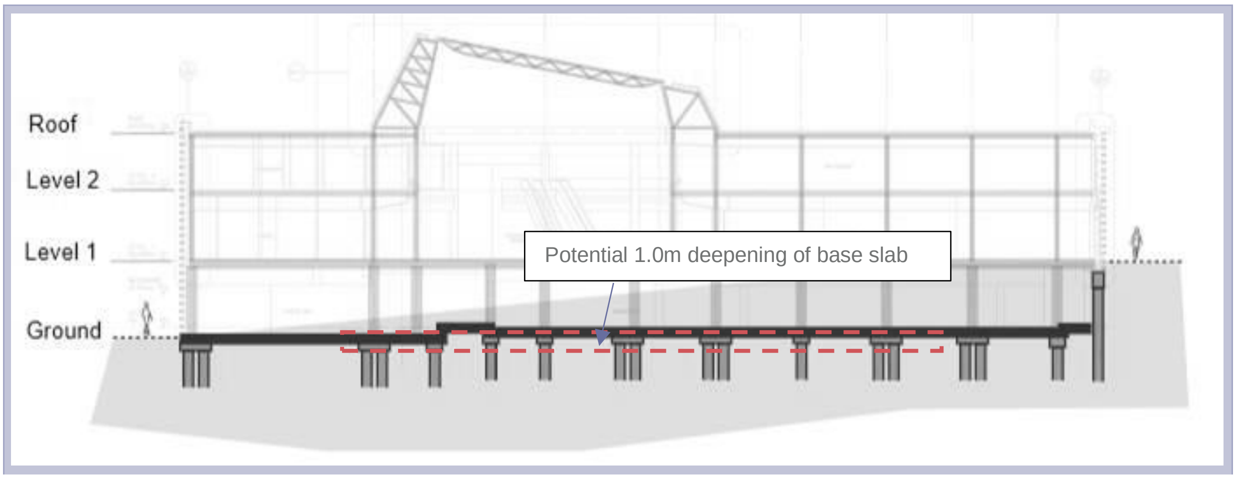


Figure 9 Cross-section through proposed scheme showing retained basement slab and walls

Based on the proposed works the following issues and their potential impact on adjacent infrastructure are addressed;

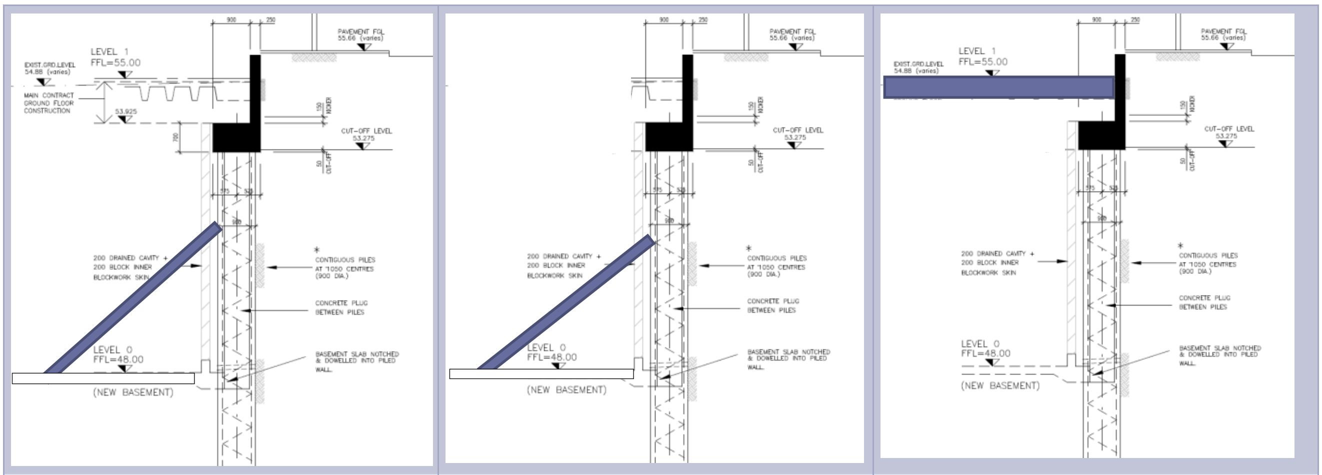
- Ground movement associated with demolition
- Loss of support to basement perimeter walls
- Ground movement from construction

8.3.1 Impact from demolition

The existing structure is supported on bearing piles extending from the basement level into the underlying London Clay. Demolition of the superstructure will result in unloading of the piles with some associated upward movement of the piles. This upward movement would be less than that associated with the original pile settlement under the action of the structural loads since the unloading response of the ground and pile is stiffer than the original loading response. Typically working settlements of 10-15 mm can be assumed for the original design, and an unloading response of 5-10mm (upwards) might be conservatively expected. Movement of this magnitude will have negligible impact on ground movement outside the basement footprint with no impact on adjacent infrastructure.

8.3.2 Loss of support to basement slab

The ground floor slab currently provides support to the basement walls in the permanent case. The ‘for construction enabling works’ drawings state “*Piling contractor to design contiguous pile walls to be free standing cantilever walls - above 47.60 and to accommodate cantilever retaining wall above*”. Consequently, is can be assumed that, at least in the original temporary construction case, the contiguous piled wall which forms the existing basement would provide ground support. The proposed works may introduce a temporary undrained response of the soil, and consequently the existing basement wall would continue to provide adequate support. However, the removal of the ground floor slab may nevertheless lead to some inward deflection of the wall. It is thus proposed that temporary raking props are provided to brace the existing basement wall to the base slab prior to demolition of the exiting ground floor, and these props remain in place until completion of the new ground floor. This consecution sequence is illustrated in Figure 10 below which will mitigate any potential deflection of the existing basement wall resulting in negligible impact with respect to ground movements and adjacent infrastructure.



a) install raking props	b) demolish existing ground floor	c) construct new ground floor and remove props.

Figure 10 Support to existing basement walls during construction

8.3.3 Impact from construction

The loads imposed by the new structure shall be carried by existing bearing piles extending below the basement slab. As a consequence, the construction works will only introduce a degree of unloading and reloading of the basement piles and its integral slab, which as previously discussed will be small and will not result in any associated ground movement or impact on adjacent infrastructure.

8.4 Outline Plots

The proposed design for the rest of the plots within the outline application has not been developed in enough detail to determine the full extent of any new proposed basements. For the purpose of this application, a maximum allowance is shown on the parameter plan 19066_X_(02)_105-Proposed Basement Extents. In the first instance the potential impact of the development of these basement areas can be quantitively evaluated through the application of the CIRIA C760 (2017) report entitled ‘Guidance on embedded retaining wall design’. This document allows the prediction of ground movements resulting from the construction of basements utilising an embedded retaining wall to be evaluated through the use of empirical relationships. The ground movements can be estimated for the installation of the wall and the subsequent excavation. For the proposed maximum excavation depth of 4m, maximum horizontal and vertical ground movements occur immediately behind the wall and are estimated at 3.2 and 2.0mm respectively assuming a secant/sheet piled wall is used to retain the sides of the excavation. These ground movements reduce linearly to zero at a distance equal to 1.5 and 2 times the wall depth for the horizontal and vertical ground movements. Typically, this would be some 10 to 12m from the wall. It is noted that installation effects using a sheet pile wall can be ignored.

Ground movements associated with excavation can be derived from CIRIA C760 through plots of ground movement and distance from the wall normalised to the excavation depth. Assuming a well-supported wall (high stiffness) the maximum horizontal movement occurs immediately behind the wall and is estimated at 6mm, reducing linearly to zero at about 16m from the excavation. For the vertical ground movement, the maximum settlement occurs at a distance approximately half the excavation depth (2 m), and is estimated at 3.0 mm, reducing to zero some 14m from the wall. Consequently, maximum horizontal and vertical ground movements of 9 and 5mm respectively are estimated.

Based on the above it is apparent that any basement construction associated with the proposed buildings N3, N6 and N7 are likely to have a negligible impact on any adjacent NR or TFL infrastructure due the distance to the excavation. For example, the distance to the nearest rail track from N6 and N3 is estimated at 27 to 21m which is greater than 4 times the excavation depth and hence beyond the influence of the excavation.

The proposed basement area for Building S8 is approximately 7m from the adjacent rail track, and as such the track lies within the potential influence zone of the excavation. However, conservatively assuming that ground movements would be approximately 50% of the maximum horizontal and vertical values estimated above, then these respective movements of 4.5 and 2.5mm are unlikely to have any significant impact on the railway infrastructure.

However, it should be noted that BIA will be updated for each individual plot to reflect the final design proposals at the reserved matters stage, and where required a detailed ground movement assessment shall be undertaken.

8.5 Other Considerations

8.5.1 Building Damage

As presented in the previous section the proposed basement works are considered to have a negligible effect with regard to any induced ground movement on adjacent infrastructure. Consequently, in terms of a damage classification the proposed works can be considered to induce Category 0 damage in accordance with the Burland Scale as presented in CPG: Basements (Figure 11).

8.5.2 Groundwater and Hydrology

As presented earlier in section 4.2, groundwater may only be present as perched water within Made Ground overlying the London Clay. As such it is not considered a flowing aquifer and would not be affected by the presence of a basement. Furthermore, the depth and extent of the existing basement of the O2 Centre is not changing and hence there will be no impact on the existing groundwater and hydrological conditions.

8.5.3 Surface Water and Flooding

The site is known to be at risk from flooding and reference to an evaluation of the flood risk associated with the site should be obtained from the Flood Risk Assessment Report (104878-PEF-ZZ-ZZ-RP-D-100009). Notwithstanding this, the proposed works to the existing and new basement areas will result in no change to the current site hydrogeology and hydrology and hence no change to the current flood risk.

Since the site is identified as one at risk from surface water flooding, then any basement will be at risk from the ingress of surface flood water and appropriate design and access requirements should be considered.

9 Residual Risks

With reference to the scoping of risks in section 7 and the BIA presented above, the residual risks are summarised in this section

9.1 Groundwater Flow

Potential Impact	Remaining Risk After Assessment
2.The site is within 100 m of a watercourse or potential spring line.	Very low to negligible

9.2 Ground Stability

Potential Impact	Remaining Risk After Assessment
3.The development neighbour land, including railway cuttings and the like, contains slopes greater than 7°	Very low to negligible
6.Trees will be felled as part of the proposed development	Very low to negligible
8. The site is within 100 m of a watercourse or potential spring line	Very low to negligible
9.The site is within an area of previously worked ground	Very low to negligible
11.The site within 5 m of a highway or pedestrian right of way.	Low The installation of basement structures on site will need to incorporate protection measures to minimise ground movement where highways or pedestrian rights of way are within the zone of influence of the works.
13.The site is over (or within the exclusion zone of) tunnels and railway lines.	Low Basement construction will incorporate measures to minimise ground movement on vulnerable assets.

9.3 Surface flow and flooding

Potential Impact	Remaining Risk After Assessment
6.The site is within an area known to be at risk of surface water flooding.	Potential flooding of the basement. Refer to flood risk assessment for further information (doc reference: 104878-PEF-ZZ-ZZ-RP-D-100009)

10 Conclusions and Recommendations

A Basement Impact Assessment has been undertaken using best practice methodology in accordance with Camden Planning Guidance: Basements (January 2021). An initial screening and scoping process was carried out to identify potential areas that may be impacted by the proposed basements within the redevelopment of the site, and these areas were then investigated to present an assessment of the impact of the works.

It is concluded that the proposed works for the detailed plots N3E, N4 and N5 and the existing basement of the O2 Centre, will not result in any specific issues relating to land or slope instability, detrimental effect on the local hydrogeology and hydrology of the site, nor to have any adverse impact on neighbouring infrastructure. Building damage resulting from ground movements are qualitatively assessed as Category 0.

It is however recommended that monitoring points are installed on the existing basement wall and /or levelling points on the adjacent roadways, to verify the anticipated negligible impact of the works on adjacent infrastructure. Similarly, for the construction of block N5 over the existing Thames Water sewer, a ground movement monitoring regime will be in place as part of the build-over agreement. It is noted that the impact of construction works on Thames Water infrastructure is the subject of a separate detailed assessment.

With regards to outline plots N3, N6 and N7, these are of sufficient distance from existing infrastructure that open excavations are likely to be feasible with negligible impact but if required, supported excavations will be undertaken. For plot S8, rail infrastructure to the south and existing buildings to the west and north lie within the zone of influence of basement works and a detailed ground movement and building damage assessment shall be undertaken as appropriate.

11 References

Pell Frischmann, Flood Risk Assessment, document reference 104878-PEF-ZZ-ZZ-RP-D-100009, dated January 2022.

Pell Frischmann, Land Contamination Desk Study, Preliminary Risk Assessment, document reference 104878-PEF-ZZ-XX-RP-GG-600002, dated January 2022.

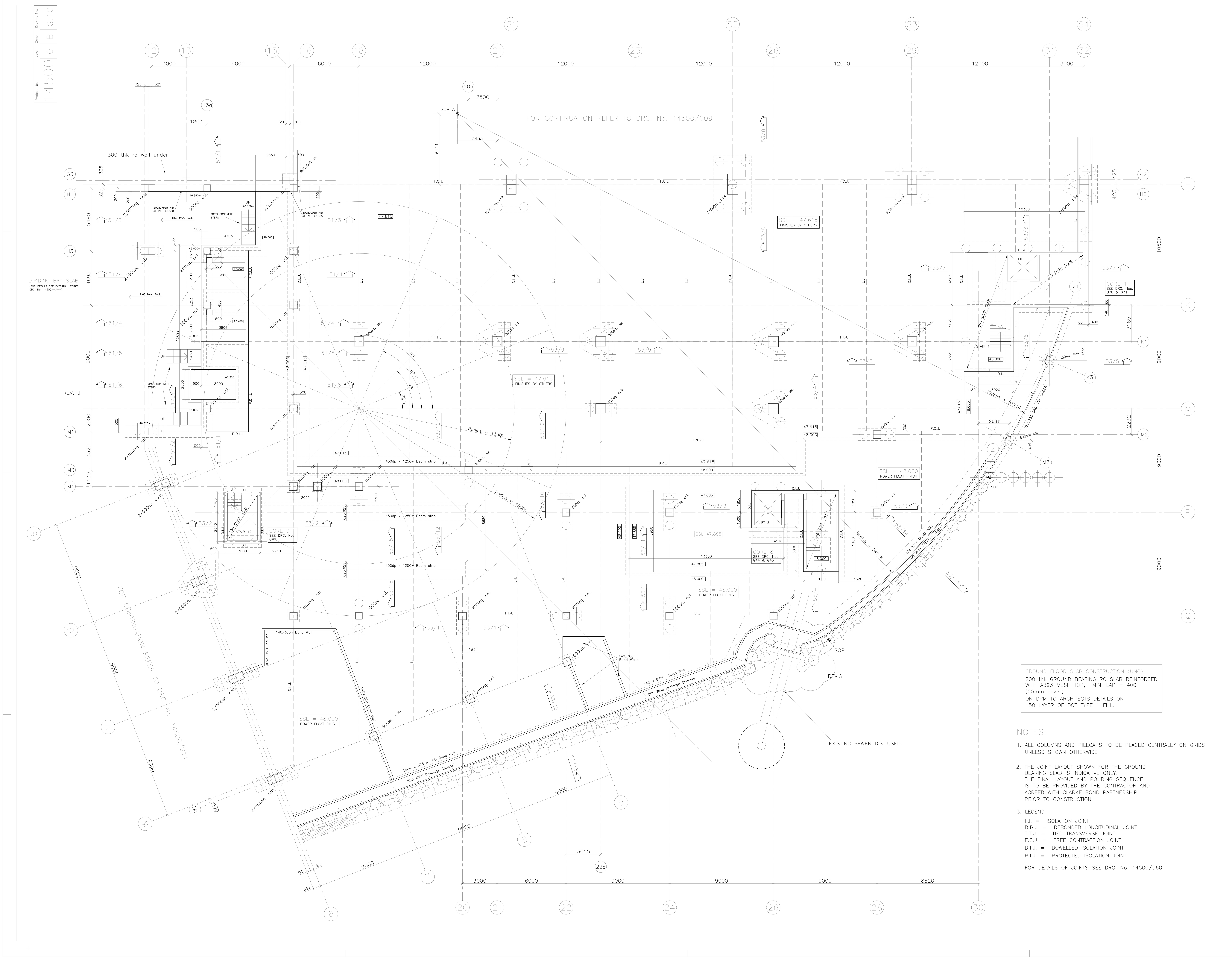
CIRIA C580. Embedded Retaining Walls – Guidance for Economic Design. London, 2003.

London Borough of Camden. Camden Planning Guidance: Basements.

Arup. Guidance for Subterranean Development. 2010

Ball R, Langdon N, and M Creighton. "Prediction of party wall movements using CIRIA report C580". Ground Engineering, Sept 2014.

Appendix A Existing O2 Centre Drawings



GROUND FLOOR SLAB CONSTRUCTION (UNO) :
200 thk GROUND BEARING RC SLAB REINFORCED WITH A393 MESH TOP, MIN. LAP = 400 (25mm cover)
ON DPM TO ARCHITECTS DETAILS ON 150 LAYER OF DOT TYPE 1 FILL.

NOTES:

1. ALL COLUMNS AND PILECAPS TO BE PLACED CENTRALLY ON GRIDS UNLESS SHOWN OTHERWISE

2. THE JOINT LAYOUT SHOWN FOR THE GROUND BEARING SLAB IS INDICATIVE ONLY. THE FINAL LAYOUT AND POURING SEQUENCE IS TO BE PROVIDED BY THE CONTRACTOR AND AGREED WITH CLARKE BOND PARTNERSHIP PRIOR TO CONSTRUCTION.

3. LEGEND
I.J. = ISOLATION JOINT
D.B.J. = DEBONDED LONGITUDINAL JOINT
T.T.J. = TIED TRANSVERSE JOINT
F.C.J. = FREE CONTRACTION JOINT
D.I.J. = DOWELLED ISOLATION JOINT
P.I.J. = PROTECTED ISOLATION JOINT

FOR DETAILS OF JOINTS SEE DRG. No. 14500/D60

Notes.
1 Do not scale this drawing.
2. Contractor to check all dimensions and report all errors and omissions to the Engineer.
3. Concrete mix to be grade: which shall conform in all respects with the requirements of our specifications. SEE NOTE 7 BELOW
4. Design loadings:– kN/m² kN/m² kN/m²
5. Ground bearing resistance:– 100 kN/m²
6. Cover to reinforcement shall be:–
7. FOR CONCRETE MIXES SEE SPECIFICATION E10 : Clauses 132B, 133b & 135(For columns)

Cast in channels:
Masonry to be tied to the concrete frame via. cast in channels by HALFEN–UNISTRUT (Tel: 01234 21 1331), Channels to be Type 35/15.
Brick and blockwork to be fixed to cast in channels with HALFEN–UNISTRUT HBT channel ties.

RC walls:
For RC walls to be clad in masonry, (eg. core walls externally), provide stainless steel cast in channels at 450 vertically and 900 horizontal centres.

RC columns in external walls:
Allow stainless steel channels in one face and galvanised mild steel in two faces.
All channels at 225 vertical centres.

RC columns within internal walls:
Where an internal wall is butted up to an RC column allow mild steel cast in channels at 225 vertical centres in the column faces.

Reinforcement schedules nos.

Scales
1:100

Revisions

Ref.	Detail.	By.	Date.
A	GENERALLY UPDATED	–	2.10.96
B	FURTHER DETAILS ADDED	RJD	22.10.96
C	FURTHER DETAILS ADDED	RJD	–
D	PILE DIAMETERS AND PILE CAPS REVISED.	–	9.12.96
E	SLAB JOINTS, LEVELS, SLAB STEPS ADDED, CORE 8 REVISED.	–	15.12.96
F	REVISIONS MARKED THUS	–	19.12.96
G	COLUMNS ON GRID LINE W MOVED BUND WALLS ADDED OTHER REVISIONS SHOWN CLOUDED	BC	14.3.97
H	SLAB STRENGTHENING STRIPS ADDED PLUS OTHER MINOR REVISIONS ISSUED AS WORKING DRAWING	BC	18.3.97
J	CORE SETTING OUT AMENDED REVISIONS SHOWN CLOUDED	BC	18.4.97
K	COLUMNS ON GRIDS W1/7 & 8 MOVED, LOADING DOCK AREA, DOCK LEVELLERS REVISED	BC	9.5.97
L	MINOR AMENDMENTS	BC	16.5.97
M	MINOR AMENDMENTS	BC	----

Client.
BURFORD GROUP PLC

Project.
LONDON: FINCHLEY ROAD DEVELOPMENT

Description.
LEVEL 0
GROUND FLOOR G.A.
ZONE B

WORKING DRAWING

CONSULTING ENGINEERS

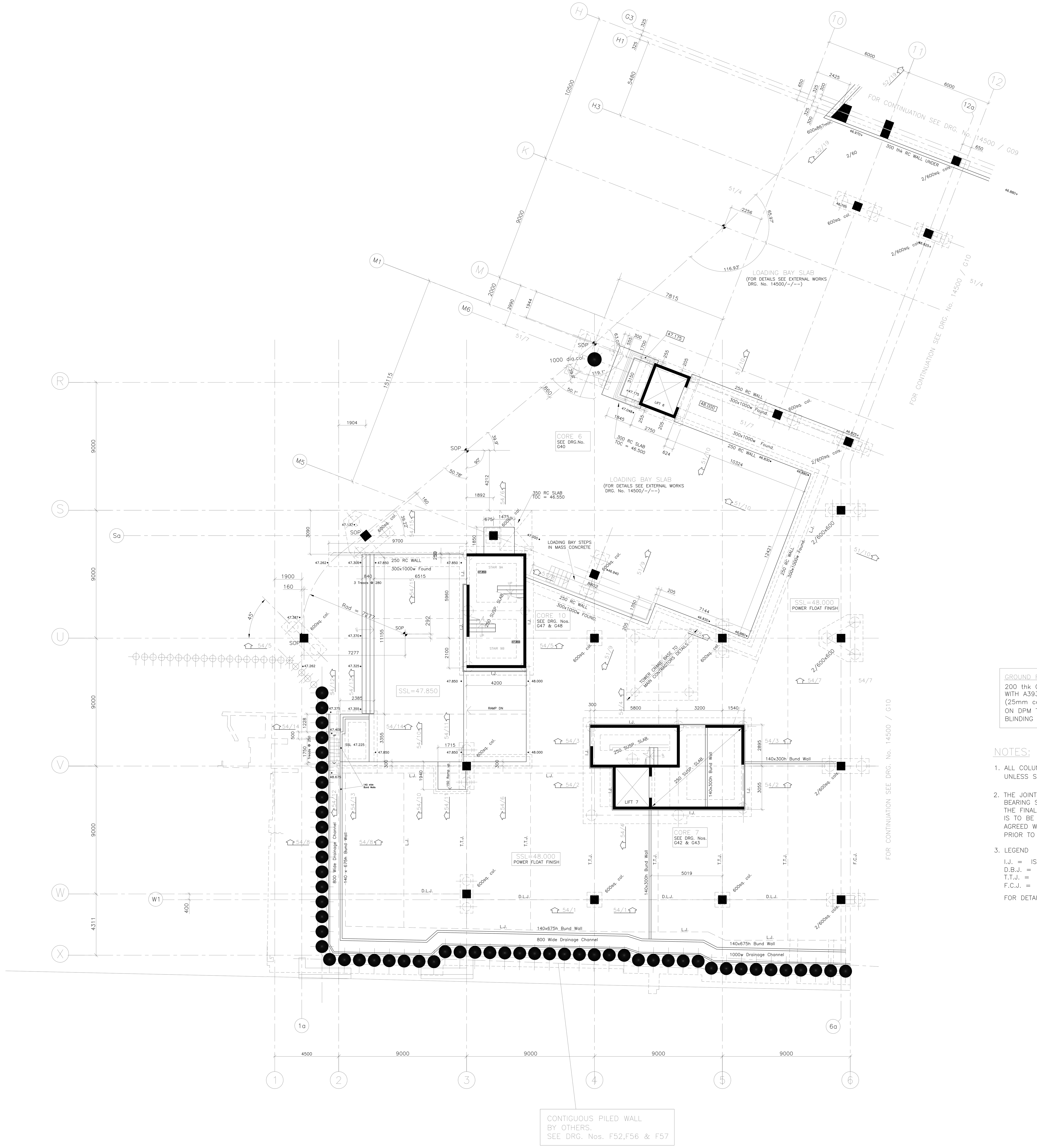
BIRMINGHAM	0121 414 1989
BRISTOL	0117 929 2244
CARDIFF	01222 810785
EXETER	01626 891861
LONDON	0171 255 1998
MANCHESTER	0161 962 2974
WAKEFIELD	01924 823773

CLARKE BOND PARTNERSHIP

Project No.	Level	Zone	Drawing No.
14500	0	B	G.10

Revision.
G H J K L M

Drawn by	Checked	Date
RJD		SEP'96



Notes.

1 Do not scale this drawing.

2. Contractor to check all dimensions and report all errors and omissions to the Engineer.

3. Concrete mix to be grade: which shall conform in all respects with the requirements of our specifications.

4. Design loadings:– kN/m² kN/m² kN/m²

5. Ground bearing resistance:– 100 kN/m²

6. Cover to reinforcement shall be:–

__Cast in channels:__
Masonry to be tied to the concrete frame via. cast in channels by HALFEN–UNISTRUT (Tel: 01234 21 1331), Channels to be Type 35/15.
Brick and blockwork to be fixed to cast in channels with HALFEN–UNISTRUT HBT channel ties.

__RC walls:__
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__RC columns in external walls:__
Allow stainless steel channels in one face and galvanised mild steel in two faces.
All channels at 225 vertical centres.

__RC columns within internal walls:__
Where an internal wall is butted up to an RC column allow mild steel cast in channels at 225 vertical centres in the column faces.

GROUND FLOOR SLAB CONSTRUCTION (UNO) :
200 thk GROUND BEARING SLAB REINFORCED WITH A393 MESH TOP, MIN. LAP = 400 (25mm cover)
ON DPM TO ARCHITECTS DETAILS ON SAND BLINDING ON 150 LAYER OF DOT TYPE 1 FILL.

NOTES:

1. ALL COLUMNS AND PILECAPS TO BE PLACED CENTRALLY ON GRIDS UNLESS SHOWN OTHERWISE

2. THE JOINT LAYOUT SHOWN FOR THE GROUND BEARING SLAB IS INDICATIVE ONLY. THE FINAL LAYOUT AND POURING SEQUENCE IS TO BE PROVIDED BY THE CONTRACTOR AND AGREED WITH CLARKE BOND PARTNERSHIP PRIOR TO CONSTRUCTION.

3. LEGEND

I.J. = ISOLATION JOINT
D.B.J. = DEBONDED LONGITUDINAL JOINT
T.T.J. = TIED TRANSVERSE JOINT
F.C.J. = FREE CONTRACTION JOINT

FOR DETAILS OF JOINTS SEE DRG. No. 14500/G60

Reinforcement schedules nos.

Scales 1:100

Revisions

Ref.	Detail.	By.	Date.
A	GENERALLY UPDATED	RJD	2.10.96
B	FURTHER DETAILS ADDED	RJD	22.10.96
C	PILECAPS ADDED	RJD	–
D	–		–
E	PILE CAP CORE 7 REVISED, SLAB JOINTS ADDED.		15.12.96
F	REVISIONS MARKED THUS		20.12.96
G	COLUMNS ON GRID LINE W MOVED RC BUND WALLS ADDED OTHER REVISIONS SHOWN CLOUDED	BC	14.3.97
H	..., CORE AREAS OTHER REVISIONS SHOWN CLOUDED	BC	18.4.97
J	GENERALLY UPDATED, LEVELS AND NEW SECTION MARKS ADDED	BC	30.4.97
K	BUND WALL ADDED BETWEEN GRIDS 4 & 5, WALL ADJ. GRID LINE Sa & OIL STORAGE TANK AREA AMENDED PLUS MINOR REVISIONS	BC	14.5.97
L	– – – –	RJD	4.6.97

Client.
BURFORD GROUP PLC

Project.
LONDON: FINCHLEY ROAD DEVELOPMENT

Description.
LEVEL 0
GROUND FLOOR G.A.
ZONE C

WORKING DRAWING

CONSULTING ENGINEERS

BIRMINGHAM	0121 414 1989
BRISTOL	0117 929 2244
CARDIFF	01222 810785
EXETER	01626 891861
LONDON	0171 255 1998
MANCHESTER	0161 962 2974
WAKEFIELD	01924 823773

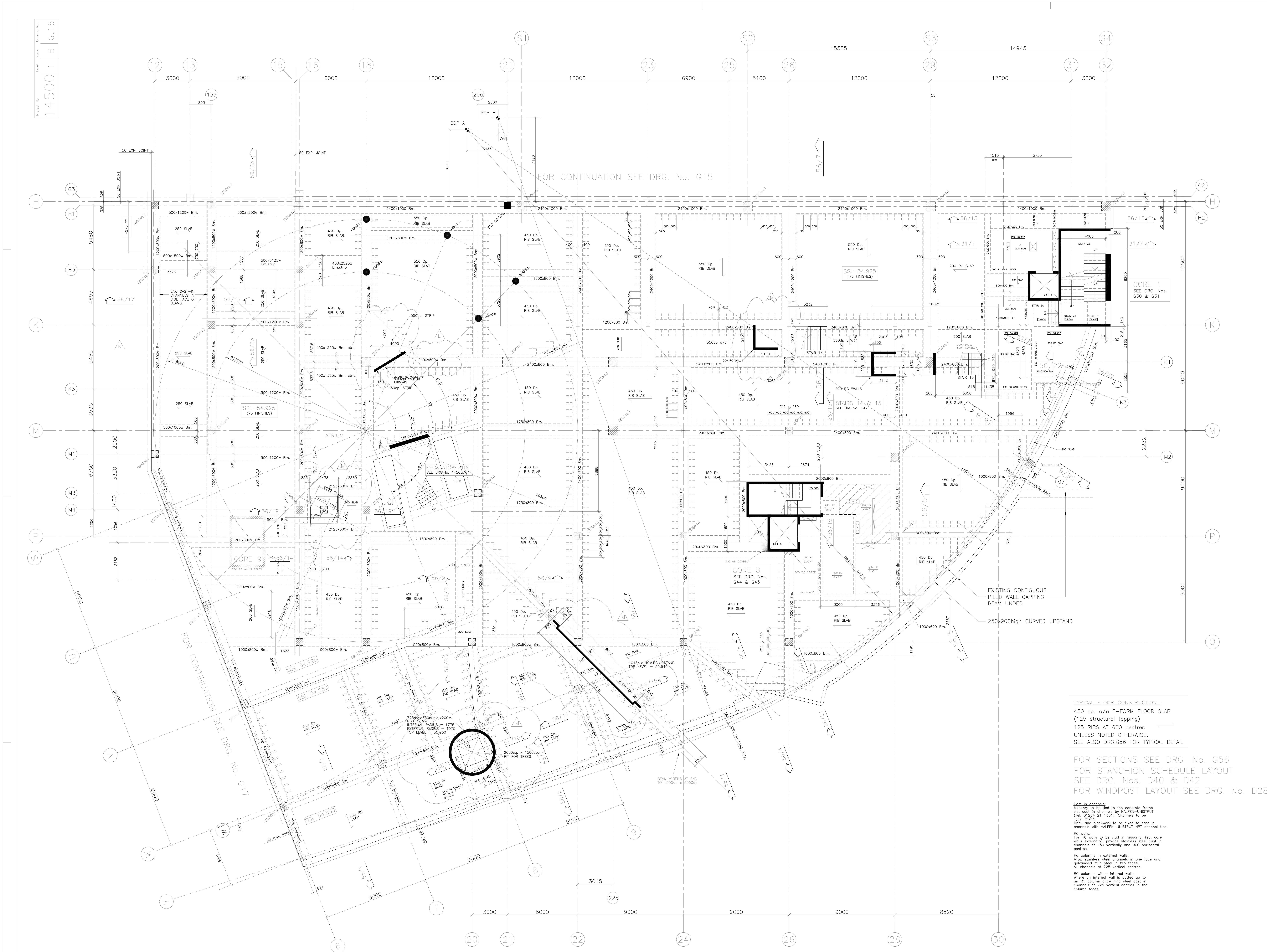
CLARKE BOND PARTNERSHIP

Project No.	Level	Zone	Drawing No.
14500	0	C	G.11

Revision. B C D E F G J K L

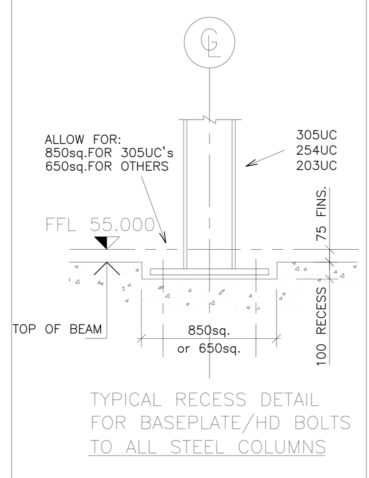
Drawn by: RJD | Checked: | Date: SEP'96

Project No. 14500 Level 0 Zone C Drawing No. G.11



Notes.

1. Do not scale this drawing.
2. Contractor to check all dimensions and report all errors and omissions to the Engineer.
3. Concrete mix to be grade: which shall conform in all respects with the requirements of our specifications. | SEE NOTE 7 BELOW
4. Design loadings:– kN/m² / kN/m² / kN/m²
5. Ground bearing resistance:– kN/m²
6. Cover to reinforcement shall be:–
7. FOR CONCRETE MIXES SEE SPECIFICATION E10 : Clauses 132B, 133b & 135(For columns)



TYPICAL RECESS DETAIL
FOR BASEPLATE/HD BOLTS
TO ALL STEEL COLUMNS

Reinforcement schedules nos.

Scales
1:100

Revisions

Ref.	Detail.	By.	Date.
A	GENERALLY UPDATED	BC	2.10.96
B	GENERALLY UPDATED	BC	25.10.96
C	CONTIGUOUS PILED WALL ADDED, ESC. PIT REVISED, CORE 8 MOVED, ATRIUM COLS AMENDED TO CIRCULAR, ALL OTHER REVISIONS CLOUDED, FIRST LEISURE COLS. ADDED	BC	6.12.96
D	CONTIGUOUS PILED WALL ADDED, ESC. PIT REVISED, CORE 8 MOVED, ATRIUM COLS AMENDED TO CIRCULAR, ALL OTHER REVISIONS CLOUDED, FIRST LEISURE COLS. ADDED ISSUED FOR BILLING	BC	20.12.96
E	STANCHION AND RC BEAM ADDED ADJACENT GRIDS H2/13a SIZES & WEIGHTS TO STANS. REMOVED SEE DRG. D40 MINOR REVISIONS CLOUDED	BC	5.4.97
F	FLOOR SLAB STEPPED BETWEEN GRIDS 6–9/X–V, TO SUIT FINISHED LEVELS. BEAM SIZES AMENDED BETWEEN GRIDS 12–16/ H–M4 DUE TO HEADROOM PLUS MINOR REVISIONS	BC	14.3.97
G	STAIR CORES 1 & 8 UPDATED, BEAMS & SECTIONS ALONG FRONT ELEVATION AMENDED GENERAL UPDATE OF SLAB CONSTRUCTION TYPES AND BEAM SIZES.	DRB	21.5.97
H	ESCALATOR PIT/STAIR 18 ARRANGEMENT UPDATED	DRB	6.5.97
J	ESCALATOR/STAIR 18 AREA AMENDED (SEE DRG. No. 14500/G14), ALSO ATRIUM LIFT PIT REVISED. RIB SETTING OUT FINALISED	BC	27.6.97
K	STAIR 14 & 15 SETTING OUT REVISED CONCRETE SUPPORT WALLS ADDED/ REVISED TO SUIT NEW LAYOUT. BEAM STRIPS ADDED BETWEEN GRIDS 12–18/H–M	BC	4.8.97
L	BEAM ON GRID W1 MOVED TO GRID W MINOR AMENDMENTS SHOWN CLOUDED	BC	28.8.97
M	SUPPORT WALLS FOR STAIR 14 ADDED (ISSUED BY FAX)	BC	18.9.97
	ATRIUM LIFT COL.SETOUT ADDED MINOR AMENDMENTS SHOWN CLOUDED (ISSUED BY FAX)	RJD	23.12.97
	TREE PLANTER WALLS ADDED RC UPSTAND ADDED ADJACENT GL.22	RJD	15.1.98

TYPICAL FLOOR CONSTRUCTION :
450 dp. o/a T–FORM FLOOR SLAB
(125 structural topping)
125 RIBS AT 600 centres
UNLESS NOTED OTHERWISE.
SEE ALSO DRG.G56 FOR TYPICAL DETAIL

FOR SECTIONS SEE DRG. No. G56
FOR STANCHION SCHEDULE LAYOUT
SEE DRG. Nos. D40 & D42
FOR WINDPOST LAYOUT SEE DRG. No. D28

Cast in channels:
Masonry to be tied to the concrete frame via. cast in channels by HALFEN–UNISTRUT (Tel: 01234 21 1331), Channels to be Type 35/15.
Brick and blockwork to be fixed to cast in channels with HALFEN–UNISTRUT HBT channel ties.

RC walls:
For RC walls to be clad in masonry, (eg. core walls externally), provide stainless steel cast in channels at 450 vertically and 900 horizontal centres.

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All channels at 225 vertical centres.

RC columns within internal walls:
Where an internal wall is butted up to an RC column allow mild steel cast in channels at 225 vertical centres in the column faces.

Client.
BURFORD GROUP PLC

Project.
LONDON:
FINCHLEY ROAD
DEVELOPMENT

Description.
LEVEL 1
FIRST FLOOR G.A.
ZONE B

WORKING DRAWING

CONSULTING ENGINEERS

BIRMINGHAM	0121 414 1989
BRISTOL	0117 929 2244
CARDIFF	01222 810785
EXETER	01626 891861
LONDON	0171 255 1998
MANCHESTER	0161 962 2974
WAKEFIELD	01924 823773

CLARKE BOND
PARTNERSHIP

Project No.	Level	Zone	Drawing No.
14500	1	B	G.16

Revision.
~~G~~ ~~H~~ ~~J~~ ~~K~~ ~~L~~ M

Drawn by	Checked	Date
BC		SEP'96

Notes.

1 Do not scale this drawing.

2. Contractor to check all dimensions and report all errors and omissions to the Engineer.

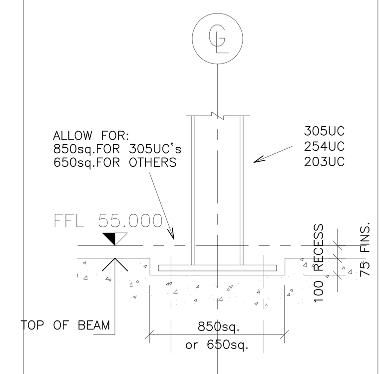
3. Concrete mix to be grade: which shall conform in all respects with the requirements of our specifications. SEE NOTE 7 BELOW

4. Design loadings:– kN/m² kN/m² kN/m²

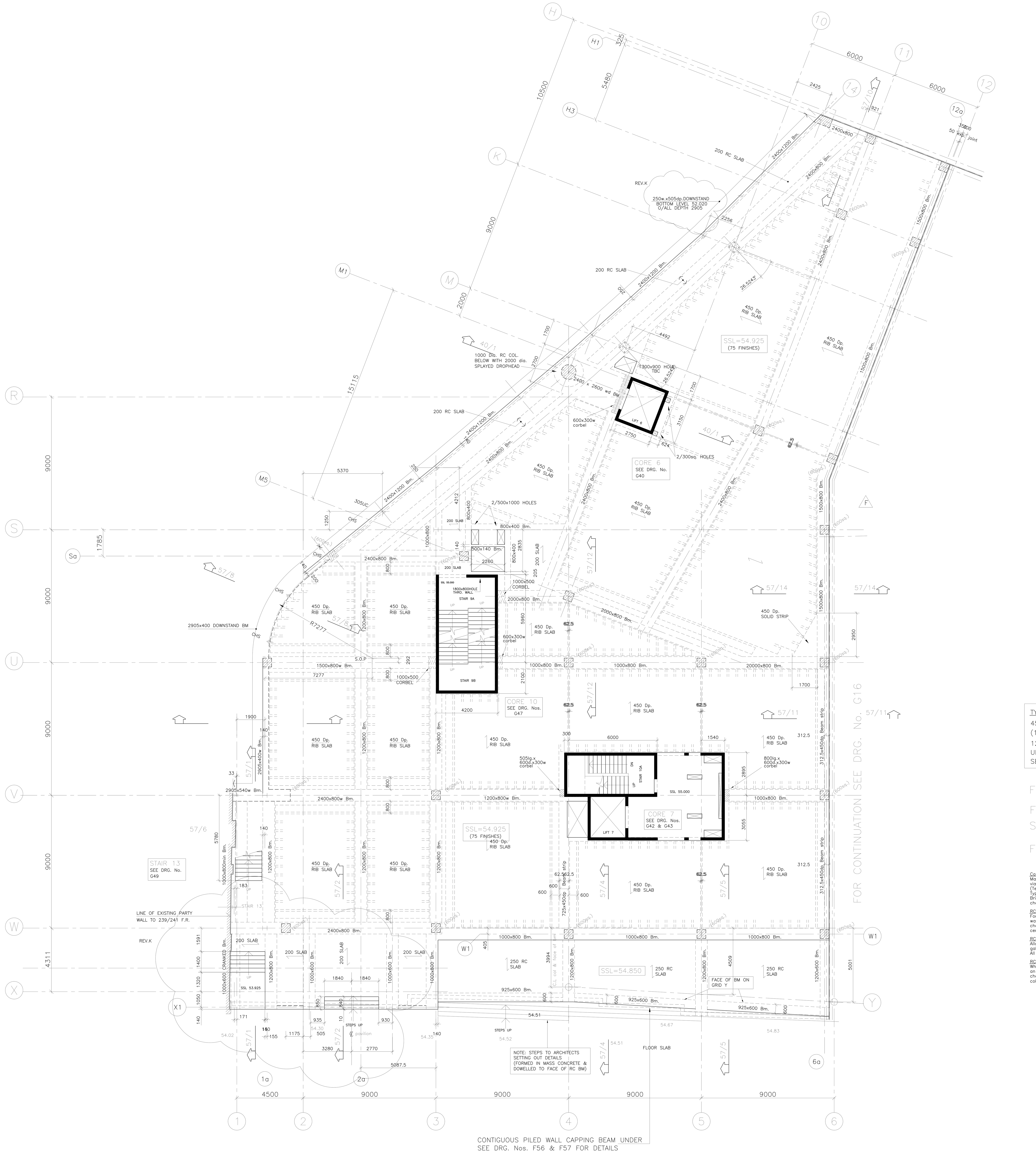
5. Ground bearing resistance:– kN/m²

6. Cover to reinforcement shall be:–

7. FOR CONCRETE MIXES SEE SPECIFICATION E10 : Clauses 132B, 133b & 135(For columns)



TYPICAL RECESS DETAIL FOR BASEPLATE/HD BOLTS TO ALL STEEL COLUMNS



TYPICAL FLOOR CONSTRUCTION :
450 dp. o/a T–FORM FLOOR SLAB
(125 structural topping)
125 RIBS AT 600 c/c
UNLESS NOTED OTHERWISE
SEE ALSO DRG. No. G57 FOR TYPICAL DETAIL

FOR SECTIONS SEE DRG. No. G57

FOR STANCHION SCHEDULE & LAYOUT SEE DRG. Nos. D40 & D43

FOR WINDPOST LAYOUT SEE DRG. No. D29

Cast in channels:
Masonry to be tied to the concrete frame via. cast in channels by HALFEN–UNISTRUT (Tel: 01234 21 1331), Channels to be Type 35/15.
Brick and blockwork to be fixed to cast in channels with HALFEN–UNISTRUT HBT channel ties.

RC walls:
For RC walls to be clad in masonry, (eg. core walls externally), provide stainless steel cast in channels at 450 vertically and 900 horizontal centres.

RC columns in external walls:
Allow stainless steel channels in one face and galvanised mild steel in two faces.
All channels at 225 vertical centres.

RC columns within internal walls:
Where an internal wall is butted up to an RC column allow mild steel cast in channels at 225 vertical centres in the column faces.

Reinforcement schedules nos.

Scales 1:100

Revisions

Ref.	Detail.	By.	Date.
A			
B	GENERALLY UPDATED	BC	25.10.96
D	CORES 6, 7 & 10 REVISED, STAIR 13 REVISED, CHS SETTING OUT AMENDED. STEEL COLUMN SIZES REVISED CONTIGUOUS PILED WALL ADDED FRAMING GENERALLY UPDATED, OTHER ISSUED FOR BILLING	BC	20.12.96
E	SIZES/WEIGHTS REMOVED FROM STANS. SEE DRG. D40. BEAM/COLS. MOVED ON GRID LINE W/3–6 STRENGTHENING TO AREA BETWEEN GRIDS 2–3/X–S1 ADDED PLUS MINOR REVS. (SHOWN CLOUDED)	BC	5.2.97
F	FLOOR SLAB STEPPED BETWEEN GRIDS 3–6/X–W	BC	14.2.97
G	CORE 10 UPDATED TO ARCHITECTS LATEST SETTING–OUT. GENERAL UPDATE TO G.A	DRB	27.5.97
J	BEAM STRIP ON GRID 4/V–W AMENDED MINOR AMENDING TO RIB SETTING OUT	BC	1.7.97
K	BEAM STRIP ON GRID 4/V–W AMENDED MINOR AMENDING TO RIB SETTING OUT SETTING OUT ADDED TO STEPS ON GRIDS 1 & X1 –DOWNSTAND ADDED TO GL.14 ALL REVISIONS CLOUDED	BC RJD	25.7.97

Client. BURFORD GROUP PLC

Project. LONDON: FINCHLEY ROAD DEVELOPMENT

Description. LEVEL 1 FIRST FLOOR G.A. ZONE C

WORKING DRAWING

CONSULTING ENGINEERS

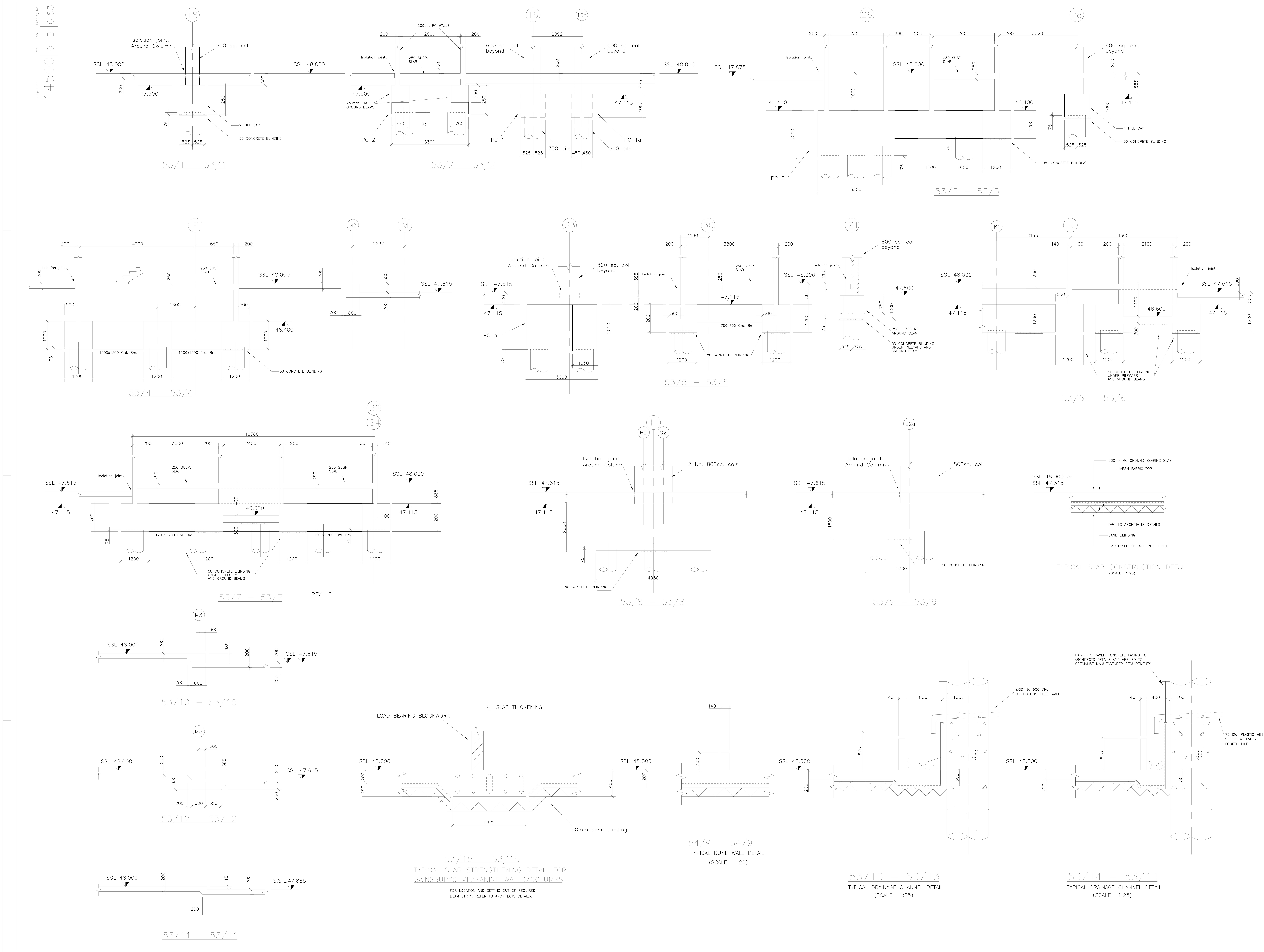
BIRMINGHAM	0121 414 1989
BRISTOL	0117 929 2244
CARDIFF	01222 810785
EXETER	?61
LONDON	
MANCHESTER	
WAKEFIELD	

CLARKE BOND PARTNERSHIP

Project No.	Level	Zone	Drawing No.
14500	1	C	G.17

Revision. B C D E F G J K

Drawn by	Checked	Date
BC		SEP'96



Notes.

1 Do not scale this drawing.

2. Contractor to check all dimensions and report all errors and omissions to the Engineer.

3. Concrete mix to be grade: which shall conform in all respects with the requirements of our specifications.

4. Design loadings:– kN/m² kN/m² kN/m²

5. Ground bearing resistance:– kN/m²

6. Cover to reinforcement shall be:–

Reinforcement schedules nos.

Scales 1:50

Revisions

Ref.	Detail.	By.	Date.
A	REVISIONS MARKED THUS	–	19.12.96
B	REVISIONS MARKED THUS	–	18.3.97
C	ALL SECTIONS UPDATED TO SUIT CHANGES TO LAYOUTS, SECTIONS 53/14, 53/15, 53/16 ADDED	BC	2.5.97
D	DEPTH OF LIFT PIT ON SECTIONS 53/6 & 53/7 REVISED PLUS MINOR AMENDMENTS	BC	16.5.97

Client.
BURFORD GROUP PLC

Project.
LONDON: FINCHLEY ROAD DEVELOPMENT.

Description.
LEVEL 0
GENERAL ARRANGEMENT
SECTIONS

ZONE B.

WORKING DRAWING

CONSULTING ENGINEERS

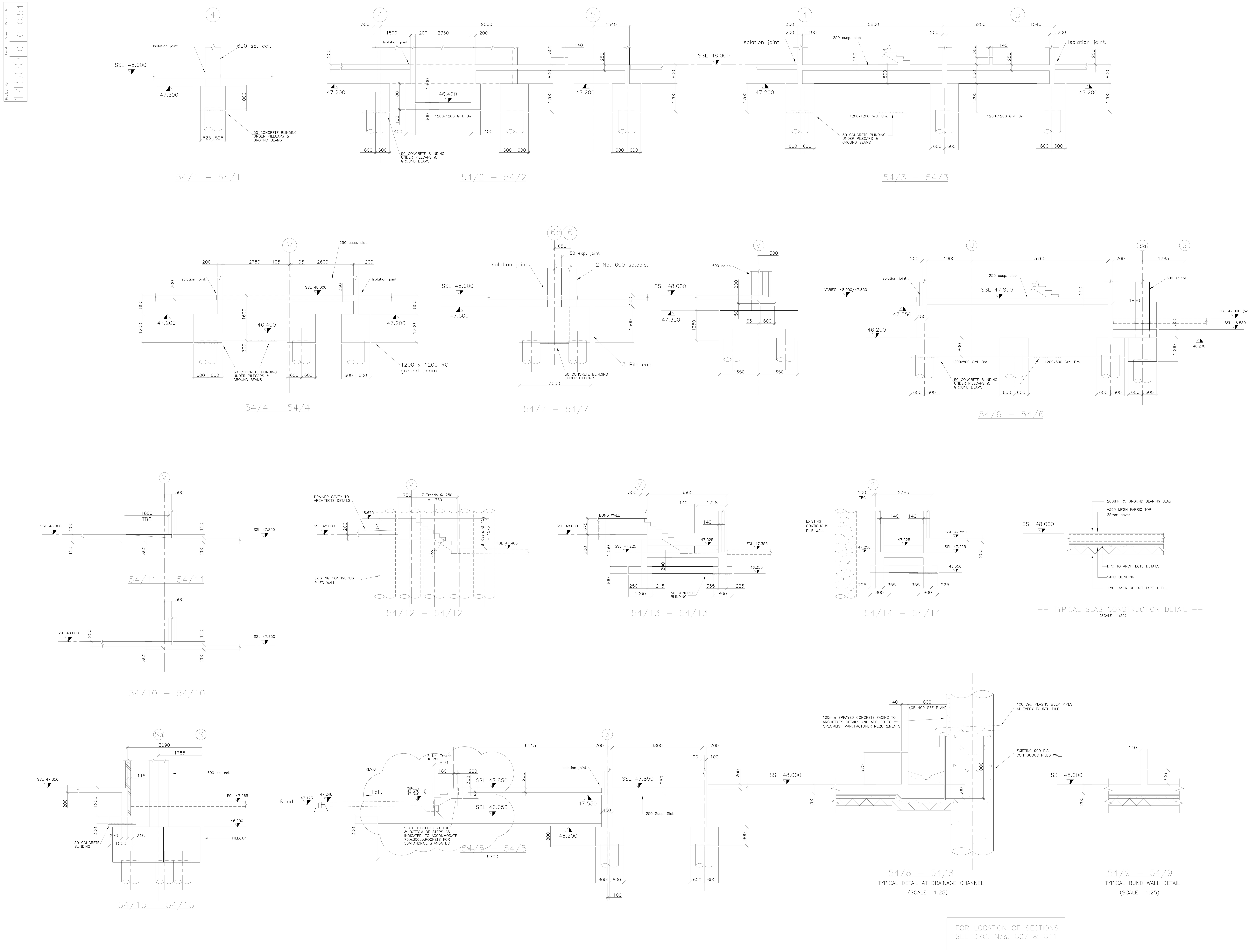
BIRMINGHAM	0121 414 1989
BRISTOL	0117 929 2244
CARDIFF	01222 810785
EXETER	01626 891861
LONDON	0171 255 1998
MANCHESTER	0161 962 2974
WAKEFIELD	01924 823773

CLARKE BOND PARTNERSHIP

Project No.	Level	Zone	Drawing No.
14500	0	B	G.53

Revision.
A | B | C | D

Drawn by	Checked	Date
G⌃		NOV'96



Notes.

1 Do not scale this drawing.
2. Contractor to check all dimensions and report all errors and omissions to the Engineer.
3. Concrete mix to be grade: which shall conform in all respects with the requirements of our specifications. SEE NOTE 7 BELOW
4. Design loadings:– kN/m² kN/m² kN/m²
5. Ground bearing resistance:– kN/m²
6. Cover to reinforcement shall be:–
7. FOR CONCRETE MIXES SEE SPECIFICATION E10 : Clauses 132B, 133b & 135(For columns)

Reinforcement schedules nos.

Scales
1:50

Revisions

Ref.	Detail.	By.	Date.
A	REVISIONS MARKED THUS	–	20.12.96
B	SECTIONS 54/8 & 54/9 ADDED REVISIONS MARKED THUS	BC	7.4.97
C	ALL SECTIONS UPDATED TO SUIT CHANGES TO PLAN SECTIONS 54/10 & 54/11 ADDED	BC	25.4.97
D	SECTIONS 54/12, 54/13, 54/14 & 54/15 ADDED	BC	30.4.97
E	SECTIONS 54/11, 54/12, 54/13, 54/14, 54/5 AMENDED	BC	14.5.97
F	SECTIONS 54/5, 54/6 AMENDED MARKED THUS	GG	30.7.97
G	THICKENING ADDED TO ESCAPE STAIRS TO ACCOMMODATE HANDRAIL STANDARDS	RJD	20.10.97

Client.
BURFORD GROUP PLC

Project.
LONDON: FINCHLEY ROAD DEVELOPMENT.

Description.
FOUNDATION/LEVEL 0 GENERAL ARRANGEMENT SECTIONS

ZONE C

WORKING DRAWING

CONSULTING ENGINEERS

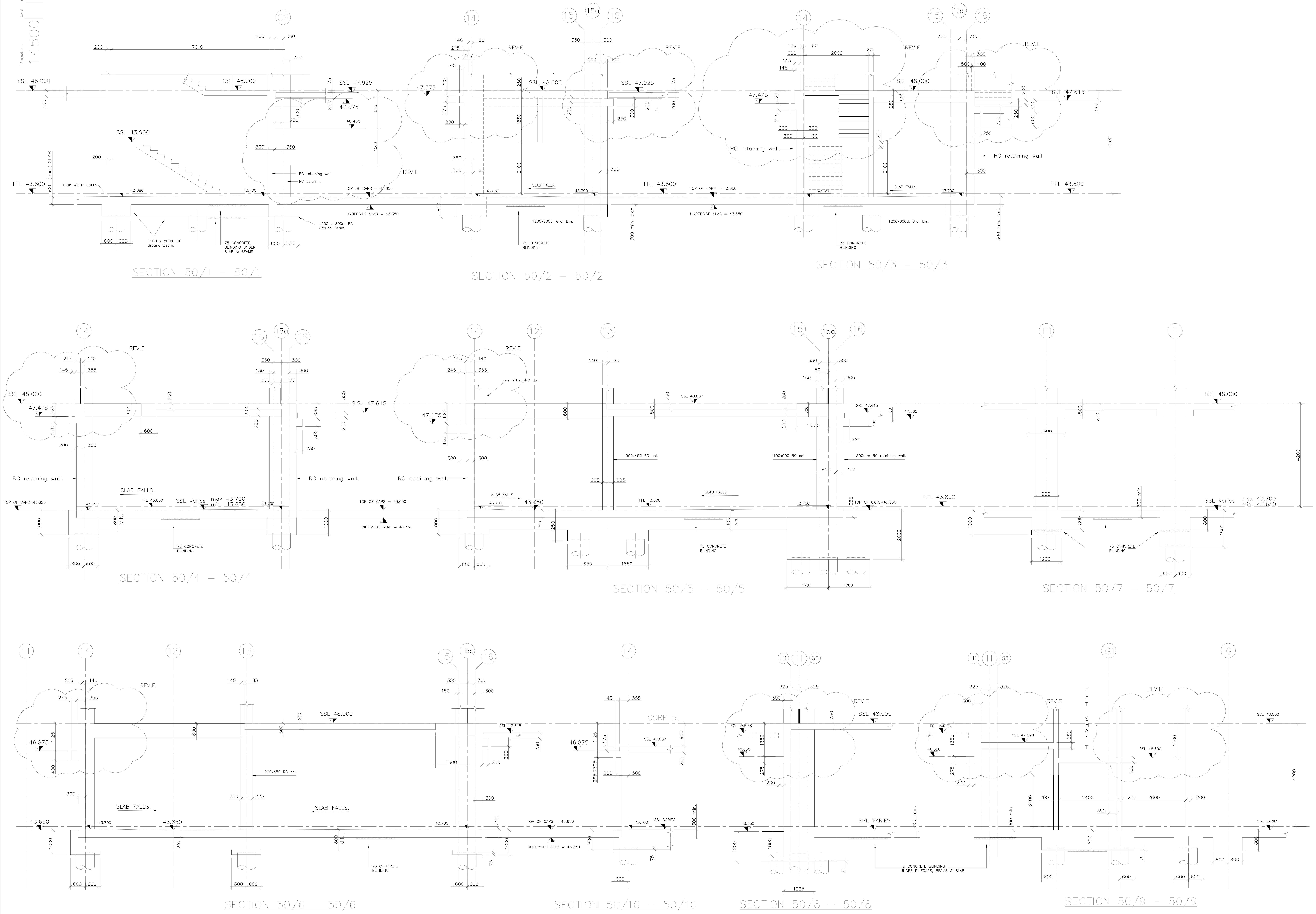
BIRMINGHAM	0121 414 1989
BRISTOL	0117 929 2244
CARDIFF	01222 810785
EXETER	01626 891861
LONDON	0171 255 1998
MANCHESTER	0161 962 2974
WAKEFIELD	01924 823773

CLARKE BOND PARTNERSHIP

Project No.	Level	Zone	Drawing No.
14500	0	C	G.54

Revision.
A B C D E F G

Drawn by	Checked	Date
BC		NOV'96



FOR LOCATION OF SECTIONS INDICATED REFER TO DRG. No. 14500/0/A/G04.

Notes.

1 Do not scale this drawing.

2. Contractor to check all dimensions and report all errors and omissions to the Engineer.

3. Concrete mix to be grade: which shall conform in all respects with the requirements of our specifications. SEE NOTE 7 BELOW

4. Design loadings:– kN/m² kN/m² kN/m²

5. Ground bearing resistance:– kN/m²

6. Cover to reinforcement shall be:–

7. FOR CONCRETE MIXES SEE SPECIFICATION E10 : Clauses 132B, 133b & 135(For columns)

Reinforcement schedules nos.

Scales 1:50

Revisions

Ref.	Detail.	By.	Date.
A	Dimensions added.	–	15.12.96
B	NIB DETAILS ADDED, SECTION 10–10 ADDED.	–	20.12.96
C	SECTIONS 8–8, 9–9 WALL RELOCATED, SLAB FALLS ADDED, RETAINING WALL THICKNESS REVISED,	GG	14.3.97
D	ALL SECTIONS REVISED TO SUIT PLANS	BC	28.4.97
E	ALL REVISIONS CLOUDED	RJD	3.7.97

Client. BURFORD GROUP PLC

Project. LONDON: FINCHLEY ROAD DEVELOPMENT.

Description. BASEMENT G.A.SECTIONS. ZONE A.

WORKING DRAWING

CONSULTING ENGINEERS

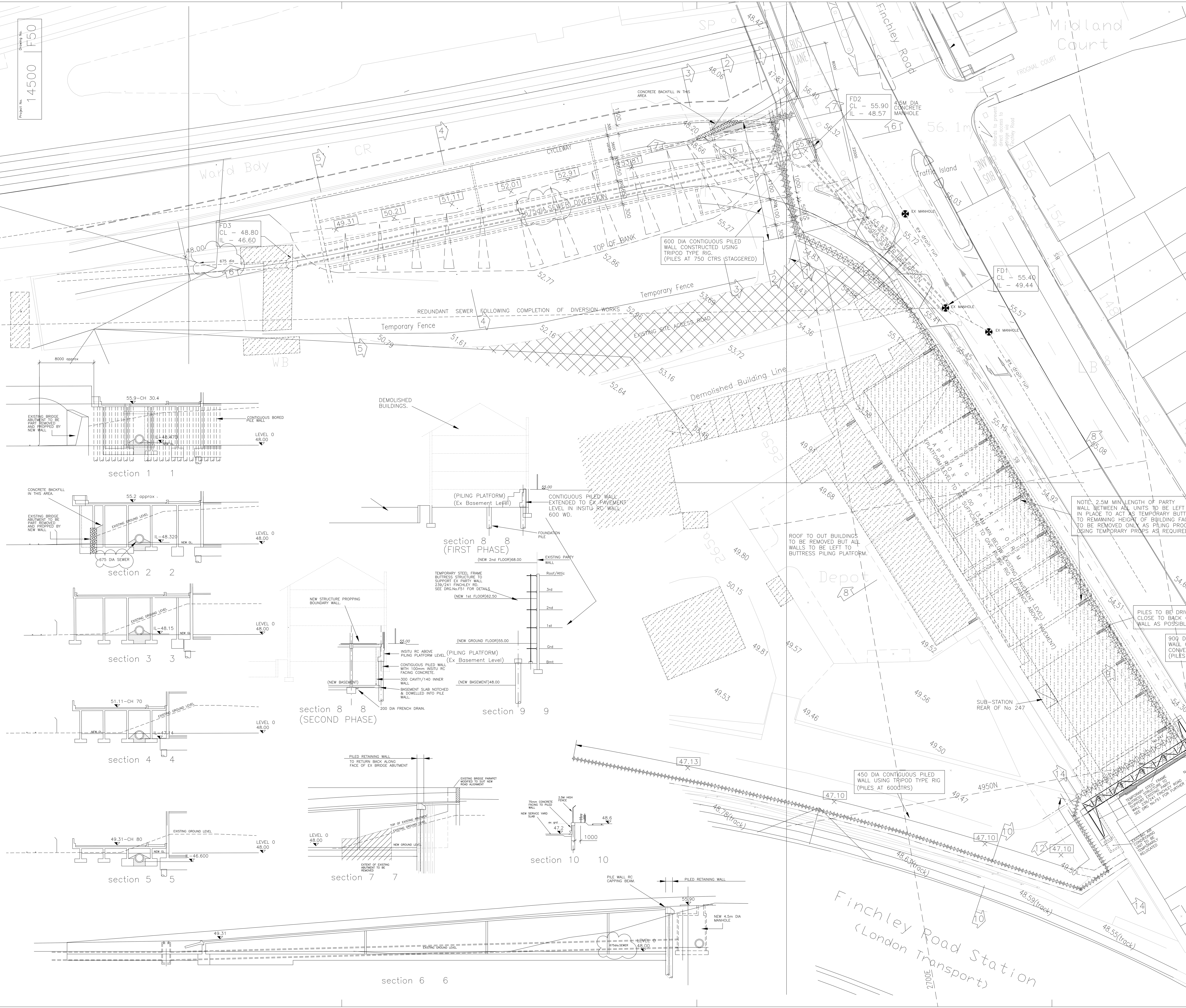
BIRMINGHAM	0121 414 1989
BRISTOL	0117 929 2244
CARDIFF	01222 810785
EXETER	01626 891861
LONDON	0171 255 1998
MANCHESTER	0161 962 2974
WAKEFIELD	01924 823773

CLARKE BOND PARTNERSHIP

Project No.	Level	Zone	Drawing No.
14500	–	A	G.50

Revision. A B C D E

Drawn by	Checked	Date
GG		DEC'96



CONSTRUCTION SEQUENCE OF KEY ACTIVITIES

1. New Access Road
   Make safe and remove any live services. Protect railway as required.
   Fell trees and grub out roots.
   Install piling platform.
   Install head end piled wall and capping beam. (Tripod rig within mobile screens where necessary)
   Construct new manhole.
   Drive sewer to existing manhole. (Microtunnel)
   Bulk muckshift up to 10 m from piled wall.
   Construct strip footings, wall and new sewer pipe.
   Once piled wall is propped by access road support walls, complete excavation.
   Construct deck and allow 14 days curing period.
   Complete drainage diversion.
   Finishes to new access road except wearing course.
   Open new access road as site entrance.
   Install piled wall access existing access road.

2. Finchley Road Retaining Wall
   Make safe and remove existing substation plus any other live services.
   Demolish and remove No's 265 – 251 Finchley Road.
   Construct temporary steelwork buttress to party wall 239/241.
   Demolish and remove Nos. 251 – 241 Finchley Road plus roofs to rear of basement.
   Weatherproof party wall 239/241.
   Install piled wall from existing basement level after boring through existing floor and wall footings.
   Construct insitu capping beam/wall to ground level.
   Demolish remainder of walls to rear of basement and excavate to new basement level.

3. LU Boundary Retaining Wall
   Make safe and remove any live services.
   Install temporary screening remove lamposts and vegetation.
   Install piling platform.
   Install piled wall and capping beam (Tripod rigs within mobile safety screens)
   Erect new fence.
   Excavate to new road level.
   Break off front segment of piles in wall and render.
   Construct roadworks.

4. Piled Foundations
   Make safe and remove any live services.
   Install piling platform at basement level approximately + 48.000.
   Carry out preliminary load tests.
   Install piles and complete load testing programme.
   Excavate individual pile caps.
   Breakdown and prepare piles.
   Construct caps and column starters.
   Excavate for lower basement.
   Breakdown piles to suit lower basement pile caps.
   Construct caps and lower basement floor beams and slab including tanking.
   Construct lower basement walls including tanking and drainage.
   Backfill outside lower basement perimeter to + 48.00 level.

Notes.
1 Do not scale this drawing.
2. Contractor to check all dimensions and report all errors and omissions to the Engineer.
3. Concrete mix to be grade: which shall conform in all respects with the requirements of our specifications.
4. Design loadings: – kN/m² kN/m² kN/m²
5. Ground bearing resistance: –
6. Cover to reinforcement shall be: –

EXISTING BUILDINGS TO BE DEMOLISHED SHOWN THUS

Reinforcement schedules nos.

Scales
1:200

Revisions

Ref.	Detail.	By.	Date.
A	750 DIA CONTIGUOUS PILED WALL AMENDED TO 900 DIA. SECTION 10 10 ADDED. 450 DIA CONTIGUOUS PILED WALL EXTENDED.	DRB	26.7.96
B	450 DIA CONTIGUOUS PILED WALL AMENDED SECTION 2 2 REVISED	DRB	29.7.96
C	TEMPORARY BUTRESS TO No.241 REVISED PILING REVISED AT REAR OF 241 & ADJACENT PARTY WALL	RJD	12.8.96
D	SEWER SIZE REVISED	KCW	20.8.96

Client.
BURFORD GROUP

Project.
FINCHLEY ROAD CENTRE LONDON

Description.
PILED RETAINING WALLS AND DRAINAGE DIVERSION.

PRELIMINARY

CONSULTING ENGINEERS

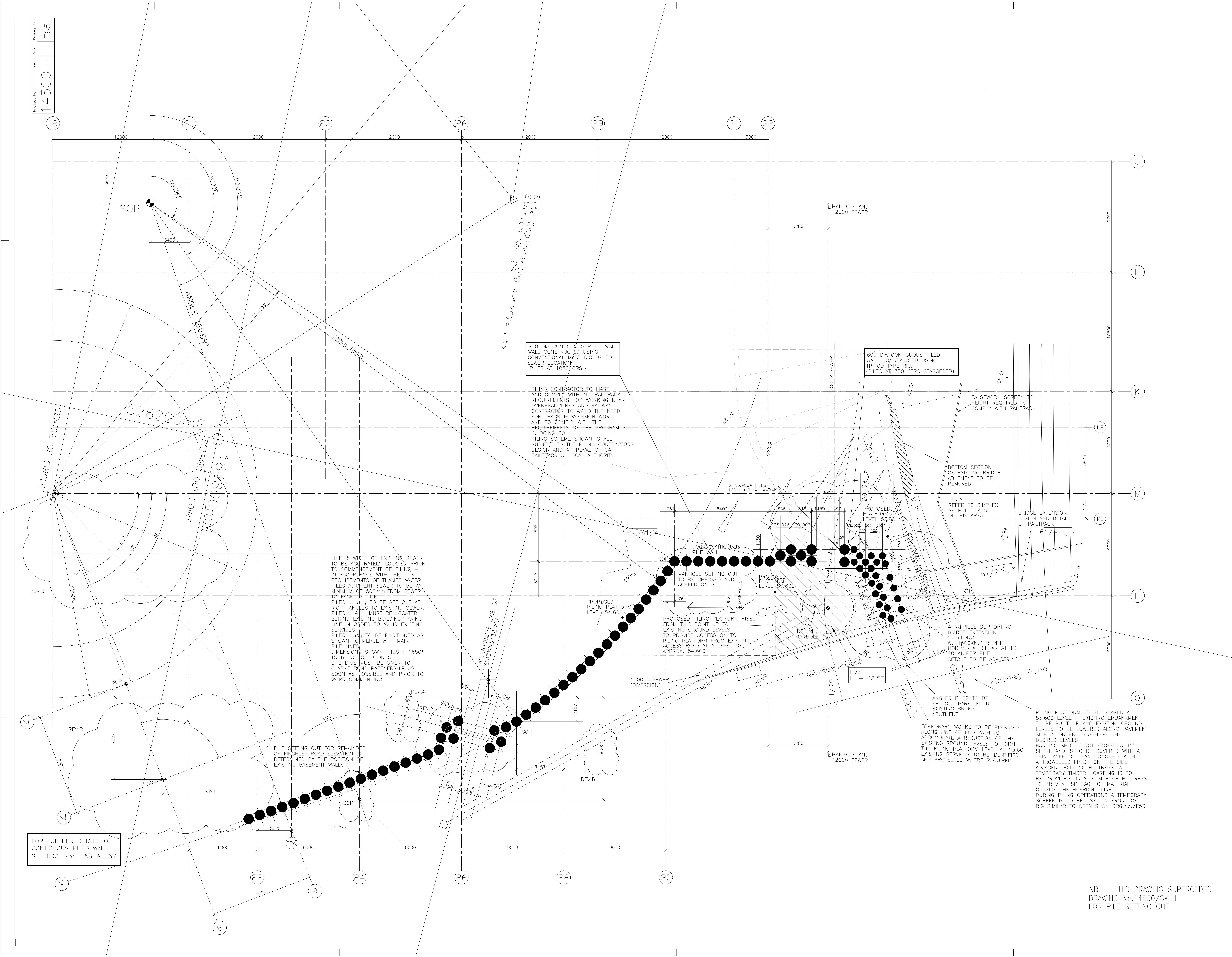
BIRMINGHAM	0121 414 1989
BRISTOL	0117 929 2244
CARDIFF	01222 810785
EXETER	01626 891861
LONDON	0171 493 3375
MANCHESTER	0161 962 2974
WAKEFIELD	01924 823773

CLARKE BOND PARTNERSHIP

Project No. 14500 | Drawing No. F50

Revision. A | B | C | D

Drawn by Checked Date
DRB | | JULY'96



Notes.

1. Do not scale this drawing.
2. Contractor to check all dimensions and report all errors and omissions to the Engineer.
3. Concrete mix to be grade: See Note 6 which shall conform in all respects with the requirements of our specifications.
4. Design loadings:- kN/m² kN/m² kN/m²
5. Ground bearing resistance:- kN/m²
6. For Concrete Mixes see Specification E10 - Clauses 130a ; 131b & 132b

Reinforcement schedules nos.

Scales 1:100

Revisions

Ref.	Detail	By	Date
A	ALL REVISIONS CLOUDED	RJD	22.1.97
A	ALL REVISIONS CLOUDED	RJD	10.2.97

Client: BURFORD GROUP PLC

Project: LONDON: FINCHLEY ROAD DEVELOPMENT

Description: PILE SETTING OUT ALONG CURVED GRID AND TOP OF ACCESS ROAD ADJOINING FINCHLEY RD.

WORKING DRAWING

CONSULTING ENGINEERS

BIRMINGHAM	0121 414 1989
BRISTOL	0117 929 2244
CARDIFF	01222 810785
EXETER	01626 891861
LONDON	0171 493 3375
MANCHESTER	0161 962 2974
WAKEFIELD	01924 823773

CLARKE BOND PARTNERSHIP

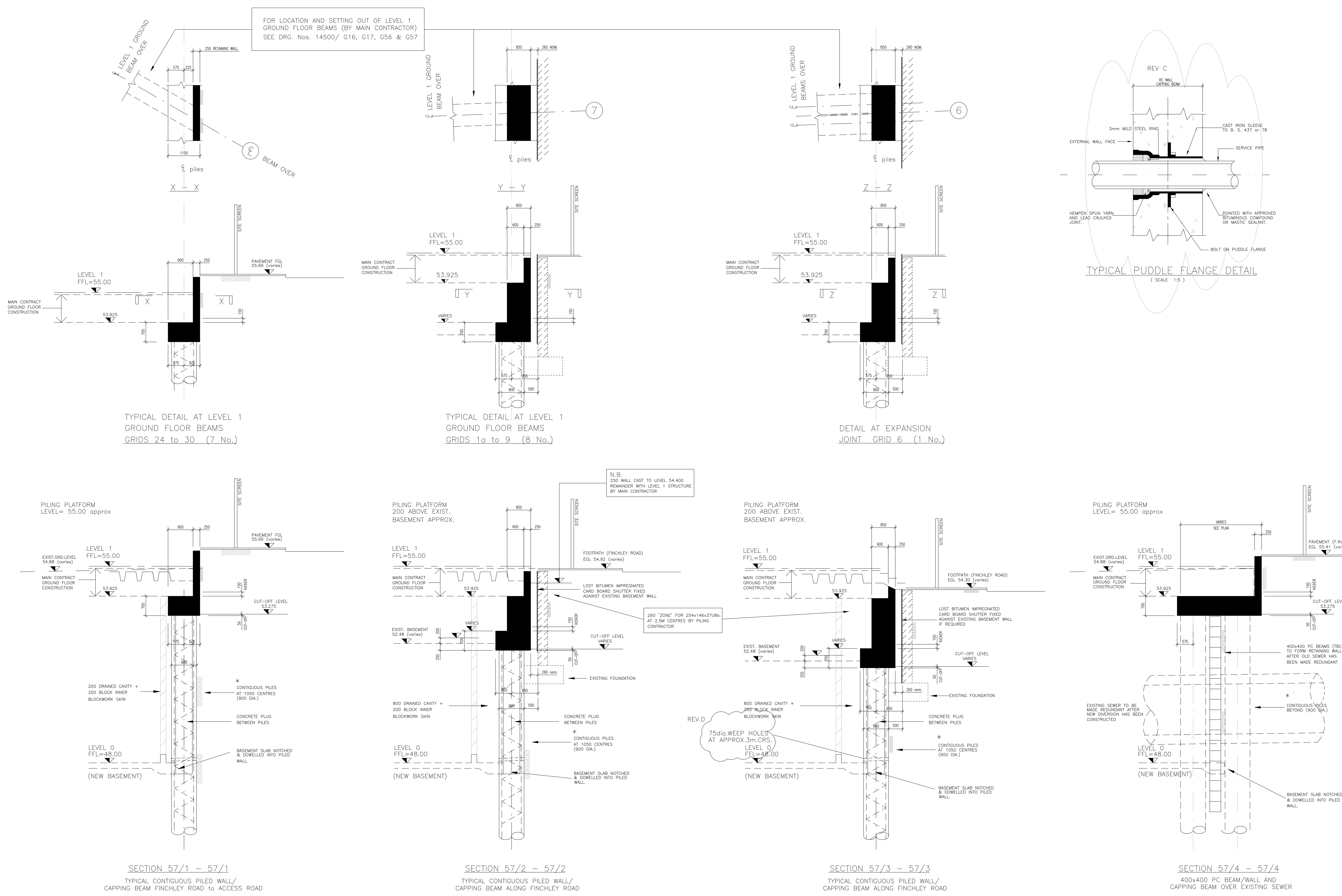
Project No. 14500 Level - Zone - Drawing No. F65

Revision: A B

Drawn by RJD Date AUG'96

Project No. 14500 Level – Zone – Drawing No. F56
Finchley Road
NOTE: VARIATIONS IN LINE OF EXISTING BASEMENT WALL TO BE ACCOMMODATED AFTER CONSTRUCTION OF PILES TO ENGINEERS REQUIREMENTS.
FD1 CL – 55.40 IL – 49.44
EX MANHOLE
exist.drain run
1200dia SEWER DIVERSION
EXISTING SITE ACCESS
REV C
NOMINAL 260 GAP FOR TEMPORARY WORKS BY PILING CONTRACTOR
NOTE: 2.5M MIN LENGTH OF PARTY WALL BETWEEN ALL UNITS (SHOWN HATCHED) TO BE LEFT IN PLACE TO ACT AS TEMPORARY BUTTRESS TO REMAINING HEIGHT OF BUILDING FACADE. TO BE REMOVED ONLY AS PILING PROGRESSES USING TEMPORARY PROPS AS REQUIRED.
PILES TO BE DRIVEN 500mm FROM FACE OF EXISTING BASEMENT WALL FOUNDATIONS.
Building Line
EXISTING PARTY WALL TO 239/241
600sq.COL.
FOR DETAILS OF ACCESS ROAD/ CONTIGUOUS PILED WALL SEE DRG.Nos.14500/F60 to F66 incl.
EXISTING ENTRANCE TO BE USED TO GAIN ACCESS TO BASEMENT FOR PILING
TO MAIN SETTINGOUT POINT
TO CENTRE OF ATRIUM
EXISTING SEWER LINE
PILING PLATFORM LEVEL= 55.00
PILING PLATFORM LEVEL= 54.60
EXISTING BASEMENT WALLS TO BE DEMOLISHED
PILING PLATFORM
APPROX. 200 ABOVE EXISTING BASEMENT LEVELS (PLATFORM LEVEL TO BE SUFFICIENT TO GIVE PILING RIG CLEARANCE ABOVE PAVEMENT)
900 DIA CONTIGUOUS PILED WALL CONSTRUCTED USING CONVENTIONAL MAST RIG. (PILES AT 1050 CTRS)
NOTE: PILING CONTRACTOR TO DESIGN CONTIGUOUS PILE WALLS TO BE FREE STANDING CANTILEVER WALLS ABOVE 47.60 AND TO ACCOMMODATE CANTILEVER RETAINING WALL ABOVE. ALL TO THE ENGINEERS/HIGHWAYS AGENCY/LOCAL AUTHORITY APPROVAL.
FOR CONTINUATION SEE DRG.No. 14500/F52
FOR PILE SETTING OUT ALONG CURVED SECTION SEE DRG. NO. 14500/F65
PLAN ON CONTIGUOUS PILED WALL AND CAPPING BEAM ALONG FINCHLEY ROAD
LEGEND : EGL = Exist. Ground Level EBL = Exist. Basement Level
N.B. 250 RETAINING WALL TO BE CAST TO UNDERSIDE LEVEL 1 SLAB = 54.400 DENOTED THUS ON ELEVATION (EXCEPT SECTION BETWEEN GRIDS 1 and 4 = 54.075 KICKER LEVEL). REMAINDER CAST WITH LEVEL 1 STRUCTURE BY MAIN CONTRACTOR
* DENOTES MINIMUMUM GAP TO BE LEFT IN 250 RETAINING WALL FOR FUTURE LEVEL 1 GROUND FLOOR BEAMS BY MAIN CONTRACTOR. (FOR LOCATION/SETTING DETAILS REFER TO DRG. Nos. 14500/ G16, G17, G56 & G57)
RECESS/GAP IN WALL TO ACCOMMODATE FUTURE LEVEL 1 BEAMS / ENTRANCE STAIRCASE 13 SEE DRG. No. G17 FOR DETAILS
400sq. PC PLANKS POSITIONED BETWEEN PILES TO FORM RETAINING WALL AFTER OLD SEWER HAS BEEN MADE REDUNDANT
TOP OF RC WALL TO SUIT NEW PAVEMENT LEVELS
700dp x 1050 RC CAPPING BEAM
MAIN CONTRACT GROUND FLOOR CONSTRUCTION
TOP OF NEW RC WALL TO SUIT PAVEMENT LEVELS
NEW GROUND FLOOR FFL LEVEL 1 = 55.000
LEVEL 1 55.000
LEVEL 1 STRUCTURE SUPPORTED ON CAPPING BEAM
FOR ACCESS ROAD/CONTIGUOUS PILED WALL DETAILS SEE DRG. Nos. 14500/F61 to F66 incl.
NEW BASEMENT LEVEL 0 = 48.00
Roof/Attic
3rd
2nd
1st
Grd
Bmt
NOTE: CONTRACTOR TO PROVIDE METHOD STATEMENT ON CONSTRUCTION AND PLACEMENT OF PC PLANKS
APPROX LOCATION EXISTING SEWER
NOTE: 2.5M MIN LENGTH OF PARTY (SHOWN HATCHED) WALL BETWEEN ALL UNITS TO BE LEFT IN PLACE TO ACT AS TEMPORARY BUTTRESS TO REMAINING HEIGHT OF BUILDING FACADE. TO BE REMOVED ONLY AS PILING PROGRESSES USING TEMPORARY PROPS AS REQUIRED.
ELEVATION A – A (LOOKING TOWORDS FINCHLEY ROAD)
TYPICAL PUDDLE FLANGE DETAIL
(SCALE 1:5)
FOR SECTIONS/DETAILS SEE DRG. NO. 14500/F57
FOR REINFORCEMENT DETAILS SEE DRG. NO. 14500/F59
Scales 1:100
Client: BURFORD GROUP PLC
Project: LONDON : FINCHLEY ROAD DEVELOPMENT
Description: G.A. CONTIGUOUS PILED WALL/CAPPING BEAM ALONG FINCHLEY ROAD
FOR CONSTRUTION ENABLING WORKS
CONSULTING ENGINEERS
BIRMINGHAM 0121 414 1989
BRISTOL 0117 929 2244
CARDIFF 01222 810785
EXETER 01626 891861
LONDON 0171 255 1998
MANCHESTER 0161 962 2974
WAKEFIELD 01924 823773
CLARKE BOND PARTNERSHIP
Project No. 14500 – – F56
BC AUG'96

Project No. 14500 | Level – | Zone – | Drawing No. F57



* NOTE:

PILING CONTRACTOR TO DESIGN CONTIGUOUS PILE WALLS TO BE FREE STANDING CANTILEVER WALLS – ABOVE 47.60 AND TO ACCOMMODATE CANTILEVER RETAINING WALL ABOVE. ALL TO THE ENGINEERS/HIGHWAYS AGENCY/LOCAL AUTHORITY APPROVAL.

FOR LOCATION OF SECTIONS SEE DRG. No. F56

FOR REINFORCEMENT DETAILS SEE DRG. No. F59

Notes.

1. Do not scale this drawing.
2. Contractor to check all dimensions and report all errors and omissions to the Engineer.
3. Concrete mix to be grade: see note 7 which shall conform in all respects with the requirements of our specifications.
4. Design loadings:- kN/m² kN/m² kN/m²
5. Ground bearing resistance:- kN/m²
6. Cover to reinforcement shall be:-
7. For Concrete mixes see specification E10 clauses 130a, 131b & 132b

Reinforcement schedules nos.

Scales 1:50

Revisions

Ref.	Detail.	By.	Date.
T1	TENDER ISSUE-QS	–	9.9.96
T2	TENDER ISSUE	–	12.9.96
A	UPDATED TO SUIT AMENDMENTS TO CONTIGUOUS PILED WALL REINFORCEMENT ADDED	BC	25.11.96
B	AMENDED TO SUIT CHANGES TO MAIN LAYOUT, REINFORCEMENT DETAILS REMOVED AND ADDED TO DRG. No. F59	BC	12.12.96
C	AMENDED TO SUIT LAYOUT PLAN TYPICAL PUDDLE FLANGE DETAIL ADDED	BC	10.2.97
D	WEEP HOLES INDICATED	RJD	28.2.97

Client: BURFORD GROUP PLC

Project: LONDON: FINCHLEY ROAD DEVELOPMENT

Description: G.A. CONTIGUOUS PILED WALL/CAPPING BEAM ALONG FINCHLEY ROAD

SECTIONS/DETAILS

FOR CONSTRUCTION ENABLING WORKS

CONSULTING ENGINEERS

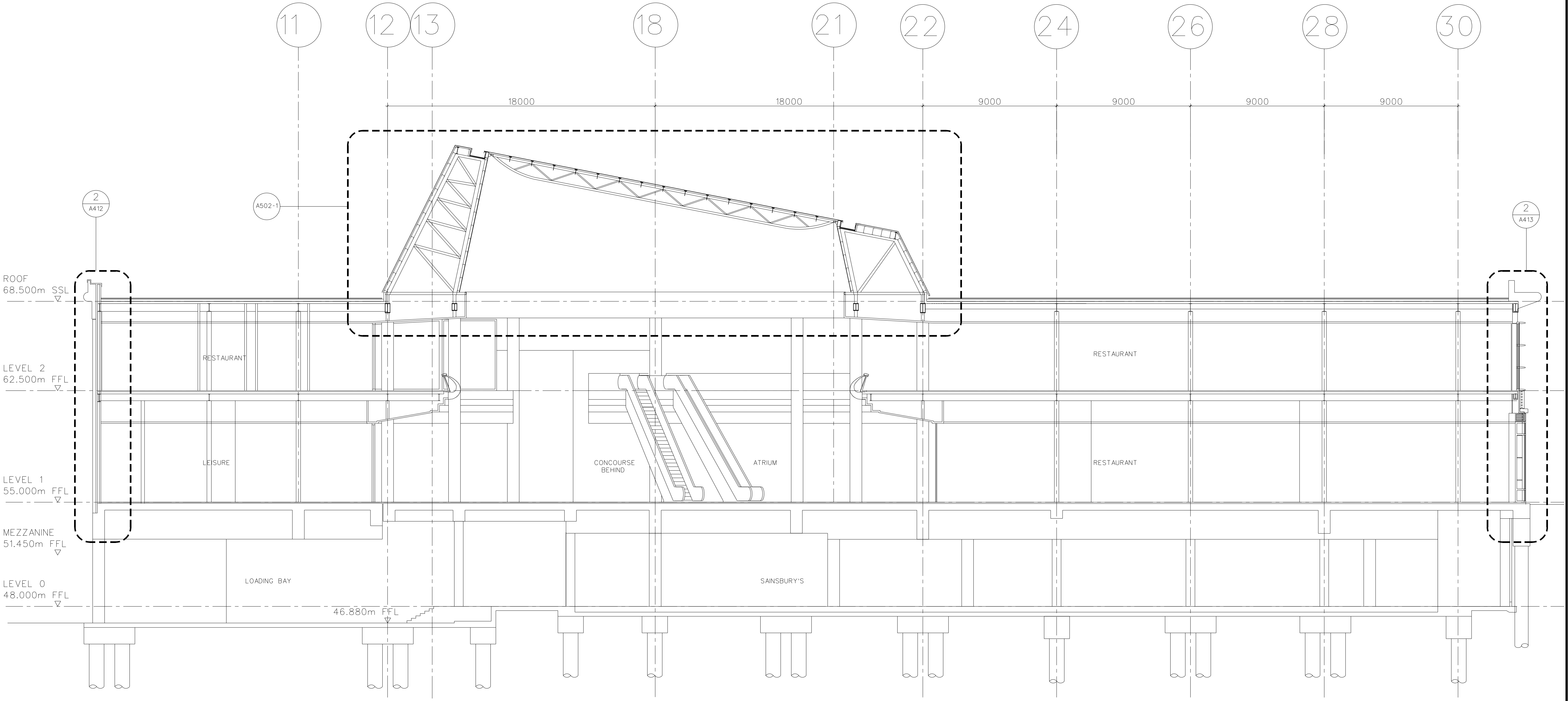
BIRMINGHAM	0121 414 1989
BRISTOL	0117 929 2244
CARDIFF	01222 810785
EXETER	01626 891861
LONDON	0171 255 1998
MANCHESTER	0161 962 2974
WAKEFIELD	01924 823773

CLARKE BOND PARTNERSHIP

Project No. 14500 | Level – | Zone – | Drawing No. F57

Revision: T1 | T2 | A | B | C | D

Drawn by: BC | Checked: | Date: AUG'96



FINCHLEY ROAD CENTRE
LONDON

RETAIL & LEISURE DEVELOPMENT

BURFORD NW3 LTD
and
J. SAINSBURY PLC

HELLMUTH, OBATA & KASSABAUM, INC.
ARCHITECTURE, PLANNING, INTERIORS, CONSULTING

Axtell House, 23/24 Warwick Street
London W1R 6DH England
Telephone: 0171 439 2248
Facsimile: 0171 734 0508
Email: 100545.747@compuserve.com

Do not scale drawings
Site verify all dimensions

No	Description	Date
A	STRUCTURE ADDED	
	LO FLOOR AMENDED	JAN 1997
B	GENERAL REVISIONS	14.03.97

Project Number: 94.525
Drawn by: TW
Checked by:
Date issued: OCT 1996
Scale at A0: 1:100

Drawing Title

SECTION C-C

Work Stage

DETAIL DESIGN

Drawing Number: A403

Revision: B