Appendix (iii)

Structural Calculations
Loadings Used (Unfactored SLS)

**Flat Roof**
Dead Loads
- Felt and chippings: 0.45 kN/m²
- Boards and joists: 0.20 kN/m²
- Ceiling: 0.20 kN/m²
- Services: 0.15 kN/m²
Total Dead Load: 1.00 kN/m²

Imposed Load: 0.75 kN/m²

**Pitched Roof**
Dead Loads
- Slate and felt: 0.30 kN/m²
- Boards and joists: 0.25 kN/m²
- Ceiling: 0.25 kN/m²
- Services: 0.15 kN/m²
Total Dead Load: 1.00 kN/m²

Imposed Load Roof (maintenance): 0.75 kN/m²
Imposed Load Ceiling: 0.25 kN/m²
Total Imposed Loading: 1.00 kN/m²

**Timber Floors**
Dead Loads
- Boards and joists: 0.35 kN/m²
- Ceiling: 0.25 kN/m²
- Services: 0.20 kN/m²
Total Dead Load: 0.80 kN/m²
Imposed Load: 1.50 kN/m²

Partitions (on plan): 0.60 kN/m²

**Beam & Block Floors**
Dead Loads
- Screed: 1.80 kN/m²
- Floor swt: 3.50 kN/m²
- Services: 0.30 kN/m²
Total Dead Load: 5.60 kN/m²
Imposed Load: 1.50 kN/m²
## Walls Loads (on elevation)

<table>
<thead>
<tr>
<th>Material</th>
<th>Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stud Partions</td>
<td>1.00 kN/m²</td>
</tr>
<tr>
<td>100/100/100 Cavity Wall</td>
<td>4.70 kN/m²</td>
</tr>
<tr>
<td>215 Brickwork + Plaster</td>
<td>5.30 kN/m²</td>
</tr>
<tr>
<td>330 Brickwork + Plaster</td>
<td>7.40 kN/m²</td>
</tr>
<tr>
<td>450 Brickwork + Plaster</td>
<td>10.10 kN/m²</td>
</tr>
</tbody>
</table>
### Existing Property Load Run Down

**External Wall Load Run Down**

<table>
<thead>
<tr>
<th>Support</th>
<th>DL (kN/m²)</th>
<th>LL (kN/m²)</th>
<th>Span (m)</th>
<th>LOADING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1.</strong></td>
<td>6.5 x 0.5 x 2.2</td>
<td>0.5</td>
<td>3.4 m</td>
<td></td>
</tr>
<tr>
<td><strong>2.</strong></td>
<td>1 x 5</td>
<td>0.5</td>
<td>2.5 m</td>
<td></td>
</tr>
<tr>
<td><strong>3.</strong></td>
<td>0.8 x 0.5</td>
<td>0.5</td>
<td>2.5 m</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>80</td>
<td>8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Ground Bearing Pressure Validation

* Using footwork report number 9207.

\[ 2 \times MP @ 11.30m = 31 + 33 + 36 + 185 = 285 \]

Max. Bearing = \( \frac{(2860 + 550(135 - 40)^{1/2})}{0.0475} \) = 393 kN/m²

Account for rise in gr. = \( \frac{293}{2} = 146.75 \) kN/m²

... Consequently, assume 3660 = 150 kN/m²
### Retaining Wall Design

**Permanently Stable:**
- $E_e = 20kN/m^2$
- $\alpha_e = 8kN/m$
- Grade 100 below ground
- Surcharge = 10kN/m²
- Foot at base representing slab

**Temporary State:**
- No grill
- $E_p = 35kN/m^2$ (Well slab)
**MASTERKEY: RETAINING WALL DESIGN TO BS 8002 AND BS 8110: 1997**

**Basic RC Retaining Wall**

**Reinforced Concrete Retaining Wall with Reinforced Base**

Retaining Wall R1: (Perm State)

---

### Summary of Design Data

**Notes**: All dimensions are in mm and all forces are per metre run.

**Material Densities (kN/m³)**
- Dry Soil: 18.00
- Saturated Soil: 20.80
- Submerged Soil: 10.80
- Concrete: 24.00

**Concrete**
- fcu: 30 N/mm²
- Permissible tensile stress: 0.250 N/mm²

**Concrete covers (mm)**
- Wall inner cover: 30 mm
- Wall outer cover: 30 mm
- Base cover: 50 mm

**Reinforcement design**
- fy: 460 N/mm² designed to BS 8110: 1997

**Surcharge and Water Table**
- Surcharge: 10.00 kN/m²
- Water table level: 2500 mm

*The Engineer must satisfy him/herself to the reinforcement detailing requirements of the relevant codes of practice*

### Additional Loads

- **Wall Propped at Base Level**
- **Vertical Line Loads**

*Therefore no sliding check is required*

**80 kN/m @ X - 150 mm and Y 0 mm - Load type Dead**

**8 kN/m @ X - 150 mm and Y 0 mm - Load type Live**

*Ties, line loads and partial loads are measured from the inner top edge of the wall*

### Soil Properties

**Soil bearing pressure**
- Allowable pressure @ front 150.00 kN/m², @ back 150.00 kN/m²

**ϕ = Atan(Tan(30)/1.2) = 25.69°**

**δ = Atan(0.75° Tan(Atan(Tan(30)/1.2))) = 19.84°**

### Loading Cases

**Gₛₑₚ**: Soil Self Weight, **Gₛₑₑ**: Wall & Base Self Weight, **Fᵥₑₑ**: Vertical Loads over Heel,

**Pₑₑ**: Active Earth Pressure, **Pₛₑₑ**: Earth pressure from surcharge, **Pₑₚ**: Passive Earth Pressure

**Case 1: Geotechnical Design**
- 1.00 Gₛₑₑ + 1.00 Gₛₑₑ + 1.00 Fᵥₑₑ + 1.00 Pₑₑ + 1.00 Pₛₑₑ + 1.00 Pₑₚ

**Case 2: Structural Ultimate Design**
- 1.40 Gₛₑₑ + 1.40 Gₛₑₑ + 1.60 Fᵥₑₑ + 1.00 Pₑₑ + 1.00 Pₛₑₑ + 1.00 Pₑₚ

---

### Geotechnical Design

**Wall Stability - Virtual Back Pressure**

- Case 1 Overturning/Stabilising: 85.108/215.119

**Wall Sliding - Virtual Back Pressure**

- Fx/(Rxfric + Rxpress) = 0.000/(48.93+0.000)

**Prop ReactionCase 2 (Serviceability)**
- 75.1 kN @ Base

**Soil Pressure**

- Virtual Back (No uplift): Max(76.184/150, 59.416/150) kN/m²
- Max(89.928/150, 45.672/150) kN/m²
**Structural Design**

**Prop Reaction**
Maximum Prop Reaction (Ultimate) 80.9 kN @ Base

**Wall Design (Inner Steel)**

<table>
<thead>
<tr>
<th>Critical Section</th>
<th>Critical @ 0 mm from base, Case 2</th>
<th>628 mm²</th>
<th>OK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel Provided (Cover)</td>
<td>Main B10@125 (30 mm) Dist. B10@200 (40 mm)</td>
<td>628 mm²</td>
<td>OK</td>
</tr>
<tr>
<td>Compression Steel Provided (Cover)</td>
<td>Main B10@300 (30 mm) Dist. B10@300 (40 mm)</td>
<td>262 mm²</td>
<td>OK</td>
</tr>
<tr>
<td>Leverarm z=fn(d,b,As,f,Fcu)</td>
<td>265 mm, 1000 mm, 628 mm², 460 N/mm², 30.0 N/mm²</td>
<td>252 mm</td>
<td></td>
</tr>
<tr>
<td>Mr=fn(above,As',d',x,x/d)</td>
<td>262 mm², 35 mm, 23 mm, 0.09</td>
<td>69.1 kN.m</td>
<td></td>
</tr>
<tr>
<td>Moment Capacity Check (M/Mr)</td>
<td>M 68.6 kN.m, Mr 69.1 kN.m</td>
<td>0.992</td>
<td>OK</td>
</tr>
<tr>
<td>Wall Axial Design (N/Net)</td>
<td>N 155.0 kN, Ncap 3600.0 kN</td>
<td>0.043</td>
<td>OK</td>
</tr>
<tr>
<td>Wall Slenderness λ</td>
<td>Leff/tk = 2.00x3000.0/300.0</td>
<td>20.0</td>
<td>OK</td>
</tr>
<tr>
<td>Kmin = (Nuz-N)/(Nuz-Nbal)</td>
<td>Min[1.0, 4000.0 - 155.0/(4000.0 - 1683.2)]</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>M_b = NMin.h.h²/2000</td>
<td>155.0x1.0x300.0x20.0²/2000</td>
<td>9.2kN.m</td>
<td></td>
</tr>
<tr>
<td>(M+Madd)/M_total</td>
<td>M+Madd 77.8 kN, M_total 89.1 kN.m</td>
<td>0.873</td>
<td>OK</td>
</tr>
<tr>
<td>Shear Capacity Check</td>
<td>V 66.2 kN, vc 0.461 N/mm², Fvr 122.1 kN</td>
<td>0.54</td>
<td>OK</td>
</tr>
</tbody>
</table>

**Base Top Steel Design**

<table>
<thead>
<tr>
<th>Steel Provided (Cover)</th>
<th>Main B10@150 (50 mm) Dist. B10@150 (60 mm)</th>
<th>524 mm²</th>
<th>OK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compression Steel Provided (Cover)</td>
<td>Main B10@100 (50 mm) Dist. B10@150 (60 mm)</td>
<td>785 mm²</td>
<td>OK</td>
</tr>
<tr>
<td>Leverarm z=fn(d,b,As,f,Fcu)</td>
<td>295 mm, 1000 mm, 524 mm², 460 N/mm², 30 N/mm²</td>
<td>280 mm</td>
<td></td>
</tr>
<tr>
<td>Mr=fn(above,As',d',x,x/d)</td>
<td>785 mm², 55 mm, 19 mm, 0.06</td>
<td>64.1 kN.m</td>
<td></td>
</tr>
<tr>
<td>Moment Capacity Check (M/Mr)</td>
<td>M 0.0 kN.m, Mr 64.1 kN.m</td>
<td>0.000</td>
<td>OK</td>
</tr>
<tr>
<td>Shear Capacity Check</td>
<td>V 0.0 kN, vc 0.407 N/mm², Fvr 120.1 kN</td>
<td>0.00</td>
<td>OK</td>
</tr>
</tbody>
</table>

**Base Bottom Steel Design**

<table>
<thead>
<tr>
<th>Steel Provided (Cover)</th>
<th>Main B10@100 (50 mm) Dist. B10@150 (60 mm)</th>
<th>785 mm²</th>
<th>OK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compression Steel Provided (Cover)</td>
<td>Main B10@150 (50 mm) Dist. B10@150 (60 mm)</td>
<td>524 mm²</td>
<td>OK</td>
</tr>
<tr>
<td>Leverarm z=fn(d,b,As,f,Fcu)</td>
<td>295 mm, 1000 mm, 785 mm², 460 N/mm², 30 N/mm²</td>
<td>280 mm</td>
<td></td>
</tr>
<tr>
<td>Mr=fn(above,As',d',x,x/d)</td>
<td>785 mm², 55 mm, 28 mm, 0.10</td>
<td>96.2 kN.m</td>
<td></td>
</tr>
<tr>
<td>Moment Capacity Check (M/Mr)</td>
<td>M 79.1 kN.m, Mr 96.2 kN.m</td>
<td>0.822</td>
<td>OK</td>
</tr>
<tr>
<td>Shear Capacity Check</td>
<td>V 115.9 kN, vc 0.466 N/mm², Fvr 137.5 kN</td>
<td>0.84</td>
<td>OK</td>
</tr>
</tbody>
</table>
MASTERKEY: RETAINING WALL DESIGN TO BS 8002 AND BS 8110: 1997
Basic RC Retaining Wall
Reinforced Concrete Retaining Wall with Reinforced Base

Retaining Wall R1: (Temp State)

Summary of Design Data
Notes
- All dimensions are in mm and all forces are per metre run
- Material Densities (kN/m³)
  - Soil 18.00, Concrete 24.00
- Concrete grade
  - fcu = 30 N/mm², Permissible tensile stress = 0.250 N/mm²
- Concrete covers (mm)
  - Wall inner cover = 30 mm, Wall outer cover = 30 mm, Base cover = 50 mm
- Reinforcement design
  - fy = 460 N/mm² designed to BS 8110: 1997
- Surcharge and Water Table
  - Surcharge = 10.00 kN/m², Fully drained
  - The Engineer must satisfy him/herself to the reinforcement detailing requirements of the relevant codes of practice

Additional Loads
- Wall Propped at Base Level
- Vertical Line Load
- Therefore no sliding check is required
- Ties, line loads and partial loads are measured from the inner top edge of the wall

Dimensions
- 75 kN/m @ X = -150 mm and Y = 0 mm - Load type Dead
- 0.00 kN/m - Bending Moment Diagram per m run

Soil Properties
- Soil bearing pressure
  - ϕ = Atan(Tan(30)/1.2) = 25.69°
- Back Soil Friction and Cohesion
  - δ = Atan(0.75tan(Atan(Tan(30)/1.2))) = 19.84°
- Front Soil Friction and Cohesion
  - ϕ = Atan(Tan(30)/1.2) = 25.69°

Loading Cases
- Gsatt = Soil Self Weight, Gwall = Wall & Base Self Weight, FVvert = Vertical Loads over Heel,
- Pp = Active Earth Pressure, Pscharge = Earth pressure from surcharge, Pp = Passive Earth Pressure
- Case 1: Geotechnical Design
  - 1.00 Gsatt + 1.00 Gwall + 1.00 FVvert + 1.00 Pp + 1.00 Pscharge + 1.00 Pp
- Case 2: Structural Ultimate Design
  - 1.40 Gsatt + 1.40 Gwall + 1.60 FVvert + 1.00 Pp + 1.00 Pscharge + 1.00 Pp

Geotechnical Design

Wall Stability - Virtual Back Pressure
- Case 1 Overturning/Stabilising
  - 55.507/200.509
  - 0.277
  - OK

Wall Sliding - Virtual Back Pressure
- Fx(Rkfracture + Rdissipate)
  - 0.000/(45.539 + 0.000)
  - 0.000
  - OK

Prop ReactionCase 2 (Serviceability)
- 44.1 kN @ Base

Soil Pressure
- Virtual Back (No uplift)
  - Max(34.897/150, 91.303/150) kN/m²
  - 0.609
  - OK
- Wall Back (No uplift)
  - Max(51.422/150, 74.778/150) kN/m²
  - 0.499
  - OK
### Structural Design

#### Prop Reaction
Maximum Prop Reaction (Ultimate) 51.5 kN @ Base

#### Wall Design (Inner Steel)

<table>
<thead>
<tr>
<th>Critical Section</th>
<th>Steel Provided (Cover)</th>
<th>Compression Steel Provided (Cover)</th>
<th>Leverarm ( z = fn(d,b,As,fy, Fcu) )</th>
<th>( M_r ) = ( fn(above,As',d',x,x/d) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical @ 0 mm from base, Case 2</td>
<td>Main B10@125 (30 mm) Dist. B10@200 (40 mm)</td>
<td>628 mm²</td>
<td>262 mm²</td>
<td></td>
</tr>
<tr>
<td>Steel Provided (Cover)</td>
<td>Main B10@300 (30 mm) Dist. B10@300 (40 mm)</td>
<td>262 mm²</td>
<td>69.1 kN.m</td>
<td></td>
</tr>
<tr>
<td>Leverarm ( z = fn(d,b,As,fy,Fcu) )</td>
<td>265 mm, 1000 mm, 628 mm², 460 N/mm², 30.0 N/mm²</td>
<td>252 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( M_r ) = ( fn(above,As',d',x,x/d) )</td>
<td>262 mm², 35 mm, 23 mm, 0.09</td>
<td>69.1 kN.m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moment Capacity Check (M/Mr)</td>
<td>M 49.9 kN.m, Mr 69.1 kN.m</td>
<td>0.721</td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>Wall Axial Design (N/Ncap)</td>
<td>N 135.2 kN, Ncap 3600.0 kN</td>
<td>0.038</td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>Wall Slenderness ( \lambda )</td>
<td>( \text{Left/Right} = 2.00x3000.0/300.0 )</td>
<td>20.0</td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>Kmin = (Nuz-N)/(Nuz-Nbal)</td>
<td>Min(1.0, 4000.0 - 135.2)/(4000.0 - 1683.2)</td>
<td>1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( M_{max} = N.kmin.h )</td>
<td>135.2x1.0x300.0x20.0/2000</td>
<td>8.1 kN.m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( M + M_{axd} )/Mmax</td>
<td>57.9 kN.m, Mmax 85.8 kN.m</td>
<td>0.667</td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>Shear Capacity Check</td>
<td>F 43.8 kN, vc 0.461 N/mm², Fvr 122.1 kN</td>
<td>0.36</td>
<td>OK</td>
<td></td>
</tr>
</tbody>
</table>

#### Base Top Steel Design

<table>
<thead>
<tr>
<th>Steel Provided (Cover)</th>
<th>Compression Steel Provided (Cover)</th>
<th>Leverarm ( z = fn(d,b,As,fy,Fcu) )</th>
<th>( M_r ) = ( fn(above,As',d',x,x/d) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel Provided (Cover)</td>
<td>Main B10@150 (50 mm) Dist. B10@150 (60 mm)</td>
<td>524 mm²</td>
<td>280 mm</td>
</tr>
<tr>
<td>Compression Steel Provided (Cover)</td>
<td>Main B10@100 (50 mm) Dist. B10@150 (60 mm)</td>
<td>785 mm²</td>
<td></td>
</tr>
<tr>
<td>Leverarm ( z = fn(d,b,As,fy,Fcu) )</td>
<td>295 mm, 1000 mm, 524 mm², 460 N/mm², 30 N/mm²</td>
<td>280 mm</td>
<td></td>
</tr>
<tr>
<td>( M_r ) = ( fn(above,As',d',x,x/d) )</td>
<td>785 mm², 55 mm, 19 mm, 0.06</td>
<td>64.1 kN.m</td>
<td></td>
</tr>
<tr>
<td>Moment Capacity Check (M/Mr)</td>
<td>M 0.0 kN.m, Mr 64.1 kN.m</td>
<td>0.000</td>
<td>OK</td>
</tr>
<tr>
<td>Shear Capacity Check</td>
<td>F 0.0 kN, vc 0.407 N/mm², Fvr 120.1 kN</td>
<td>0.00</td>
<td>OK</td>
</tr>
</tbody>
</table>

#### Base Bottom Steel Design

<table>
<thead>
<tr>
<th>Steel Provided (Cover)</th>
<th>Compression Steel Provided (Cover)</th>
<th>Leverarm ( z = fn(d,b,As,fy,Fcu) )</th>
<th>( M_r ) = ( fn(above,As',d',x,x/d) )</th>
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<tbody>
<tr>
<td>Steel Provided (Cover)</td>
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<tr>
<td>Compression Steel Provided (Cover)</td>
<td>Main B10@150 (50 mm) Dist. B10@150 (60 mm)</td>
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<td></td>
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<tr>
<td>Leverarm ( z = fn(d,b,As,fy,Fcu) )</td>
<td>295 mm, 1000 mm, 785 mm², 460 N/mm², 30 N/mm²</td>
<td>280 mm</td>
<td></td>
</tr>
<tr>
<td>( M_r ) = ( fn(above,As',d',x,x/d) )</td>
<td>524 mm², 55 mm, 28 mm, 0.10</td>
<td>96.2 kN.m</td>
<td></td>
</tr>
<tr>
<td>Moment Capacity Check (M/Mr)</td>
<td>M 54.4 kN.m, Mr 96.2 kN.m</td>
<td>0.566</td>
<td>OK</td>
</tr>
<tr>
<td>Shear Capacity Check</td>
<td>F 93.9 kN, vc 0.466 N/mm², Fvr 137.5 kN</td>
<td>0.68</td>
<td>OK</td>
</tr>
</tbody>
</table>
Appendix (iv)

Site Investigation Report
Geotechnical Survey Report

FSI Ref: 9207
Issue Date: January 2015
Address: St Mark’s Coptic Church
          Allen Street
          Kensington
          W8 6UX

Engineer: David Kavanagh / Dan Vickerstaff
Company: Cranbrook Basements

Director: Martin Rush MSc FGS
Office Manager: Louise Hiscock BSc (Hons)
Report Writer: Perry Martin AMCIHT
Laboratory Manager: Lara Knight
## Borehole Log

**Property Address:** St Mark's Coptic Church, Allan Street, Kensington, W8 6UX  
**Client Claim Ref:** St Mark's Coptic Church  
**Survey date:** 28/01/2015  
**Operative:** SE1

### BH1

<table>
<thead>
<tr>
<th>Water</th>
<th>Samples</th>
<th>In situ Tests</th>
<th>Depth (m)</th>
<th>Legend</th>
<th>Stratum Description and Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strikes Type</td>
<td>Depth (m) Type</td>
<td>Results Type</td>
<td></td>
<td></td>
<td>80mm Concrete onto Rubble</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Mid brown silty sandy gravelly CLAY</td>
</tr>
<tr>
<td>1.00</td>
<td>MP</td>
<td>11/75mm</td>
<td>1.00</td>
<td></td>
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</tr>
<tr>
<td>1.08</td>
<td>MP</td>
<td>11/75mm</td>
<td>1.08</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.15</td>
<td>MP</td>
<td>12/75mm</td>
<td>1.15</td>
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<td></td>
</tr>
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<td>1.23</td>
<td>MP</td>
<td>13/75mm</td>
<td>1.23</td>
<td></td>
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</tr>
<tr>
<td>2.00</td>
<td>MP</td>
<td>16/75mm</td>
<td>2.00</td>
<td></td>
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<tr>
<td>2.08</td>
<td>MP</td>
<td>16/75mm</td>
<td>2.08</td>
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</tr>
<tr>
<td>2.15</td>
<td>MP</td>
<td>18/75mm</td>
<td>2.15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.23</td>
<td>MP</td>
<td>20/75mm</td>
<td>2.23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.00</td>
<td>MP</td>
<td>23/75mm</td>
<td>3.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.08</td>
<td>MP</td>
<td>25/75mm</td>
<td>3.08</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.15</td>
<td>MP</td>
<td>25/75mm</td>
<td>3.15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.23</td>
<td>MP</td>
<td>27/75mm</td>
<td>3.23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.00</td>
<td>MP</td>
<td>31/75mm</td>
<td>4.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.08</td>
<td>MP</td>
<td>33/75mm</td>
<td>4.08</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.15</td>
<td>MP</td>
<td>35/75mm</td>
<td>4.15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.23</td>
<td>MP</td>
<td>36/75mm</td>
<td>4.23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.00</td>
<td>V</td>
<td>140.00</td>
<td>5.00</td>
<td></td>
<td>Medium dense orange SAND</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.00</td>
<td>V</td>
<td>140.00</td>
<td>6.00</td>
<td></td>
<td>Very stiff mid brown CLAY</td>
</tr>
<tr>
<td>7.00</td>
<td>V</td>
<td>140.00</td>
<td>7.00</td>
<td></td>
<td>Noted to be grey in colour from 5.60m</td>
</tr>
<tr>
<td>8.00</td>
<td>V</td>
<td>140.00</td>
<td>8.00</td>
<td></td>
<td>End of Borehole at 8.00 m</td>
</tr>
</tbody>
</table>

### Key:
- Water Strike
- D Disturbed Sample
- V In situ vane test (kPa)
- MP Mackintosh Probe Test

**Remarks:** Borehole was closed at 8.00m as requested. Borehole was noted to be dry on completion.

N.b. Unless otherwise stated small vane paddle used. To convert MP to SPT divide average blows for 75mm by 1.5.
Appendix (v)

2240-267 - Proposed Hoarding and Conveyor Layout
Hoarding/Conveyor Layout

- Scale 1:75

Parking bays to be suspended during working hours only

Skip will only be present during working hours

T-03 to be pruned if necessary (only if conflicting with conveyor setup) - a relevant tree works application will be submitted prior to works taking place

T-02 to be pruned if necessary - a relevant tree works application will be submitted prior to works taking place

Pedestrian access to church

Materials and Plant Storage

Conveyor

Extent of parking suspension - 2no bays in total

Street Tree

Street Tree

Pavement

Roadway

Pavement

Materials and Plant Storage

30 May 15 Drawn: 28th May

Cranbrook Basements
26-28 Hammersmith Grove
Hammersmith
London, W7 7BA
T +44 (0)208 551 5555
F +44 (0)208 551 1580
admin@cranbrook.co.uk
www.cranbrook.co.uk

Client : St Mark's Coptic Church
Project : St Mark's Coptic Church
Allen Street
London
W8 6UX

Drawing : Proposed Hoarding/Conveyor Layout

Scale : 1:75 @ A1

Date : 20 May 15

Amendment
No.
Date
 initials

C
17.09.15
Vehicle routing plan removed from layout

B
26.08.15
Street tree locations amended to accord with Arb Report by Open Spaces. Boxing to tree trunks added to layout

A
15.06.15
Extent of hoarding amended

Scale
METRES
0
1
2
3
4
5

0
5
10
15
Scale
Appendix (vi)

2240-268 - Proposed Hoarding and Conveyor Section
Install external frame to the perimeter of the gantry for monoflex.

Gantry level

Conveyor boxed in

Pavement

Skip

Proposed Hoarding / Conveyor Section
Appendix (vii)

2240-269 - Proposed Hoarding Elevation
Proposed Hoarding Elevation

Boxing to tree trunk

Conveyor boxed in

Extent of monoflex hoarding

2m

Scale: 1:50 @ A3

Client: St Mark's Coptic Church

Project: St Mark's Coptic Church

Allen Street

London

NW 8 6UX

Date: 28 May 15

Rev: 2240-269

No. Date Amendment Initials

B 26-08-15 Street trees and protective boxing added to layout. DK

A 25-06-15 Extent of hoarding amended. DK

Boxing to tree trunk

Boxing to tree trunk
Appendix (viii)

TD 05 – Shaft Excavation – Access & Earthwork Support
Anti Flood Pump Device (ix)
Sewage backflow prevention

There are 2 million properties at risk from flooding in the UK. Many will be directly affected by river or coastal flooding, but more homes are damaged indirectly by the backflow of sewage. The causes can include severe storms, breakdown of pumping plant or blocked pipelines.

The Marley anti-flood (or non-return) valves have been designed to prevent backflow from surcharging sewers. Wherever there is danger from rising water backing up into a property through the drainage system the valve will close off the backflow automatically to prevent flood damage.

The financial losses caused by sewage flooding events can be in the region of £30,000 to £50,000 per property. In less than 30 minutes a house or basement flat can flood with untreated sewage to a depth greater than 1 metre.

An anti-flood valve is particularly suitable for the following places:

- Low-lying coastal, lake or valley areas
- Properties connected to a high flow rate sewage system
- Private discharge systems connected to public sewers supplied with pumping stations
- Where non-pressure flow control is needed

Simple installation, effective operation

The anti-flood valves are produced in both PVCu and ABS Plastic and are corrosion resistant. As well as preventing back flow in the system, the anti-flood valve also stops rodent penetration.

**Installation**

The Marley anti-flood valve is easy to install within the drainage system. When installing, ensure the valve is set horizontally, as a fall is already built in. Also check that the direction of the flow matches that indicated by the arrow on the cover of the valve. The valve should be installed in a chamber to allow access for maintenance.

**Emergency closure device**

The valve can be locked in the closed position for added security (no through drainage allowed) for holiday periods, if required.

**Operation**

When backflow occurs in the system the non-return valve closes automatically. For the system to function correctly ensure the handle is on ‘open.’ Regular flow rate is regained when the backflow ceases.

**Maintenance**

The emergency closure device mentioned above should be tested once every six months. In case of a blockage, remove the cover, clean the constituent parts, check the gaskets and replace any damaged parts. It is essential that the valve is accessible at all times. The Marley anti-flood valve should be serviced once every twelve months.
Marley anti-flood valves

An anti-flood valve is a simple and effective way to eliminate backflow through drainage systems. The flap(s) in the valve opens to allow discharge. In a potential flood situation, the rising water levels seals the flap(s) shut.

The Marley anti-flood valve range:

**Normal use**

**Anti-flooding situation**

The Marley double-flap valve meets the requirements of Building Regulations, Document H1.
Appendix (x)

TD 12 – Lateral Bracing
TYPICAL SECTION INDICATING UNDERPIN SUPPORT PROPS

Existing brick wall

Assumed existing footing

75mm dry packing

B1131 Mesh (75mm cover)

RC wall thickness to match existing brickwork thickness. Subject to thickness may need to be reviewed to suit existing wall thickness.

Assumed Depth 900

Less than re-design may be required

Existing foundation corbel trimmed back.

A393 Mesh inside face.

Mabry or similar approved Slimline Shores @ 1M c/c fixed to timber alling using 100mm M12 Coach screws @ 900mm c/c.

75 x 225mm timber wailing fixed securely to face of underpin section using M12 rawl bolts @ 1.2M c/c.

NOTE - Finishes to be applied once prop has been removed.

L'bars as engineers details

mesh tap (cover confirmed by engineer)

mesh in bottom (cover to be confirmed by engineer)

L'bars as engineers details

500 MIN

500 MIN

900

900

194