

63 Goldhurst Terrace, London, NW6 3HB

Method Statement – New Basement Construction

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Basement Formation Suggested Method Statement.

I.1. This method statement provides an approach which will allow the basement design to be correctly considered during construction, and the temporary support to be provided during the works. The Contractor is responsible for the works on site and the final temporary works methodology and design on this site and any adjacent sites.

I.2. This method statement has been written by a Chartered Engineer and is to be read in conjunction with the architectural and structural engineering design information. The sequencing has been developed considering guidance from ASUC.

I.3. Contact party wall surveyors to inform them of any changes to this method statement.

I.5. The approach followed in this design is; to remove load from above and place loads onto supporting steelwork, then to cast cantilever retaining walls in underpin sections at the new basement level.

I.6. The cantilever pins are designed to be inherently stable during the construction stage with temporary propping to the head. The base benefits from propping, this is provided in the final condition by the ground slab. In the temporary condition the edge of the slab is buttressed against the soil in the middle of the property, also the skin friction between the concrete base and the soil provides further resistance. The central slab is to be poured in a maximum of a 1/3 of the floor area.

I.7. A soil investigation has been undertaken.

I.8. The bearing pressures have been limited to 150kN/m². This is standard loadings for local ground conditions and acceptable to building control and their approvals.

I.9. Provide engineers with concrete mix, supplier, deliver and placement methods 2 weeks prior to first pour. Site mixing of concrete should not be employed apart from in small sections <1 m³.

Enabling Works

2.1. The site is to be hoarded with ply sheet to 2.4m to prevent unauthorised public access.

2.2. Licenses for Skips and conveyors to be posted on hoarding

2.3. Provide protection to public where conveyor extends over footpath. Depending on the requirements of the local authority, construct a plywood bulkhead onto the pavement. Hoarding to have a plywood roof covering, night-lights and safety notices.

2.4. No significant dewatering is expected. Localised removal of water may be required to deal with rain from perched water or localised water. This is to be dealt with by localised pumping. Typically achieved by a small sump pump in bucket.

2.5. On commencement of construction the contractor will determine the foundation type, width and depth. Any discrepancies will be reported to the structural engineer in order that the detailed design may be modified as necessary.

Basement Sequencing

Sequencing of underpin and cantilevered wall installation is to be agreed in advance of works and approved by Building Control Officer

Please refer to the attached DFV Typical underpinning sequence for clay soils with sacrificial sheeting. This sketch details the construction method we are likely to adopt, based on the assumed ground conditions at the property consisting of London clay

Please also refer to the document 'Typical Temporary Works Arrangement', which details the designed temporary works for a similar project undertaken at nr 66 Goldhurst Terrace, which we commenced recently as of the date of this document. Once we establish the existing structural arrangements as stage B below we will then employ our Structural Engineer to design a suitable temporary works regime which, in our view, will not differ greatly from the exemplar shown.

Note : Temporary Support to Excavated Faces

- Ground conditions will be continuously assessed by a competent person to determine the means and method of supporting any face of any excavation. All necessary shoring equipment will be available for use on site. The most likely method to be adopted will be the introduction of trench sheets supported by Acrow props in accordance with the temporary works design prepared by the Engineer. Please refer to the attached diagrams which indicate the temporary works we will adopt during the underpinning works.

We would like to note that we completed an almost identical project at nr 66 Goldhurst Terrace at the end of 2013 and we will be employing the same methodology, project team and resources at nr 65. Our highly trained, experienced and competent Foreman (holding the 5 Day Site Managers Safety Training Scheme accreditation) shall ensure that every part of every excavation is inspected at the start of each shift (and at intervals as specified by law and good practice) and will record the findings of any such inspection in a register held on site.

Investigation works

- We have a soil investigation report which shows a soil profile of made ground to 1.3m deep and stiff London clay below that to our formation level.
- On commencement of construction DFV will determine the foundation type, width and depth. Any discrepancies from the design allowances will be reported to the structural engineer in order that the detailed design can be modified.
- Prior to installation of new structural beams in the superstructure, DFV may undertake the local exploration of specific areas in the superstructure. This will confirm the exact form and location of the temporary works that are required. A fully designed temporary works package will be prepared once the existing structural composition is determined, and only once the structural engineer has been made aware thereof and issues either an instruction to continue as planned or revised design information. Only then can the permanent structural work can then be undertaken while ensuring that the full integrity of the structure above is maintained.

3.1. Begin by placing cantilevered walls noted on plans.

3.2. Needle & prop the ground floor/ walls over.

3.3. Insert steel over and sit on cantilevered walls.

3.3.1. Beams over 6m to be jacked on site to reduce deflections of floors.

3.3.2. Dry pack to steelwork. Ensure a minimum of 24 hours from casting cantilevered walls to dry packing. Grout column bases.

3.4. Excavate Light well to front of property down to 600mm below external ground level.

3.5. Excavate first front corner of light well. (Follow methodology in section 4)

3.6. Excavate second front corner of light well. (Follow methodology in section 4)

3.7. Continue excavating section pins to form front light well. (Follow methodology in section 4)

- Similar methodology and sequencing to be employed for rear lightwell

3.8. Place cantilevered retaining wall to the left side of front opening. After 48 hours place cantilevered retaining wall to the right side of front opening.

3.9. Excavate Pin A (tbc)

3.10. Excavate Pin B (tbc)

3.11. Needle and prop bay/front wall. Insert support

3.12. Excavate out first 1m around front opening prop floor and erect conveyor.

3.13. Continue cantilevered wall formation around perimeter of basement following the numbering sequence on the drawings.

Floor over to be propped as excavations progress. Steelwork to support Floor to be inserted as works progress.

3.14. Cast base to internal wall. Construct wall to provide support to floor and steels as works Progress.

3.15. Excavate a maximum of a 1/3 of the middle section of basement floor. Place reinforcement to central section of ground bearing slab and pour concrete. Excavate next third and cast slab. Excavate and cast final third and cast.

3.16. Provide structure to ground floor and water proofing to retaining walls as required.

Underpinning and Cantilevered Walls

4.1. Prior to installation of new structural beams in the superstructure, the contractor may undertake the local exploration of specific areas in the superstructure. This will confirm the exact form and location of the temporary works that are required. The permanent structural work can then be undertaken whilst ensuring that the full integrity of the structure above is maintained.

4.2. Provide propping to floor where necessary.

4.3. Excavate first section of retaining wall (no more than 1000mm wide). Where excavation is greater than 1m deep provide temporary propping to sides of excavation to prevent earth collapse (Health and Safety). A 1000mm width wall has a lower risk of collapse to the heel face.

4.4. Excavation of pins deeper than 3m comes under confirmed working space and operators must wear harness and there must be a winch above the excavation.

4.5. Back propping of rear face. Rear face to be propped in the temporary conditions with a minimum of 2 Trench sheets. Trench sheets are to extend over entire height of excavation. Trench sheets can be placed in short sections as the excavation progresses.

4.5.1. If the ground is stable, trench sheets can be removed as the wall reinforcement is placed and the shuttering is constructed.

4.5.2. Where soft spots are encountered leave in trench sheets or alternatively back prop with precast lintels or trench sheeting. (If the soil support to the ends of the lintels is insufficient then brace the ends of the PC lintels with 150x150 C24 Timbers and prop with Acros diagonally back to the floor.)

4.5.3. Where voids are present behind the lintels or trench sheeting. Grout voids behind sacrificial propping; Grout to be 3:1 sand cement packed into voids.

4.5.4. Prior to casting place layer of DPM between trench sheeting (or PC lintels) and new concrete. The lintels are to be cut into the soil by 150mm either side of the pin. A site stock of a minimum of 10 lintels to be present for to prevent delays due to ordering.

4.6. If cut face is not straight, or sacrificial boards noted have been used, place a 15mm cement particle board between sacrificial sheets and or soil prior to casting. Cement particle board is to line up with the adjacent owners face of wall. The method adopted to prevent localised collapse of the soil is to install these progressively one at a time. Cement particle board must be used in any condition where overspill onto the adjacent owners land is possible.

4.7. Underpins can be completed in Segmental lifts (e.g. top section of wall followed by bottom section of wall).

The recommendation is that walls with high vertical loads or susceptible to settlement, and all party walls, should be completed as first pin top first pin bottom, next pin top next pin bottom. We do not recommend for such conditions that all the top sections for every pin followed by all the lower pins are completed; such a sequencing can result in the existing wall being left on a narrower section than the original footing for too long resulting in settlement.

4.8. Excavate base. Mass concrete heels to be excavated. If soil over unstable prop top with PC lintel and sacrificial prop.

4.9. Visually inspect the footings and provide propping to local brickwork, if necessary sacrificial acrow, or pit props, to be sacrificial and cast into the retaining wall.

4.10. Clear underside of existing footing.

4.11. Local authority inspection to be carried for approval of excavation base.

4.12. Place blinding.

4.13. Place reinforcement for retaining wall base, heel & toe. Site supervisor to inspect and sign off works for proceeding to next stage.

4.14. Cast base. (on short stems it is possible to cast base and wall at same time). It is essential that pokers/vibrators are used.

4.15. For first 3 pins take 4 cubes and test at 7 days, 14 days and inform engineers of results. Test last cube at 28 days. If cube results are low then action into concrete specification and placement must be considered. Take 2 cubes of concrete and store for testing. Test one at 28 days, if result is low test second cube. Provide results to client and design team on request or if values are below those required.

Ensure that Concrete is of sufficient strength, check engineers specifications

4.16. Horizontal temporary prop to base of wall to be inserted. Alternatively cast base against soil.

4.17. Place reinforcement for retaining wall stem. Site supervisor to inspect and sign off works for proceeding to next stage.

4.18. Drive U Bars into soil along centre line of stem to act as shear ties to adjacent wall.

4.19. Place shuttering & pour concrete for retaining wall. Stop a minimum of 75mm from the underside of existing footing). It is essential that pokers/vibrators are used, hitting shutters is not considered adequate.

4.20. 24 hours after pouring the concrete the gap shall be filled using a dry pack mortar. Ram in drypack between retaining wall and existing masonry.

4.21. After 24 hours the temporary wall shutters are removed.

4.22. Trim back existing masonry corbel and concrete on internal face.

4.23. Site supervisor to inspect and sign off for proceeding to the next stage. A record will be kept of the sequence of construction, which will be in strict accordance with recognised industry procedures.

Floor Support

Timber Floor

5.1. The timber floor will remain in situ, and be supported by a series of steel beams that will support the floors, to provide the open areas in the basement.

5.2. Position 100 x 100mm temporary timber beam lightly packed to underside of joists either side of existing sleeper wall and support with vertical acrow props @ 750 centres. Remove sleeper walls and insert steel beam as a replacement. Beams to bear onto concrete padstones built into the masonry walls (refer to Structural Engineer's details for padstone & beam sizes)

5.3. Dismantle props and remove timber plates on completion of installation of permanent steel beams.

Supporting existing walls above basement excavation

6.1. Where steel beams need to be installed directly under load bearing walls, temporary works will be required to enable this work. Support comprises the installation of steel needle beams at high level, supported on vertical props, to enable safe removal of brickwork below, and installation of the new beams and columns.

6.1.1. The condition of the brickworks must be inspected by the foreman to determine its condition and to assess the centres of needles. The foreman must inspect upstairs to consider where loads are greatest. Point loads and between windows should be given greater consideration.

6.1.2. Needles are to be spaced to prevent the brickwork above "saw toothing". Where brickwork is good, needles must be placed at a maximum of 1100mm centres. Lighter needles or strong boys should be placed at tighter centres under door thresholds

6.2. Props are to be placed on Sleepers of firm ground or if necessary temporary footings will be cast.

6.3. Once the props are fully tightened, the brickwork will be broken out carefully by hand. All necessary platforms and crash decks will be provided during this operation.

6.4. Decking and support platforms to enable handling of steel beams and columns will be provided as required.

6.5. Once full structural bearing is provided via beams and columns down to the new basement floor level. The temporary works will be redundant and can be safely removed.

6.6. Any voids between the top of the permanent steel beams and the underside of the existing walls will be packed out as necessary. Voids will be dry packed with a 1:3 (cement: sharp sand) drypack layer, between the top of the steel and underside of brickwork above.

6.7. Any voids in the brickwork left after removal of needle beams can at this point be repaired by bricking up and/or drypacking, to ensure continuity of the structural fabric.

Slab and Drainage

7.1. Depending on the structural design it may be a requirement to implement propping to resist sliding forces (As per structural engineering requirements) at the base of the underpins, prior to construction of the new basement slab, and to allow for excavation to formation level. Generally, the underpinning works are completed around the perimeter walls, with the central soil mass (Dumpling) left intact as detailed on the attached sheets. This enables the earth mass to act as a firm support for the underpinning stem single sided shutters, and also to provide a prop force at the base of the pins. The pump sump units and associated underground drainage will then be installed in conjunction with the mechanical and electrical details and architectural layouts.

7.2. Once excavation to formation level has been completed, and the slab cast, any temporary shoring can be safely removed.

7.3. The design steel reinforcement will then be fixed in the slab. This will be checked by the engineer and building control inspector prior to concreting.

Waterproofing & Screeding

8.1. Generally the waterproofing membrane will be in accordance with the attached sketch.

8.2. Once the basement slab is complete, the DELTA internal waterproofing cavity membrane will be installed as per the architectural layouts and manufacturers technical specification.

8.3. The floor finishes which may include insulation and under floor heating, can be laid as per the final architectural details.

8.4. A cement and sand screed will be overlaid to the above.

Approval

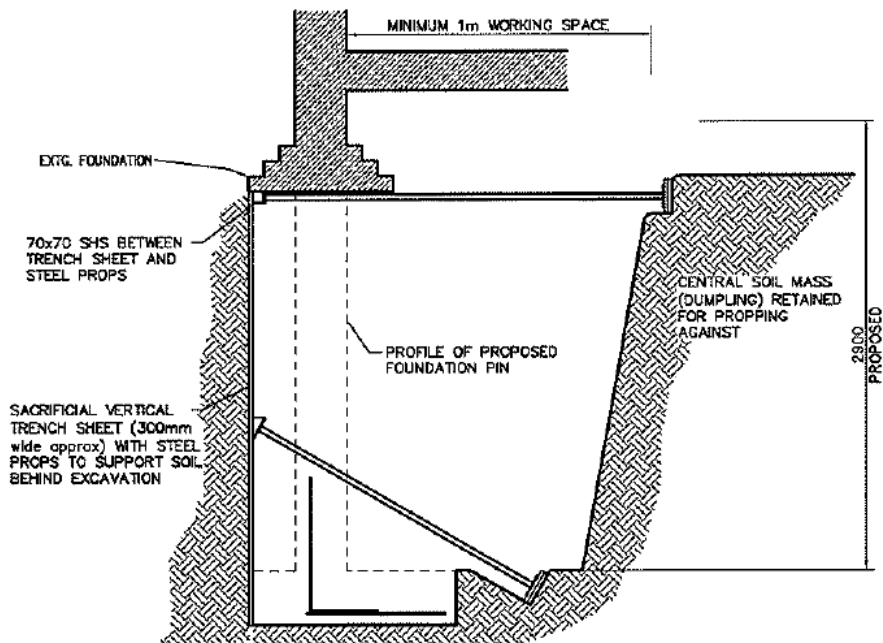
9.1. Building control officer/approved inspector to inspect pin bases and reinforcement prior to casting concrete.

9.2. Contractor to keep list of dates pins inspected & cast

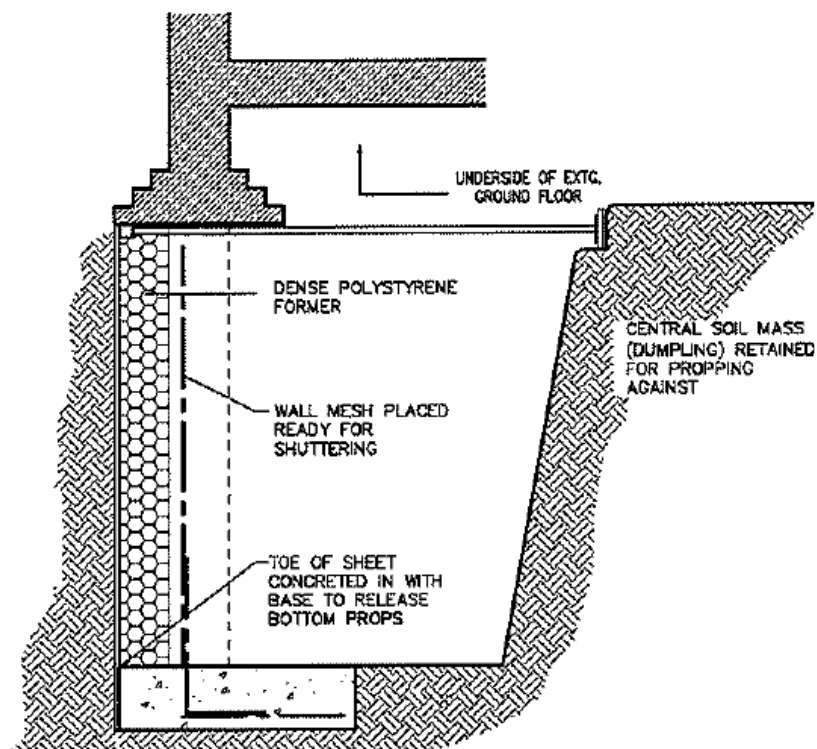
9.3. One month after work completed the contractor is to contact adjacent party wall surveyor to attend site and complete final condition survey and to sign off works.

Typical underpinning sequence – Clay soils with sacrificial sheeting

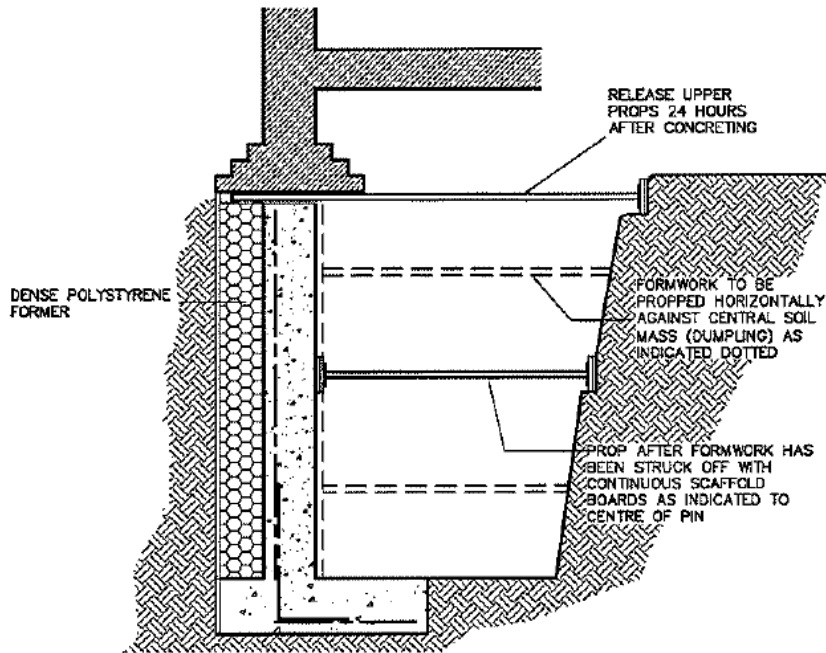
Stage 1



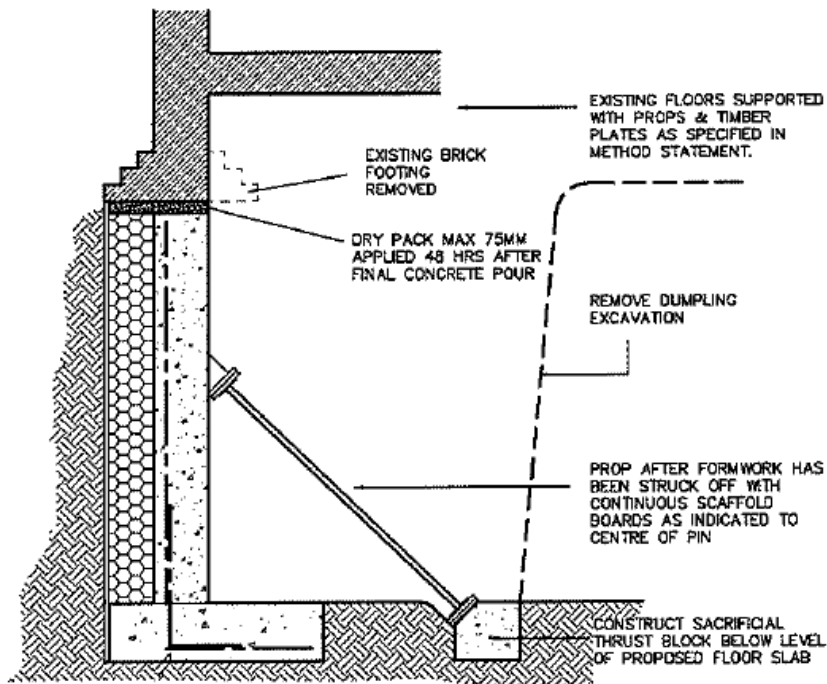
Stage 2

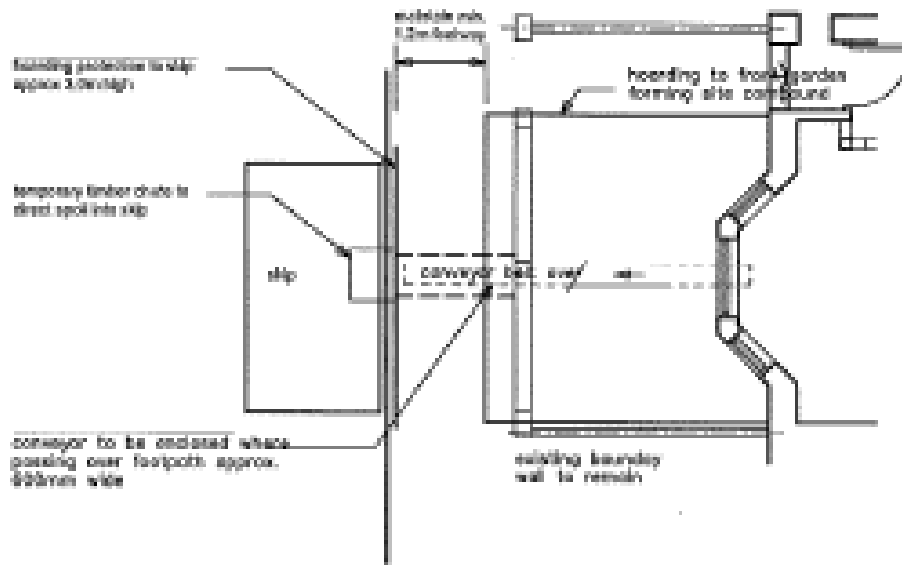


Stage 3

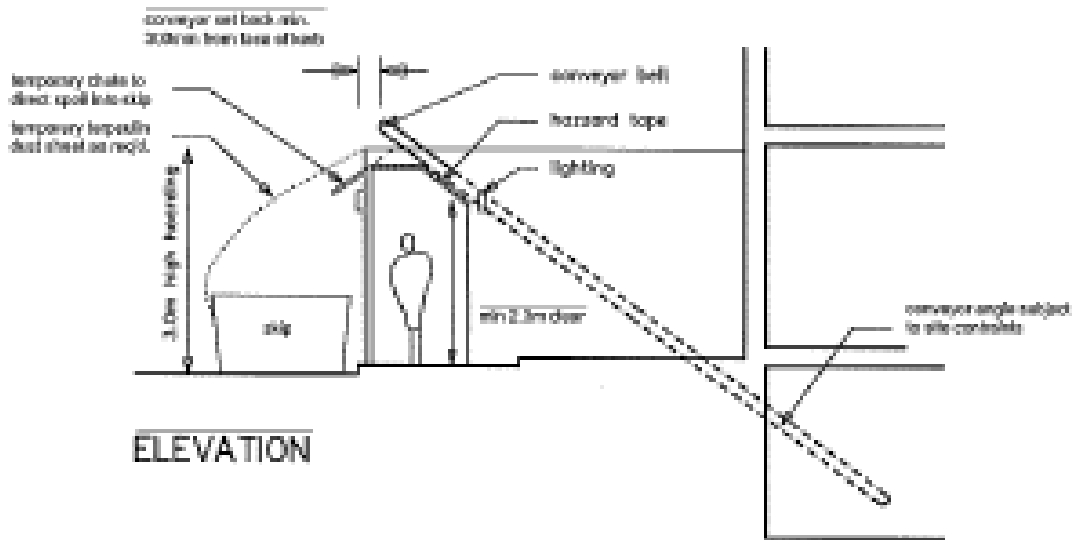


Stage 4





PLAN AT PAVEMENT LEVEL



ELEVATION

TYPICAL HOARDING & OVERHEAD CONVEYOR INSTALLATION