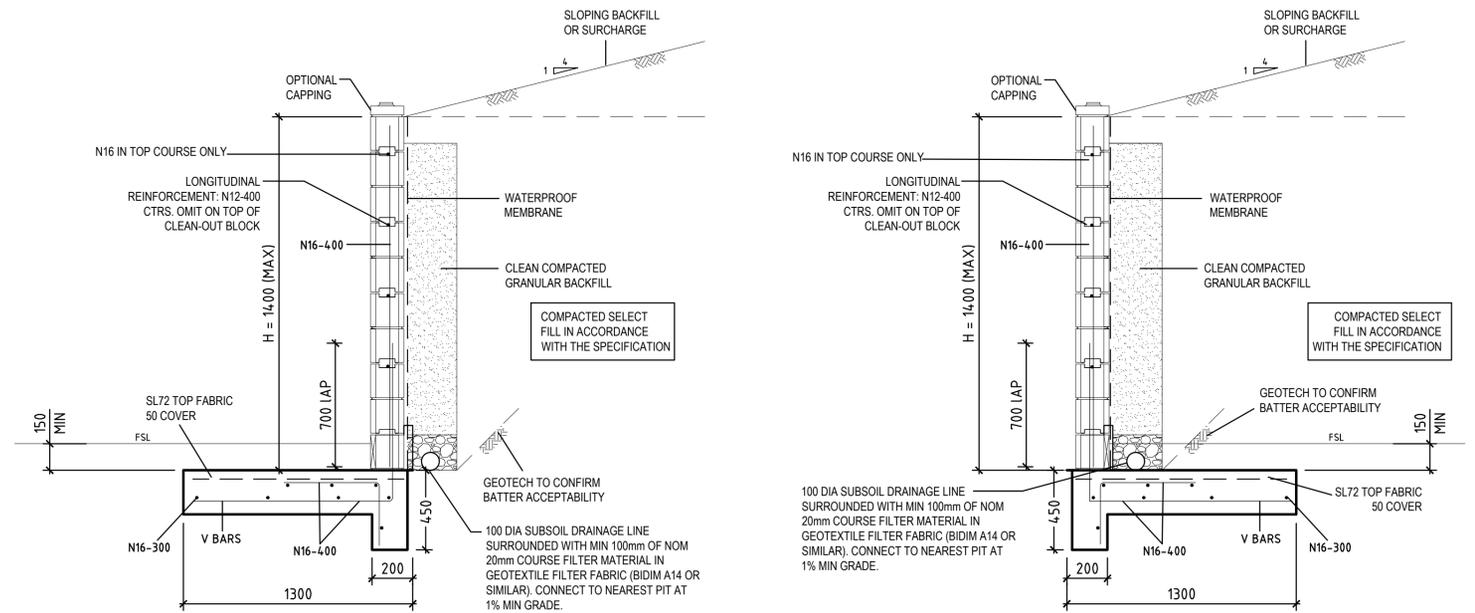
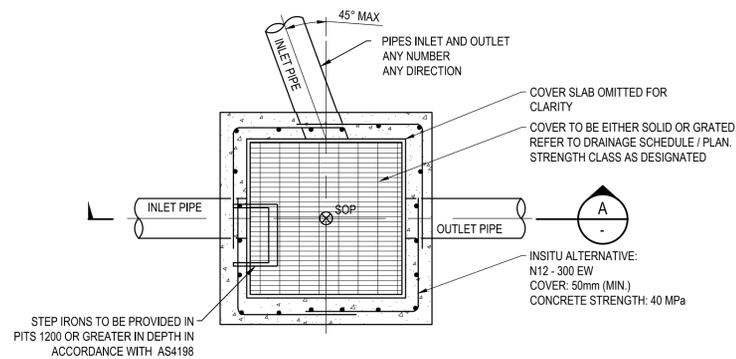


TYPICAL DRAINAGE PIT COVERS

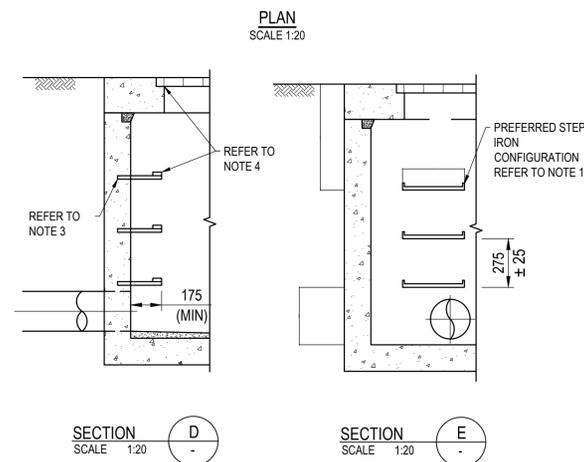
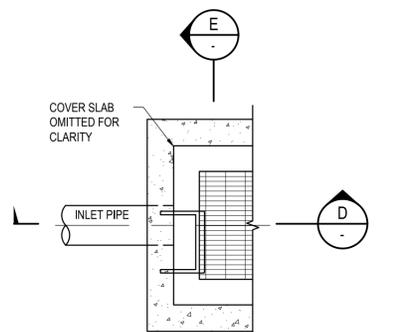


BLOCK RETAINING WALL (MAX 1400 HIGH)

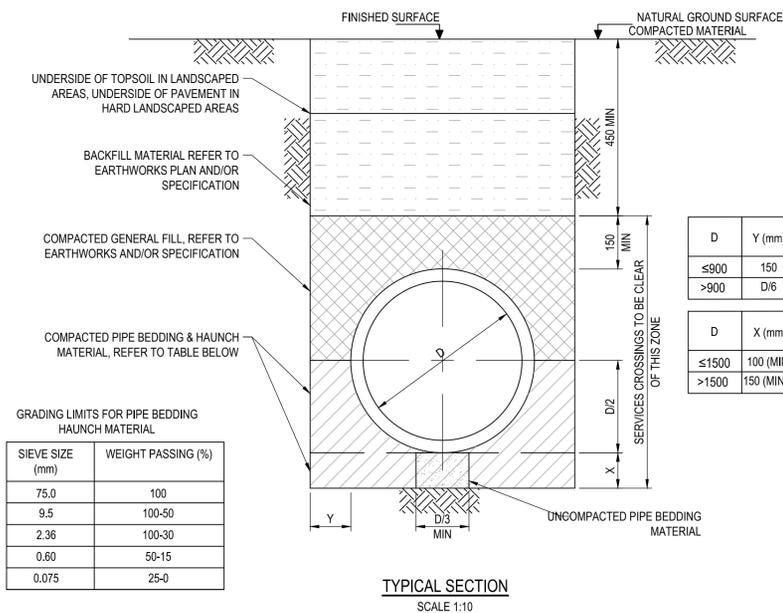
SCALE 1:20



PLAN SCALE 1:20



STANDARD STEP IRON DETAILS



TYPE HS1 PIPE BACKFILL DETAIL

GRADING LIMITS FOR PIPE BEDDING HAUNCH MATERIAL

SIEVE SIZE (mm)	WEIGHT PASSING (%)
75.0	100
9.5	100-50
2.36	100-30
0.60	50-15
0.075	25-0

PIPE BEDDING & HAUNCH MATERIAL COMPACTION REQUIREMENTS

TYPE	MIN STD COMPACTION
COHESIVE	50%*1
COHESIONLESS	85%*2

*1 IN ACCORDANCE WITH AS3725-2007

D	Y (mm)
≤900	150
>900	D/6

D	X (mm)
≤1500	100 (MIN)
>1500	150 (MIN)

NOTES FOR PITS:

- Holes broken/former in pre-cast pits for the insertion of pipes shall be made watertight and reinstated with a stiff mortar (3 cement:1 fine aggregate) or epoxy based sealant.
- If pit depth is greater than 1500mm but less than 3000mm, insitu reinforcement is N16-150 EW.
- Width of pit wall to be extended accordingly to accommodate twin pipes. Insitu reinforcement to suit accordingly.

NOTES FOR BENCHING:

- Mass concrete benching within pits must be formed so as to convey water from inlet(s) to outlet.
- Benching should be achieved minimum cross falls within pits as required by ENSTRUCT'S PIT DETAILS AND AUSTRALIAN STANDARDS.
- No water stand in pits when benching is complete.

NOTES FOR STEP IRONS:

- Step irons to AS1657 and EN13101 arranged in a single width tread formation (min length 350mm) or a single column, double width tread (min length 150mm) staggered double column.
- Step irons to be industrial step, sure-step or similar approved, minimum thickness of tread 20mm with upstand height 20mm at each end of the tread to prevent lateral slip.
- Steps to be chemically/physically anchored into the pit walls in accordance with the step iron manufacturer's details.
- Step irons to be located so as to be ready accessible from the cover, where internal pit size exceeds 1200x1200 the cover slab, frame & cover position should be locally displaced to suit access to the step irons. Refer to engineer for clarification if required.

Recent revision history

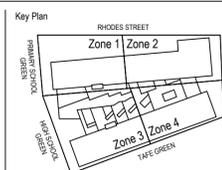
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01		50% SD ISSUE	13/07/18
02		80% SD ISSUE	31/08/18
03		FOR COSTING	25/03/19
04		SSDA ISSUE	15/05/19
05		DRAFT 90% SD	29/05/19
06		SD ISSUE	14/06/19
07		50% ISSUE	01/06/20
08		75% ISSUE	08/07/20
09		FOR CROWN CERTIFICATE	23/07/20

Notes

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Contractor must verify all dimensions on site before commencing work or preparing shop drawings.

Do not scale drawings.



Contractor



Project
MEADOWBANK EDUCATION AND EMPLOYMENT PRECINCT SCHOOLS PROJECT



Issuer
enstruct
enstruct group Pty Ltd
Level 4, 2 Glen Street, Missions Point NSW 2061
Telephone: (02) 8504 1444
http://www.enstruct.com.au

Project number
5645

Size check
25mm

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Approved
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Sheet size
A1

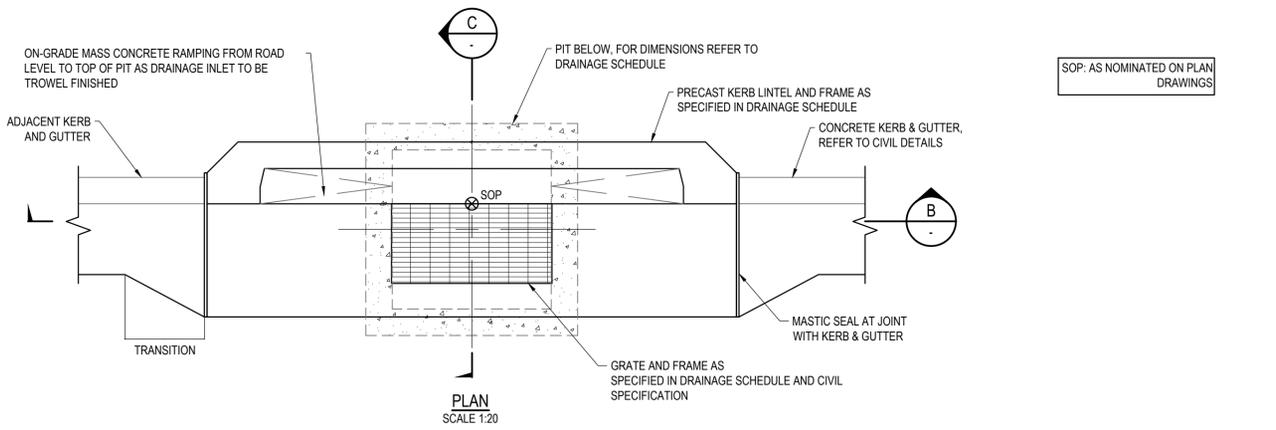
Scale
NOTED

Sheet title
STORMWATER DETAILS - SHEET 2

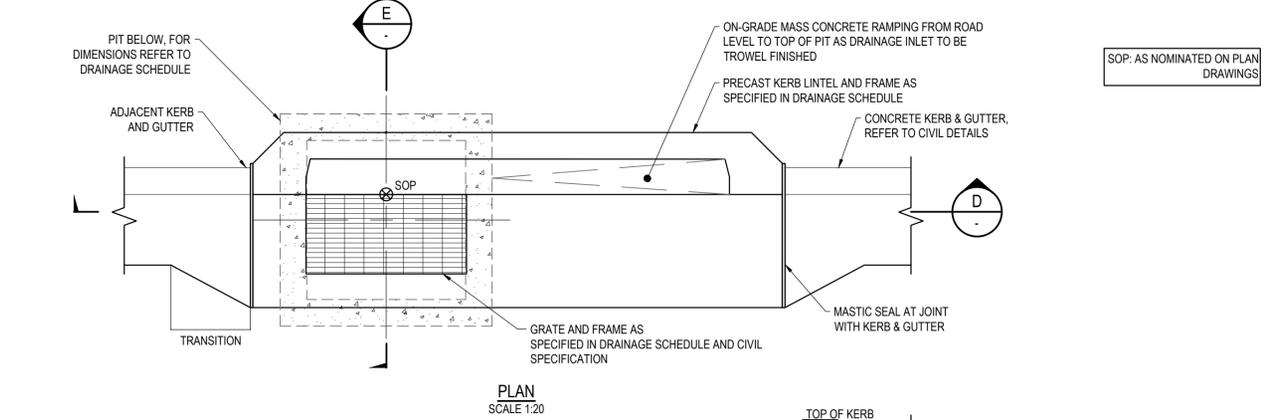
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MSP-EN-CV-00852

Revision
09

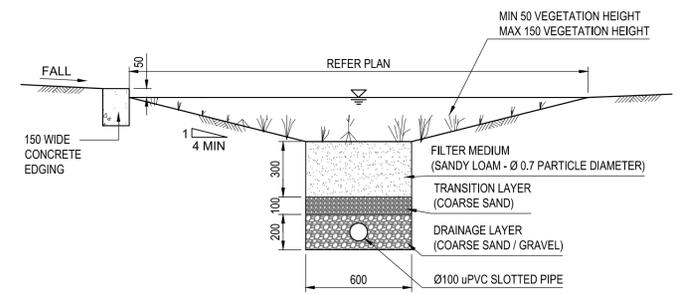
Status
FOR CROWN CERTIFICATE



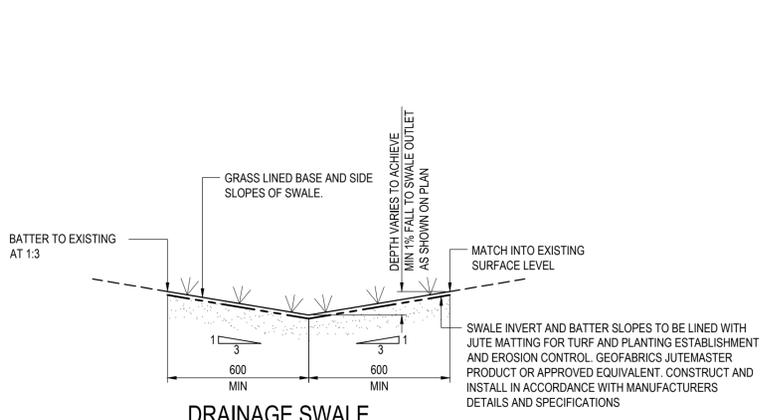
TYPICAL SAG KERB INLET DETAIL [KIP(S)]



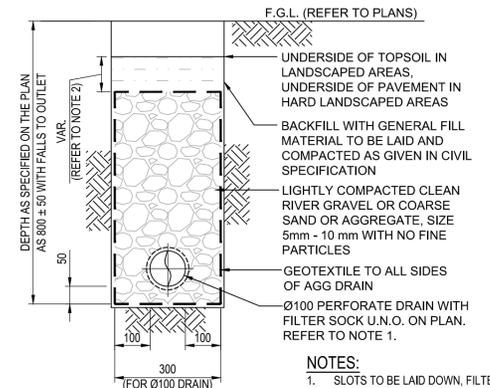
TYPICAL ON-GRADE KERB INLET DETAIL [KIP(OG)]



TYPICAL BIO-RETENTION SWALE DETAIL

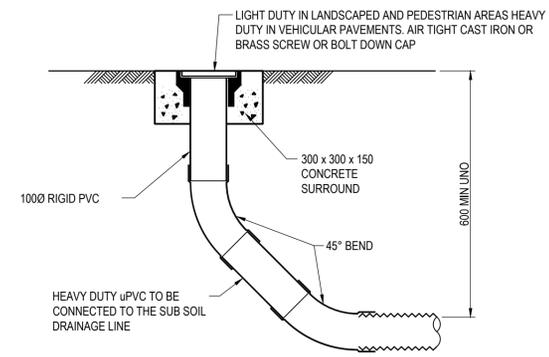


DRAINAGE SWALE



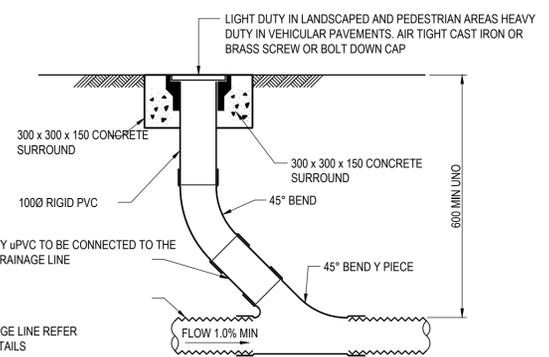
SUBSOIL DRAIN DETAIL

- NOTES:**
1. SLOTS TO BE LAID DOWN, FILTER AS GIVEN IN DRAINAGE SPECIFICATION.
 2. FOR LANDSCAPING AREAS, CLEAN AGGREGATE AND GEOTEXTILE TO BE BROUGHT UP TO UNDERSIDE OF TOPSOIL OR AS OTHERWISE INDICATED ON LANDSCAPE ARCHITECT'S DETAILS. IN THE EVENT OF UNCERTAINTY, CONTRACTOR TO REFER TO LANDSCAPE ARCHITECT. FOR PAVED AREAS, CHANNELS AND SLABS MINIMUM DEPTH OF MATERIAL IS 150mm COMPACTED FILL.



FLUSHING POINT (FP)

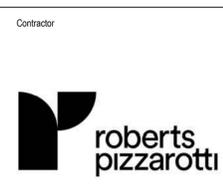
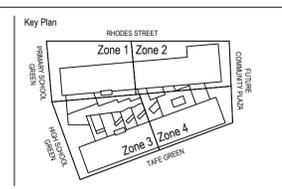
NOTE: SLOTTED RIGID PVC PIPE AND FITTINGS MAY BE USED



INTERMEDIATE RISER (IR)

NOTE: SLOTTED RIGID PVC PIPE AND FITTINGS MAY BE USED

#	Status	Description	Date	Notes
01		50% SD ISSUE	13/07/18	Copyright © Woods Bagot 2018. All Rights Reserved.
02		80% SD ISSUE	31/08/18	No material may be reproduced without prior permission.
03		FOR COSTING	25/03/19	
04		SSDA ISSUE	15/05/19	Contractor must verify all dimensions on site before commencing work or preparing shop drawings.
05		DRAFT 90% SD	29/05/19	
06		SD ISSUE	14/06/19	
07		50% ISSUE	01/06/20	Do not scale drawings.
08		75% ISSUE	08/07/20	
09		FOR CROWN CERTIFICATE	23/07/20	



Project
MEADOWBANK EDUCATION AND EMPLOYMENT PRECINCT SCHOOLS PROJECT

Client
NSW GOVERNMENT Education School Infrastructure

Issuer
enstruct
enstruct group Pty Ltd
Level 4, 2 Glen Street, Missions Point NSW 2061
Telephone (02) 8904 1444
http://www.enstruct.com.au

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STORMWATER DETAILS - SHEET 3

Sheet number
MSP-EN-CV-00853

Revision
09

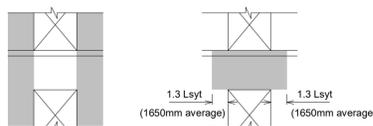
Status
FOR CROWN CERTIFICATE

REINFORCEMENT

- Symbols:
 - R: Structural grade plain bars to AS/NZS 4671, ductility class N (250MPa)
 - N: Deformed bar to AS/NZS 4671, ductility class N (500 MPa)
 - TM: Hard drawn steel trench mesh to AS/NZS 4671, ductility class L (500 MPa)
 - SL: Square rib mesh AS/NZS 4671, ductility class L (500 MPa)
 - RL: Rectangular rib mesh AS/NZS 4671, ductility class L (500 MPa)
- All reinforcement bars to be Type N unless noted otherwise.
- Distribution bars to main reinforcement bars in slabs shall be N12 at 300mm centres unless noted otherwise. Refer to reinforcement lap schedule for lap lengths.
- Minimum lap for fabric shall be one mesh plus 25mm.
- Welding of reinforcement is not allowed without prior approval.
- Top and bottom reinforcement shall be supported in both directions at maximum centres 1000mm.
- The minimum clear spacing between conduits as per AS3600 but not less than three diameters. Conduits in slabs to be placed above the bottom reinforcement and below the top reinforcement.
- All re-entrant corners and service holes are to have trimmer bars placed diagonally at corners using two bars (1600mm long), one tied to the underside of top reinforcement and the other tied to the top of the bottom reinforcement. Trimmer bars to be N12 for slabs not thicker than 120mm and N16 for slabs not thicker than 180mm.
- Where not shown bars to be N20 unless noted otherwise.
- Abbreviations used for reinforcement:
 - BB = Bottom Bottom
 - B = Bottom
 - TT = Top Top
 - T = Top
 - EF = Each Face
 - EW = Each Way
 - F = Near Face
 - FF = Far Face
- At least 95% of all reinforcing bar and mesh meets or exceeds 500 MPa strength grade, and at least 60% of all reinforcing bar and mesh is produced using energy-reducing processes in its manufacture (measured by average mass by steel maker annually)
- At least 95% of all reinforcing steel meets or exceeds 500 MPa strength grade, and at least 15% (by mass) of all reinforcing steel is assembled using off site optimal fabrication techniques detailed in Table 2 (Mat-6 Steel, Green Building Council of Australia).

REINFORCEMENT RATES

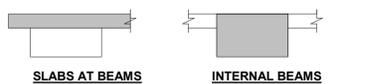
- Floor plate reinforcement rates make no allowance for construction joints or typical penetration trimming reinforcement.
- Wall reinforcement rates make no allowance for typical penetration trimming reinforcement.
- Reinforcement rates provided do not allow for site wastage or construction related reinforcement such as but not limited to safety mesh, alimak and crane reaction reinforcement or screens and railing reinforcement.
- In the instance where members such as beams overlap, both beam areas shall be considered separately in the calculation of the total reinforcement and post-tensioning tonnage



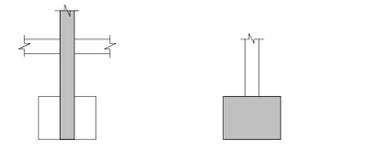
WALLS **WALL LINK BEAMS**



EDGE BEAMS **SLABS AT EDGES**



SLABS AT BEAMS **INTERNAL BEAMS**



R.C. WALL/COLUMNS **FOOTINGS**

TYPICAL REINFORCEMENT AREAS
For reinforcement quantities required refer to tables. Denotes areas to be used when determining reinforcement quantities for kg/m² values only.

STRUCTURAL STEELWORK

- All workmanship and materials in accordance with AS 4100 and AS 4600.
- Steel shall have the following minimum properties unless noted otherwise:

COMPONENT	STANDARD	GRADE
Plates	AS 3678	350
Hot rolled sections	AS 3679	300
CHS	AS 1163	C350
RHS and SHS	AS 1163	C450
Welded beams and columns	AS 3679	300
Flat bars and Rods	AS 3679	300
Purlins and girts	AS 1397	450
- All bolts shall be M20 Grade 8.8/s in 22mm diameter holes with a minimum of two bolts per connection unless noted otherwise. A washer shall be placed under the nut in all cases and where the head of the bolt is to be tightened and additional washer is to be placed under the bolt head.
- Where slotted or oversize holes are permitted, a hardened plate washer of 6mm minimum thickness shall be placed under the nut and the bolt head to completely cover the slot. Unless noted otherwise, the washer shall be 6mm continuous fillet welded to the element containing the slot.
- After tightening bolts shall project beyond the nut a minimum of 1 full thread.
- All welding is to be in accordance with AS 1554, special purpose (SP) using E48XXX electrodes in accordance with AS 1553. All welding shall be carried out by suitable qualified personnel. Testing of welds to be carried out by qualified testers in accordance with AS 2214 and notes on the drawings.
- Minimum fillet welds to be 6mm continuous fillet. All butt welds to be full penetration with non-destructive testing in accordance with the specification unless noted otherwise.
- The following refers to bolting procedures:
 - 4.6/S - Commercial bolts (or black bolts), Grade 4.6 to AS 1111, tightened to snug tight condition using a standard wrench.
 - 8.8/S - High strength bolts (or structural bolts), Grade 8.8 to AS 1252, tightened to snug tight condition using a standard wrench.
 - 8.8/TF - High strength bolts (or structural bolts), Grade 8.8 to AS 1252, fully tensioned to AS 4100, designed as a friction type joint.
 - 8.8/TB - High strength bolts (or structural bolts), Grade 8.8 to AS 1252, fully tensioned to AS 4100, designed as a bearing type joint.
- Contact surfaces in connections incorporating 'TF' bolts shall be left unpainted unless noted otherwise. Bolts in 'TF' and 'TB' connections shall be tightened using the part-tum method or load indicating washers. A hardened washer is to be placed under the nut or bolt head, whichever is to be rotated. Bolts that have been fully tensioned shall not be re-used.
- Shop drawings are to be submitted for approval a minimum of 3 weeks prior to fabrication.
- No steelwork shall be fabricated until final approval of the shop detail drawings has been received by the builder and all review comments on the workshop drawings have been resolved to the engineer's satisfaction.
- All plates to be 10mm thick unless noted otherwise.
- All axial member connections (compression or tension) shall be capable of transferring a force equal to the member capacity.
- All hollow sections to be sealed with a 3mm plate unless noted otherwise.
- Corrosion protection:
 - Refer to the specification
 - All members in external masonry walls shall be hot dip galvanised in accordance AS 1650 with a minimum coating of 600 grams per square metre.
 - Bolts, nuts and washers to be hot dip galvanised to manufacturer's specifications
 - Exterior, fully exposed pin connection components to be hot dip galvanised with a minimum coating of 600 grams per square metre.
 - In addition to the specified finish, steelwork in contact with the ground is to be coated with Interzone 954 or approved equivalent, to a minimum thickness of 0.4mm.
 - Steelwork encased in concrete shall be covered with a minimum thickness of 50mm and be wrapped in SL41 galvanised mesh with N12 bars inside the 4-corners of the mesh. Lap mesh 150mm minimum. Lap N12 bars 400mm minimum.
 - All sealed hollow sections to be galvanised shall have vent holes as per manufacturer's
- GROUT under base plates to be high strength cementitious non-shrink grout (Masterflow 870 by Master Builders or approved equivalent).
- All chemical fixings to existing structure to be formed using Epcon C8 (or equivalent approved in writing)
- All chemical anchors to existing concrete structure to be site drilled and surveyed prior to steelwork fabrications. Coring of existing structure for anchors is not permitted.
- Connection of steelwork to concrete or masonry using chemical anchors through steel plates shall have the gap between the bolt holes in the plate and the bolts fully filled with epoxy mortar prior to installing the bolt washers and nuts.
- Purlins and Girts:
 - Cleats to be as per purlin manufacturer's specifications. For purlin top flange greater than 250mm above top of supporting steelwork, use 75x75x8 angle unless noted otherwise.
 - Bridging as per manufacturer's specifications. Bridging to wall girts commence from supporting structure under (slab) and be continuous up to eaves line. Bridging to purlins to be continuous across roof ridges.
 - Ceiling systems, ductwork etc. to be suspended from purlins web via hook bolts. Bolts supporting services off the bottom flange of purlins will not be permitted.
- All steelwork connections not indicated in the documentation to be assumed to be standard cleat and end plate member connections in accordance with the Australian Steel Institute design guides for simple connections.
- All steelwork to be fire protected by approved spray or board to the architect's details U.N.A.O
- All secondary steelwork for support of facade, internal partitions, acoustic panels, balustrades etc. are to the contractors design and detail. Contractor to submit details to engineer prior to fabrication.
- Bracing tumbuckles must be capable of carrying the full capacity of the brace.

SHOTCRETE

- General** - The concrete in the panels of retaining walls may be placed by the shotcreting process.
- Definitions** - The following definitions explain the meaning of certain words and terms as used in this specification:
 - Sprayed concrete is a mixture of cement, aggregate and water projected at high velocity from a nozzle into place to produce a dense homogeneous mass.
 - Shotcrete is a term used for sprayed concrete where the maximum aggregate size is not more than 20mm.
 - Rebound is a term used for all material having passed through the nozzle which does not conform to the definition of sprayed concrete
 - Nozzle is the attachment at the end of the material hose from which the material is jetted at high velocity.
 - Nozzlemaster is the workman who manipulates the nozzle, contains consistency and makes the final disposition of the material.
- Mix Design** - Mix proportions shall be designed by the contractor and shall be to the approval of the engineer. All concrete shall be obtained from an approved concrete supplier and shall be premixed and delivered to site in accordance with AS 3379. Where admixtures are approved by the engineer for addition to the mix to speed the setting rate of the cement, the following setting times and strengths shall apply unless otherwise stated:
 - Initial set of cement/admixture paste : 3 minutes Final set of cement/admixture paste : 12 minutes
 - 8 hour strength of concrete : 3 MPa
 - 24 hour strength of concrete : 10 MPa
 All constituents shall be uniformly dispersed throughout the mix.
- Qualifications of Operators** - All operators shall be to the approval of the engineer prior to commencement of spraying. The contractor shall certify to the engineer that the foreman, nozzleman and delivery equipment operatives have completed satisfactory work in similar capacities elsewhere. Where required by the engineer, the operator shall spray pre-construction panels which shall be approved by the engineer before the operators are employed on the works. Such panels may also be used by the engineer to assess the competence of operators or trainees for whom such certification is not available.
- Plant** - The contractor shall state the numbers and type of plant which he proposes to use for the construction of the works.
- Substrate Preparation** - The surface shall be compacted, lined and graded as required and dampened before the application of sprayed concrete. Natural surfaces must be sufficiently cohesive to prevent erosion when the sprayed concrete is applied.
- Spraying Procedure** - No concrete shall be sprayed in air temperatures less than 1° Celsius. Freshly sprayed concrete shall be protected from rain or water until the surface is of sufficient hardness to prevent damage. Spraying shall be discontinued if wind or air currents cause separation of the nozzle stream during placement. During starting or stopping of the spraying operation or whenever spraying is irregular, the nozzle shall be directed away from the works, all corners and any areas where rebound cannot escape or be blown free, shall be filled prior to general spraying. Rebound shall not be worked into the construction or reused in the works. Guides shall be set up to establish finished surfaces. These guides shall be to the approval of the engineer prior to spraying. Sprayed concrete shall be applied so that it neither sags nor slumps. Sprayed concrete shall be troweled to a smooth surface. Maximum deviation from a 1 metre straight edge shall be 10mm. Full records of all materials delivered to the sprayed concrete mixer shall be kept and made available to the construction manager.
- Joints** - The position and type of all construction joints shall be approved by the engineer.
- Quality Control** - Testing of shotcrete shall be carried out in accordance with the sprayed concrete manual Recommended Practice: Sprayed Concrete Clause A12 of the reference specification prepared by the Concrete Institute of Australia.

PERMANENT / TEMPORARY GROUND ANCHORS

- All ground anchor loads nominated are minimum long term ultimate residual loads.
- Ground anchors are to be designed to withstand the working load as shown on the drawings. All workmanship and materials shall be in accordance with AS 3600, AS 1310, AS 1311, AS 1313 and AS 1314. The design and details are to be certified by an independent engineer prior to commencement of works.
- Anchors shall consist of low relaxation stress relieved super grade strand to AS 1313 and anchorages shall conform to AS 1314.
- The contractor shall determine the ground anchor type, size and lengths required. The contractor shall be required to verify anchor lengths by two test anchors and to proof load each anchor as noted below. The actual minimal number of test anchors is to be determined by the engineer on site.
- Details of the proposed anchor system shall be forwarded to the engineer for review and shall include assumptions used in designing the anchors, including fixed anchor length or grouted length, free anchor length soil or rock assumptions and corrosion protection. Prior to any drilling operations, the contractor shall acquaint themselves with all adjacent underground services and ensure that none of these are disrupted by ground anchors. All appropriate approval, permits and agreements shall be obtained before commencement of the work. Services locations shown on the drawings are indicative only.
- Anchors shall be stressed at the appropriate stages of the construction sequence, provided that the bond anchorage grout has reached the required strength. Sufficient strands shall be left projecting from the anchorage to enable any subsequent re-stressing.
- Proof testing of anchors shall be advised prior to construction for permanent anchors. As a minimum, temporary anchors shall be tested as follows:
 - jack to required working load, check and record the load after a minimum period of 24 hours then gradually jack to the test load (1.5 times the working load) and hold for a minimum period of 5 minutes.
 - Slowly de-stress to the working load, should the ground anchor fail to hold the test load for minimum period, it shall be rejected and another constructed as specified. Failure is determined by more than 5% drop in load.
 - Re-check and record the ground anchor load not less than 3 days after the initial check and again at 21 days.
 - If the load is greater than 90% of the working load, the anchors shall be stressed back to the working load. If the load is less than 90% of the working load, the anchors shall be rejected and another constructed as specified.
- The contractor shall maintain on site an adequate supply of anchor cables, grout and such equipment as necessary for emergency use.
- Anchors holes shall be drilled to the line shown on the drawings and tolerances specified. Casings shall be provided when necessary to prevent collapse of the hole during construction of the anchor. On completion of drilling, all holes shall be cleared out and suitably plugged or otherwise protected to prevent entry of foreign matter. Under no circumstances shall holes be water jetted.
- At the designated stage of the construction sequence, temporary anchors shall be de-stressed, anchor heads removed and surfaces made good. All drilled holes shall be fully grouted including those rejected after anchors have been de-stressed.
- The contractor shall keep accurate records of the ground anchors in a logbook on site which shall be kept up to date as work proceeds.

The following data shall be recorded:
 - Ground anchor identification
 - Drilled date, total anchor length and angle
 - Grouted date and grouted length
 - Working load and date applied
 - Test load and date applied
 - 3 day load check and date
 - 21 day load check and date
 - Wedge and barrel identification numbers

GREEN STAR

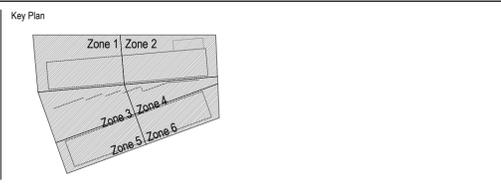
- To achieve the nominated green star points for the project the following is required.
 - At least 95% of all reinforcing bar and mesh meets or exceeds 500MPa strength grade, and at least 60% of all reinforcing steel is produced using energy-reducing processes in its manufacture (measured by average mass by steel maker annually) and at least 15% (by mass) of all reinforcing steel is assembled using off site optimal fabrication techniques as defined by the GBCA.

REINFORCEMENT RATES			
ELEMENT	LEVEL	RATE	
		REINF.	UNIT
PILE CAPS	TYPICAL	180	kg/m ³
CORE BASE	TYPICAL	195	kg/m ²
CORE WALLS	TYPICAL	195	kg/m ³
LINK BEAMS	TYPICAL	195	kg/m ³
SHEAR WALL AT GRID 15		250	kg/m ³
COLUMNS AT ENDS OF SHEAR WALL AT GRID 15		300	kg/m ³
STAIRS	TYPICAL	150	kg/m ³
CORE LIDS	TYPICAL	175	kg/m ³
PAD FOOTINGS	TYPICAL	190	kg/m ³

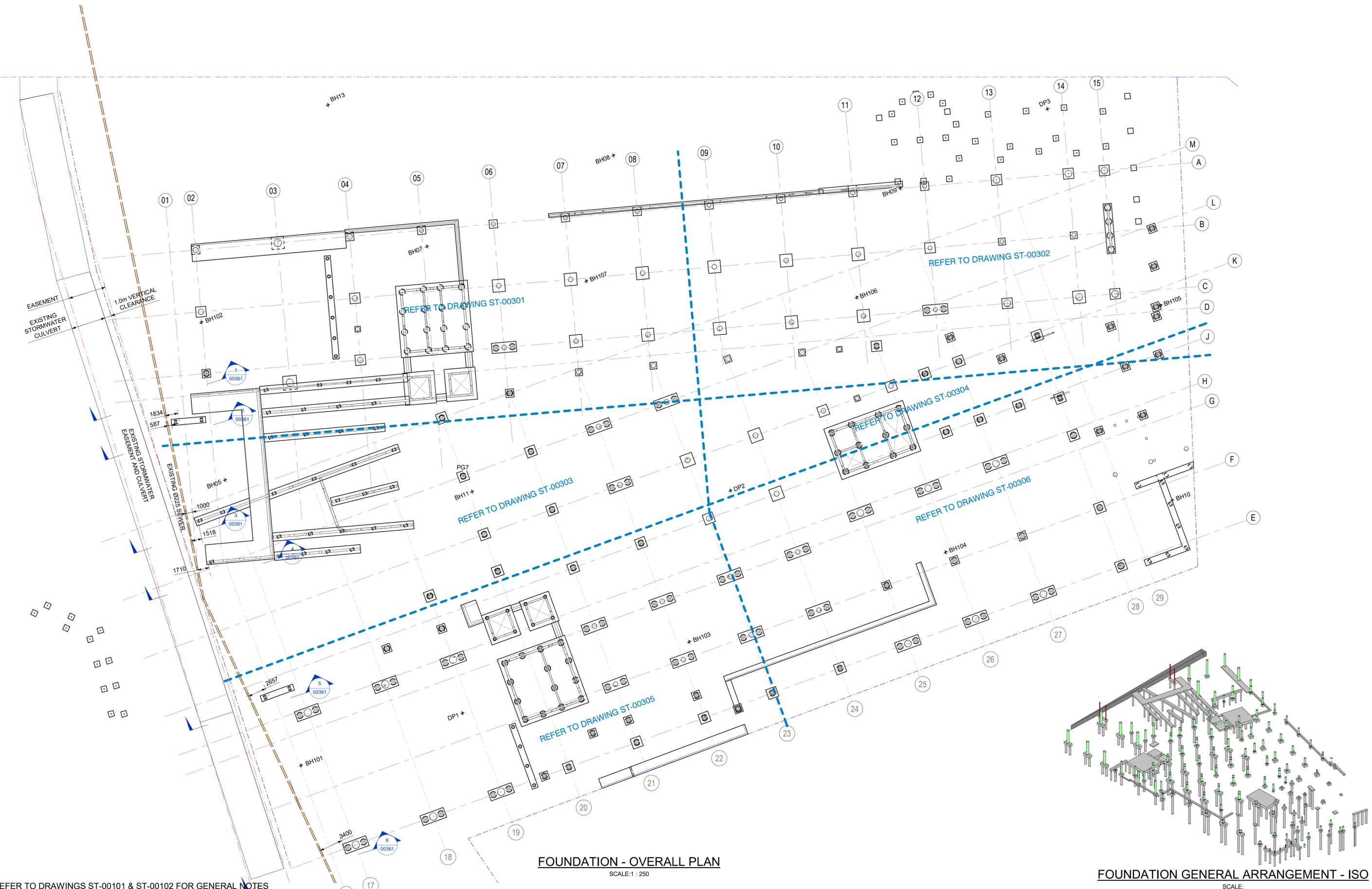
TRANSFER BEAM REINFORCEMENT + PT RATES			
TRANSFER BEAM TAG	LEVEL	RATE	
		REINF.	PT
		kg/m ³	kg/m ²
TB1	GROUND	175	75
TB2	LEVEL 2	175	75
TB3	LEVEL 2	145	75

NOTE:
 - REINFORCEMENT RATES DO NOT INCLUDE ANTIBURST, CONSTRUCTION JOINT REINFORCEMENT, SAFETY MESH, ROLLING MARGINS OR ANY PROPRIETARY PRODUCTS AND ASSOCIATED ADDITIONAL REINFORCEMENT COSTS.

Recent revision history		Notes
#	Description	Date
5	Schematic Design	14.06.19
6	Issued for Foundation Loads	15.05.20
7	Issued for Information	22.05.20
8	Issued for Information	29.05.20
9	Issued For Information 50% Design Development	06.06.20
10	Issued For Design Development Updates	12.06.20
11	50% DD Updates	19.06.20
12	75% Documentation Issue	08.07.20
13	For Crown Certificate	23.07.20



Contractor	Project	Issuer	Sheet title
	MEADOWBANK EDUCATION AND EMPLOYMENT PRECINCT SCHOOLS PROJECT	enstruct enstruct group Pty Ltd Level 4, 2 Glen Street, Milsom Point NSW 2061 Telephone (02) 8904 1444 http://www.enstruct.com.au	GENERAL NOTES - SHEET 2
Client	Education School Infrastructure	Project number	Revision
		5645	MSP-EN-ST-00102 13
		Checked: NLK	Status: FOR CROWN CERTIFICATE
		Approved: MOS	
		Size check: 25mm	
		Sheet size: A1	
		Scale: 1:1	



FOUNDATION - OVERALL PLAN

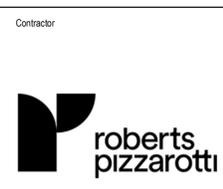
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FOUNDATION GENERAL ARRANGEMENT - ISO

SCALE:

REFER TO DRAWINGS ST-00101 & ST-00102 FOR GENERAL NOTES

#	Description	Date	Notes
4	Draft 50% Schematic Design	24.06.19	
5	Schematic Design	14.06.19	
6	Schematic Design	21.01.20	
7	Issued for Foundation Loads	15.05.20	
8	Issued for Information	20.05.20	
9	Issued for Information	29.05.20	
10	Issued For Information 50% Design Development	05.06.20	
11	50% DD Updates	19.06.20	
12	75% Documentation Issue	08.07.20	
13	For Crown Certificate	23.07.20	



Project
MEADOWBANK EDUCATION AND EMPLOYMENT PRECINCT SCHOOLS PROJECT

Client
NSW GOVERNMENT Education School Infrastructure

Issuer
enstruct
enstruct group pty ltd
Level 4, 2 Glen Street, Milsions Point NSW 2061
Telephone (02) 8904 1444
http://www.enstruct.com.au

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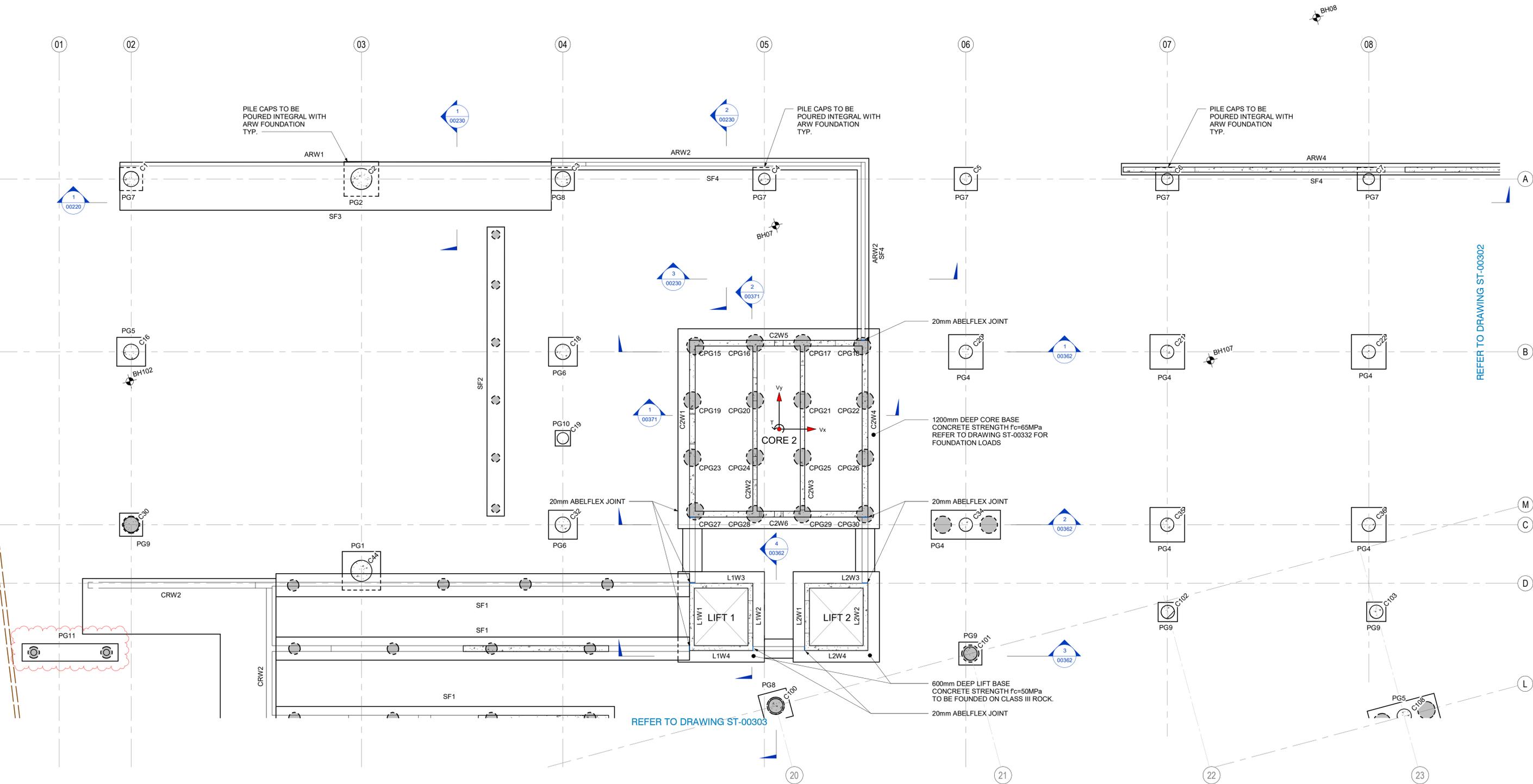
NOTES:

- GROUP PILE LOADS TO BE RESISTED BY PILES DIRECTLY BENEATH EACH CORE. VERTICAL ACTIONS ARE NOT TO BE SHARED BETWEEN PILE GROUPS.
- SHEAR FORCES CAN BE DISTRIBUTED BETWEEN PILES THAT ARE CONNECTED BY A RIGID PILE CAP OR SUSPENDED SLAB.
- DISTRIBUTION OF FORCES AND MOVEMENTS IN FOUNDATIONS SHALL BE COMPATIBLE WITH THE FORCES AND MOVEMENTS IN THE STRUCTURE ABOVE.
- CORE PADS AND PILE CAPS ARE TO BE POURED HARD AGAINST IN-SITU ROCK.
- THE TENSION CONNECTION BETWEEN PILES AND CORE RAFTS IS TO DEVELOP THE FULL TENSION FORCE WITHIN 200MM OF THE TOP OF THE RAFT. DETAIL TO BE COORDINATED WITH THE PILING CONTRACTOR.
- PILES WITHIN THE ZONE OF INFLUENCE OF THE EXISTING CULVERT ARE NOT TO APPLY ANY LATERAL OR VERTICAL LOAD ONTO THE EXISTING CULVERT
- CORE PILE LOADS ARE TO BE CONFIRMED FOLLOWING CONFIRMATION OF PILE SIZE, SETOUT AND STIFFNESS BY THE PILING CONTRACTOR.

☛ DENOTES BORE HOLES. REFER GEOTECHNICAL REPORTS

NOTES (cont.):

- FOR PAD FOOTING AND STRIP FOOTING DETAILS AND NOTES REFER TO ST-00331 TO ST-00351
- FOR FOUNDATION SECTIONS REFER TO DRG. ST-00361
- PILE DESIGN BASED ON GEOTECHNICAL CAPACITIES PROVIDED IN THE GEOTECHNICAL REPORTS.
- FOR PILE SCHEDULE AND NOTES REFER DRG. ST-00331
- CURRENT SELECTION OF FOUNDATION TYPE HAS BEEN BASED UPON AN INTERPRETATION OF THE CURRENT GEOTECHNICAL REPORTS. THE CONTRACTOR SHOULD REVIEW THE AVAILABLE INFORMATION IN THE GEOTECHNICAL REPORTS AND MAKE THEIR OWN ASSESSMENT.
- REFER TO DRAWING ST-00561 TO ST-00570 FOR RC WALL ELEVATIONS
- REFER TO DRAWING ST-00501 TO ST-00502 FOR COLUMN SCHEDULE
- REFER TO DRAWING ST-00331 & ST-00332 FOR LATERAL FOUNDATION LOADS
- REFER TO DRAWING ST-00331 & GENERAL NOTES FOR GROUND ANCHOR NOTES
- REFER TO DRAWING ST-00331 FOR CORE WALL GRAVITY LOADS
- DEPTH OF FOUNDATION TO BE CO-ORDINATED WITH IN-GROUND SERVICES

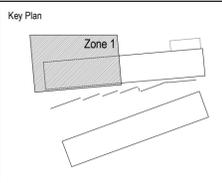


FOUNDATION - GENERAL ARRANGEMENT - ZONE 1

SCALE: 1 : 100

REFER TO DRAWINGS ST-00101 & ST-00102 FOR GENERAL NOTES

#	Description	Date	Notes
1	Issued for Foundation Loads	15.05.20	
2	Issued for Information	29.05.20	
3	Issued For Information 50% Design Development	05.06.20	
4	Issued For Design Development Updates	12.06.20	
5	50% DD Updates	19.06.20	
6	75% Documentation Issue	08.07.20	
7	For Crown Certificate	23.07.20	



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FOUNDATION GENERAL ARRANGEMENT - ZONE 1

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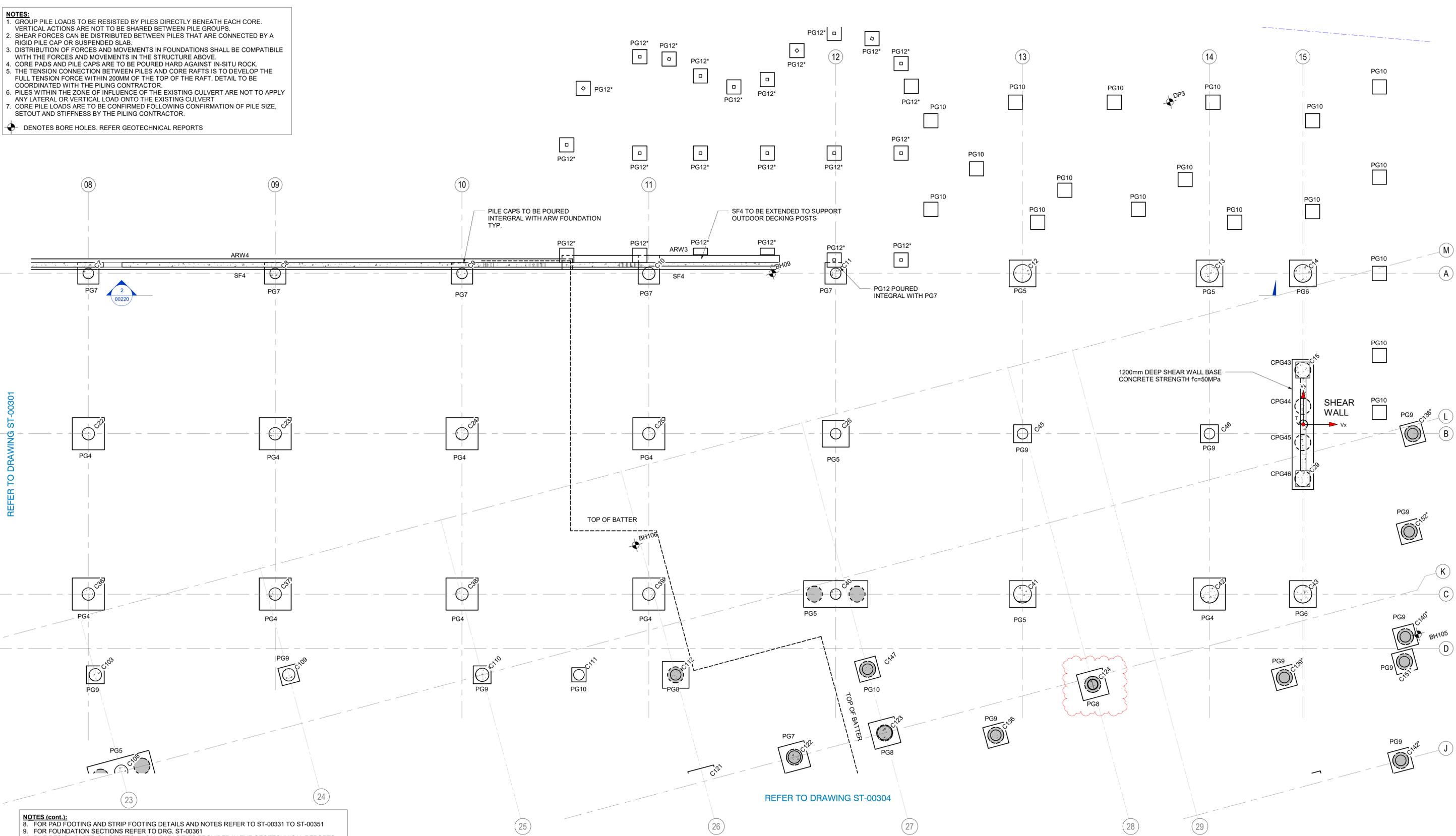
Status
FOR CROWN CERTIFICATE

NOTES:

- GROUP PILE LOADS TO BE RESISTED BY PILES DIRECTLY BENEATH EACH CORE. VERTICAL ACTIONS ARE NOT TO BE SHARED BETWEEN PILE GROUPS.
- SHEAR FORCES CAN BE DISTRIBUTED BETWEEN PILES THAT ARE CONNECTED BY A RIGID PILE CAP OR SUSPENDED SLAB.
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☉ DENOTES BORE HOLES. REFER GEOTECHNICAL REPORTS

REFER TO DRAWING ST-00301



REFER TO DRAWING ST-00304

FOUNDATION - GENERAL ARRANGEMENT - ZONE 2

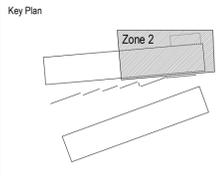
SCALE: 1 : 100

NOTES (cont.):

- FOR PAD FOOTING AND STRIP FOOTING DETAILS AND NOTES REFER TO ST-00331 TO ST-00351
- FOR FOUNDATION SECTIONS REFER TO DRG. ST-00361
- PILE DESIGN BASED ON GEOTECHNICAL CAPACITIES PROVIDED IN THE GEOTECHNICAL REPORTS.
- FOR PILE SCHEDULE AND NOTES REFER DRG. ST-00331
- CURRENT SELECTION OF FOUNDATION TYPE HAS BEEN BASED UPON AN INTERPRETATION OF THE CURRENT GEOTECHNICAL REPORTS. THE CONTRACTOR SHOULD REVIEW THE AVAILABLE INFORMATION IN THE GEOTECHNICAL REPORTS AND MAKE THEIR OWN ASSESSMENT.
- REFER TO DRAWING ST-00561 TO ST-00570 FOR RC WALL ELEVATIONS
- REFER TO DRAWING ST-00501 TO ST-00502 FOR COLUMN SCHEDULE
- REFER TO DRAWING ST-00331 & ST-00332 FOR LATERAL FOUNDATION LOADS
- REFER TO DRAWING ST-00331 & GENERAL NOTES FOR GROUND ANCHOR NOTES
- REFER TO DRAWING ST-00331 FOR CORE WALL GRAVITY LOADS
- DEPTH OF FOUNDATION TO BE CO-ORDINATED WITH IN-GROUND SERVICES

REFER TO DRAWINGS ST-00101 & ST-00102 FOR GENERAL NOTES

#	Description	Date	Notes
1	Issued for Foundation Loads	15.05.20	
2	Issued for Information	23.05.20	
3	Issued For Information 50% Design Development	05.06.20	
4	50% DD Updates	19.06.20	
5	50% DD Updates	24.06.20	
6	75% Documentation Issue For Crown Certificate	08.07.20	
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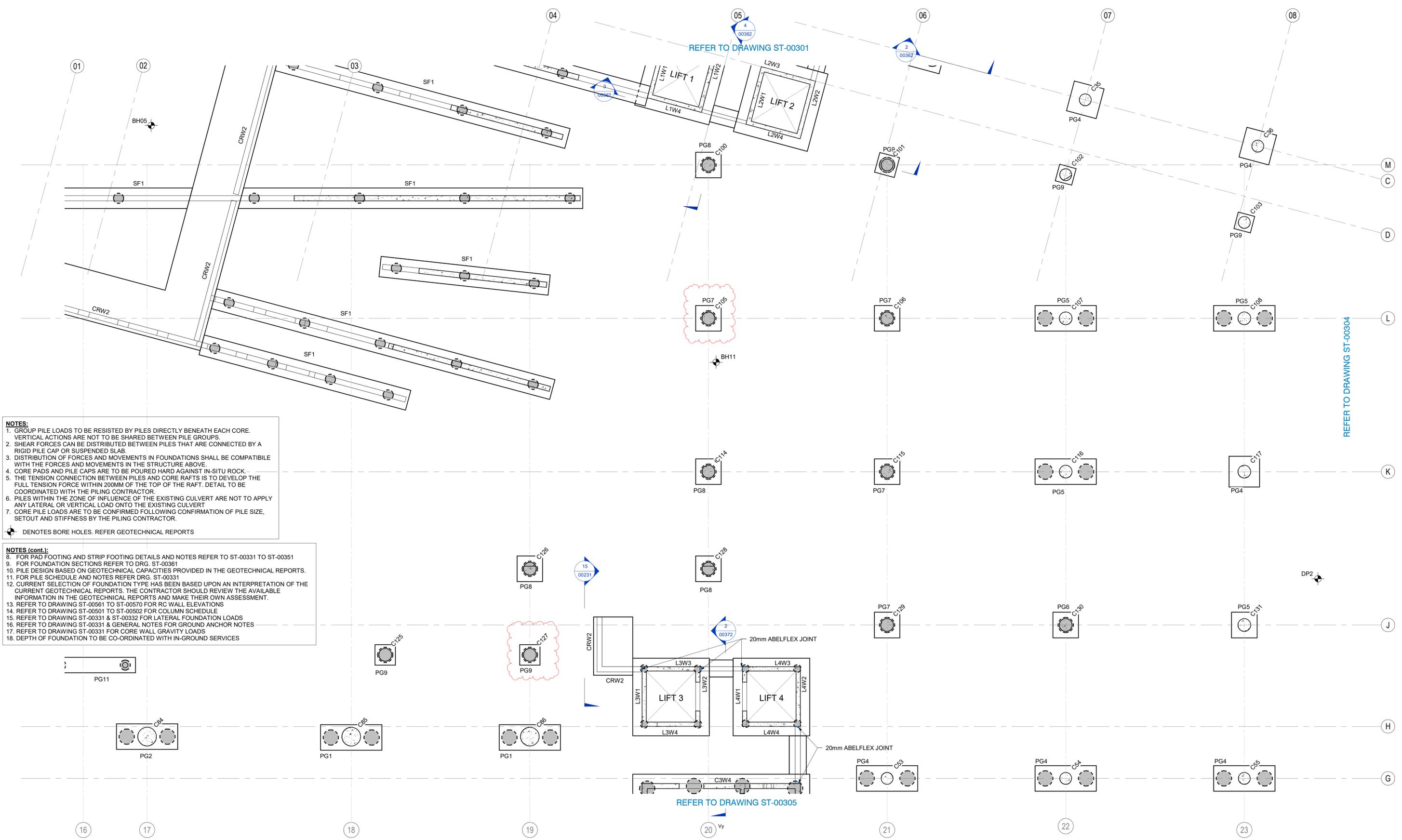
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FOUNDATION GENERAL ARRANGEMENT - ZONE 2

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7

Status
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NOTES:

- GROUP PILE LOADS TO BE RESISTED BY PILES DIRECTLY BENEATH EACH CORE. VERTICAL ACTIONS ARE NOT TO BE SHARED BETWEEN PILE GROUPS.
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NOTES (cont.):

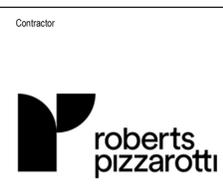
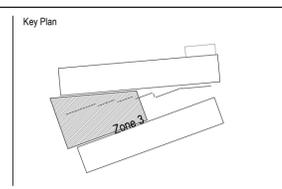
- FOR PAD FOOTING AND STRIP FOOTING DETAILS AND NOTES REFER TO ST-00331 TO ST-00351
- FOR FOUNDATION SECTIONS REFER TO DRG. ST-00361
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- REFER TO DRAWING ST-00331 & GENERAL NOTES FOR GROUND ANCHOR NOTES
- REFER TO DRAWING ST-00331 FOR CORE WALL GRAVITY LOADS
- DEPTH OF FOUNDATION TO BE CO-ORDINATED WITH IN-GROUND SERVICES

FOUNDATION - GENERAL ARRANGEMENT - ZONE 3

SCALE: 1 : 100

REFER TO DRAWINGS ST-00101 & ST-00102 FOR GENERAL NOTES

Recent revision history	Description	Date	Notes
1	Issued for Foundation Loads	15.05.20	
2	Issued for Information	29.05.20	
3	Issued For Information 50% Design Development	05.06.20	
4	50% DD Updates	19.06.20	
5	75% Documentation Issue	08.07.20	
6	For Crown Certificate	23.07.20	



Project
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enstruct
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Level 4, 2 Glen Street, Milsom Point NSW 2061
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http://www.enstruct.com.au

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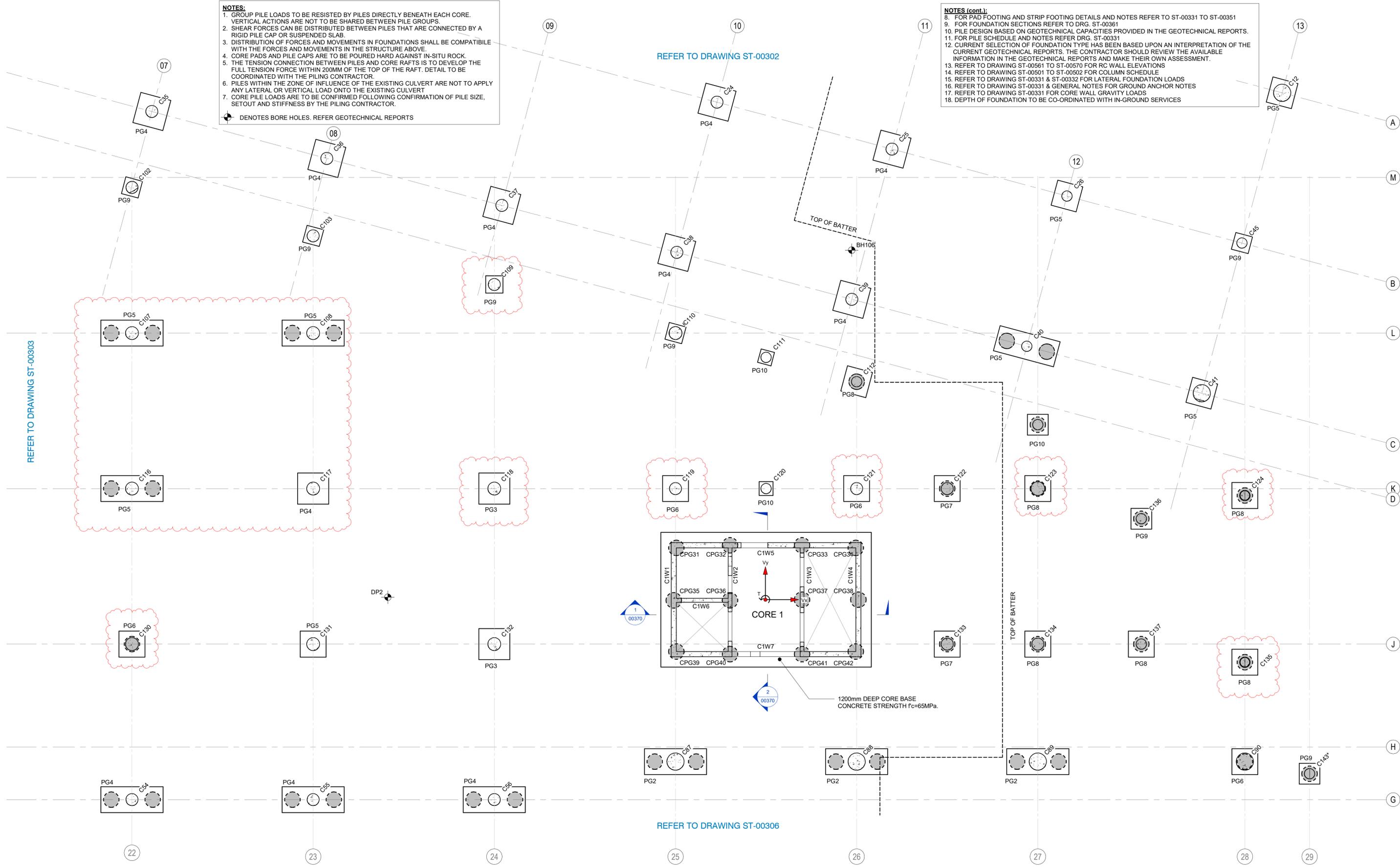
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- FOR FOUNDATION SECTIONS REFER TO DRG. ST-00361
- PILE DESIGN BASED ON GEOTECHNICAL CAPACITIES PROVIDED IN THE GEOTECHNICAL REPORTS.
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- REFER TO DRAWING ST-00331 & ST-00332 FOR LATERAL FOUNDATION LOADS
- REFER TO DRAWING ST-00331 & GENERAL NOTES FOR GROUND ANCHOR NOTES
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- DEPTH OF FOUNDATION TO BE CO-ORDINATED WITH IN-GROUND SERVICES

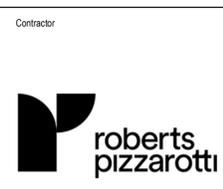
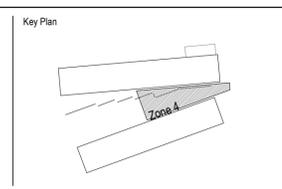


FOUNDATION - GENERAL ARRANGEMENT - ZONE 4

SCALE: 1 : 100

REFER TO DRAWINGS ST-00101 & ST-00102 FOR GENERAL NOTES

#	Description	Date	Notes
1	Issued For Foundation Loads	15.05.20	
2	Issued for Information	23.05.20	
3	Issued For Information 50% Design Development	05.06.20	
4	Issued For Design Development Updates	12.06.20	
5	50% DD Updates	19.06.20	
6	50% DD Updates	24.06.20	
7	75% Documentation Issue	08.07.20	
8	For Crown Certificate	23.07.20	



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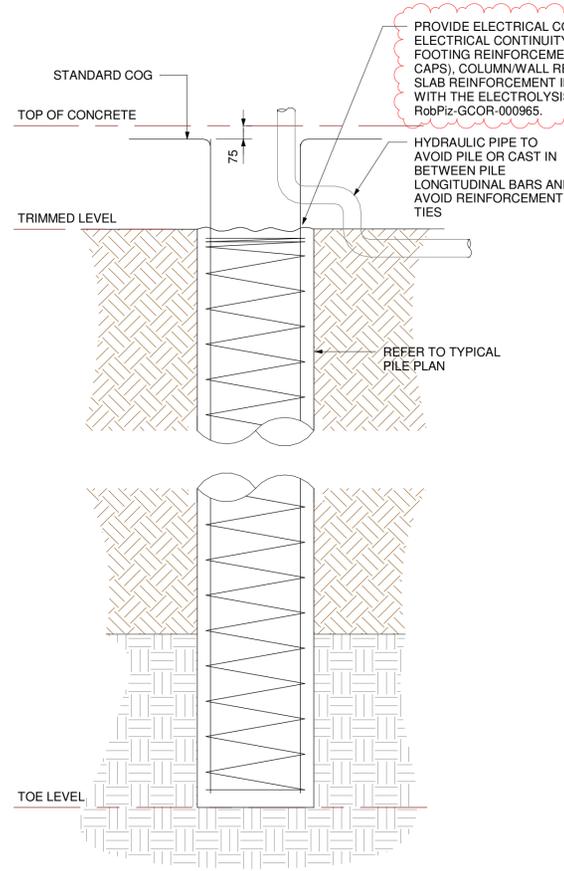
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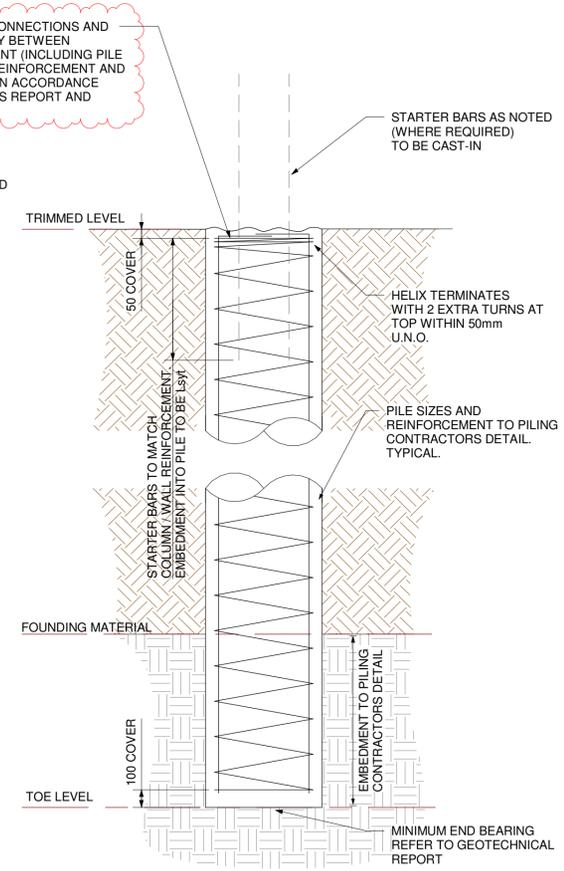
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Revision
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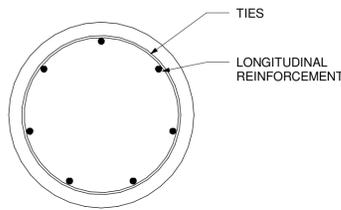
Status
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TYPICAL PILE AT SLAB / PILE CAP / BEAM / CORE FOUNDATION



TYPICAL PILE TO CONCRETE COLUMN



TYPICAL PILE DETAIL

NOTE:
PILES TO BE DESIGNED AND CERTIFIED BY PILING CONTRACTOR

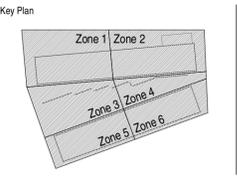
PILE NOTES

- PILES AND PILING TO BE IN ACCORDANCE WITH AS 2159.
- REFER TO THE PILING CONTRACTORS DOCUMENTATION FOR PILE SIZES.
- PILES TO BE LOCATED WITHIN 75mm OF POSITION NOMINATED AND BE WITHIN 1.75 FOR PILING.
- ALL PILES TO BE INSPECTED BY A QUALIFIED GEOTECHNICAL ENGINEER TO VERIFY DESIGN BEARING PRESSURES.
- ALL PILE BORINGS ARE TO BE INSPECTED TO ENSURE THEY ARE CLEANED AND FREE OF LOOSE MATERIAL AND WATER PRIOR TO POURING CONCRETE, WHICH SHOULD BE WITH MINIMAL DELAY AND ON THE SAME DAY AS BORING.
- THE INSPECTION SHOULD ENSURE ADEQUATE ROUGHNESS IS ACHIEVED IN THE PILE SHAFT TO GUARANTEE SHAFT ADHESION, THE USE OF A ROUGHENING TOOL IS RECOMMENDED.
- SOME GROUNDWATER SEEPAGE INTO PILES CAN BE EXPECTED. WATER SHOULD BE PUMPED FROM THE PILES IMMEDIATELY PRIOR TO POURING CONCRETE. TREMIE METHODS SHOULD BE USED IF DEPTH OF WATER EXCEEDS 100mm
- OBSTRUCTIONS MAY BE EXPECTED WHEN DRILLING THROUGH EXISTING FILL
- INFORMATION RELATING TO GROUND CONDITIONS HAS BEEN BASED ON ALLIANCE GEOTECHNICAL: 9280-GR-1-1 REV[1] 11/10/2019, MSP: MSP-DP-GT-011 REV[0] 11/10/2018 & ARUP: 258661-GDR-01 REV[1] 28/2/2018
- PILE DESIGN TO BE IN ACCORDANCE WITH GEOTECHNICAL REPORTS: ALLIANCE GEOTECHNICAL: 9280-GR-1-1 REV[1] 11/10/2019, MSP: MSP-DP-GT-011 REV[0] 11/10/2018 & ARUP: 258661-GDR-01 REV[1] 28/2/2018
- THE CONTRACTOR SHALL SATISFY THEMSELVES TO THE CORRECTNESS, OR OTHERWISE, OF THE ESTIMATED TOP OF GEOTECHNICAL MATERIAL LEVELS. THE CONTRACTOR SHALL MAKE ALL ALLOWANCES NECESSARY TO COVER FOR VARIANCE BETWEEN ESTIMATED GEOTECHNICAL MATERIAL LEVELS AND ACTUAL GEOTECHNICAL MATERIAL LEVELS. NO TIME OR COST VARIATION WILL BE GIVEN SHOULD THERE EXIST A DIFFERENCE BETWEEN ACTUAL GEOTECHNICAL MATERIAL LEVELS AND ESTIMATED GEOTECHNICAL MATERIAL LEVELS.
- ALL PILES MUST BE CAPABLE OF CARRYING THE ULTIMATE LOADS NOMINATED AND IN ADDITION A MINIMUM LATERAL LOAD EQUIVALENT TO THE MAXIMUM OF 2.5% OF VERTICAL ULTIMATE LOAD OR 75kN U.N.O.
- ALL PILES MUST BE CAPABLE OF CARRYING THE ULTIMATE LOADS NOMINATED AND IN ADDITION A MINIMUM MOMENT THAT TAKES INTO ACCOUNT THE BUILDING TOLERANCE OF THE PILES.
- PILES TO BE DESIGNED TO LIMIT SETTLEMENT TO 10mm OR DIFFERENTIAL SETTLEMENT BETWEEN ADJACENT COLUMNS OR WALLS SPACING/1000mm - WHICHEVER IS LESS
- SHEAR AND TENSION/COMPRESSION IS TO BE CONSIDERED TOGETHER. SHEAR FORCES CANNOT BE DISTRIBUTED BETWEEN PILES.
- REINFORCEMENT MUST CARRY ALL TENSION LOAD IN PILES.
- REFER TO ARCHITECTS DRAWINGS FOR ALL LEVELS
- SELF-WEIGHT OF PILES TO BE ADDED TO ALL COMPRESSION LOADS BY THE PILING CONTRACTOR
- REFER TO PILING CONTRACTORS DRAWINGS FOR PILE DETAILS
- PILE DESIGN TO ACCOUNT FOR INTERACTION BETWEEN PILES IN PILE GROUPS
- ALL CHANGES TO NOMINATED PILE DIAMETERS TO BE SUBMITTED FOR ENSTRUCT REVIEW. CHANGES IN PILE DIAMETER MAY CHANGE LATERAL PILE LOADS.
- PILES ARE TO BE DESIGNED ASSUMING NO FRICTION AT THE PILE CAP

- NOTES:**
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 - FOR FOUNDATION SECTIONS REFER TO DRG. ST-00361
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 - REFER TO DRAWING ST-00331 FOR CORE WALL GRAVITY LOADS

REFER TO DRAWINGS ST-00101 & ST-00102 FOR GENERAL NOTES

#	Description	Date
4	Issued For Information 50% Design Development	05.06.20
5	50% DD Updates	19.06.20
6	50% DD Updates	24.06.20
7	75% Documentation Issue	08.07.20
8	Issued for Construction Certificate	22.07.20
A	Issued for Construction- Zone 1 & 2 Pile Loads Only	31.07.20
B	Issued for Construction	05.08.20
C	For Crown Certificate	12.08.20



FOUNDATION OPTION TABLE																
PAD FOOTING OPTION																
TAG	WORKING LOAD	ULTIMATE LOAD	f _c	DEPTH	ABP = 3500kPa								ABP = 6000kPa			
					WIDTH	LENGTH	REINFORCEMENT			WIDTH	LENGTH	REINFORCEMENT				
							'B1'	'B2'	'T1'			'T2'	'B1'	'B2'	'T1'	'T2'
PG0	13000	15500	50	1500	2500	2500	8N28	8N28	N16-200	N16-200	1800	1800	7N28	7N28	N16-200	N16-200
PG1	12000	14500	50	1200	2000	2000	8N28	8N28	N16-200	N16-200	1800	1800	7N28	7N28	N16-200	N16-200
PG2	10500	13000	50	1000	1800	1800	8N28	8N28	N16-200	N16-200	1500	1500	6N28	6N28	N16-200	N16-200
PG3	9000	11000	50	1000	1800	1800	8N28	8N28	N16-200	N16-200	1500	1500	6N28	6N28	N16-200	N16-200
PG4	8000	10000	50	1000	1800	1800	7N28	7N28	N16-200	N16-200	1500	1500	6N28	6N28	N16-200	N16-200
PG5	7000	9000	50	900	1500	1500	6N28	6N28	N16-200	N16-200	1200	1200	6N24	6N24	N16-200	N16-200
PG6	6000	8000	50	900	1500	1500	7N24	7N24	N16-200	N16-200	1200	1200	6N24	6N24	N16-200	N16-200
PG7	5000	6500	50	900	1200	1200	6N24	6N24	N16-200	N16-200	1100	1100	6N24	6N24	N16-200	N16-200
PG8	4000	5000	40	800	1200	1200	5N24	5N24	N16-200	N16-200	1000	1000	4N24	4N24	N16-200	N16-200
PG9	2500	3000	40	800	1000	1000	4N24	4N24	N16-200	N16-200	800	800	4N24	4N24	N16-200	N16-200
PG10	1500	2000	40	600	800	800	3N24	3N24	N16-200	N16-200	800	800	4N24	4N24	N16-200	N16-200
PG11																
PG12*	100	150	40	450	900	900	4N20	4N20	N16-200	N16-200						
	kN/m	kN/m														
SF1	250	300	40	800	800											
SF2	100	150	40	800	600											

NOTE: - ALL PAD FOOTINGS TO HAVE N16-300 SIDE FACE REINFORCEMENT.
* PG12 FOUNDATIONS CAN BE FOUND ON MATERIAL WITH REDUCED ALLOWABLE BEARING PRESSURE OF 150kPa. TO BE CONFIRMED BY GEOTECHNICAL ENGINEER ON SITE.

PILED OPTION																
TAG	WORKING LOAD	ULTIMATE LOAD	# PILES	PILE DIMENSIONS		f _c	PILE CAP DIMENSIONS				REINFORCEMENT					
				PILE DIAMETER	SOCKET LENGTH		LENGTH	WIDTH	DEPTH	A'	B'	C'	D'	E'		
															mm	mm
PG0	13000	15500	2	900	2500	65	3600	1200	1500							
PG1	12000	14500	2	900	2000	65	3600	1200	1500							
PG2	10500	13000	2	900	1500	65	3600	1200	1500							
PG3	9000	11000	2	900	1000	65	3600	1200	1500							
PG4	8000	10000	2	900	500	65	3600	1200	1500							
PG5	7000	9000	2	900	0	65	3600	1200	1500							
PG6	6000	8000	1	900	2000	50	1500	1500	900							
PG7	5000	6500	1	900	1200	50	1500	1500	900							
PG8	4000	5000	1	900	500	50	1500	1500	900							
PG9	2500	3000	1	600	1200	50	1200	1200	900							
PG10	1500	2000	1	600	0	50	1200	1200	900							
PG11	2000	3000	1	450	0	50	4700	900	900							
PG12																
	kN/m	kN/m														
SF1	250	300	-	600 @ MAX 6M SPACING	300	50	-	900	900							
SF2	100	150	-	450 @ MAX 6M SPACING	300	50	-	900	900							

NOTES
- FINAL PILE DESIGN AND CERTIFICATION BY CONTRACTOR. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW THE AVAILABLE INFORMATION IN THE GEOTECHNICAL REPORTS AND MAKE THEIR OWN ASSESSMENT.
- CURRENT SELECTION OF THE FOUNDATION TYPES SHOWN ON THE PLANS HAS BEEN BASED ON AN INTERPRETATION OF THE CURRENT GEOTECHNICAL ADVICE. REFER TO GEOTECHNICAL REPORTS. PADS AND PILES OF THE SAME TAG ARE INTERCHANGEABLE. THE SELECTED TYPE IS DEPENDENT ON THE ACTUAL GROUND CONDITIONS ON SITE AND THE DEPTH OF ROCK.

- GEOTECHNICAL REPORTS:**
ARUP: 258661-GDR-01 REV[1] 28/2/2018
MSP: MSP-DP-GT-011 REV[0] 11/10/2018
ALLIANCE GEOTECHNICAL: 9280-GR-1-1 REV[1] 11/10/2019
- CONTAMINATION REPORT:**
ALLIANCE GEOTECHNICAL: 7179-ER-1-2 REV[3] 4/04/2019
- ALL LOADS PROVIDED IN THE ABOVE TABLE SHOULD BE APPLIED AT THE TOP OF A FOUNDATION GROUP. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE NUMBER OF PILES AND SIZE IS APPROPRIATE.
 - ALL LOADS SPECIFIED ABOVE DO NOT INCLUDE SELF WEIGHT OF PAD, PILE CAP OR PILE.
 - PADS TO BE FOUND ON CLASS III (ABP = 6000kPa) OR CLASS IV (ABP = 3500kPa) ROCK AS DEFINED IN THE GEOTECHNICAL REPORTS
 - ALL PILES TO BE FOUND IN CLASS III ROCK OR GREATER.
 - CLASS III ROCK TO HAVE ALLOWABLE BEARING PRESSURE OF 6000kPa OR GREATER REFER TO GEOTECHNICAL REPORT FOR TESTING REQUIREMENTS.
 - PILE LENGTHS ARE MINIMUM LENGTHS IN CLASS III ROCK AND DO NOT INCLUDE ROCK TRANSITION ZONE. REFER TO GEOTECHNICAL REPORT FOR MINIMUM EMBEDMENT DEPTHS.
 - ASSUMED GEOTECHNICAL ULTIMATE FACTOR $\phi_g = 0.6$ FOR ULTIMATE PILE CAPACITY
 - ALL FOUNDATIONS TO BE REVIEWED BY THE GEOTECHNICAL ENGINEER TO CONFIRM ALLOWABLE BEARING PRESSURE HAS BEEN ACHIEVED.
 - ALL PILE REINFORCEMENT CAGES ARE TO CONTINUE TO THE TOP OF THE PILE CAP AND BE COGGED AS PER AS3600.
 - STRIP FOOTINGS WITH LINE LOADS AS SPECIFIED ABOVE MUST HAVE A PILE AT EACH END OF INDIVIDUAL STRUCTURAL ELEMENT
 - STRIP FOOTINGS SUPPORTING COLUMNS MUST HAVE PILES UNDER EACH COLUMN.
 - PILES AT THE END OF STRIP FOOTINGS MUST HAVE CENTRELINES THAT ARE MIN 300mm BEYOND END OF STRUCTURAL ELEMENT ABOVE.
 - ACTUAL GROUND CONDITIONS MAY VARY AND NUMBER OF PILES REQUIRED COULD INCREASE WITH FURTHER SITE INVESTIGATION
 - LIGHTWEIGHT FAÇADE ASSUMED FOR LIBRARY CONCRETE FAÇADE WALLS NOT INCLUDED UNDER REVIEW

ELECTROLYSIS NOTES:
1. REFER TO POWER EARTH ELECTROLYSIS REPORT NO. 4413REP010101 REVISION 0 DATED 8/7/20 FOR ELECTROLYSIS REQUIREMENTS FOR THE PROJECT.
2. PROVIDE REINFORCEMENT WELDS/TIES AND ELECTRICAL CONNECTIONS IN ACCORDANCE WITH THE ELECTROLYSIS REPORT.
3. REFER TO ACONEX CORRESPONDENCE RobPiz-GCOR-000965 FOR ADDITIONAL ELECTRICAL CONNECTIONS REQUIRED WHERE MOVEMENT JOINTS EXIST BETWEEN SLAB-ON-GRADE AND FOOTINGS/COLUMNS.



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http://www.enstruct.com.au

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TYPICAL PILE DETAILS - SHEET 1

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LATERAL FOUNDATION LOADS

TAG	ULTIMATE COMPRESSION [kN]	ULTIMATE TENSION [kN]	WORKING COMPRESSION [kN]	WORKING TENSION [kN]
CPG1	10,000	7,250	3,000	0
CPG2	8,500	5,750	2,500	0
CPG3	10,500	7,250	3,000	0
CPG4	10,000	7,250	3,000	0
CPG5	7,000	4,500	2,500	0
CPG6	3,500	1,500	1,500	0
CPG7	6,500	4,250	2,500	0
CPG8	7,500	4,250	3,000	0
CPG9	3,500	1,250	2,000	0
CPG10	7,500	4,500	2,500	0
CPG11	10,000	7,250	3,000	0
CPG12	8,500	5,250	3,000	0
CPG13	12,500	8,250	4,000	0
CPG14	10,000	7,250	3,000	0
CPG15	10,500	6,750	4,500	250
CPG16	9,500	5,250	4,500	0
CPG17	9,000	5,250	4,000	0
CPG18	10,500	6,750	4,500	250
CPG19	7,000	4,500	3,000	250
CPG20	2,500	750	1,500	0
CPG21	2,500	750	1,500	0
CPG22	7,500	4,750	3,500	250
CPG23	7,000	4,500	3,000	250
CPG24	2,500	750	1,500	0
CPG25	2,500	750	1,500	0
CPG26	7,500	4,750	3,500	250
CPG27	10,500	6,750	4,500	250
CPG28	8,000	5,000	3,000	250
CPG29	7,500	4,750	3,000	500
CPG30	10,500	6,750	4,500	250
CPG31	11,000	8,250	3,000	250
CPG32	9,500	6,000	3,500	0
CPG33	8,500	5,250	3,000	0
CPG34	11,000	8,250	3,000	250
CPG35	9,000	5,500	3,000	0
CPG36	1,500	250	1,000	0
CPG37	1,500	0	1,000	0
CPG38	9,000	5,750	3,000	0
CPG39	11,000	8,250	3,000	250
CPG40	8,500	4,750	3,500	0
CPG41	9,000	5,500	3,500	0
CPG42	11,000	8,250	3,000	250
CPG43	10,500	8,750	3,000	1,000
CPG44	2,500	1,750	1,000	250
CPG45	2,500	1,750	1,000	250
CPG46	10,500	8,750	3,000	1,000

	CORE 1 - SHEAR AND TORSION LOAD SCHEDULE		
	Vx	Vy	T
	[kN]	[kN]	[kNm]
ULTIMATE WIND - DIRECTION 1	250	2,000	500
ULTIMATE WIND - DIRECTION 2	1,000	250	250
EARTHQUAKE - DIRECTION 1	16,000	23,000	31,500
EARTHQUAKE - DIRECTION 2	39,000	9,250	30,500
WORKING WIND - DIRECTION 1	250	1,500	500
WORKING WIND - DIRECTION 2	750	250	250

	CORE 2 - SHEAR AND TORSION LOAD SCHEDULE		
	Vx	Vy	T
	[kN]	[kN]	[kNm]
ULTIMATE WIND - DIRECTION 1	250	5,250	6,250
ULTIMATE WIND - DIRECTION 2	1,250	250	500
EARTHQUAKE - DIRECTION 1	3,500	24,750	57,750
EARTHQUAKE - DIRECTION 2	24,750	3,750	17,000
WORKING WIND - DIRECTION 1	250	3,750	4,500
WORKING WIND - DIRECTION 2	1,000	250	250

	CORE 3 - SHEAR AND TORSION LOAD SCHEDULE		
	Vx	Vy	T
	[kN]	[kN]	[kNm]
ULTIMATE WIND - DIRECTION 1	250	2,500	500
ULTIMATE WIND - DIRECTION 2	250	250	250
EARTHQUAKE - DIRECTION 1	8,250	35,250	28,000
EARTHQUAKE - DIRECTION 2	18,500	17,000	16,500
WORKING WIND - DIRECTION 1	250	1,750	250
WORKING WIND - DIRECTION 2	250	250	250

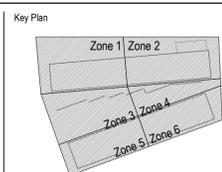
	SHEAR WALL - SHEAR AND TORSION LOAD SCHEDULE		
	Vx	Vy	T
	[kN]	[kN]	[kNm]
ULTIMATE WIND - DIRECTION 1	250	1,750	250
ULTIMATE WIND - DIRECTION 2	250	250	250
EARTHQUAKE - DIRECTION 1	250	10,500	250
EARTHQUAKE - DIRECTION 2	250	2,500	250
WORKING WIND - DIRECTION 1	250	1,250	250
WORKING WIND - DIRECTION 2	250	250	250

1. ALL EARTHQUAKE ACTIONS ARE TO BE CONSIDERED TO ACT IN THE POSITIVE OR NEGATIVE DIRECTION, WHICHEVER IS WORSE FOR THE COMBINATION BEING...
2. WHEN AN EARTHQUAKE ACTION IN ONE DIRECTION IS BEING CONSIDERED, 30% OF THE EARTHQUAKE ACTION IN THE OTHER DIRECTION IS TO BE CONSIDERED...
3. GLOBAL EARTHQUAKE FORCES ARE TO BE COMBINED IN ACCORDANCE WITH AS/NZS 1170.1 AND AS1170.4.
4. EARTHQUAKE LOADS PROVIDED ARE ULTIMATE LOADS.
5. FORCES ARE SUBJECT TO CHANGE AS THE DESIGN DEVELOPS AND STRUCTURAL LOADS AND CORE WALL PENETRATIONS ARE FINALISED.
6. GEOTECHNICAL ADVICE ON THE LATERAL STIFFNESS OF PILES IS TO BE PROVIDED ONCE PILE SIZES AND NUMBER OF PILES ARE CONFIRMED BY THE PILING...
7. THE LOADS ABOVE INCLUDE NO ALLOWANCE FOR GRAVITY LOADS. REFER TO CORE WALL GRAVITY LOAD SCHEDULE FOR GRAVITY LOADS.
8. SHEAR FORCE IS TO BE DISTRIBUTED BETWEEN ALL PILES CONNECTED BY A RIGID CAP ACCORDING TO AN ELASTIC DISTRIBUTION .
9. FOLLOWING RECEIPT OF PROPOSED PILE SIZES AND LOCATIONS FROM THE PILING CONTRACTOR, LOADS FOR INDIVIDUAL PILES WILL BE PROVIDED.
10. WORKING WIND LOADS CAN BE CALCULATED BY APPLYING A FACTOR OF 0.72 TO THE LOADS ABOVE.

REFER TO DRAWINGS ST-00101 & ST-00102 FOR GENERAL NOTES

Recent revision history	Description	Date
1	50% DD Updates	19.06.20
2	75% Documentation Issue	08.07.20
3	For Crown Certificate	23.07.20

Notes



Contractor



Project
MEADOWBANK EDUCATION AND
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Issuer
enstruct
enstruct group pty ltd
Level 4, 2 Glen Street, Milsions Point NSW 2061
Telephone (02) 8904 1444
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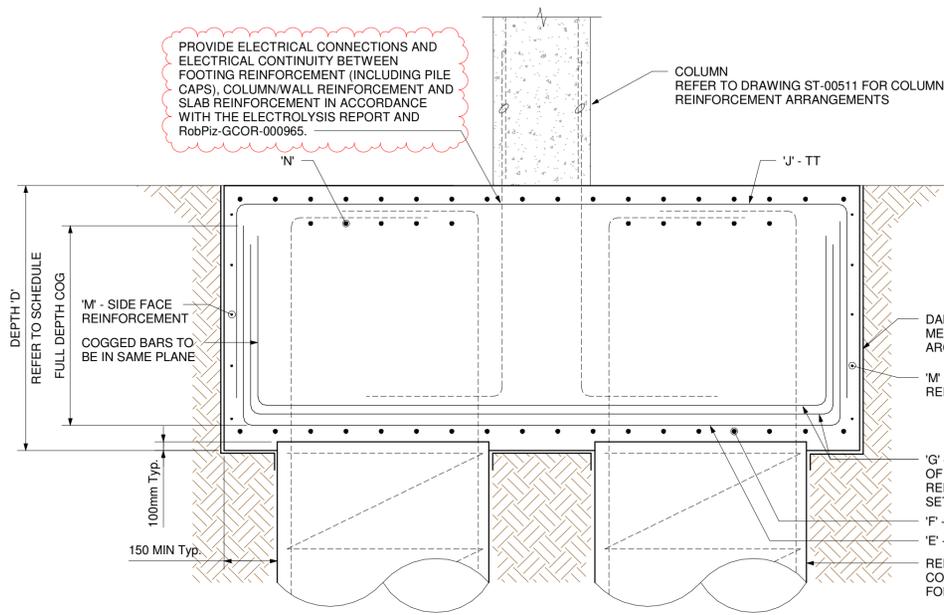
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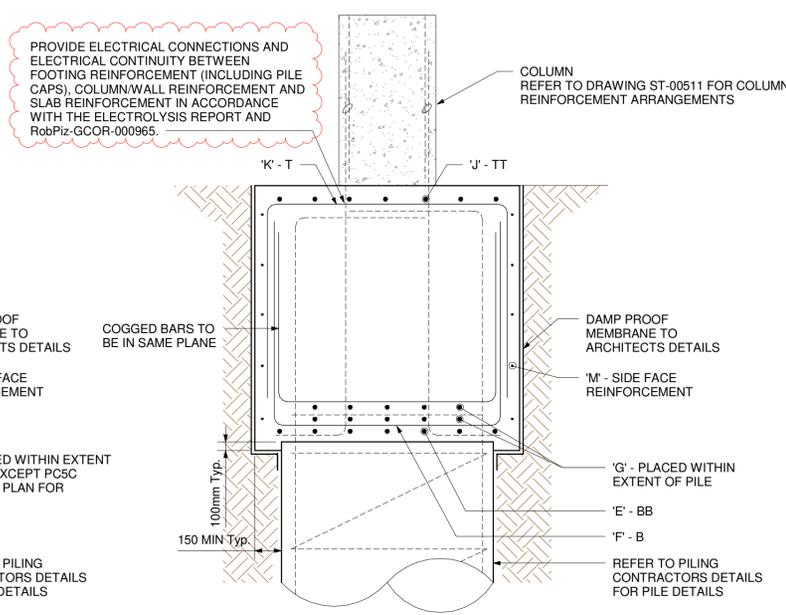
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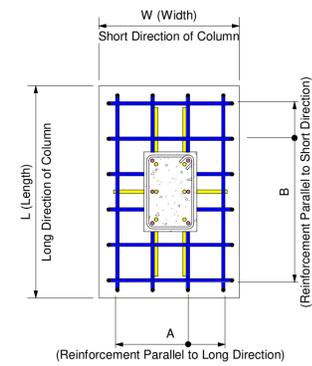
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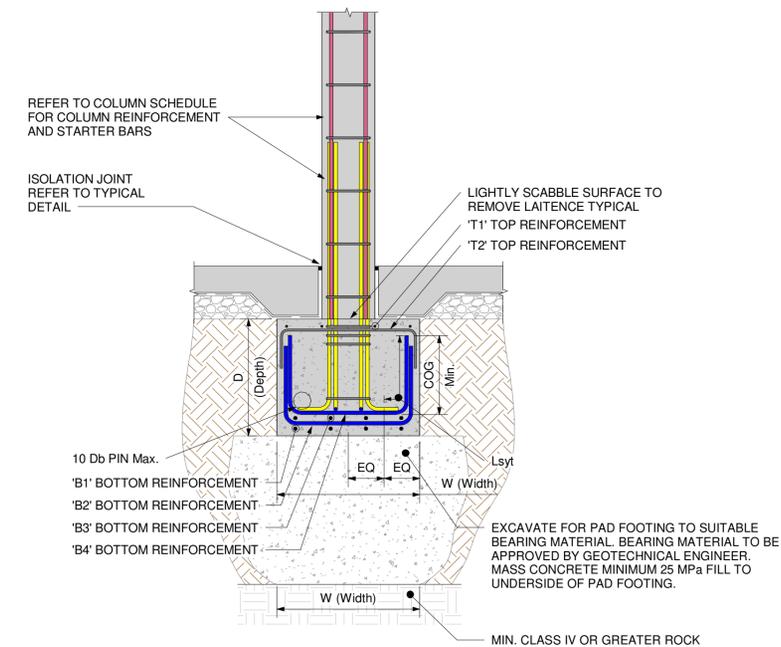
TYPICAL DUAL-PILE PILECAP ELEVATION



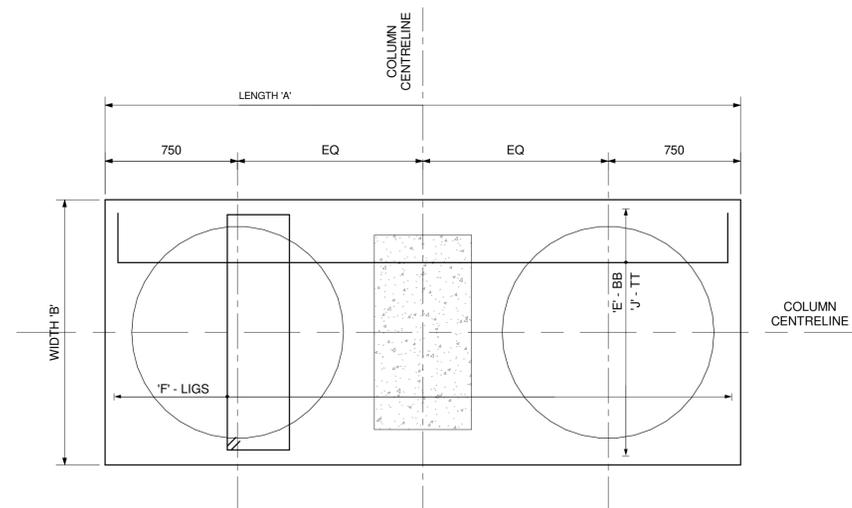
TYPICAL SINGLE-PILE PILECAP ELEVATION



PLAN

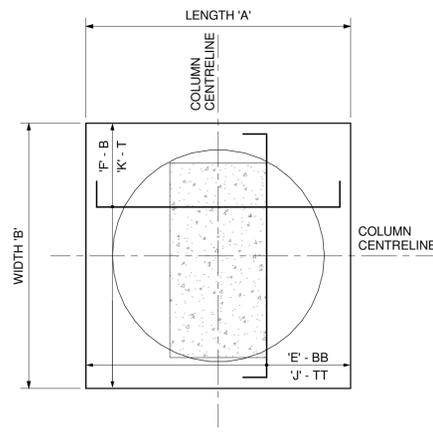


TYPICAL FOOTING SECTION



TYPICAL DUAL-PILE PILECAP PLAN

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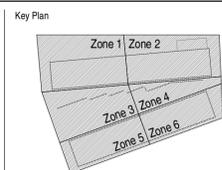
TYPICAL SINGLE-PILE PILECAP PLAN

SCALE = 1:20

- ELECTROLYSIS NOTES:**
1. REFER TO POWER EARTH ELECTROLYSIS REPORT NO. 4413REP010101 REVISION 0 DATED 8/7/20 FOR ELECTROLYSIS REQUIREMENTS FOR THE PROJECT.
 2. PROVIDE REINFORCEMENT WELDS/TIES AND ELECTRICAL CONNECTIONS IN ACCORDANCE WITH THE ELECTROLYSIS REPORT.
 3. REFER TO ACONEX CORRESPONDENCE RobPiz-GCOR-000965 FOR ADDITIONAL ELECTRICAL CONNECTIONS REQUIRED WHERE MOVEMENT JOINTS EXIST BETWEEN SLAB-ON-GRADE AND FOOTINGS/COLUMNS.

REFER TO DRAWINGS ST-00101 & ST-00102 FOR GENERAL NOTES

#	Description	Date
1	Draft 50% Schematic Design	24.06.19
2	Schematic Design	14.06.19
3	Issued for Foundation Loads	15.05.20
4	Issued For Information 50% Design Development	06.06.20
5	75% Documentation Issue	08.07.20
6	Issued for Construction Certificate For Crown Certificate	22.07.20
7		12.08.20



Notes

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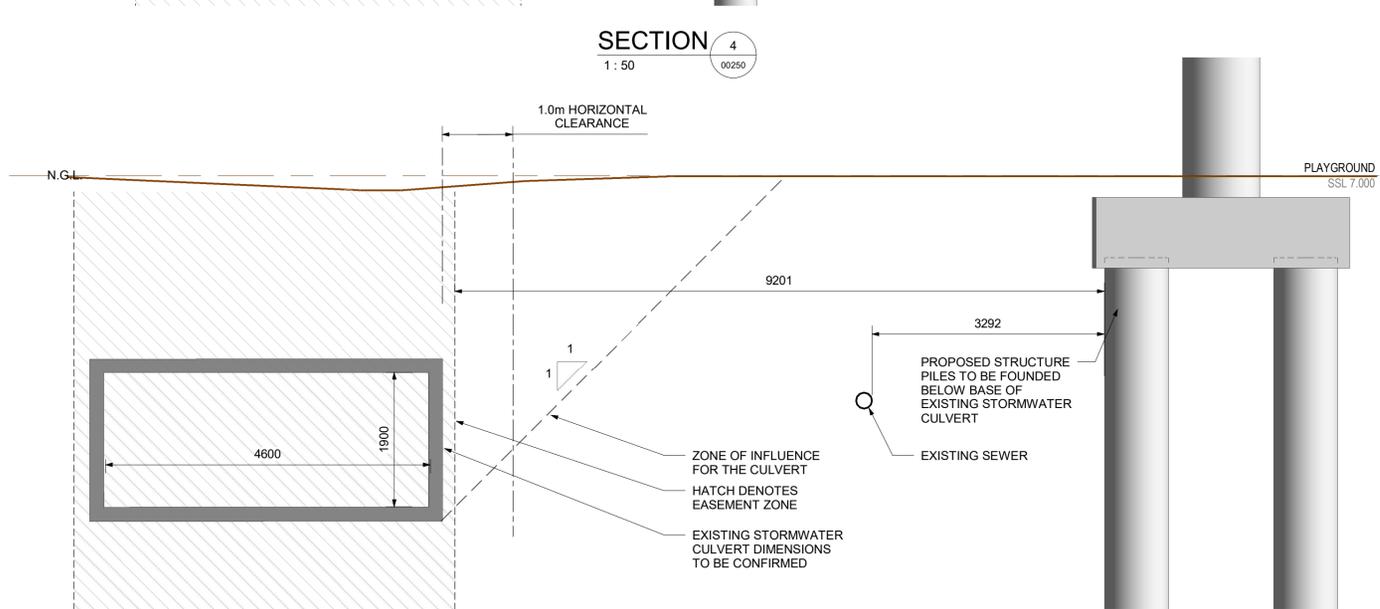
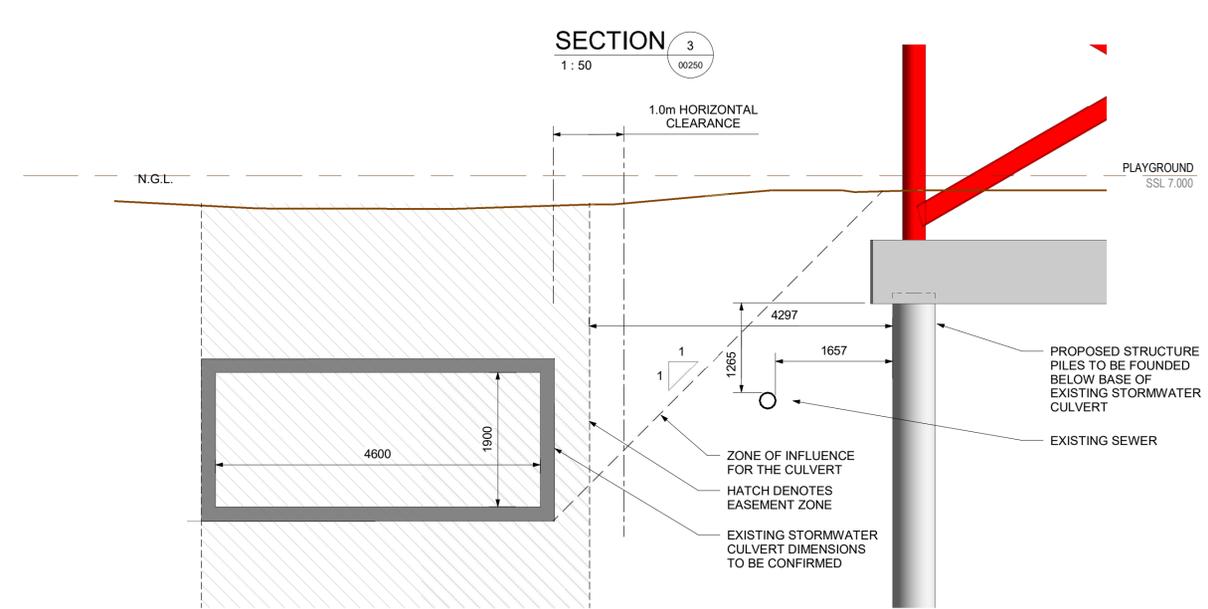
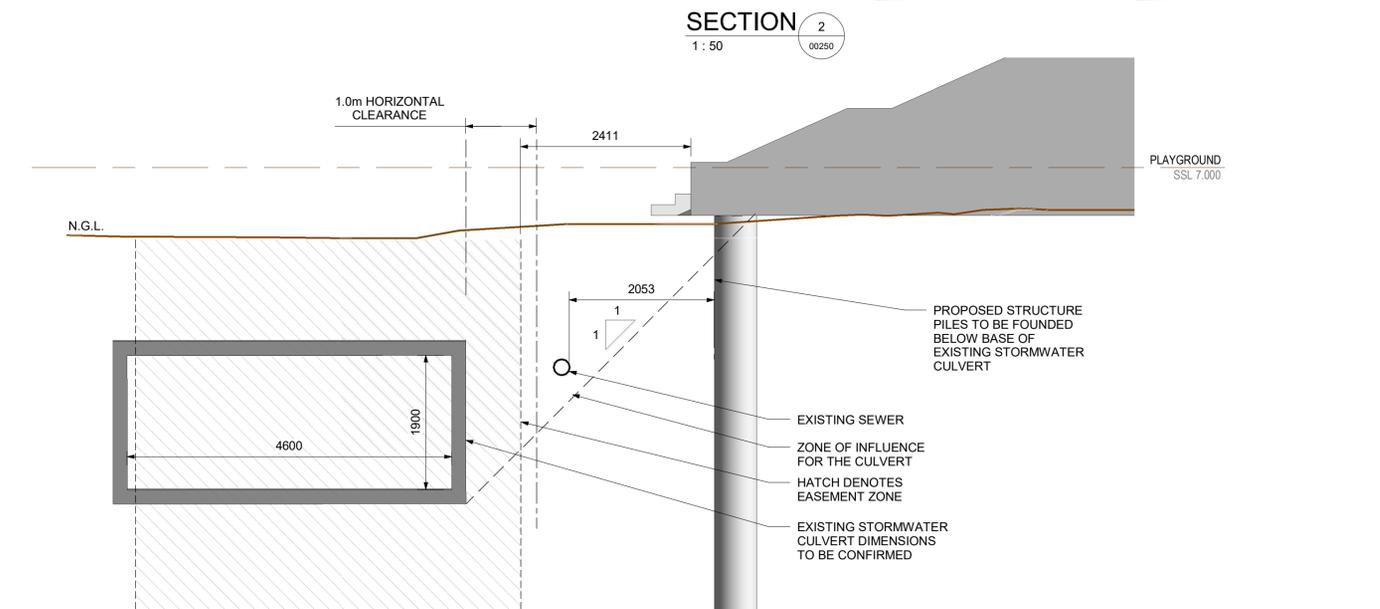
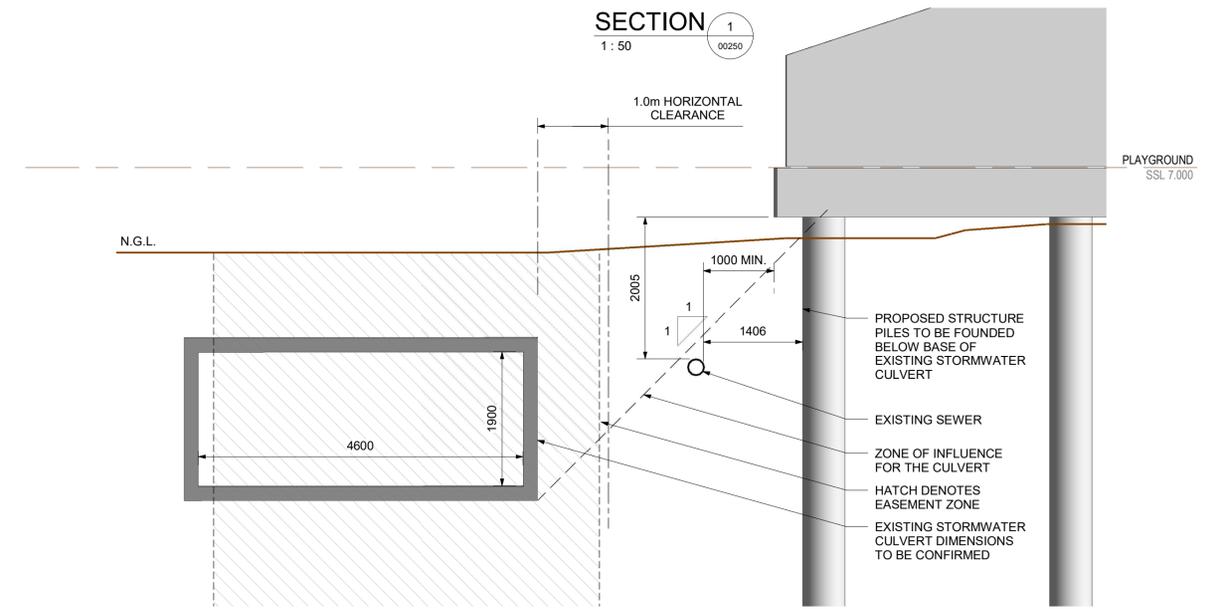
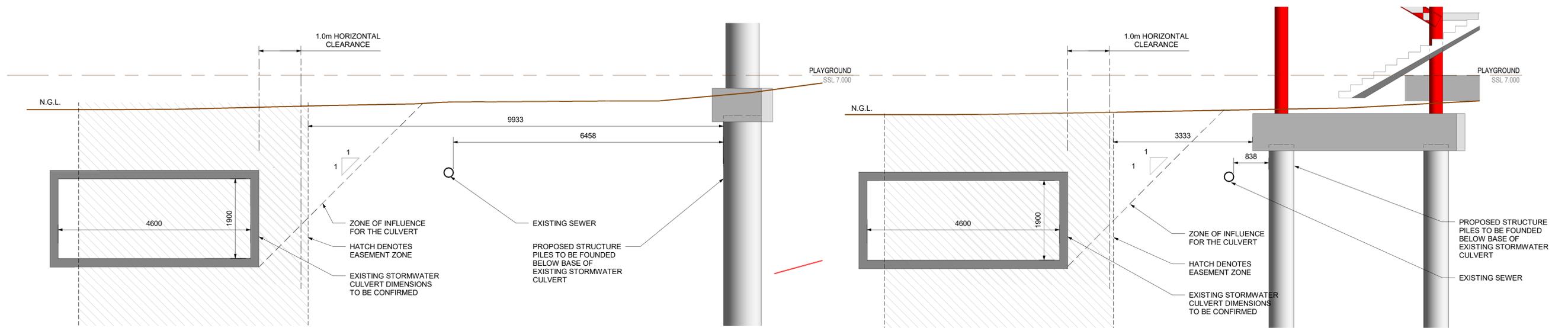
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Issuer
enstruct
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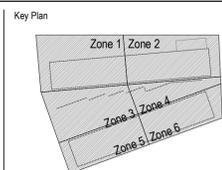
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TYPICAL PILE CAP AND STRIP FOOTING DETAILS - SHEET 1
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REFER TO DRAWINGS ST-00101 & ST-00102 FOR GENERAL NOTES

#	Description	Date	Notes
1	Schematic Design	21.01.20	
2	Issued for Foundation Loads	15.05.20	
3	Issued for Information	20.05.20	
4	Issued for Co-ordination	22.05.20	
5	Issued for Information 50% Design Development	06.06.20	
6	75% Documentation Issue	08.07.20	
7	For Crown Certificate	23.07.20	



LEGEND

- EXISTING NATURAL GROUND LEVEL
- CLASS III ROCK
- CLASS IV ROCK
- BULK EXCAVATION LEVEL



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enstruct
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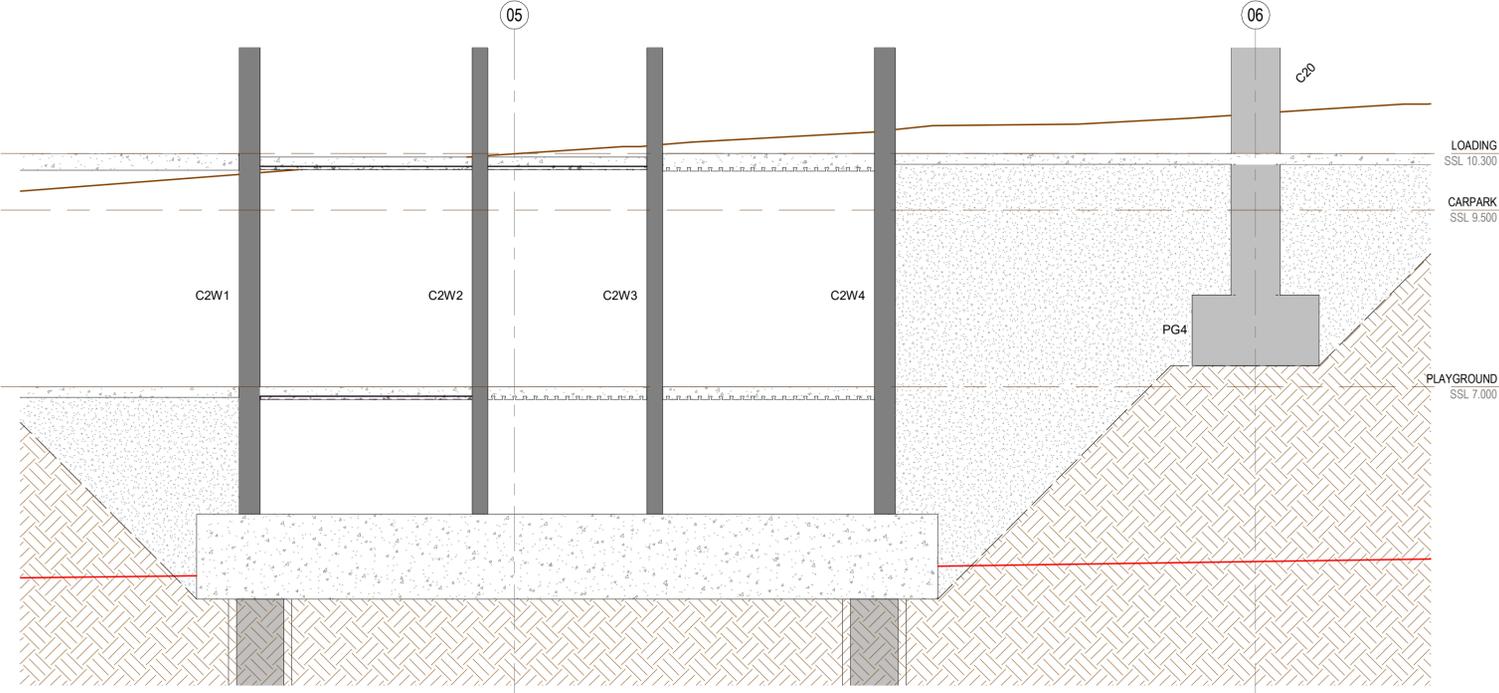
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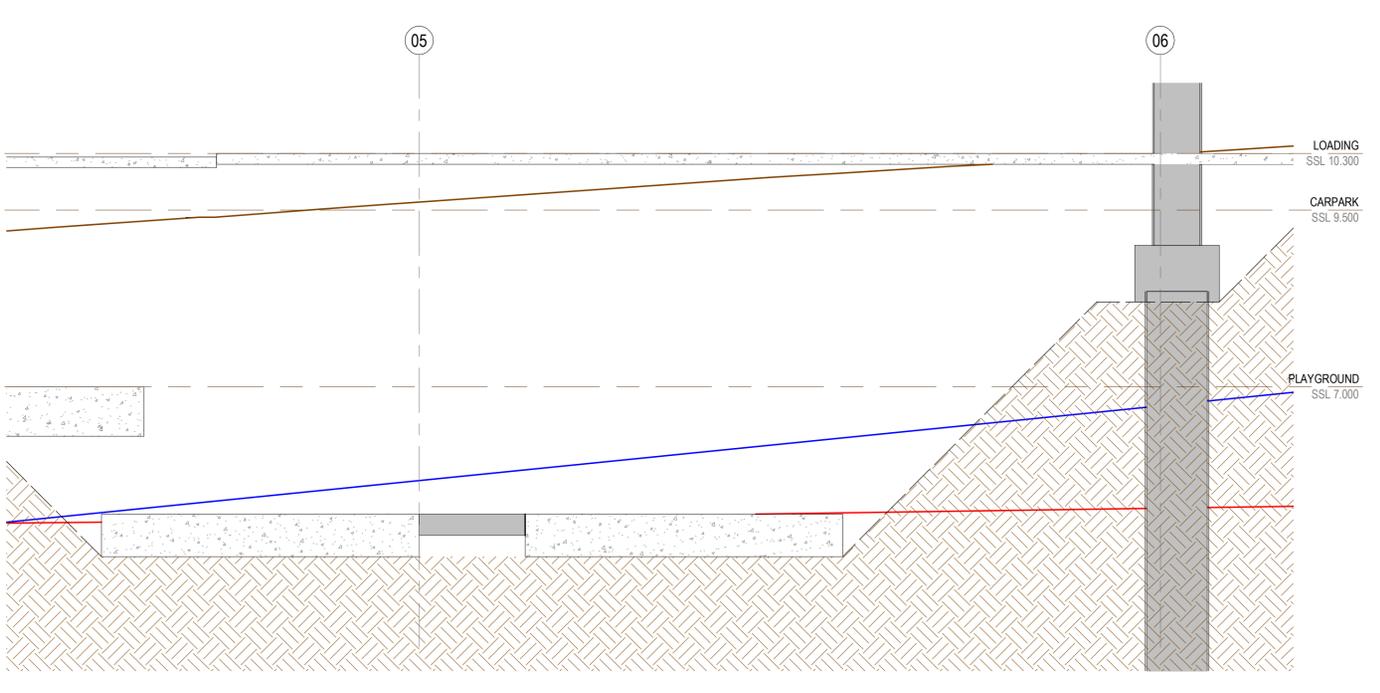
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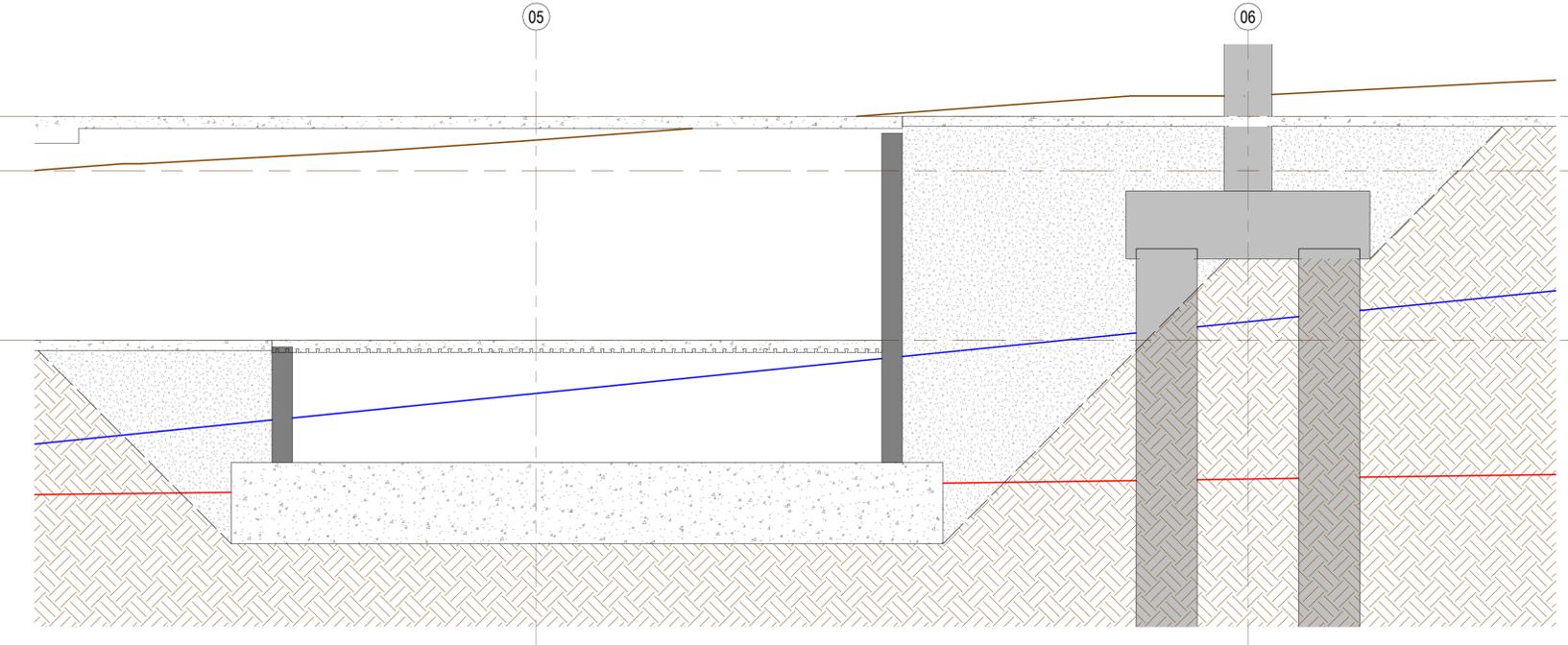
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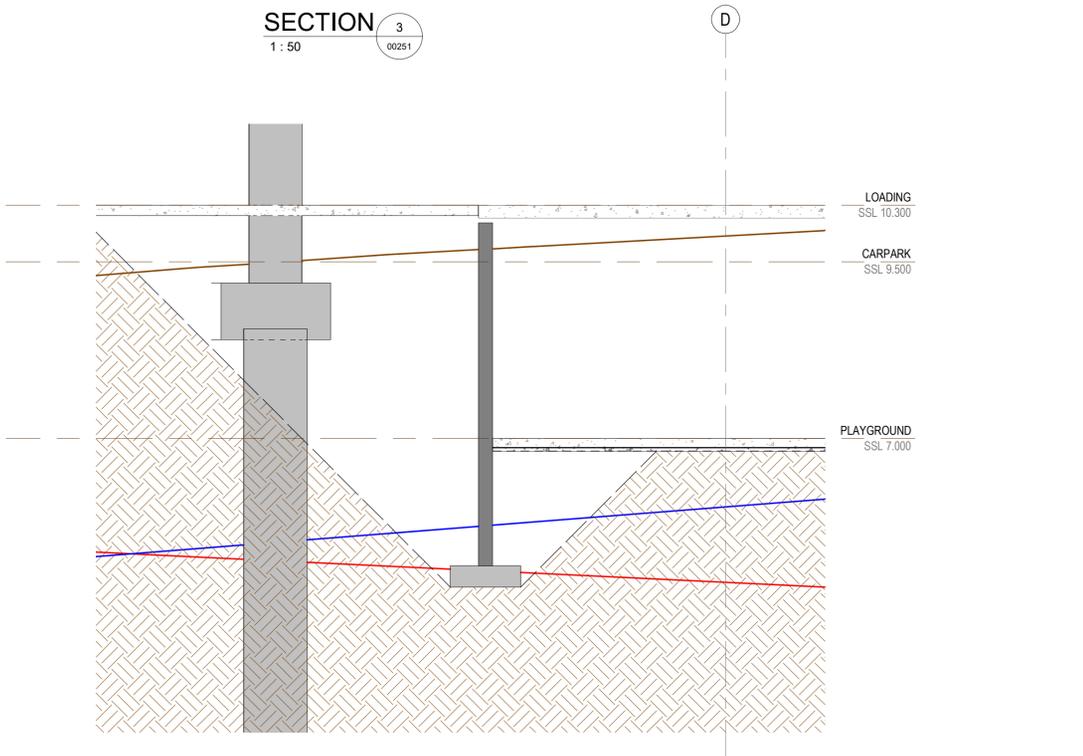
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SECTION 3
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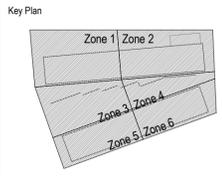
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SECTION 4
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REFER TO DRAWINGS ST-00101 & ST-00102 FOR GENERAL NOTES

Recent revision history	Description	Date	Notes
# 1	75% Documentation Issue	08.07.20	
# 2	For Crown Certificate	23.07.20	



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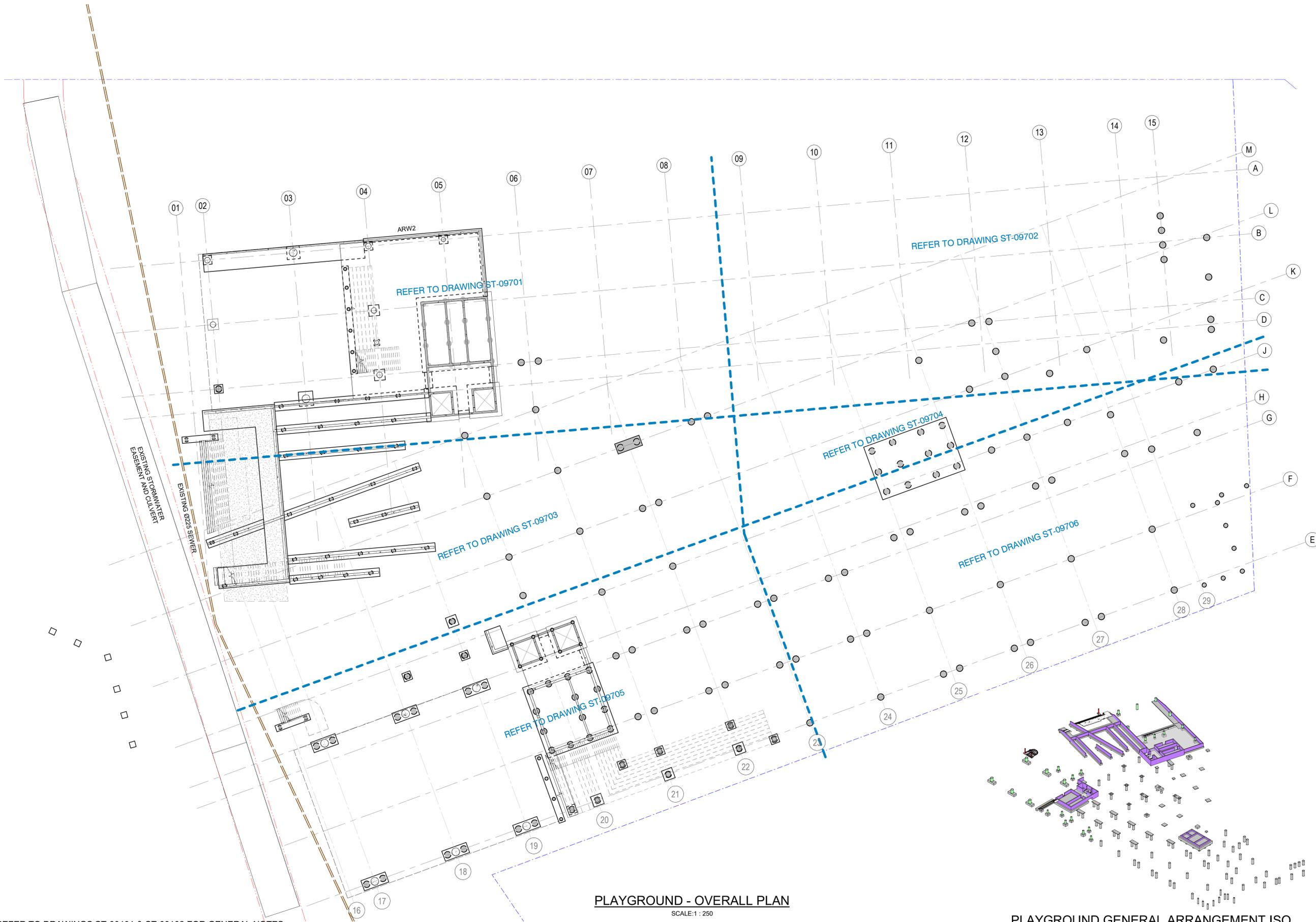
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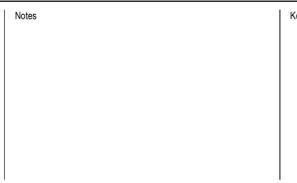


PLAYGROUND - OVERALL PLAN
SCALE: 1 : 250

PLAYGROUND GENERAL ARRANGEMENT ISO
SCALE:

REFER TO DRAWINGS ST-00101 & ST-00102 FOR GENERAL NOTES

Recent revision history	Description	Date	Notes
1	Schematic Design	14.06.19	
2	Issued for Information	22.05.20	
3	Issued for Information	29.05.20	
4	Issued for Information 50% Design Development	05.06.20	
5	50% DD Updates	19.06.20	
6	75% Documentation Issue	08.07.20	
7	For Crown Certificate	23.07.20	



- NOTES:**
- POST TENSIONED CONCRETE WORKS TO SPECIALIST P/T CONTRACTORS DETAIL
 - REFER TO PT CONCRETE SPECIFICATION
 - SLABS TO BE 180 THICK PT MINIMUM TYPICAL U.N.O.
 - ALL BEAMS TO BE P/T U.N.O.
 - ALL SLAB FOLDS TO BE 900mm WIDE U.N.O.
 - ALL FACADE FIXINGS TO BE COORDINATED WITH P/T AND REINFORCEMENT
 - REFER TO DRAWING ST-01231 & ST-01232 FOR TYPICAL SUSPENDED SLAB DETAILS
 - REFER TO DRAWING ST-00550 FOR CORE WALL SIZES TYPICALLY U.N.O.
 - REFER TO DRAWING ST-00511 FOR COLUMN SIZES TYPICALLY U.N.O.
 - KF40 REFERS TO FIELDS KF40 0.75 BMT



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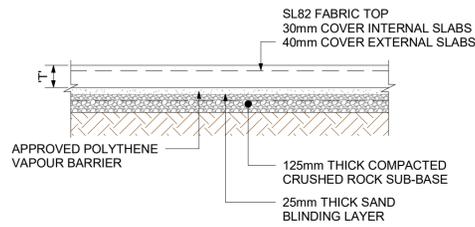
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Sheet title
PLAYGROUND - OVERALL PLAN

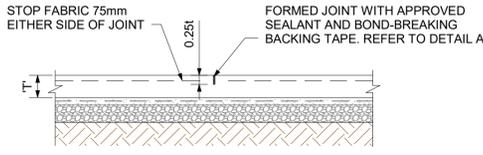
Sheet number
MSP-EN-ST-09700

Revision
7

Status
FOR CROWN CERTIFICATE



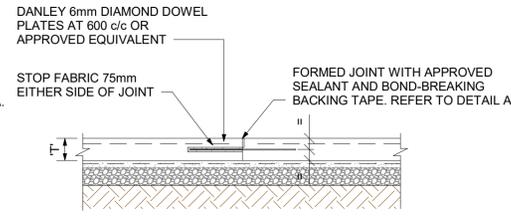
TYPICAL 150mm SLAB ON GRADE SECTION
SCALE 1:20



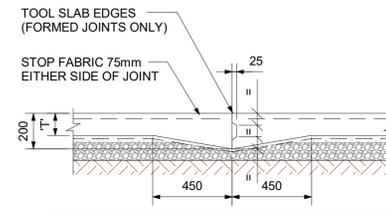
NOTE: SAW CUT TO BE WITHIN THE FOLLOWING TIME LIMITS.

DAILY MAXIMUM TEMPERATURE (°C)	MAXIMUM TIME AFTER CONCRETE PLACEMENT FOR SAWING TO OCCUR (HOURS)
<10	48
10-20	36
20-30	24
>30	12

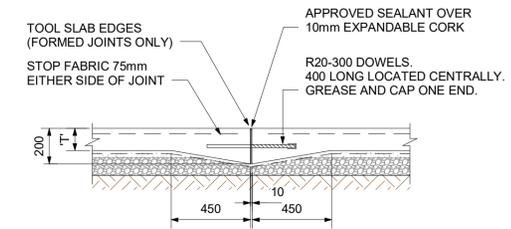
TYPICAL SAWN CONTRACTION JOINT (S.C.J.)
SCALE 1:20



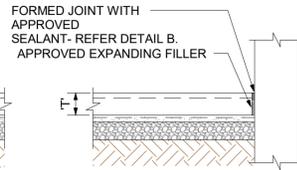
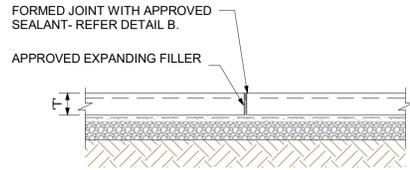
FORMED CONSTRUCTION JOINT (F.C.J.)
SCALE 1:20



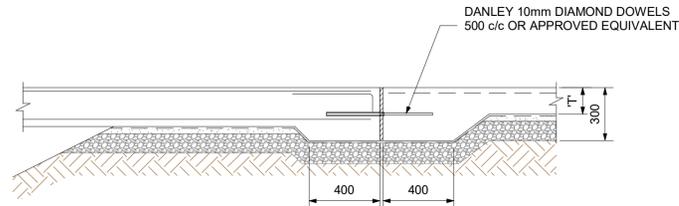
KEYED JOINT (K.J.)
SCALE 1:20



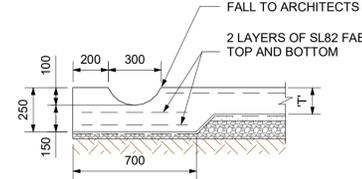
EXPANSION JOINT (E.J.)
SCALE 1:20



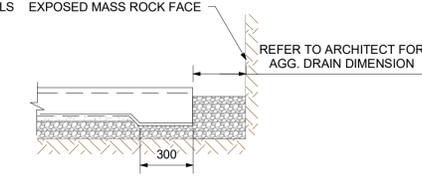
TYPICAL ISOLATION JOINT (I.J.)
SCALE 1:20



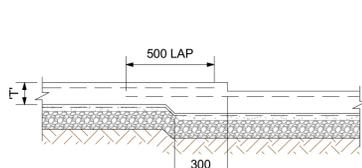
MOVEMENT JOINT (M.J.) CONNECTION TO SUSPENDED SLAB
SCALE 1:20



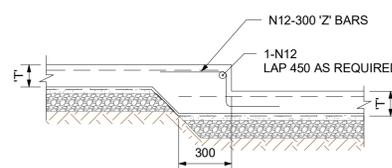
SPOON DRAIN DETAIL
SCALE 1:20



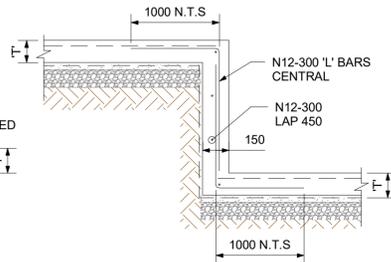
TYPICAL SLAB EDGE THICKENING (ET1)
SCALE 1:10



STEP <50mm

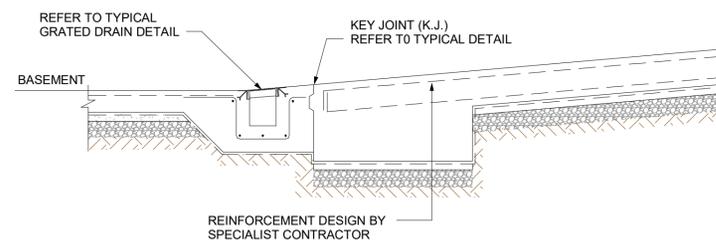


STEP ≥ 50mm AND < 450mm

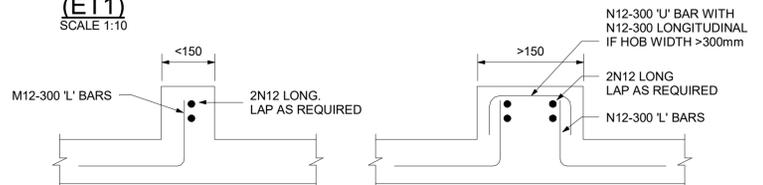


STEP ≥ 450mm

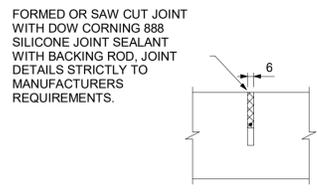
TYPICAL SLAB ON GRADE STEP DETAIL
SCALE 1:20



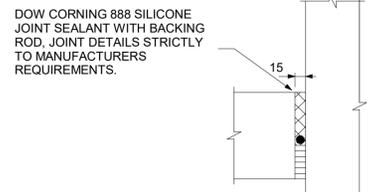
RAMP KEY JOINT ON GRADE GRATED DRAIN DETAIL



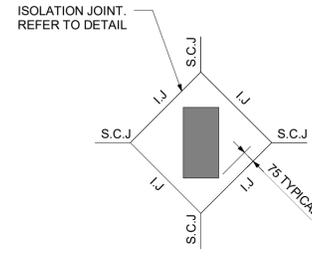
TYPICAL HOB DETAILS
SCALE 1:20



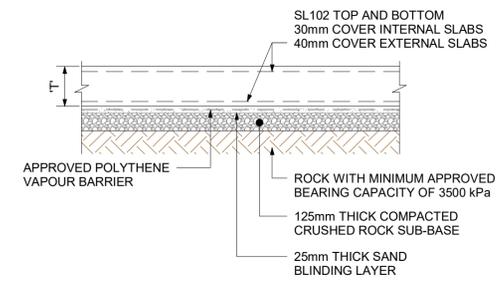
DETAIL A
SCALE = 1:20



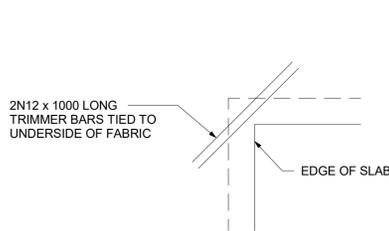
DETAIL B
SCALE = 1:20



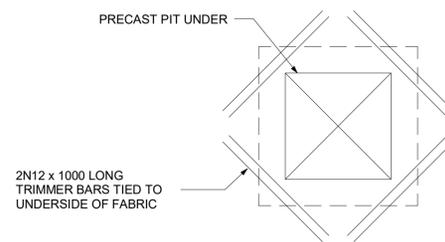
TYPICAL PLAN AT JOINT JUNCTION
SCALE 1:20



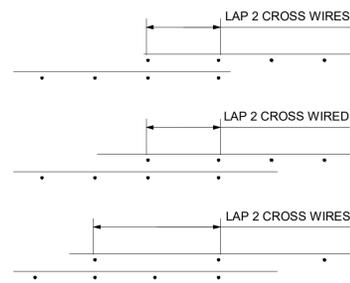
TYPICAL 250mm SLAB ON GRADE SECTION
SCALE 1:20



TYPICAL RE-ENTRANT CORNER DETAIL
SCALE 1:20



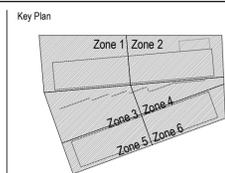
TYPICAL PRECAST PIT PLAN DETAIL
SCALE 1:20



MESH REINFORCEMENT LAP DETAILS
SCALE 1:20

Recent revision history

#	Description	Date
1	Draft 50% Schematic Design	24.05.19
2	Schematic Design	14.06.19
3	Issued For Information 50% Design Development	05.06.20
4	Issued For Design Development Updates	12.06.20
5	50% DD Updates	19.06.20
6	75% Documentation Issue	08.07.20
7	For Crown Certificate	23.07.20



Project
MEADOWBANK EDUCATION AND EMPLOYMENT PRECINCT SCHOOLS PROJECT

Client
NSW Education School Infrastructure

Issuer
enstruct
enstruct group pty ltd
Level 4, 2 Glen Street, Milsons Point NSW 2061
Telephone (02) 8904 1444
http://www.enstruct.com.au

Project number
5645

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25mm

Checked
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Approved
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Sheet size
A1

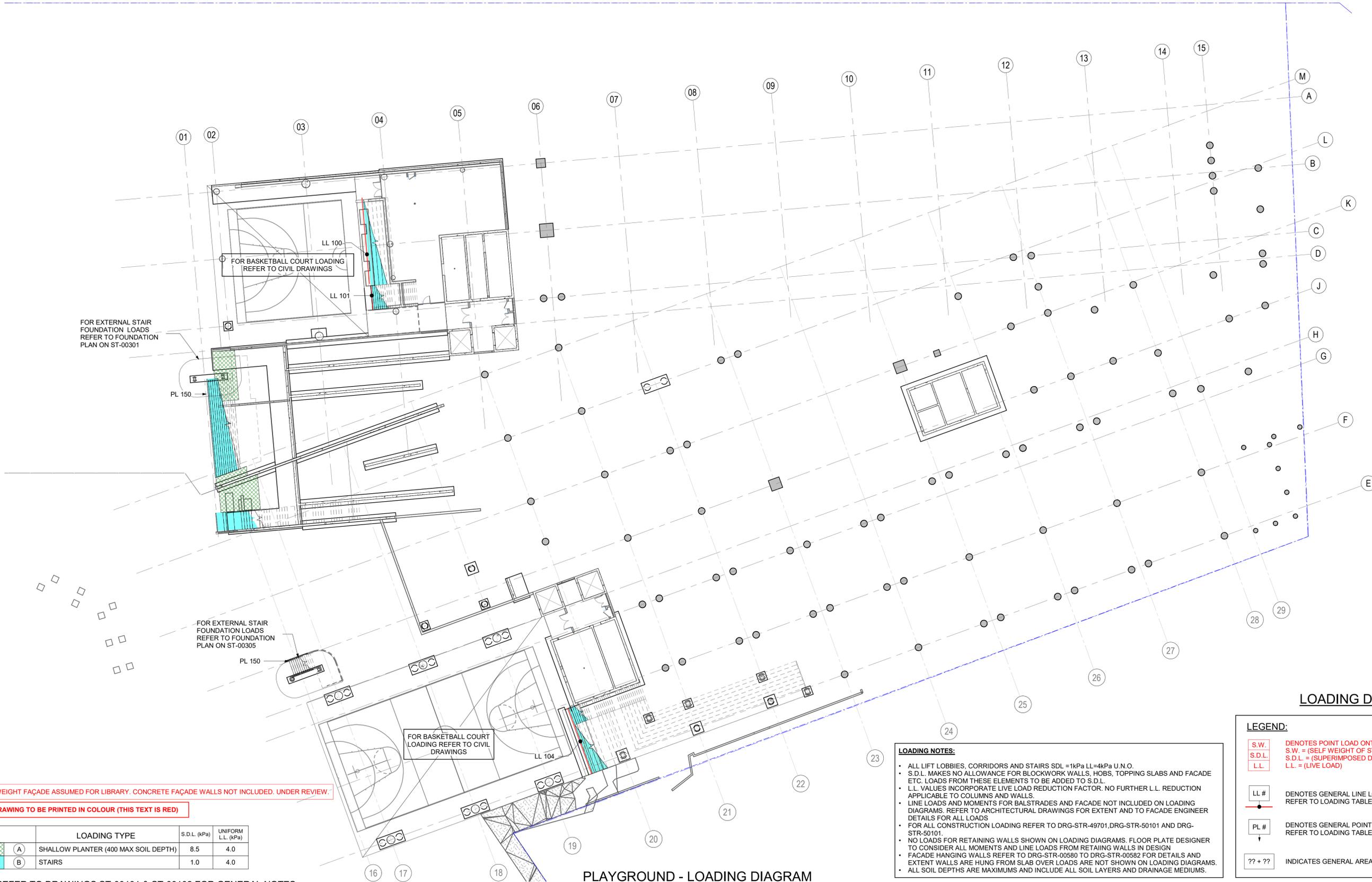
Scale
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Sheet title
TYPICAL SLAB ON GRADE DETAILS

Sheet number
MSP-EN-ST-09931

Revision
7

Status
FOR CROWN CERTIFICATE

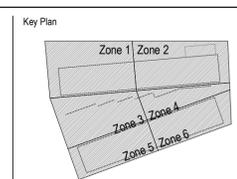


LIGHTWEIGHT FAÇADE ASSUMED FOR LIBRARY. CONCRETE FAÇADE WALLS NOT INCLUDED. UNDER REVIEW.
 THIS DRAWING TO BE PRINTED IN COLOUR (THIS TEXT IS RED)

	LOADING TYPE	S.D.L. (kPa)	UNIFORM L.L. (kPa)
	(A) SHALLOW PLANTER (400 MAX SOIL DEPTH)	8.5	4.0
	(B) STAIRS	1.0	4.0

REFER TO DRAWINGS ST-00101 & ST-00102 FOR GENERAL NOTES

Recent revision history	Description	Date	Notes
1	Issued For Information 50% Design Development	05.06.20	
2	50% DD Updates	19.06.20	
3	75% Documentation Issue	08.07.20	
4	For Crown Certificate	23.07.20	



PLAYGROUND - LOADING DIAGRAM
 SCALE: 1 : 250

LOADING NOTES:

- ALL LIFT LOBBIES, CORRIDORS AND STAIRS SDL = 1kPa LL = 4kPa U.N.O.
- S.D.L. MAKES NO ALLOWANCE FOR BLOCKWORK WALLS, HOBS, TOPPING SLABS AND FAÇADE ETC. LOADS FROM THESE ELEMENTS TO BE ADDED TO S.D.L.
- L.L. VALUES INCORPORATE LIVE LOAD REDUCTION FACTOR. NO FURTHER L.L. REDUCTION APPLICABLE TO COLUMNS AND WALLS.
- LINE LOADS AND MOMENTS FOR BALUSTRADES AND FAÇADE NOT INCLUDED ON LOADING DIAGRAMS. REFER TO ARCHITECTURAL DRAWINGS FOR EXTENT AND TO FAÇADE ENGINEER DETAILS FOR ALL LOADS
- FOR ALL CONSTRUCTION LOADING REFER TO DRG-STR-49701, DRG-STR-50101 AND DRG-STR-50101.
- NO LOADS FOR RETAINING WALLS SHOWN ON LOADING DIAGRAMS. FLOOR PLATE DESIGNER TO CONSIDER ALL MOMENTS AND LINE LOADS FROM RETAINING WALLS IN DESIGN
- FAÇADE HANGING WALLS REFER TO DRG-STR-00580 TO DRG-STR-00582 FOR DETAILS AND EXTENT WALLS ARE HUNG FROM SLAB OVER LOADS ARE NOT SHOWN ON LOADING DIAGRAMS.
- ALL SOIL DEPTHS ARE MAXIMUMS AND INCLUDE ALL SOIL LAYERS AND DRAINAGE MEDIUMS.

LOADING DIAGRAM KEY

LEGEND:

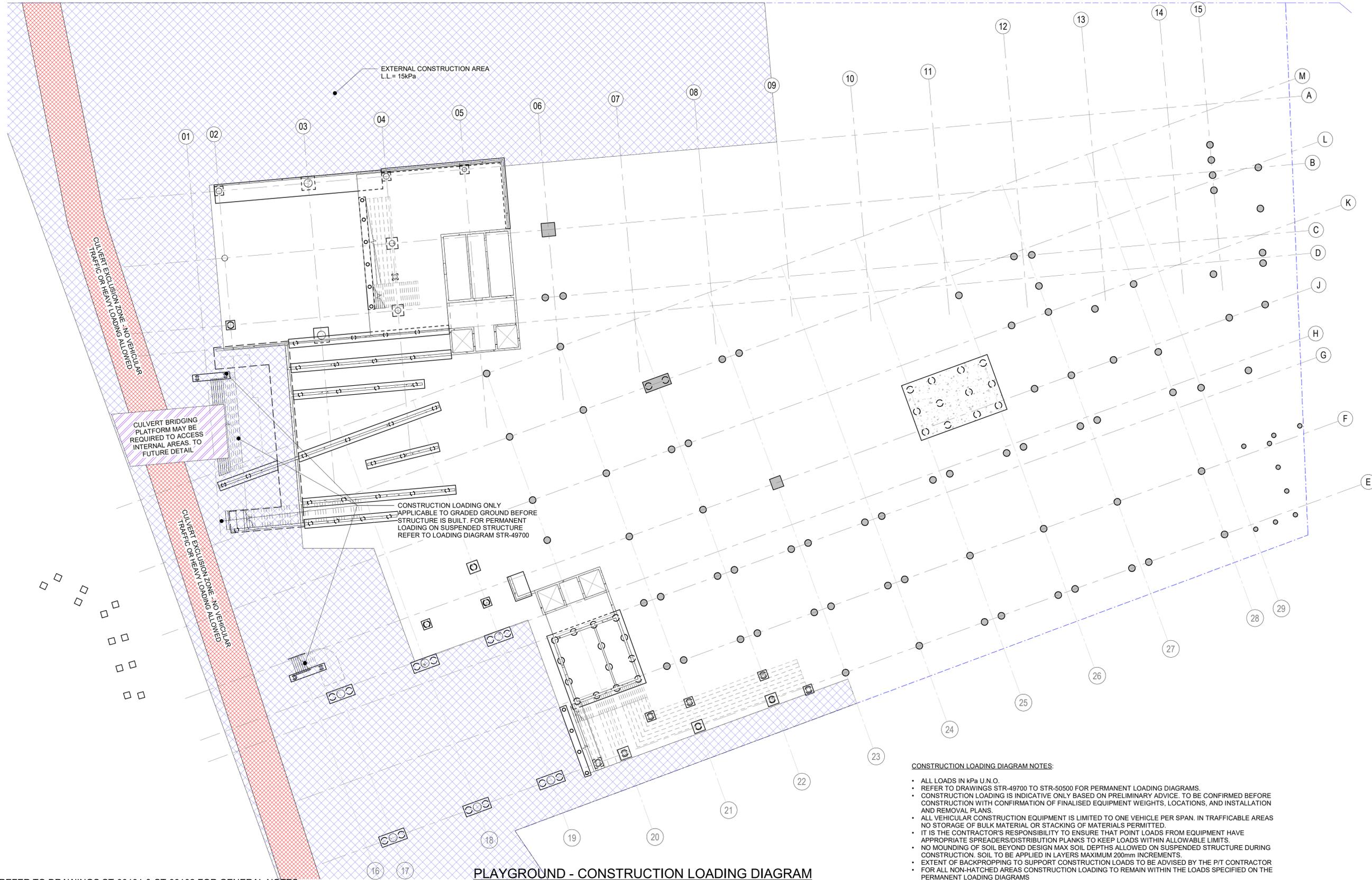
- S.W. DENOTES POINT LOAD ONTO TRANSFER STRUCTURE IN kN U.N.O.
- S.D.L. S.W. = (SELF WEIGHT OF STRUCTURE)
- L.L. S.D.L. = (SUPERIMPOSED DEAD LOAD)
- L.L. = (LIVE LOAD)
- LL # DENOTES GENERAL LINE LOAD. REFER TO LOADING TABLE ON STR-49500 FOR LOADING SCHEDULE
- PL # DENOTES GENERAL POINT LOAD. REFER TO LOADING TABLE ON STR-49500 FOR LOADING SCHEDULE
- ?? + ?? INDICATES GENERAL AREA LOADS S.D.L. + L.L. (IN kPa)



Contractor
 Project
 MEADOWBANK EDUCATION AND EMPLOYMENT PRECINCT SCHOOLS PROJECT
 Client
 NSW GOVERNMENT Education School Infrastructure

Issuer
enstruct
 enstruct group Pty Ltd
 Level 4, 2 Glen Street, Milsom Point NSW 2061
 Telephone (02) 8904 1444
 http://www.enstruct.com.au
 Project number
 5645
 Checked NLK Approved MOS
 Size check 25mm
 Sheet size A1
 Scale As indicated

Sheet title
 PLAYGROUND - LOADING DIAGRAM
 Sheet number
 MSP-EN-ST-49700
 Revision
 4
 Status
 FOR CROWN CERTIFICATE



PLAYGROUND - CONSTRUCTION LOADING DIAGRAM

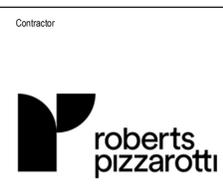
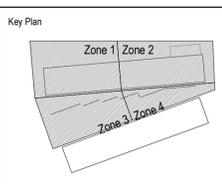
SCALE: 1 : 250

CONSTRUCTION LOADING DIAGRAM NOTES:

- ALL LOADS IN kPa U.N.O.
- REFER TO DRAWINGS STR-49700 TO STR-50500 FOR PERMANENT LOADING DIAGRAMS.
- CONSTRUCTION LOADING IS INDICATIVE ONLY BASED ON PRELIMINARY ADVICE. TO BE CONFIRMED BEFORE CONSTRUCTION WITH CONFIRMATION OF FINALISED EQUIPMENT WEIGHTS, LOCATIONS, AND INSTALLATION AND REMOVAL PLANS.
- ALL VEHICULAR CONSTRUCTION EQUIPMENT IS LIMITED TO ONE VEHICLE PER SPAN. IN TRAFFICABLE AREAS NO STORAGE OF BULK MATERIAL OR STACKING OF MATERIALS PERMITTED.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT POINT LOADS FROM EQUIPMENT HAVE APPROPRIATE SPREADERS/DISTRIBUTION PLANKS TO KEEP LOADS WITHIN ALLOWABLE LIMITS.
- NO MOUNDING OF SOIL BEYOND DESIGN MAX SOIL DEPTHS ALLOWED ON SUSPENDED STRUCTURE DURING CONSTRUCTION. SOIL TO BE APPLIED IN LAYERS MAXIMUM 200mm INCREMENTS.
- EXTENT OF BACKPROPPING TO SUPPORT CONSTRUCTION LOADS TO BE ADVISED BY THE P/T CONTRACTOR FOR ALL NON-HATCHED AREAS CONSTRUCTION LOADING TO REMAIN WITHIN THE LOADS SPECIFIED ON THE PERMANENT LOADING DIAGRAMS

REFER TO DRAWINGS ST-00101 & ST-00102 FOR GENERAL NOTES

Recent revision history	Description	Date	Notes
# 1	75% Documentation Issue	08.07.20	
2	For Crown Certificate	23.07.20	



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1 : 250

Sheet title
PLAYGROUND - CONSTRUCTION LOADING DIAGRAM

Sheet number
MSP-EN-ST-49701

Revision
2

Status
FOR CROWN CERTIFICATE