



# Upgrade to Dundas Public School

## DoE Group 2 Structural and Civil Schematic Design Report

Project Reference: 132564

Document Reference: 250114 - DUNDAS PS 132564 - SCHEMATIC DESIGN REPORT - STRUCTURAL AND CIVIL - REV. C.DOCX

Revision	Date	Description	Status
A	18 <sup>TH</sup> December 2024	Schematic Design	100%
B	14 <sup>TH</sup> Jan 2025	Schematic Design	100%
C	21 <sup>ST</sup> Feb 2025	Schematic Design	100%

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## 1. EXECUTIVE SUMMARY

Meinhardt (MHT) has been engaged by Department of Education (DoE) as the Civil & Structural Engineering Consultants for the DoE Group 2 Metro North, Metro South, and South Coast schools.

This Schematic Design Report has been prepared for the Dundas Public School (DPS) proposed upgrade works. The project scope involves:

- Creation of 6 new teaching spaces and 2 learning commons in a single-story building
- Installation of covered walkways connecting the new building to the existing school network
- Landscaping and external works around the new building and eastern entry
- Upgrades to site infrastructure and services to support the new building.

The intent of the activity is to increase the number of permanent teaching spaces (PTS) from 9 to 15 and students from 331 to 391.

The purpose of this report is to:

- Outline the proposed Schematic design of the structural and civil engineering requirements for the new building works.
- Confirm adequacy of the relevant Masterplan due diligence reports &/ documentation of the existing site conditions for the proposed building works.
- Ensure compliance with SINSW Pattern Book Rev. 2 dated 19/09/2024, Educational Facilities Standards and Guidelines (EFSG), local authority requirements, statutory building codes and industry best practice.
- Establish structural and civil design principles for the preferred development option based on:
  - Architectural drawings prepared by Fulton Trotter Architects (FTA).
  - School Infrastructure Pattern Book Rev. 2 dated 19/09/2024.
  - EFSG guidelines.
  - Design team meetings (DTM).
  - Site attendance was carried out by our Structural & Civil engineers in July 2024.

### 1.1. Civil

Dundas PS proposed building site is unaffected by flooding in 1% AEP event and PMF event from either mainstream or local overland sources and is consequently situated outside the Flood Risk Precincts. As a result, no flood controls will apply to the proposed development.

Due to the increase in impervious area of the proposed buildings an OSD Tank is required.

### 1.2. Structural

The School Infrastructure Pattern Book has recently replaced the Modern Method of Construction Integrator scope for the 'above' ground building structure. At present, the Pattern Book designs focus on 3 storey new schools which are the most prevalent typology. Other school building typologies including halls, COLAs, pre-schools, single and double storey buildings will be progressively added to the 2025 Pattern Book. The Pattern Book should be read in conjunction with the EFSG and Technical Standards. The Pattern Book is essentially "the box" which is situated above ground. The "box" is agnostic of structure and requires adaptation to meet specific project Schedules of Accommodation and site requirements.

During the Schematic Design Phase, Meinhardt presented a reverse structural scope brief for the building structure situated above ground (refer to Appendix C). This reverse brief is based on the design philosophy considerations outlined in EFSG 2.0: DGN007 Structural Design Criteria (2023), Section 7.4 of the building B15 - Technical Brief (Final - 25.01.22) and industry best practice. The following structural form for the permanent teaching buildings was supported by DoE:

- One-storey structures: Ground floor reinforced concrete slab with a proprietary D&C light-weight steel modular frame structure incl. roof.
- Two & three storey structures: A concrete braced frame structure with post-tensioned suspended slabs; concrete columns typically placed on a regular grid of 7.5m x 9.0m; and concrete shear walls & /cores located to meet the specific project site requirements. The uppermost storey (incl. roof) is to be a proprietary D&C light-weight steel modular frame structure, subject to a Fire Performance Solution, if required by BCA/PCA.



## 2. SITE DUE DILIGENCE

### 2.1. Location and Occupancy

DPS is located at 85 Kissing Point Road, Dundas. The school site is bound by Kissing Point Road to the north and Calder Road to the south. Kenworthy Street is located parallel to the site to the east as is Saint Andrews Street to the west. The site has an area of 1.99 ha and comprises 1 allotment legally known as Lot 3 DP 610.

The site currently comprises an existing co-education primary (K-6) public school with 9 permanent buildings, 6 demountable structures (1 demountable includes 2 classrooms), interconnected covered walkways, play areas, on-grade parking, sports court and green spaces with mature trees.

Majority of the buildings are 1 storey with only one 2-storey building being Building A (Admin/staff hub and amenities building). Buildings are clustered to the north of the site, with the southern part comprising of a large play area/informal sports oval and a sports court.

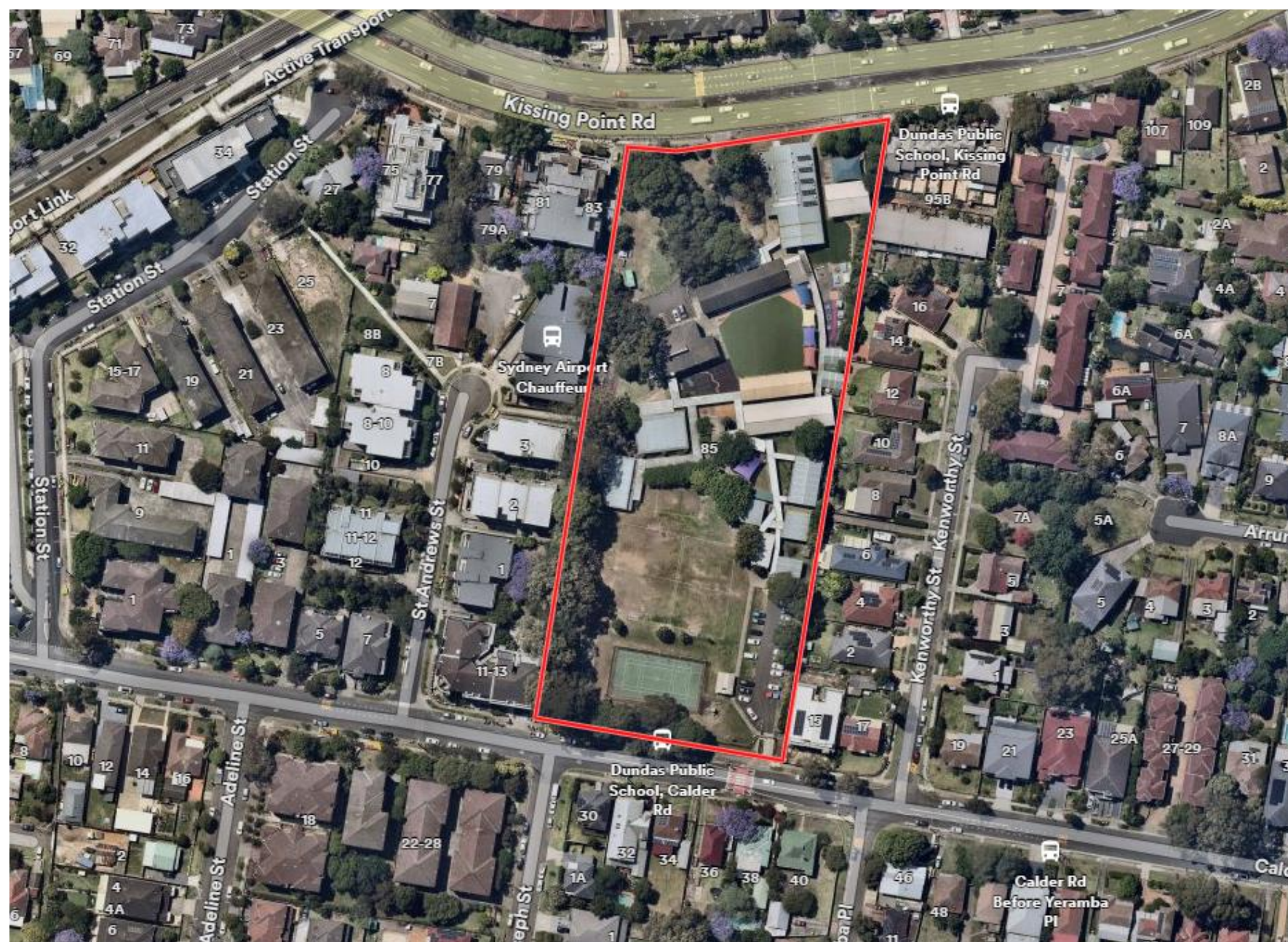


Figure 1: Aerial image of the site, outlined in red (Source: NearMap, taken 30 October 2024)



## 2.2. Arborist

The new proposed building location has been positioned to minimize encroachment on the Tree Protection Zones (TPZ) of the existing trees that are to be retained at the western boundary of the school site. Refer to Figure 2 below.

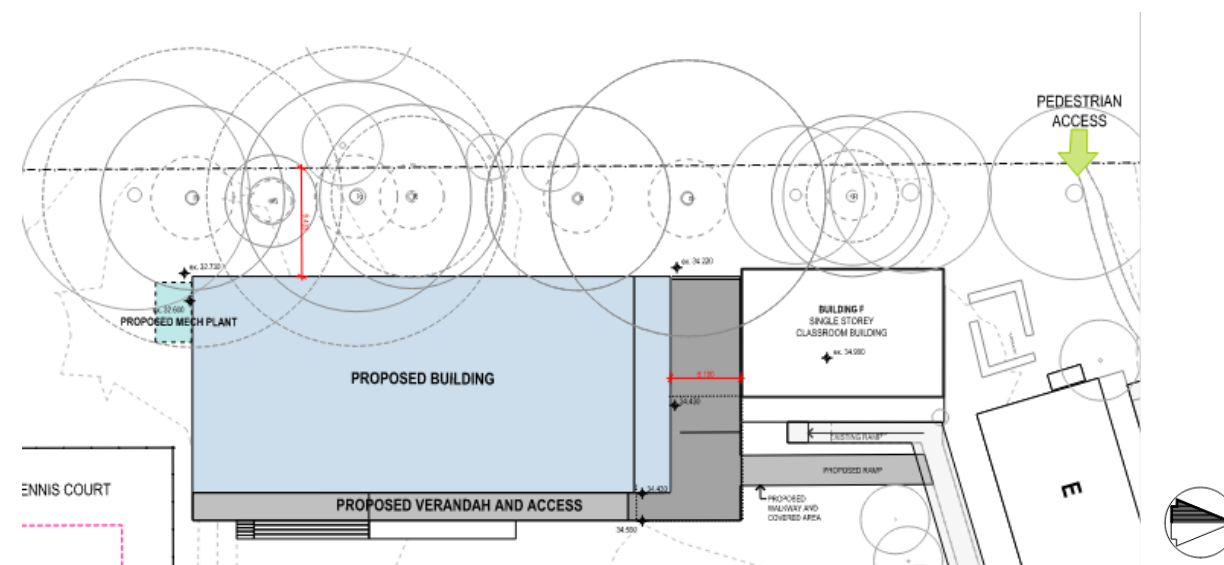


Figure 2: Existing Site Plan & Proposed Site Plan – Fulton Trotter Architects

## 2.3. Contamination

Based on ADE's detailed DSI Report, A101023.0722.DSI.Dundas\_v1d and Supplementary Detailed Site Investigation\_A101023.0722.SuppDSI.Dundas\_v1d, the contamination risk at the proposed development is Low. The site is suitable for planned development.

Refer to Figure 3 below for location of test pits and boreholes conducted in the Supplementary Detailed Site Investigation\_A101023.0722.SuppDSI.



Figure 3: Proposed borehole and test pits for Dundas PS

## 2.4. Geotechnical Investigations

Based on ADE's Geotech report, A201023.0722.03\_A\_v1d and Supplementary Geotechnical Investigation Report A201023.0722.03\_B\_v1d, considering the existing sandstone bedrock stratum is located at shallow depths for BH04 to BH06, BH101 to BH103 we proposed that shallow foundations such as pad footing foundations systems can be considered. If the sandstone layer is lower, bored piers will likely be required to reach the sandstone bedrock. Refer to Figure 4 & 5 below.

Refer to Figure 4 for borehole locations & Figure 5 for BH102 Geological Log.



Dundas PS Project No.: 132564  
Date: 21/02/2024



Figure 4: Borehole Location Plan

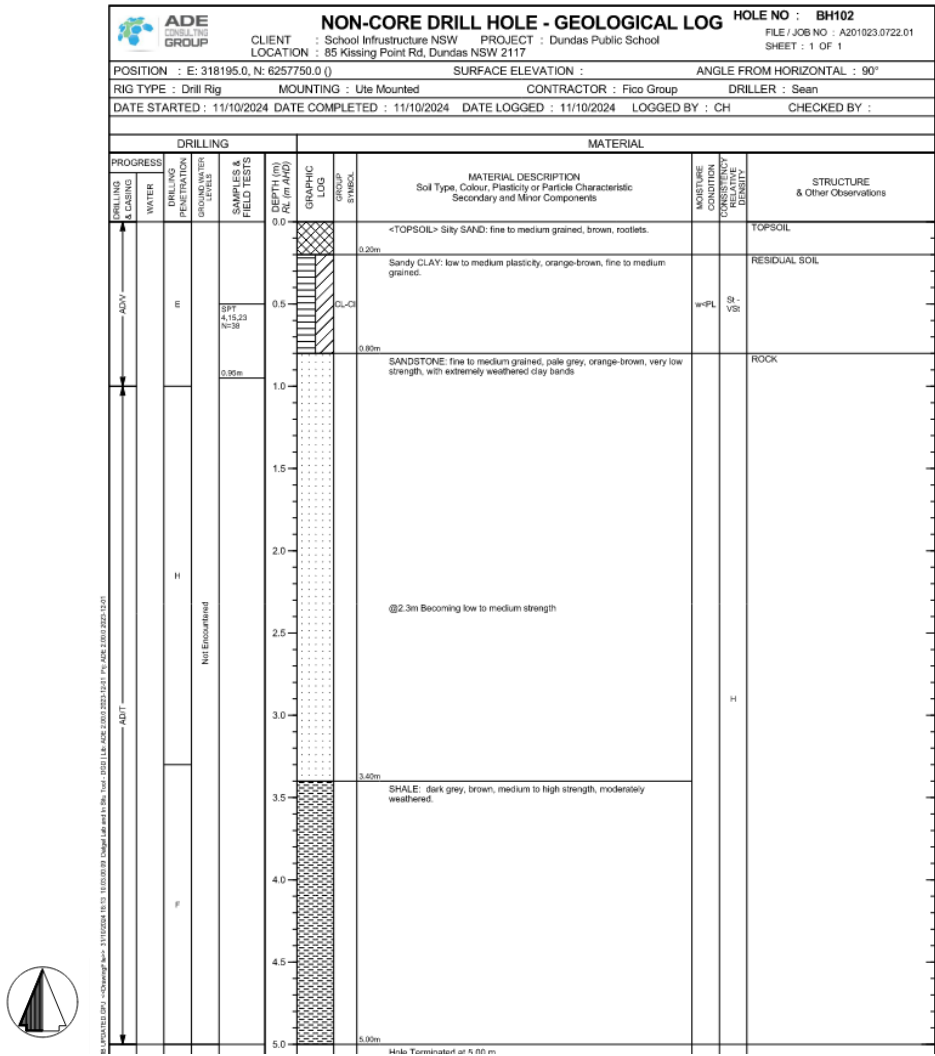


Figure 5: Borehole BH102 geological log.



## 2.5. Flooding and Overland Flow

Dundas PS proposed building site is unaffected by flooding in 1% AEP event and PMF event from either mainstream or local overland sources. However, surrounding access roads are impacted, including Kissing Point Road, north of the site, which is affected by depths exceeding 1.5m in the 1% AEP event below the railway, approximately 120m west of the site. Similarly, Calder Road, which is the main pickup and drop-off point for the school, is impacted by overland flows up to 150mm at the sag point near its junction with Elder Road, 200m east of the school site. Consultation with Council on 29 August 2024 confirmed that a Flood Emergency Management Plan (FEMP) is not required for the site, with flood-free routes available from the site and is consequently situated outside the Flood Risk Precincts. Refer to Figure 6 below.

Due to the increase in impervious area of the proposed buildings an OSD Tank is required.

Due Diligence Report  
Dundas Public School

29 August 2024  
241378





Figure 10: Flood depths around Dundas Public School in the PMF event (adapted from the Parramatta River Flood Study, 2024)









Figure 6: PMF flood depths surrounding DPS (courtesy of Stantec)

## 2.6. Existing Documentation

The following due diligence reports &/ documentation has been relied upon to develop the Phase 2 Schematic Design:

- L&Co24003\_SINSW Dundas Public School\_Preliminary Arboricultural Report\_v2
- 240829 Dundas Public School - Due Diligence Report 241378 - Rev 2
- Detailed Site Investigation Plan\_A101023.0722.DSI.Dundas\_v1d
- Supplementary Detailed Site Investigation\_A101023.0722.SuppDSI.Dundas\_v1d
- Material Analysis and Classification Report\_23.0722\_MAC1.v1f
- SINSW EFSG DGN007 Structural Design Criteria
- Geotechnical Investigation Report, A201023.0722.03\_A\_v1d
- Supplementary Geotechnical Investigation Report, A201023.0722.03\_B\_v1d
- LAND SURVEY 9010 - Detail & Level - Rev A - 85 Kissing Point Rd Dundas
- Fulton Trotter Architectural drawings – Issued 100% Schematic Design

-  DUPS-FTA-00-00-DR-A-1001 EXISTING SITE PLAN [03]
-  DUPS-FTA-00-00-DR-A-1002 DEMOLITION SITE PLAN [02]
-  DUPS-FTA-00-00-DR-A-1003 SITE ANALYSIS PLAN [02]
-  DUPS-FTA-00-00-DR-A-1101 PROPOSED SITE PLAN [03]
-  DUPS-FTA-00-00-DR-A-1201 SITE SECTIONS [02]
-  DUPS-FTA-00-00-DR-A-1401 EXTERNAL WORKS PLAN [03]
-  DUPS-FTA-00-00-DR-A-1501 STAGING PLAN [03]
-  DUPS-FTA-00-00-DR-A-1601 PLAYSCAPE CALCULATION [01]
-  DUPS-FTA-00-00-DR-A-1602 AMENITIES STRATEGY [01]
-  DUPS-FTA-00-00-DR-A-1604 TREE REMOVAL PLAN [01]
-  DUPS-FTA-00-00-DR-A-1610 INDIGENOUS ARTWORK STRATEGY [02]
-  DUPS-FTA-00-00-DR-A-1630 EXTERNAL MATERIAL AND FINISHES [02]
-  DUPS-FTA-00-00-DR-A-1640 SHADOW DIAGRAM [01]
-  DUPS-FTA-B00L-GF-DR-A-2101 GROUND FLOOR PLAN [03]
-  DUPS-FTA-B00L-GF-DR-A-2201 REFLECTED CEILING GROUND FLOOR PLAN [03]
-  DUPS-FTA-B00L-LR-DR-A-2102 ROOF PLAN [03]

-  DUPS-FTA-B00L-ZZ-DR-A-3001 ELEVATIONS 01 [03]
-  DUPS-FTA-B00L-ZZ-DR-A-3002 ELEVATIONS 02 [03]
-  DUPS-FTA-B00L-ZZ-DR-A-3101 SECTIONS 01 [03]
-  DUPS-FTA-B00L-ZZ-DR-A-4001 WALL TYPE DETAILS \_ PARTITION DETAILS [03]
-  DUPS-FTA-B00L-ZZ-DR-A-4201 WALL SECTIONS 01 [03]
-  DUPS-FTA-B00L-ZZ-DR-A-4202 WALL SECTIONS 02 [03]
-  DUPS-FTA-B00L-ZZ-DR-A-4401 STAIR AND RAMP DETAILS [01]
-  DUPS-FTA-B00L-ZZ-DR-A-4501 BALUSTRADE AND HANDRAIL DETAILS [02]
-  DUPS-FTA-B00L-ZZ-DR-A-4801 TYPICAL COVERED WALKWAY DETAILS [02]
-  DUPS-FTA-B00L-ZZ-DR-A-4901 TYPICAL FASCIA DETAILS [02]
-  DUPS-FTA-B00L-ZZ-DR-A-6001 EXTERNAL DOOR & WINDOW SCHEDULE [02]
-  DUPS-FTA-B00L-ZZ-DR-A-6002 INTERNAL DOOR & WINDOW SCHEDULE [02]
-  DUPS-FTA-B00L-ZZ-DR-A-9001 PERSPECTIVES 1 [02]
-  DUPS-FTA-B00L-ZZ-DR-A-9002 PERSPECTIVES 2 [02]
-  DUPS-FTA-XX-XX-DR-A-0000 COVER SHEET + DRAWING LIST [03]
-  DUPS-FTA-XX-XX-DR-A-0001 SPECIFICATION SCHEDULE & MATERIAL SCHEDULE [02]
-  Group 2 Schools-Master Spec-FTA-7068VS01-SP 26.11.24



### 3. PROPOSED DEVELOPMENT

#### 3.1. General Description

The proposed activity involves upgrades to the existing DPS, including the following:

- Creation of 6 new teaching spaces and 2 learning commons in a single-story building
- Installation of covered walkways connecting the new building to the existing school network
- Landscaping and external works around the new building and eastern entry
- Upgrades to site infrastructure and services to support the new building.

The intent of the activity is to increase the number of permanent teaching spaces (PTS) from 9 to 15 and students from 331 to 391.

Figure 7 below show the scope of works for the proposed activity.

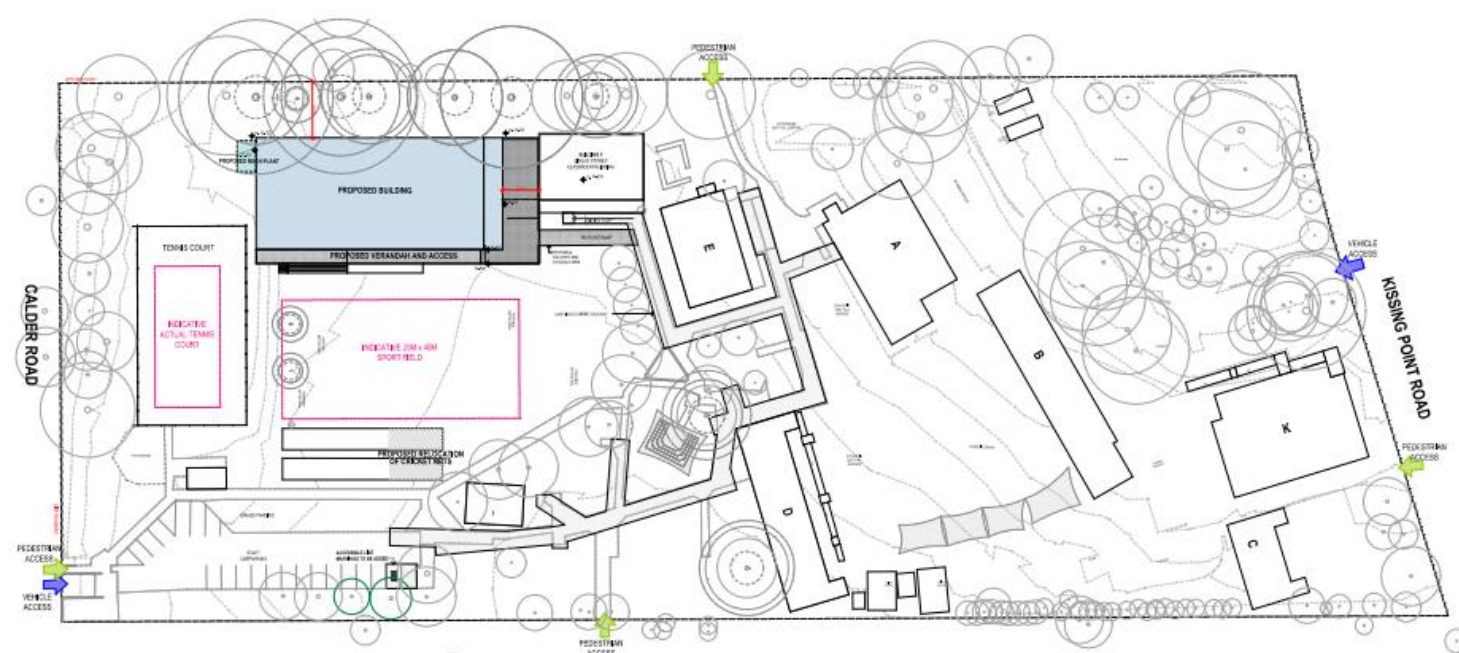


Figure 7: Proposed Scope of Works (Source: Fulton Trotter Architects, Proposed Site Plan (Rev P5))

#### 3.2. Civil Engineering Works

##### 3.2.1. Stormwater Drainage

Based on the Report, 240829 Dundas Public School - Due Diligence Report 241378 - Rev 2, Appendix A - City of Parramatta Flood Information Letter & Appendix B - Consultation with Council Re Dundas PS, the report finds that the recently adopted Parramatta River Flood Study (2024) provides a detailed assessment of the mainstream and overland flow risk across 51km<sup>2</sup> of Parramatta LGA. Updated flood maps from the study demonstrate that Dundas Public School is unaffected by flooding from both mainstream and overland sources in all events, up to and including the PMF. As a result, the proposed design is compliant with the objectives of Section 5.11 of the Parramatta DCP (2023) and will have no impact on flood behaviour in the region.

Due to the increase in impervious area, Meinhardt's preliminary recommendation is that an underground detention storage of approximately 57 m<sup>3</sup> be provided as noted in the Civil documentation. This is to ensure peak discharge flows draining from the proposed development can be managed by the downstream drainage systems from the developed site. A permissible site discharge and OSD volume was determined using DRAINS modelling. A summary of the Schematic stormwater drainage design has been presented in Figure 8 below.





Figure 8: : Proposed Stormwater Drainage Plan

### 3.2.2. Legal Point of Discharge

The stormwater layouts presented above have identified one existing stormwater discharge location along Calder Road. Meinhardt will liaise with the Parramatta council during the REF application to ascertain whether this discharge outlet can be used for the proposed school development, or if a new legal point of discharge & / associated easement is required to discharge the generated stormwater from the proposed development.

### 3.2.3. Stormwater Quality

All proposed buildings, impervious areas and adjoining pervious areas will need to be treated using industry standard Water Sensitive Urban Design (WSUD) practices. Generated stormwater pollutants will need to be treated to Council targets. MUSIC modelling is the industry standard stormwater quality software which assesses reduction in pollutant run-off on typical WSUD practices. This development will implement WSUD measures implementing a Filtration System (Quality Treatment Devices) to achieve the stormwater quality treatment targets set by Parramatta DCP (2023).

### 3.2.4. Bulk Earthworks

The new one-storey building ground floor levels has been set to achieve minimum cut and fill volumes. A summary of the Schematic bulk earthwork cut & fill volumes has been presented in Figure 09 below.

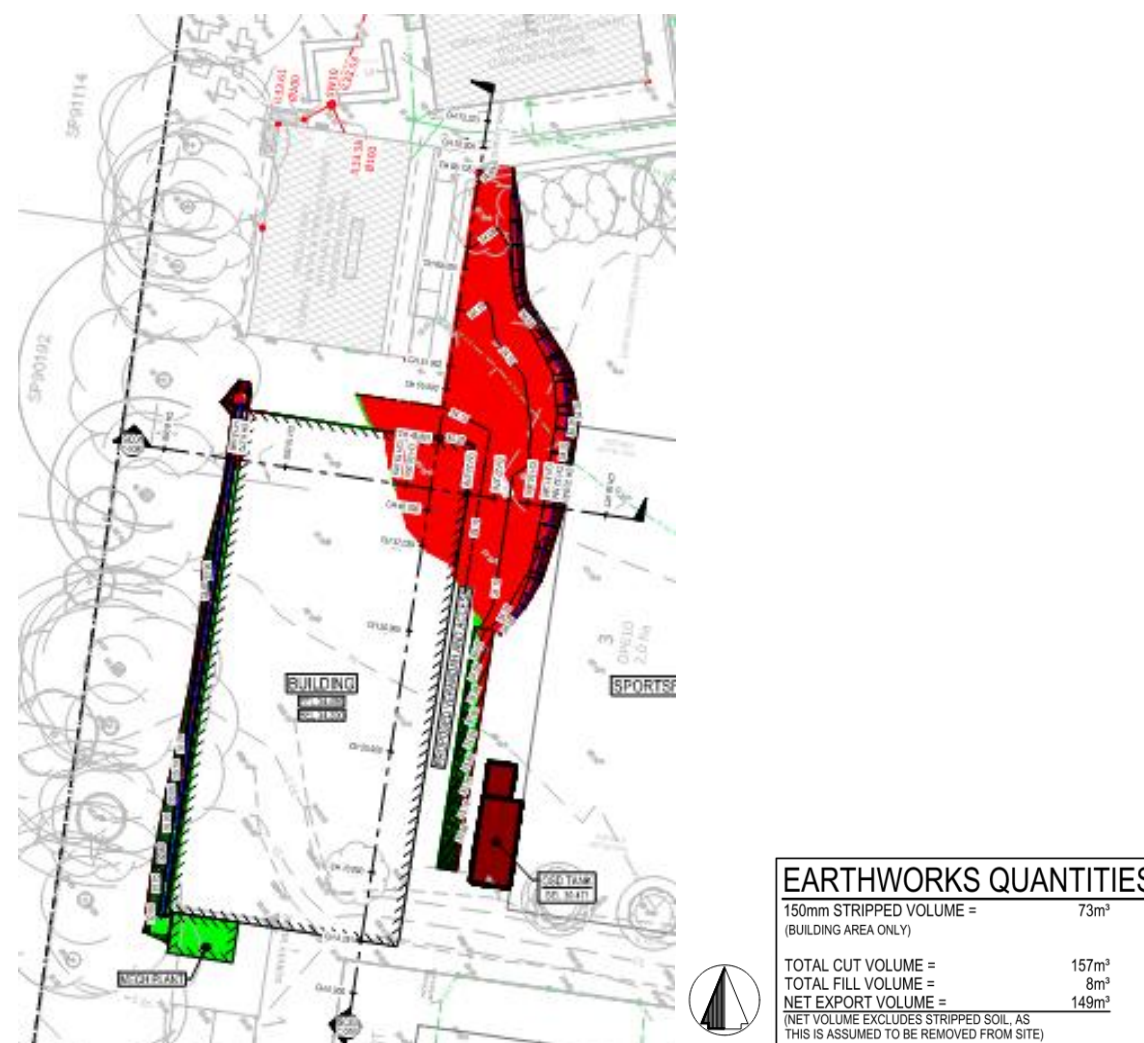


Figure 09: Preliminary Bulk Earthwork Volumes

## 3.3. Structural Works

### 3.3.1. Foundations

Based on the ADE Geotechnical reports A201023.0722.03\_A\_v1d and A201023.0722.03\_B\_v1d, considering the shallow depth of the sandstone bedrock stratum at boreholes BH04 to BH06 and BH101 to BH103, we proposed using shallow foundations such as pad footing systems. If the sandstone layer is deeper, bored piers may be required to reach the bedrock. Refer to Figures 4 and 5 for borehole location and geological profile.

Furthermore, we proposed incorporating 4-blade shear walls under the suspended slab, which will be constructed above strip footings embedded in the rock. This approach will provide sufficient lateral stability for the structure while being more cost-effective than embedding all pad footings into the rock.

### 3.3.2. School Infrastructure Pattern Book

The School Infrastructure Pattern Book has recently replaced the Modern Method of Construction Integrator scope for the 'above' ground building structure. At present, the Pattern Book designs focus on 3 storey new schools which are the most prevalent typology. Other school building typologies including halls, COLAs, pre-schools, single and double storey buildings will be progressively added to the 2025 Pattern Book. The Pattern Book should be read in conjunction with the EFSG and Technical Standards. The Pattern Book is essentially "the box" which is situated above ground. The "box" is agnostic of structure and requires adaptation to meet specific project Schedules of Accommodation and site requirements.

During the Schematic Design Phase, Meinhardt presented a reverse structural scope brief for the building structure situated above ground (refer to Appendix C). This reverse brief is based on the design philosophy considerations outlined in EFSG 2.0: DGN007 Structural Design Criteria (2023), Section 7.4 of the building B15 - Technical Brief (Final - 25.01.22) and industry best practice. The structural design will be in accordance with the latest revision of all relevant Australian Design Standards, Codes and other statutory requirements & EFSG Guidelines.

The following structural form for the permanent teaching buildings was supported by DoE:

- One-storey structures: Ground floor reinforced concrete slab with a proprietary D&C light-weight steel modular frame structure incl. roof.
- Two & three storey structures: A concrete braced frame structure with post-tensioned suspended slabs; concrete columns typically placed on a regular grid of 7.5m x 9.0m; and concrete shear walls & /cores located to meet the specific project site requirements. The uppermost storey (incl. roof) is to be a proprietary D&C light-weight steel modular frame structure, subject to a Fire Performance Solution, if required by BCA/PCA.

### 3.3.3. Fire Resistance Level for Structural Elements

- Fire resistance level for structural elements will be in accordance with the requirements of the BCA.
- A Fire Performance Solution is likely required by the D&C contractor for the modular lightweight steel structure for the upper most storey including the roof structure.

### 3.4. Structural & Civil Actions/Recommendations for Phase 3 Schematic Design

1. Survey: A detailed survey has been requested.
2. Stormwater: Gain approval from Council to use the existing legal discharge outlet for the proposed new development as to be noted in the Stormwater Management Plan to be submitted for the REF documentation.

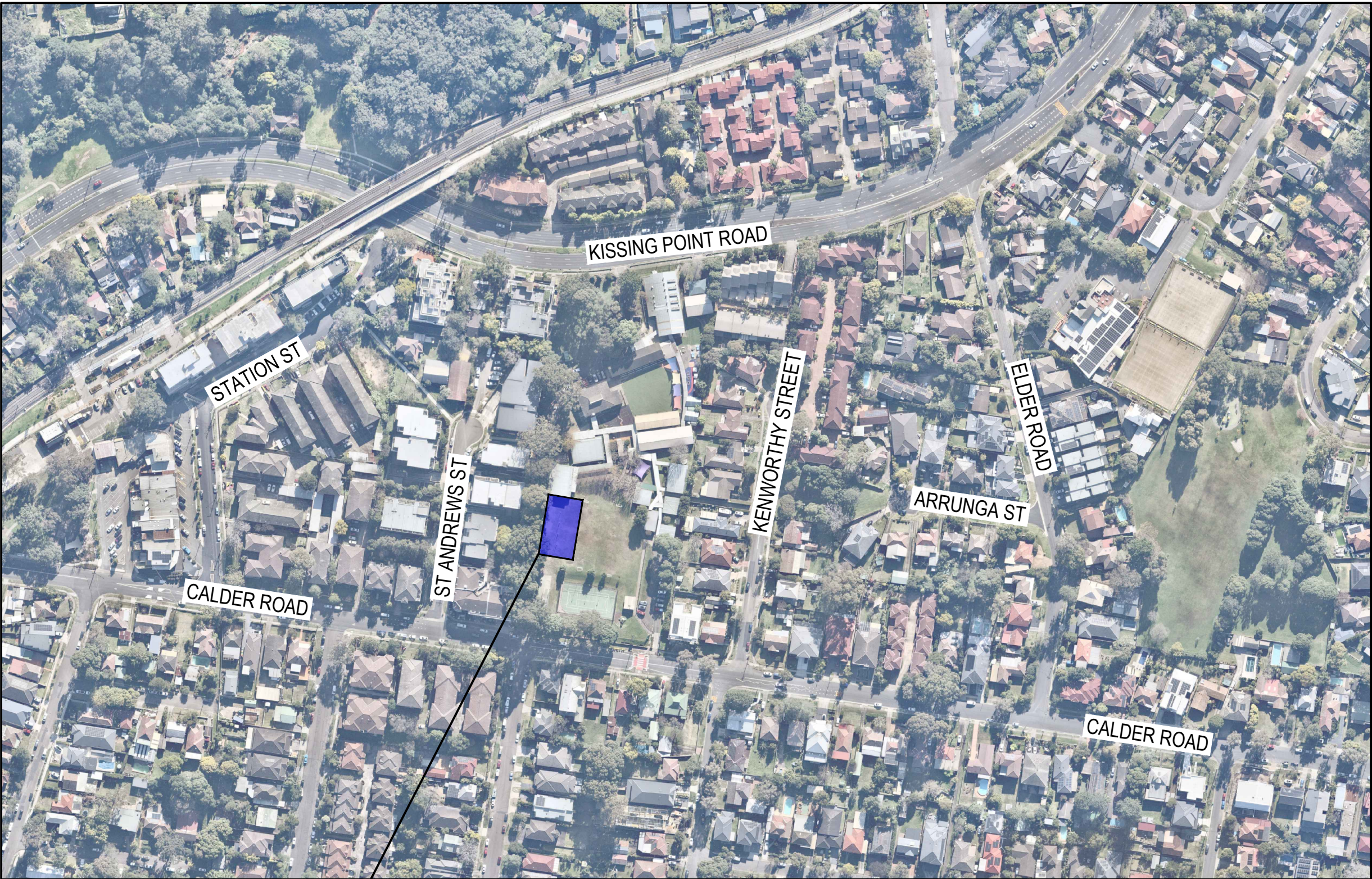


## Appendix A – Civil Schematic Design Drawings

## Appendix B – Structural Schematic Design Drawings

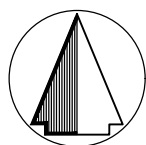


DUNDAS PUBLIC SCHOOL  
85 KISSING POINT ROAD, DUNDAS NSW 2117  
CIVIL DRAWINGS



AREA OF WORKS

LOCALITY PLAN  
N.T.S



DRAWING LIST

DRAWING NUMBER	DRAWING TITLE
DUPS-MHT-00-00-DR-C-0010	COVER SHEET, DRAWING INDEX AND LOCALITY PLAN
DUPS-MHT-00-00-DR-C-0020	STANDARD NOTES
DUPS-MHT-00-00-DR-C-0060	EROSION AND SEDIMENT CONTROL PLAN
DUPS-MHT-00-00-DR-C-0065	EROSION AND SEDIMENT CONTROL DETAILS
DUPS-MHT-00-00-DR-C-0070	BULK EARTHWORKS PLAN
DUPS-MHT-00-00-DR-C-0080	BULK EARTHWORKS LONGITUDINAL SECTIONS
DUPS-MHT-00-00-DR-C-0101	CIVIL SITEWORKS PLAN
DUPS-MHT-00-00-DR-C-0200	CIVIL DETAILS
DUPS-MHT-00-00-DR-C-0710	STORMWATER DRAINAGEPIT SCHEDULE

IMPORTANT NOTES

- PRIOR TO THE COMMENCEMENT OF BUILDING WORKS ON SITE, THE CONTRACTOR MUST VERIFY THE FEASIBILITY OF THE OUTFALL STORMWATER DRAINAGE SYSTEM/S TO THE LEGAL POINT OF DISCHARGE AS DOCUMENTED BY:
  - VERIFICATION OF THE INVERT LEVEL OF THE DRAIN FORMING THE LEGAL POINT OF DISCHARGE
  - VERIFICATION THAT THE ROUTE FROM THE SITE TO THE LEGAL POINT/S OF DISCHARGE IS CLEAR OF ALL OTHER AUTHORITY SERVICES.IF EITHER OF THE ABOVE CANNOT BE VERIFIED, THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE SUPERINTENDENT.
- PRIOR TO THE COMMENCEMENT OF ANY WORKS, THE CONTRACTOR SHALL LOCATE ALL UNDERGROUND SERVICES, NOTIFY THE AUTHORITIES RESPONSIBLE FOR THOSE SERVICES AND COMPLY WITH ALL OF THE REQUIREMENTS OF THOSE AUTHORITIES.

ENVIRONMENTAL MANAGEMENT PLAN

PRIOR TO THE COMMENCEMENT OF ANY WORKS THE CONTRACTOR SHALL PREPARE A SITE MANAGEMENT PLAN FOR APPROVAL BY THE SUPERINTENDENT. ITEMS TO BE ADDRESSED INCLUDE:

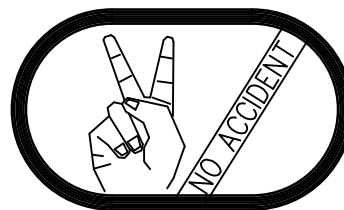
- EROSION AND SEDIMENT CONTROL
- FLORA AND FAUNA CONSERVATION
- WATER QUALITY MANAGEMENT
- DUST CONTROL
- NOISE CONTROL
- ACCESS MANAGEMENT
- WASTE MANAGEMENT
- POLLUTION CONTROL
- MONITORING AND REPORTING
- CORRECTIVE ACTION

ATTENTION TO CONTRACTOR  
OH & S REQUIREMENTS

- IN ACCORDANCE WITH CLAUSE 15 OF AS2124-1992, THE CONTRACTOR MUST ENSURE THE SAFETY OF THE CONTRACTOR'S EMPLOYEES AND ALL OTHER PEOPLE WHO ARE ON OR ADJACENT TO THE SITE. THE CONTRACTOR MUST COMPLY WITH THE NSW WHS ACT OF 2011.
- THE CONTRACTOR MUST ENSURE THAT ALL PEOPLE EMPLOYED ON THE SITE WEAR APPROVED SAFETY APPAREL. THIS INCLUDES SAFETY HELMETS, SAFETY BOOTS, EAR AND EYE PROTECTION, WHERE APPROPRIATE.
- THE CONTRACTOR IS NOT PERMITTED TO BREAK-IN TO AN EXISTING LIVE PIPELINE. ENTER A LIVE ACCESS CHAMBER OR REMOVE THE COVER TO A LIVE ACCESS CHAMBER.
- THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL EXISTING SERVICES IN WORKS AFFECTED AREAS PRIOR TO COMMENCING ANY WORKS.

NOTE:  
THIS PROJECT SHOULD BE READ IN CONJUNCTION WITH ALL OTHER SERVICES CONSULTANTS ASSOCIATED WITH THIS PROJECT BEFORE COMMENCEMENT OF ANY WORKS.

ALL EXISTING PROPERTY SERVICES' LOCATIONS AND DEPTHS ARE APPROXIMATE AND MUST BE VERIFIED ON SITE. THE CONTRACTOR SHOULD SUPPLY PRECISE LOCATIONS AND DEPTHS TO THE SUPERINTENDENT FOR REVIEW PRIOR TO ANY WORKS THAT MAY AFFECT THESE SERVICES.



THE CONTRACTOR SHALL BE TOTALLY RESPONSIBLE FOR AND AT ALL TIMES PROVIDE A SAFE WORKING ENVIRONMENT IN THE VICINITY OF THE SITE OF WORKS IN FULL COMPLIANCE WITH THE OCCUPATIONAL HEALTH AND SAFETY REGULATIONS.

HEALTH AND SAFETY

- H1. THE OBLIGATION OF MEINHARDT (OR OTHER RELEVANT MEINHARDT ENTITY) (MEINHARDT) AS THE DESIGN ENGINEER IS LIMITED TO ENSURING THAT THOSE PARTS OF THE BUILDING OR STRUCTURE THAT ARE TO BE USED AS A WORKPLACE ARE AS FAR AS REASONABLY PRACTICABLE, DESIGNED TO BE SAFE AND WITHOUT RISKS TO THE HEALTH OF THOSE PERSONS USING THE BUILDING OR STRUCTURE AS A WORKPLACE FOR THE PURPOSE FOR WHICH IT WAS DESIGNED IN ACCORDANCE WITH SECTION 22 OF THE NSW WHS ACT 2011.
- H2. MEINHARDT IS NOT RESPONSIBLE FOR THE OCCUPATIONAL HEALTH AND SAFETY OF PERSONS AT THE SITE AS THOSE OBLIGATIONS RESIDE WITH THE CONTRACTORS AND/OR SUB-CONTRACTORS WHO OCCUPY OR HAVE CONTROL OF THE SITE IN ACCORDANCE WITH APPLICABLE OCCUPATIONAL HEALTH AND SAFETY LEGISLATION, CODES OR PRACTICE, GUIDANCE NOTES, AUSTRALIAN STANDARDS AND OTHER RELEVANT DOCUMENTATION.
- H3. ANY ADVICE OR GUIDANCE CONCERNING OCCUPATIONAL HEALTH AND SAFETY ISSUES ARISING AT THE SITE SHOULD BE DIRECTED TO THE HEALTH AND SAFETY EXECUTIVE OR OFFICER NOMINATED FOR THE PROJECT.

GEOTECHNICAL DESIGN COMPLIANCE AND  
SITE INSPECTION ATTENDANCE

THESE DESIGN PLANS SHALL BE READ IN CONJUNCTION WITH GEOTECHNICAL REPORT No.A201023.0722.03\_A\_v 1f DATED 28 FEBRUARY 2024 PREPARED BY ADE CONSULTING GROUP. THE PROVISIONS AND RECOMMENDATION CONTAINED WITHIN THE REPORT ARE TO BE STRICTLY COMPLIED WITH.

ALL COMPACTION REQUIREMENT RESULTS SHALL BE CARRIED OUT IN ACCORDANCE WITH GEOTECHNICAL REPORT RECOMMENDATIONS.

LATENT CONDITIONS (SUBGRADE IMPROVEMENTS)

ANY ADDITIONAL WORKS WHICH MAY LEAD TO A VARIATION SHALL BE APPROVED BY THE SUPERINTENDENT PRIOR TO THE COMMENCEMENT OF ANY WORKS AND INCLUDE THE FOLLOWING PROVISIONS:

- NOTIFICATIONS FOR INSPECTIONS TO SUPPORT POTENTIAL VARIATION CLAIMS REQUIRE MINIMUM 48 HOUR NOTICE PERIOD. (SITE REPRESENTATION WILL BE AT THE DISCRETION OF THE SUPERINTENDENT).
- SUBGRADE IMPROVEMENTS ARE TO BE MANAGED BY THE PROJECT GEOTECHNICAL ENGINEER WITH INPUT FROM THE SUPERINTENDENT.
- CONSULTANT COSTS FOR GEOTECHNICAL REPRESENTATION AND REPORTING TO BE BORNE BY THE CONTRACTOR
- ADDITIONAL INSPECTIONS BY THE SUPERINTENDENT TO SUPPORT VARIATION CLAIMS FOR LATENT CONDITIONS SHALL BE BORNE BY CONTRACTOR



WARNING  
PROPOSED SERVICES

THE LOCATION AND EXTENT OF PROPOSED SERVICES IS INDICATIVE ONLY AND ARE NOT TO BE USED FOR CONSTRUCTION. REFER TO AUTHORISED DOCUMENTATION BY RELEVANT AUTHORITY FOR CONSTRUCTION DETAILS

WARNING

BEWARE OF UNDERGROUND SERVICES  
THE LOCATIONS OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

REV	DESCRIPTION	BY	DES	CHKD	DATE
P1	ISSUED FOR 75% SCHEMATIC DESIGN	D.J	M.D	Y.C	22.11.24
P2	ISSUED FOR 100% SCHEMATIC DESIGN	D.J	M.D	Y.C	18.12.24
P3	ISSUED FOR 100% SCHEMATIC DESIGN	D.J	M.D	Y.C	13.01.25



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School Infrastructure NSW

TITLE  
COVER SHEET, DRAWING INDEX  
AND LOCALITY PLAN

CLIENT

PROJECT

DUNDAS PUBLIC SCHOOL  
85 KISSING POINT ROAD, DUNDAS NSW 2117

STATUS

**SCHEMATIC DESIGN**  
NOT TO BE USED FOR CONSTRUCTION

DRAWN	DESIGNED	CHECKED	APPROVED	DATE	SCALE @ A1
D.J	M.D	Y.C		SEPT 2024	N.T.S
PROJECT No <b>132564</b>		DRAWING No DUPS-MHT-00-00-DR-C-0010		REV <b>P3</b>	



# STANDARD CIVIL NOTES

## 1. GENERAL

1.1 THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND OTHER CONSULTANTS' DRAWINGS AND SPECIFICATIONS, AND SUCH OTHER WRITTEN INSTRUCTIONS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCY SHALL BE REFERRED TO THE SUPERINTENDENT BEFORE PROCEEDING WITH THE WORK. THESE PLANS ARE BASED UPON THE EXISTING CONDITION SURVEY PREPARED BY OTHERS. WHERE SITE CONDITIONS DIFFER TO THE SURVEY OR DESIGN DRAWINGS, THE CONTRACTOR SHALL NOTIFY THE SUPERINTENDENT PRIOR TO PROCEEDING WITH WORKS.

1.2 IF ANY DISCREPANCY OCCURS ON THE DRAWINGS OR BETWEEN THE DRAWINGS AND SPECIFICATION, THE TENDERER SHALL DURING TENDER REFER THE DISCREPANCY TO THE SUPERINDENTENT. OR ASSUME THAT THE DRAWINGS TAKE PRECEDENCE OVER THE SPECIFICATION. ANY DISCREPANCY SHALL BE REFERRED TO THE SUPERINTENDENT FOR WRITTEN CLARIFICATION BEFORE PROCEEDING WITH THE WORK.

1.3 THESE DRAWINGS MUST NOT BE SCALED.

1.4 ALL DIMENSIONS AND REDUCED LEVELS MUST BE VERIFIED ON SITE BEFORE THE COMMENCEMENT OF ANY WORK.

1.5 THE CONTRACTOR SHALL SET OUT THE WORKS FROM THE NOMINATED DESIGN LINES, SURVEY BENCHMARKS AND CONTROL POINTS SHOWN ON THE PLANS AND TO THE SPECIFIED DETAILS. UPON REQUEST AN ELECTRONIC BASE PLAN OF THE CIVIL DRAWING CAN BE SUPPLIED FOR INFORMATION. MEINHARDT HOLDS NO LIABILITY TO THE ACCURACY OF ELECTRONIC FILES.

1.6 ALL LEVELS SHOWN ARE TO THE AUSTRALIAN HEIGHT DATUM AND ALL COORDINATES ARE TO MAP GRID OF AUSTRALIA (MGA 2020).

1.7 ALL SPOT LEVELS SHOWN ARE TO INVERT (FACE) OF KERB OR EDGE OF PAVEMENT WHERE APPLICABLE, UNLESS SHOWN OTHERWISE.

1.8 EXISTING SURFACE CONTOURS, WHERE SHOWN, ARE INTERPOLATED AND MAY NOT BE ACCURATE.

1.9 GRADE EVENLY BETWEEN FINISHED SURFACE SPOT LEVELS. FINISHED SURFACE CONTOURS ARE SHOWN FOR CLARITY. WHERE FINISHED SURFACE LEVELS ARE NOT SHOWN, THE SURFACE SHALL BE GRADED SMOOTHLY SO THAT IT WILL DRAIN AND MATCH ADJACENT SURFACES OR STRUCTURES.

1.10 MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE RELEVANT AUSTRALIAN AND RESPONSIBLE AUTHORITY STANDARDS.

1.11 THE CONTRACTOR SHALL COMPLY WITH ALL REGULATIONS OF AUTHORITIES HAVING JURISDICTION OVER THE WORKS.

1.12 ONLY SUBSTITUTIONS APPROVED IN WRITING BY THE SUPERINTENDENT SHALL BE ACCEPTED.

1.13 ALL WORKS WITHIN THE ROAD RESERVE SHALL BE IN ACCORDANCE WITH THE RESPONSIBLE ROAD AUTHORITY SPECIFICATIONS AND DRAWINGS AND ENGINEERING, DESIGN AND CONSTRUCTION MANUALS.

1.14 SERVICE INFORMATION SHOWN IS BASED ON PLANS SUPPLIED BY AUTHORITIES AND IS APPROXIMATELY ONLY. PRIOR TO COMMENCEMENT OF ANY WORKS, THE CONTRACTOR SHALL LOCATE ALL UNDERGROUND SERVICES AND COMPLY WITH ALL REQUIREMENTS OF THOSE AUTHORITIES.

1.15 WHERE CIVIL DRAWINGS HAVE BEEN PROVIDED IN AUTOCAD OR DIGITAL FORMAT, THE CONTRACTOR SHALL UTILISE THESE FOR INFORMATION ONLY. DESIGN DRAWINGS ARE TO BE REFERENCED FOR SURFACE LEVELS AND WILL TAKE PRECEDENCE FOR SETOUT OVER 3D MODELS. ANY INFORMATION EXTRACTED FROM 3D MODELS ARE TO BE CROSSCHECKED WITH FORMALLY ISSUED PDF FILES AND SITE CONDITIONS. IF ANY DISCREPANCIES EXIST, THE SUPERINTENDENT IS TO BE CONSULTED FOR REVIEW.

1.16 SHOP DRAWING REVIEW OF SUBCONTRACTOR DRAWINGS ARE NOT WITHIN THE CIVIL SCOPE. WHERE SHOP DRAWINGS ARE PRODUCED, MEINHARDT DOES NOT TAKE ANY RESPONSIBILITY TO THE SUITABILITY OF ACCURACY OF THESE DRAWINGS.

1.17 THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF ALL TEMPORARY WORKS.

## 2. EARTHWORKS AND GEOTECHNICAL

2.1 THE CONTRACTOR SHALL COMPLY WITH THE CURRENT EDITIONS OF THE FOLLOWING ROAD AUTHORITY AND AUSTRALIAN STANDARDS: - AS 1289 TESTING SOILS FOR ENGINEERING PURPOSES - AS 3798 GUIDELINES ON EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS - ROAD AUTHORITY SPECIFICATION - SITE CLEARING

2.2 GRANULAR MATERIAL SPECIFIED AS PER GEOTECHNICAL REPORT SUBJECT TO SUPERINTENDENTS APPROVAL.

2.3 THE CONTRACTOR SHALL BE RESPONSIBLE FOR CARRYING OUT ALL CONTROL AND COMPLIANCE EXAMINATION AND TESTING OF MATERIALS AND WORK. UNLESS OTHERWISE SPECIFIED, ALL TESTS SHALL BE UNDERTAKEN IN ACCORDANCE WITH THE APPROPRIATE AUSTRALIAN STANDARD TEST METHOD. WHERE THERE IS NO RELEVANT AUSTRALIAN STANDARD TEST METHOD THEN THE CURRENT APPROPRIATE ROAD AUTHORITY TEST METHOD OR OTHER SPECIFIED TEST METHOD SHALL BE USED. ALL TESTS SHALL BE CONDUCTED BY EXPERIENCED TESTING OFFICERS IN A LABORATORY ACCREDITED BY THE NATIONAL ASSOCIATION OF TESTING AUTHORITIES (NATA).

2.4 DETERMINATION OF THE NATURE AND QUANTITY(ES) OF THE EXISTING SITE MATERIALS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR (GEOTECHNICAL REPORT PREPARED BY OTHERS).

THE GEOTECHNICAL REPORT WAS USED AS THE BASIS OF DESIGN. INTERPRETATION OF THE REPORTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL ENGAGE THEIR OWN GEOTECHNICAL ENGINEER DURING CONSTRUCTION TO VERIFY ACTUAL SITE CONDITIONS.

2.5 THE CONTRACTOR SHALL BE DEEMED TO HAVE ALLOWED IN THE CONTRACT SUM FOR EXCAVATION IN ALL MATERIAL. NO ADDITIONAL PAYMENT SHALL BE MADE FOR EXCAVATION IN ROCK NOR ANY HARD OR SOFT MATERIAL. SUITABLE MATERIAL EXCAVATED FROM THE SITE MAY BE USED AS FILL ONLY WHERE APPROVED IN WRITING BY THE SUPERINTENDENT, OR WHERE SHOWN ON THE DRAWINGS. IMPORTED FILL SHALL BE APPROVED MATERIALS COMPRISING GRANULAR IGNEOUS WEATHERED ROCK OR QUARRY WASTE (SUCH AS 40mm CLASS 3 OR CLASS 4), SANDY CLAY OR WEATHERED SEDIMENTARY ROCK. THE FILL MATERIAL MAXIMUM PARTICLE SIZE AFTER COMPACTION SHALL NOT EXCEED 40mm, NOT LESS THAN 50% OF THE MATERIAL SHALL BE COARSER THAN 75 MICRON AND IT SHALL HAVE A LIQUID LIMIT NOT EXCEEDING 35%. GRANULAR MATERIAL SHALL BE WELL GRADED.

UNSATURABLE MATERIAL SHALL MEAN ANY MATERIAL WHICH CONTAINS VEGETABLE MATTER, ROOTS, STUMPS AND OR ANY OTHER PERISHABLE, FOREIGN OR DELETERIOUS MATTER, OR CONTAINS CLAY HAVING A LIQUID LIMIT EXCEEDING 80% AND OR A PLASTICITY INDEX EXCEEDING 50% OR CONTAINS ROCK, GRAVEL OR OTHER PIECES WHOSE LEAST DIMENSION EXCEEDS 100mm, OR IS SILTY MATERIAL OR IS OTHERWISE CONSIDERED AS BEING UNSUITABLE.

2.6 WHEN A SURFACE IS UNABLE TO SUPPORT CONSTRUCTION EQUIPMENT OR IT IS NOT POSSIBLE TO COMPACT THE OVERLYING MATERIALS BECAUSE OF HIGH MOISTURE CONTENT, THEN ONE OR MORE OF THE FOLLOWING ALTERNATIVE ACTIONS MAY BE TAKEN. A) ALLOW THE MATERIAL TO DRY TO A MOISTURE CONTENT WHICH ALLOW IT TO BE COMPACTED AND ALLOW THE PLACEMENT AND COMPACTION OF OVERLYING MATERIAL. B) SCARIFY THE MATERIAL TO A DEPTH OF 200mm AND WORK AS NECESSARY TO ACCELERATE DRYING. RECOMPACT AS SPECIFIED WHEN MOISTURE CONTENT APPROXIMATES OPTIMUM EXCAVATE AND REPLACE THE SOFT MATERIAL. THE ACTION TO BE ADOPTED SHALL BE AT THE CONTRACTOR'S DISCRETION AND EXPENSE, BUT SHALL BE ADVISED TO THE SUPERINTENDENT BEFORE ACTION COMMENCES. IF THE CONTRACTOR ELECTS PURSUANT TO (A) ABOVE TO ALLOW THE MATERIAL TO DRY, RESULTING DELAYS, IF ANY, SHALL NOT CONSTITUTE GROUNDS FOR AN EXTENSION OF CONTRACT PERIOD OR DATE OF PRACTICAL COMPLETION.

2.7 THE NATURAL SUBGRADE SHALL BE MOISTURE CONDITIONED TO WITHIN THE RANGE 98% TO 100% OF STANDARD OPTIMUM MOISTURE CONTENT AND COMPACTED TO ACHIEVE A MINIMUM STANDARD DRY DENSITY RATIO TO A MINIMUM DEPTH OF 200mm. IF REQUIRED THE AREA SHOULD BE TYNED AND SCARIFIED FULL DEPTH TO FACILITATE THIS PROCESS.

2.8 ANY SOFT, WEAK OR UNSTABLE AREAS EXPOSED BY THE COMPACTION PROCESS, OR DURING TEST ROLLING, AND WHICH DO NOT RESPOND TO FURTHER COMPACTION OR MOISTURE CONDITIONING SHALL BE EXCAVATED AND REPLACED. THE CONTRACTOR SHALL BE DEEMED TO HAVE ASSESSED THE EXTENT OF UNSTABLE AREAS AND SHALL BE DEEMED TO HAVE INCLUDED IN THE CONTRACT SUM FOR ALL ACTIVITIES REQUIRED FOR UNSTABLE AREA RECTIFICATION INCLUDING THE DELIVERY, PLACING AND COMPACTING OF APPROVED MATERIAL AS WELL AS THE EXCAVATION AND DISPOSAL OF REPLACED MATERIAL.

2.9 THE FINISHED SUBGRADE SHALL NOT BE DISTURBED BY TRAFFIC OR OTHER OPERATIONS, AND SHALL BE PROTECTED AND MAINTAINED BY THE CONTRACTOR UNTIL THE FIRST LAYER OF FILL OR SUB-BASE IS PLACED THEREON. THE SUBGRADE SHALL BE KEPT DRAINED AND COMPLETELY FREE OF STANDING WATER AT ALL TIMES. THE CONTRACTOR SHALL PLAN AND CARRY OUT THE WHOLE OF THE WORKS TO MINIMISE THE EFFECTS OF RUN-OFF AND EROSION ON THE SITE AND ON DOWNSTREAM AREAS. THE CONTRACTOR SHALL AVOID UNNECESSARY GROUND DISTURBANCE AND PROVIDE AS NECESSARY FOR THE PROPER CONTROL OF STORMWATER RUN-OFF AT EVERY STAGE OF THE WORKS.

2.10 ALL FILL AND PAVEMENT MATERIALS SHALL BE COMPACTED IN LAYERS NOT EXCEEDING A MAXIMUM LOOSE THICKNESS OF 250mm TO THE DENSITIES SPECIFIED BELOW:

A) LANDSCAPED AREAS	95% STANDARD DRY DENSITY
B) FILL UNDER FOOTINGS AND FLOOR SLABS FOR ANY STRUCTURE	
- FINE CRUSHED ROCK	98% MODIFIED DRY DENSITY
C) FILL UNDER ROAD PAVEMENTS	
- FINE CRUSHED ROCK	98% MODIFIED DRY DENSITY
D) ROAD PAVEMENT MATERIALS	
- SUBBASE AND BASE COURSE	98% MODIFIED DRY DENSITY

2.11 WHERE EXCAVATED MATERIAL IS NOT SUITABLE FOR FILLING, "IMPORTED FILL" SHALL BE USED. COMPACT IMPORTED BULK FILL IN LAYERS OF 150mm MAXIMUM COMPACTED DEPTH AND AT OPTIMUM MOISTURE CONTENT. THE CONTRACTOR SHALL CARRY OUT TESTING AT A FREQUENCY WHICH IS SUFFICIENT TO ENSURE THAT THE MATERIALS AND WORK SUPPLIED UNDER THE CONTRACT COMPLIES WITH THE SPECIFIED REQUIREMENTS AND CONFORMING TO AS3798 TABLE 8.1 (CHOICING WHICHEVER GIVES THE MOST TEST RESULTS). NO FILL SHALL BE PLACED OVER LAYERS NOT TESTED AND HAVING UNSATISFACTORY RESULTS.

2.12 EXCAVATION TO THE LINES, LEVELS AND GRADES AS REQUIRED FOR UNDERGROUND SERVICES SPECIFIED IN THE RELEVANT SERVICES SECTIONS, INCLUDING DRAINAGE, HYDRAULIC, ELECTRICAL AND THE LIKE. UNLESS OTHERWISE SPECIFIED MAKE THE TRENCHES STRAIGHT BETWEEN MANHOLES, INSPECTION POINTS, JUNCTIONS AND THE LIKE, WITH VERTICAL SIDES AND UNIFORM GRADES. DEPTH SHALL BE AS REQUIRED BY THE RELEVANT SERVICES AND ITS BEDDING. CUT BACK ROOTS ENCOUNTERED IN TRENCHES TO LESS THAN 600mm CLEAR OF THE RELEVANT SERVICE. REMOVE SUCH OTHER OBSTRUCTIONS INCLUDING ROOTS, STUMPS, BOULDERS, REDUNDANT SERVICES AND THE LIKE WHICH MAY, IN THE

OPINION OF THE SUPERINTENDENT, INTERFERE WITH THE PROPER FUNCTIONING OF THE SERVICE. LAY AND BED SERVICES IN ACCORDANCE WITH THE RELEVANT SERVICES SPECIFICATION SECTION.

2.13 BACKFILL AND COMPACT SERVICE TRENCHES AS SOON AS POSSIBLE AFTER APPROVAL OF LAID AND BEDDED SERVICE. COMPACT BACKFILL IN PIPE TRENCHES SO THAT THE PIPE IS BUTTRESSED BY THE WALLS OF THE TRENCH.

2.14 WHERE FILLING IS DESIGNATED BY THE CONTRACT OR IS SHOWN ON THE DRAWINGS AS STRUCTURAL OR CONTROLLED FILL, THE CONTRACTOR SHALL ENGAGE AN INDEPENDENT GEOTECHNICAL TESTING AUTHORITY TO SUPERVISE SUBGRADE PREPARATION, FILL PLACEMENT, COMPACTION AND TO UNDERTAKE SAMPLING AND TESTING AND REPORTING TO SATISFY THE REQUIREMENTS OF THIS SPECIFICATION AND THOSE OF AS 2870 AND AS 3798, FOR CONTROLLED FILL.

2.15 UNLESS OTHERWISE PERMITTED, NO FILLING SHALL BE PLACED AGAINST ANY STRUCTURES, WING WALLS OR RETAINING WALLS WITHIN FOURTEEN DAYS OF CASTING. STRUT WALLS AS NECESSARY TO PREVENT MOVEMENT DURING PLACING AND COMPACTION. PLACE AND COMPACT FILLING OVER AND AROUND PIPES, CULVERTS, BRIDGES AND OTHER STRUCTURES SO AS TO AVOID UNBALANCED LOADING OR MOVEMENT. UNLESS OTHERWISE DETAILED BACKFILL AT STRUCTURES SHALL BE FILLED AS FOLLOWS: A) WHERE THE GAP BETWEEN THE STRUCTURE AND UNDISTURBED GROUND EXCEEDS 2m, BACKFILL THE ZONE WITHIN 2m OF THE STRUCTURE WITH CLASS 3 FINE CRUSHED ROCK AND BACKFILL IN THE ZONE BEYOND 2m OF THE STRUCTURE WITH SELECT FILL TO THE APPROVAL OF THE SUPERINTENDENT OR CLASS 3 FINE CRUSHED ROCK, UNLESS OTHERWISE DETAILED. MATERIAL WITHIN 300mm OF MANHOLES SHALL BE AN APPROVED GRANULAR FILTER MEDIUM OF COARSE SAND OR CRUSHED STONE WRAPPED AND SURROUNDED WITH AN APPROVED GEOTEXTILE SEPARATION LAYER.

2.16 AREAS UPON WHICH FILL IS TO BE CONSTRUCTED, ALL LAYERS OF FILLING, AND MATERIALS LESS THAN 150mm BELOW PERMANENT SUBGRADE LEVEL IN CUT, SHALL BE COMPACTED SO AS TO BE CAPABLE OF WITHSTANDING TEST ROLLING, WITHOUT VISIBLE DEFORMATION OR SPRINGING, WITH A PNEUMATIC TYRED ROLLER OR HIGHWAY TRUCK BALLASTED TO COMPLY WITH THE FOLLOWING: A) PNEUMATIC TYRED - NOT LESS THAN 3t PER TYRE WITH TYRES INFLATED TO 550 kPa. B) HIGHWAY TRUCK - WITH REAR AXLE OR AXLES LOADED TO NOT LESS THAN 8t EACH WITH TYRES INFLATED TO 550 kPa. TEST ROLLING SHALL BE CARRIED OUT IMMEDIATELY BEFORE OVERLYING LAYERS ARE PLACED. WHERE TEST ROLLING IS REQUIRED AT SOME LATER DATE, THE SURFACE SHALL BE MOISTURE CONDITIONED AS REQUIRED AND GIVEN NOT LESS THAN FOUR COVERAGES OF THE TEST ROLLER BEFORE TEST ROLLING COMMENCES.

2.17 THE WORK SHALL NOT BE ACCEPTED AS COMPLETE UNLESS ALL TEST RESULTS ARE PROVIDED TO THE SUPERINTENDENT AND APPROVED. THE CONTRACTOR SHALL PROVIDE ALL MATERIAL PROPERTY AND QUALITY TEST RESULTS TO THE SUPERINTENDENT.

## 3. SITE CLEAN UP

3.1 ALL EXISTING REDUNDANT CONCRETE, PAVEMENT, SOIL, RUBBISH AND CONSTRUCTION DEBRIS SHALL BE TAKEN UP AND REMOVED FROM SITE.

3.2 PRIOR TO COMPLETION, THE CONTRACTOR SHALL ENSURE THE SITE OF WORKS IS TIDIED AND OBTAIN A CLEARANCE FROM THE SUPERINTENDENT.

3.3 APPROPRIATE CLEANING FACILITIES WILL BE INSTALLED ON SITE TO ENSURE THERE IS NO MUD, SOIL, OR DEBRIS DEPOSITED BY VEHICLES ON ABUTTING PUBLIC ROADS.

3.4 SITE ACCESS ROADS AND ABUTTING PUBLIC ROADS TO BE REGULARLY SWEEPED TO KEEP THEM CLEAN AND DEBRIS FREE.

## 4. STORMWATER DRAINAGE

4.1 ALL WORKMANSHIP AND MATERIALS SHALL COMPLY WITH THE CURRENT EDITIONS OF THE FOLLOWING AUSTRALIAN STANDARDS. - AS 1260 UNPLASTICISED PVC (UPVC) PIPES AND FITTINGS FOR SEWERAGE APPLICATIONS. - AS 1697 PRECAST REINFORCED CONCRETE BOX CULVERTS PART 1, SMALL CULVERTS (NOT EXCEEDING 1200mm WIDTH AND 900mm DEPTH). - AS 1631 CAST IRON NON-PRESSURE PIPES AND PIPE FITTINGS - AS 1650 GALVANISED COATINGS - AS 1657 FIXED PLATFORMS, WALKWAYS, STAIRWAYS AND LADDERS - AS 2032 CODE OF PRACTICE FOR INSTALLATION OF UPVC PIPE SYSTEMS - AS 2439 PERFORATED PLASTICS DRAINAGE AND EFFLUENT PIPE FITTINGS, PART 1, PERFORATED DRAINAGE PIPE AND ASSOCIATED FITTINGS - AS 3500 3 NATIONAL PLUMBING AND DRAINAGE CODE, PART 3, STORMWATER DRAINAGE - AS 3725 LOADS ON BURIED CONCRETE PIPES - AS 3996 METAL ACCESS COVERS, ROAD GRATES AND FRAMES - AS 4058 PRECAST CONCRETE PIPES (PRESSURE AND NON-PRESSURE) - AS 4139 FIBRE REINFORCED CONCRETE PIPES AND FITTINGS

4.2 ALL BEDDING TO BE TYPE H2 IN ACCORDANCE WITH AS3725 UNLESS NOTED OTHERWISE.

4.3 THE CONTRACTOR SHALL COMPLY WITH THE 'MINES (TRENCHES) REGULATIONS 1982' FOR ALL SHORING, SUPPORT OF TRENCHES, QUALIFICATIONS OF PERSONNEL AND NOTIFICATION TO THE RESPONSIBLE AUTHORITY.

4.4 TRENCHES MUST BE KEPT CLEAR OF WATER AT ALL TIMES AND TIMBERED >1m DEPTH WHERE NECESSARY TO PREVENT COLLAPSE.

4.5 SUITABLE SAFETY BARRIERS SHALL BE PROVIDED AROUND THE EXCAVATION AT ALL TIMES. THE BARRIERS SHALL BE SUITABLY ILLUMINATED OVERNIGHT TO THE SATISFACTION OF THE SUPERINTENDENT.

4.6 PIPES SHALL BEAR EVENLY ON THE BED PREPARED AS SPECIFIED ABOVE AND LAID WITH THE SOCKETS POINTED UPGRADE. ALL PIPES SHALL BE LAID IN STRAIGHT LINES, TO TRUE INVERT LEVELS AND GRADES AS SHOWN ON PLANS. EACH PIPE SHALL BE SEPARATELY LEVELLED BETWEEN ACCURATELY ESTABLISHED GRADE POINTS. THE CONTRACTOR SHALL ADHERE TO THE DRAWINGS AND SHALL NOT BE PERMITTED TO VARY THE LINE, LEVELS OR LOCATION OF THE DRAIN WITHOUT THE SUPERINTENDENT'S WRITTEN APPROVAL.

4.7 ALL PIPE JOINTING SHALL BE CARRIED OUT IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN SPECIFICATIONS FOR THE TYPE OF PIPE BEING USED.

4.8 FOR REACTIVE CLAY SITES, ALL STORMWATER DRAINAGE CONNECTIONS SHALL BE PROVIDED WITH A MECHANICAL FLEXIBLE JOINT AT THE INTERFACE BETWEEN THE STRUCTURE AND IN-GROUND PIPE INSTALLATION.

4.9 WHERE ANY PIPE IS CUT INTO A LARGER PIPE, SUCH CONNECTION SHALL BE NEATLY MADE AND NO PART OF THE PIPE OR DOWNPIPE SHALL BE ALLOWED TO PROJECT. ANY CUT-IN JUNCTION SHALL BE MADE IN THE TOP HALF OF THE LARGER PIPE. SUCH JUNCTION TO CONCRETE PIPES SHALL BE SURROUNDED WITH A NEAT COLLAR OF CEMENT MORTAR AS DIRECTED BY THE SUPERINTENDENT OR AS DETAILED ON THE DRAWINGS. JUNCTIONS BETWEEN PVC PIPES SHALL USE PROPRIETY FITTINGS INTENDED FOR THE PURPOSE.

4.10 THE ENDS OF PIPES WHICH CONNECT WITH SIDE ENTRY, JUNCTION OR OTHER PITS SHALL BE NEATLY CUT TO FIT THE INNER FACE OF THE CONCRETE. WHERE UPVC PIPES ENTER/LEAVE PITS A RUBBER RING JOINT MANHOLE COUPLING SHALL BE CAST INTO THE PIT WALL.

4.11 ALL PITS AND ENDWALLS SHALL BE CONSTRUCTED IN THE POSITIONS AND TO THE LEVELS SHOWN ON THE DRAWINGS OR AS DIRECTED BY THE SUPERINTENDENT. PIT COVERS SHALL BE PLACED IN ACCORDANCE WITH THE DETAIL SITE PLANS AND PIT SCHEDULE (IF PROVIDED) IN REGARD TO TYPE, SIZE, LOCATION AND LEVEL.

THE BASE OF EACH PIT SHALL BE INFILLED AND SHAPED WITH CONCRETE OR CEMENT MORTAR TO PROVIDE A SMOOTH FLOW PATH. PIT COVER LEVELS ARE SHOWN FOR GUIDANCE ONLY. THE CONTRACTOR SHALL ALLOW TO CONSTRUCT THE COVERS ON A SLOPE AS REQUIRED TO SUIT THE FINAL SURFACE SHAPES AND GRADES.

4.12 ALL DRAINAGE TO BE SETOUT A MINIMUM OF 1000mm FROM ADJACENT BUILDINGS UNLESS NOTED OTHERWISE.

4.13 ALL DRAINAGE PITS TO BE EITHER CAST IN-SITU CONCRETE PITS AS DETAILED OR AN APPROVED PRECAST PIT COMPLYING WITH THE RELEVANT AUSTRALIAN STANDARDS. CONTRACTOR TO OBTAIN APPROVAL FROM THE MAINTAINING AUTHORITY TO INSTALL PRECAST PITS. PITS LOCATED IN GROUND WATER OR COASTAL AREAS SHALL HAVE MINIMUM 80mm COVER TO REINFORCEMENT AT ALL FACES.

4.14 UNLESS NOTED OTHERWISE, ALL DRAINAGE PITS SHALL BE FITTED WITH BOLT-DOWN CONCRETE INFILL COVERS AND/OR FABRICATED STEEL GRATES COMPLYING WITH AS 3996 AS REQUIRED, OR AS DIRECTED BY SUPERINTENDENT.

4.15 UNLESS NOTED OTHERWISE, ALL PIT COVERS SHALL MEET THE FOLLOWING MINIMUM CLASS. CLASS B FOR PITS WITHIN LANDSCAPING OR AREAS NOT SUBJECT TO VEHICLE TRAFFIC. CLASS C FOR PITS WITHIN LIGHT-VEHICLE TRAFFICKED AREAS AND PRIVATE ROADWAYS. CLASS D FOR PITS WITHIN HEAVY-VEHICLE TRAFFICKED AREAS AND/OR PUBLIC ROADWAYS. IF ANY DISCREPANCY EXISTS BETWEEN THE ABOVE AND THE PIT SCHEDULE DRAWING, THE DISCREPANCY SHALL BE REFERRED TO THE SUPERINTENDENT FOR REVIEW AND DIRECTION.

4.16 CONTRACTOR TO ALLOW TO FINISH PITS FLUSH WITH SURROUNDING LEVELS ON COMPLETION. COVER LEVELS ON THE DRAWINGS AND PIT SCHEDULE ARE TO THE CENTER OF THE PIT AND MAY BE MODIFIED ONSITE ± 20mm TO MEET CONSTRUCTION TOLERANCES AND FINISHED PAVEMENT LEVELS.

4.17 ALL DOWNPIPES SHALL BE CONNECTED TO THE END OF A PIPE OR ELBOW AND WHICH THEY SHALL ENTER CENTRALLY. WHERE PVC DOWNPIPES AND UNDERGROUND DRAINAGE ARE USED, THE DOWNPIPES SHALL BE CONNECTED TO THE UNDERGROUND DRAINS WITH SUITABLE STANDARD FITTINGS, BENDS ETC AND WITH SOLVENT JOINTS. THE CONTRACTOR SHALL LAY AND GRADE DRAINS FROM DOWNPIPES TO COMPLY WITH THE REQUIREMENTS FOR PIPE MATERIAL AND COVER REQUIRED BY AS3500.3. WHERE THE REQUIREMENTS OF AS3500.3 CANNOT BE MET THE CONTRACTOR SHALL REFER THE MATTER TO THE SUPERINTENDENT.

4.18 UNLESS NOTED OTHERWISE, ALL DOWNPIPES & GRATED INLETS SHALL BE CONNECTED TO PITS OR MAIN STORMWATER DRAINS WITH PVC S80 OR S910 OF THE FOLLOWING SIZES LAID AT MINIMUM GRADE OF 1 IN 100. A) 1000 S910 FOR DOMESTIC CONSTRUCTION B) 1500 S80 FOR COMMERCIAL/INDUSTRIAL CONSTRUCTION C) 1000 S910 FOR BASEMENT GRATED INLETS D) IF U.P.V.C. OR OTHER PIPES ARE TO BE USED, APPROVAL MUST BE GIVEN BY THE SUPERINTENDENT E) GREEN STAR PROJECTS SHALL SUBSTITUTE PVC WITH APPROVED EQUIVALENT HDPE OR PP PIPES.

4.19 ALL IN GROUND DOWNPIPE CONNECTIONS ARE TO BE 1500 UPVC OR EQUAL TO THE DOWNPIPE SIZE, WHICHEVER IS GREATER, UNLESS SHOWN OTHERWISE. DOWNPIPE CONNECTIONS TO THE MAIN STORMWATER DRAINAGE SHALL BE VIA A 45° OBLIQUE JUNCTION OR BANDAGE JOINT AS DETAILED OR DIRECT TO A STORMWATER PIT. SUSPENDED DOWNPIPE CONNECTIONS WITHIN THE BUILDING ARE TO BE SUPPORTED WITH APPROVED HANGERS AT 1.2m CENTRES. THE ALIGNMENT OF SUSPENDED DRAINS IS SCHEMATIC ONLY. THE FINAL

ALIGNMENT IS TO COMPLY WITH THE ARCHITECTURAL PLANS.

4.20 ALL MAIN STORMWATER DRAINS SHALL BE CONSTRUCTED USING ONE OF THE FOLLOWING TYPES OF PIPES WITH RUBBER RING JOINTS.

A) 3000 AND ABOVE, MIN. CLASS 2 RCP OR SHOWN OTHERWISE ON PLAN IN ACCORDANCE WITH AS4058 B) 1000 STIFFNESS S910. 1500 AND ABOVE STIFFNESS S98 P.V.C. IN ACCORDANCE WITH AS1260 C) CLASS 2 F.R.C. OR SHOWN OTHERWISE ON PLAN TO AS4139 D) IF U.P.V.C. OR OTHER PIPES ARE TO BE USED, APPROVAL MUST BE GIVEN BY THE SUPERINTENDENT. E) ALL STORMWATER DRAINAGE PIPES 2250 AND LESS TO BE SEWER QUALITY UPVC WITH SOLVENT WELDED JOINTS, UNLESS NOTED OTHERWISE.

4.21 FOR SYPHONIC ROOF DRAINAGE SYSTEMS, REFER TO HYDRAULIC DRAWINGS FOR SIZE OF ALL CONNECTIONS BETWEEN DOWNPIPES AND MAIN STORMWATER DRAINS. THE CONNECTOR TO THE STORMWATER SYSTEM SHALL HAVE THREE TIMES THE CAPACITY OF THE FLOW RATE FROM THE SYPHONIC SYSTEM.

4.22 FOR SUBSIDI DRAINAGE, 1000 CLASS 1000 IN THE ROAD RESERVE AND CLASS 400 UPVC AGI (AG) DRAINS ELSEWHERE WITH 20mm N.S. SCREENINGS BACKFILL SHALL BE INSTALLED BEHIND ALL KERBING AND RETAINING WALLS UNLESS OTHERWISE NOTED. AT MINIMUM GRADE OF 1 IN 250 AND CONNECTED TO THE NEAREST DRAIN OR PIT. WHERE AGI DRAINS PASS UNDER SLABS OR PAVEMENTS, UNSLOTTED SECTIONS OF PIPE ARE TO BE USED.

4.23 THE CONTRACTOR SHALL ENSURE THAT CONSTRUCTION MACHINERY DOES NOT TRAFFIC DIRECTLY OVER STORMWATER DRAINAGE. WHERE THIS IS NOT POSSIBLE, ENSURE THAT MINIMUM 300mm COVER IS PROVIDED OVER THE STORMWATER DRAINAGE FOR THE DURATION OF THE WORKS. WHERE MINIMUM COVER OVER STORMWATER DRAINAGE IS NOT AVAILABLE, THE CONTRACTOR SHALL USE APPROPRIATE MEASURES TO PROTECT THE INTEGRITY OF THE PIPE OR INCREASE THE CLASS OF THE PIPE.

4.24 FOR BASEMENTS WITHIN THE GROUNDWATER TABLE, ALL STORMWATER DRAINAGE CONNECTIONS ARE TO BE SEALED WITH AN APPROVED SEALANT TO PREVENT GROUNDWATER INGRESS INTO THE DRAINAGE SYSTEM, AND FIXED IN PLACE TO PREVENT FLOTATION DUE TO BUOYANCY, UNLESS NOTED OTHERWISE.

4.25 UNLESS NOTED OTHERWISE, GROUNDWATER IS NOT TO BE DISCHARGED INTO THE LOCAL STORMWATER SYSTEM IN THE PERMANENT CONDITION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN A TRADE WASTE AGREEMENT WITH THE RELEVANT AUTHORITY FOR THE TEMPORARY DISCHARGE OF GROUNDWATER DURING CONSTRUCTION.

4.26 IN CIRCUMSTANCES WHERE FIRE TEST DRAINS HAVE BEEN CONNECTED TO THE STORMWATER SYSTEM, TESTS CANNOT BE CARRIED OUT WITHIN ONE HOUR OF A STORM EVENT.

4.27 OUTFALL DRAINAGE CONNECTION INVERT LEVELS ARE TO BE VERIFIED & CONFIRMED ON SITE PRIOR TO COMMENCEMENT OF ANY WORKS ON SITE. ANY DISCREPANCIES TO BE NOTIFIED TO THE SUPERINTENDENT.

4.28 SUPPLY APPARATUS AND MATERIALS NECESSARY FOR, AND CARRY OUT THE TESTS REQUIRED BY THE SPECIFICATION OR REGULATORY AUTHORITIES. IN THE PRESENCE OF THE SUPERINTENDENT AND THE RELEVANT AUTHORITY, LEAVE PIPE JOINTS EXPOSED TO ENABLE OBSERVATION DURING THE TESTS. ENSURE PVC SOLVENT CEMENT JOINTS HAVE BEEN CURED FOR AT LEAST 24 HOURS BEFORE TESTING.

4.29 THE CONTRACTOR SHALL PRESSURE TEST WITH WATER, ALL STORMWATER PIPEWORK IN OR UNDER THE STRUCTURE, IN ACCORDANCE WITH AS 3500.3.

4.30 WHERE WATER TANKS ARE SPECIFIED, APPROPRIATE FILTERS ARE TO BE INCORPORATED TO ENSURE GROSS POLLUTANTS AND LITTER ARE PREVENTED FROM ENTERING THE TANKS. NOMINAL APERTURE SIZE OF 5mm IS RECOMMENDED. AN EFFECTIVE MAINTENANCE PROGRAM INCLUDING REGULAR CLEANING OF FILTERS IS TO BE ADOPTED TO ENSURE SYSTEM REMAINS FULLY FUNCTIONAL.

4.31 PROPRIETARY STORMWATER FILTRATION/TREATMENT SYSTEMS AND PUMPS ARE TO BE INSTALLED AND CONSTRUCTED IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS.

4.32 FOR SITES WHERE STORMWATER INFRASTRUCTURE IS CONSIDERED A LIGATURE RISK, THE CONTRACTOR IS RESPONSIBLE FOR PROCURING SUITABLE ANTI-LIGATURE PRODUCTS FOR PIT LIDS, GRATES, ETC.

## 5. CONCRETE

5.1 ALL WORKMANSHIP AND CONCRETE MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE FOLLOWING AUSTRALIAN STANDARDS AS APPLICABLE. THE SPECIFICATION AND DETAILS ON THE DRAWINGS UNLESS INSTRUCTED OTHERWISE BY THE SUPERINTENDENT: - AS 1012 METHODS OF TESTING CONCRETE - AS 2758-1 DENSE NATURAL AGGREGATES - AS 1478 CHEMICAL ADMIXTURES FOR USE IN CONCRETE - AS 1379 READY MIXED CONCRETE - AS 3972 PORTLAND AND BLENDED CEMENTS - AS 1302 STEEL REINFORCING BARS FOR CONCRETE - AS 1303 HARD DRAWN STEEL REINFORCING WIRE FOR CONCRETE - AS 1304 HARD DRAWN STEEL WIRE REINFORCING FABRIC FOR CONCRETE - AS 3600 CONCRETE STRUCTURES - AS 3610 FORMWORK FOR CONCRETE - THE WATER USED SHALL BE FREE OF ALL SUBSTANCES HARMFUL TO CONCRETE AND ITS REINFORCEMENT. ADMIXTURES SHALL NOT BE USED WITHOUT WRITTEN PERMISSION FROM THE SUPERINTENDENT. ALL CONCRETE SHALL BE READY MIXED CONCRETE.

5.2 UNLESS OTHERWISE SPECIFIED, SHOWN ON THE DRAWINGS, OR DIRECTED BY THE SUPERINTENDENT, REINFORCEMENT FOR CONCRETE SHALL BE FREE FROM ANY COATING WHICH WILL REDUCE, OR PREVENT BONDING OF THE CONCRETE TO THE STEEL.

5.3 UNLESS OTHERWISE SHOWN ON THE DRAWINGS, THE MINIMUM CLEAR COVER TO REINFORCEMENT SHALL BE 1.5 TIMES THE DIAMETER OF THE BARS OR 40mm, WHICHEVER IS GREATER, AND 80mm COVER IN GROUNDWATER OR COASTAL AREAS.

5.4 ALL KERBS, KERB & CHANNEL, SPOON DRAINS ETC. SHALL BE LAID OVER 75mm MINIMUM DEPTH OF COMPACTED CLASS 2 CRUSHED ROCK, UNLESS SHOWN OTHERWISE ON THE DRAWINGS.

5.5 WHERE REQUIRED MATCH ALL NEW KERBS TO EXISTING LEVEL NEATLY, ENSURING MINIMUM 1 IN 200 GRADE. SAW CUTTING AND REINSTATING PAVEMENT IN FRONT OF KERB TO FALL TOWARDS OR AWAY FROM NEW KERB LEVEL.

5.6 SCHEDULE OF CONCRETE PROPERTIES TO BE USED FOR THE PARTICULAR SECTION OF WORK SHALL BE AS FOLLOWS UNLESS STATED OTHERWISE INSTRUCTED OR SHOWN ON THE DRAWINGS: (MIX DESIGNS SHALL BE SUBMITTED BY THE CONTRACTOR TO THE SUPERINTENDENT FOR INSPECTION 28 DAYS PRIOR TO POUR).

LOCATION	GRADE (MPa)	MAX. AGGREGATE (mm)	SLUMP (mm)
KERBS, PITS, HEADWALLS	N25	20	80 ±15
FOOTPATHS, RETAINING WALLS	N32	20	80 ±15
VEHICULAR PAVEMENT	N32 TYPE 1	20	80 ±15

TYPE 1 CONCRETE SHALL HAVE THE PROPERTIES OF NORMAL N32 CONCRETE WITH A FLEXURAL STRENGTH OF FT=4.4MPa

5.7 ALL REINFORCEMENT IN SLABS AND BEAMS SHALL BE SUPPORTED ON CHAIRS TO GIVE THE REQUIRED COVER. SPACING OF REINFORCEMENT CHAIRS SHALL NOT EXCEED 800mm IN ANY DIRECTION.

5.8 MINIMUM LAPS FOR REINFORCEMENT SHALL BE AS FOLLOWS, UNLESS NOTED OTHERWISE:

FABRIC	2 CROSS WIRES + 25mm.		
N12:	400mm.	N24:	1100mm
N16:	600mm.	N28:	1350mm
N20:	800mm.	N32:	1500mm
COG AND HOOK PIN DIAMETERS AND OVERALL DIMENSIONS SHALL BE AS PER THE REQUIREMENTS OF AS 3600 UNLESS NOTED OTHERWISE.			

5.9 ALL BAR CRANKS SHALL BE NO GREATER THAN 1 IN 6, UNLESS NOTED OTHERWISE. REINFORCEMENT GRADES SHALL BE AS FOLLOWS:

BARS:	GRADE 500N TO ASINZS 4671.
FABRIC:	HARD DRAWN WIRE FABRIC TO ASINZS 4671.
LIGS & TIES:	HARD DRAWN WIRE, GRADE 450W, TO ASINZS 4671.
ANY STEELWORK SOURCED FROM MILLS LOCATED OUTSIDE AUSTRALIA ARE TO BE PROVIDED WITH CERTIFICATES PROVING ABOVE REQUIREMENTS VERIFIED BY NATA REGISTERED ORGANISATIONS.	

5.10 CONSTRUCTION JOINTS, WHERE NOT SHOWN ON THE DRAWINGS, SHALL BE LOCATED TO THE APPROVAL OF THE SUPERINTENDENT.

5.11 THE MINIMUM CLEAR SPACING BETWEEN CONDUITS, CABLES, PIPES AND BARS SHALL BE AS REQUIRED BY AS 3600 BUT NOT LESS THAN THREE DIAMETERS HORIZONTALLY FOR HORIZONTAL CONDUITS, ETC. IN SLABS, WALLS AND FOOTINGS AND NOT LESS THAN ONE DIAMETER FOR ALL OTHER CONDUITS, ETC.

ALL PRIMARY REINFORCEMENT SHALL BE PLACED OUTERMOST.

5.12 CONCRETE SHALL NOT BE PLACED UNTIL THE SUPERINTENDENT HAS EXAMINED BOTH FORMWORK AND REINFORCEMENT IN PLACE AND GIVEN THEIR CONSENT TO PROCEED. 48 HOURS NOTICE SHALL BE GIVEN TO THE SUPERINTENDENT BEFORE PLACEMENT OF ANY CONCRETE HAS COMMENCED. CONCRETE SHALL NOT BE PLACED UNDER WATER OR DROPPED THROUGH A DISTANCE GREATER THAN 1.5m WITHOUT THE CONSENT OF THE SUPERINTENDENT.

DURING AND IMMEDIATELY AFTER THE PLACING OPERATION CONCRETE SHALL BE THOROUGHLY COMPACTED BY TAMPING, VIBRATION OR OTHER MEANS APPROVED BY THE SUPERINTENDENT. THE CONCRETE SHALL BE SPRAYED WITH AN APPROVED CURING MEMBRANE SUCH AS CONCLURE WB, IN STRICT ACCORDANCE WITH THE MANUFACTURERS SPECIFICATION.

## 6. CONCRETE JOINTING

6.1 THE JOINTS IN THE NEW WORK SHALL COINCIDE WITH THOSE IN ABUTTING CONCRETE PAVING, OR OTHER JOINED WORK, WHICH IS EITHER EXISTING OR PROPOSED. IF THE SPACING OF THE JOINTS IN EXISTING OR PROPOSED WORK IS VERY MUCH GREATER THAN THAT SPECIFIED FOR THE NEW WORK THEN ONE OR MORE EQUALLY SPACED JOINTS SHALL BE MADE IN THE NEW WORK BETWEEN EXISTING OR PROPOSED JOINTS SUCH THAT THE SPECIFIED SPACING WILL BE RETAINED AS NEATLY AS POSSIBLE.

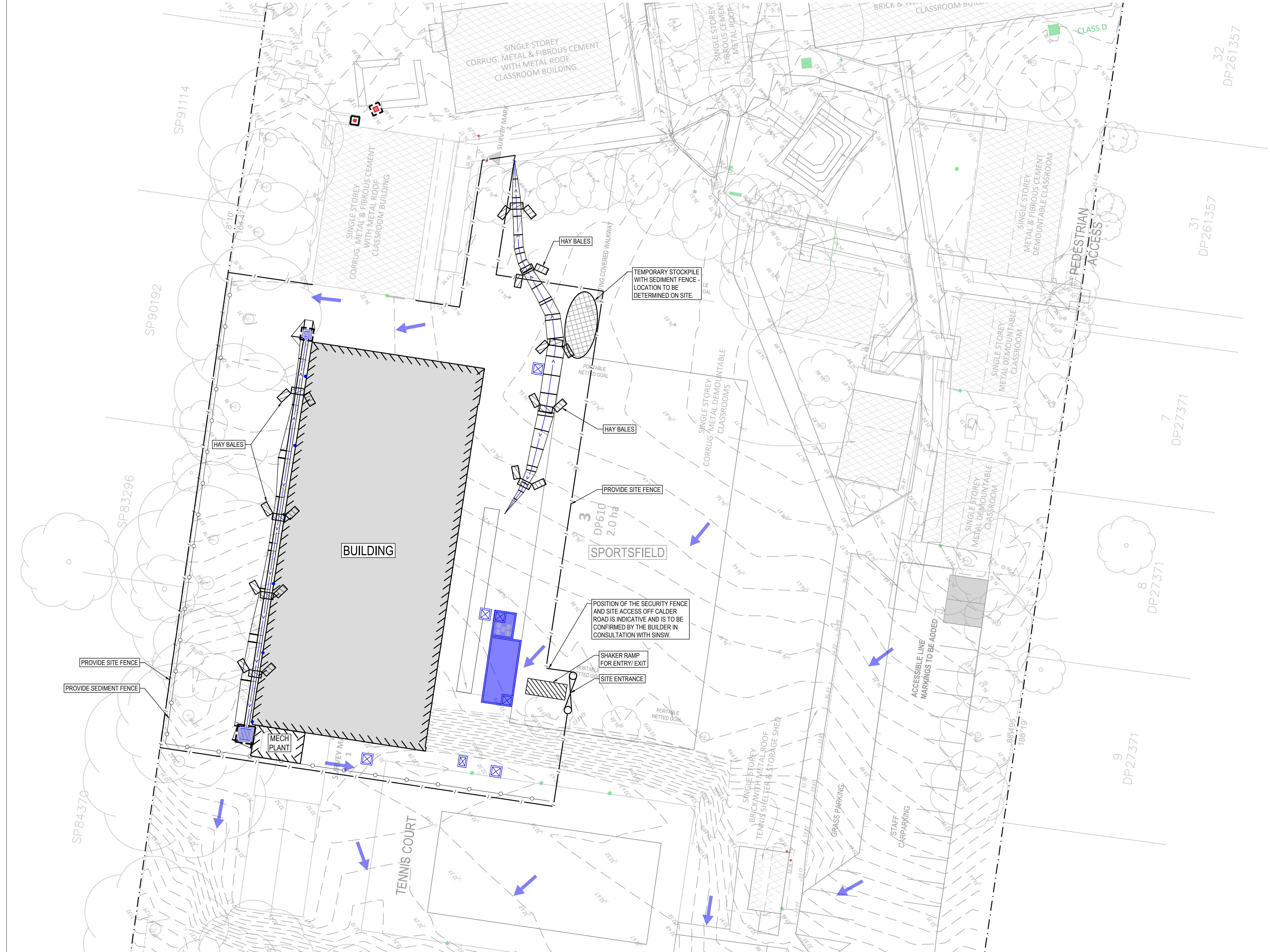
6.2 2 X N12 DIAGONAL CORNER BARS 1200 LONG ARE REQUIRED AT ALL RE-ENTRANT CORNERS OF OPENINGS IN FOOTPATHS.

### 6.3 EDGINGS

WHEN USING AN EXTRUSION MACHINE THE JOINTS SHALL BE MADE BY A METHOD APPROVED BY THE SUPERINTENDENT. WHEN USING FORMWORK, THEY SHALL CONSIST OF 3mm THICK STEEL PLATE PROFILED TO MATCH THE ITEM BEING CONSTRUCTED AND SHALL

HAVE AN AREA NOT LESS THAN 75% OF THE SECTION BEING CONSTRUCTED. AS SOON AS IT IS PRACTICABLE AFTER THE FINISHING OF ANY WORK, THE TEMPLATES SHALL BE REMOVED AND THE RESULTANT GAP FINISHED WITH A GROOVING TOOL TO A DEPTH OF NOT LESS THAN 25mm TO PRODUCE A NEAT GROOVE WITH ROUNDED ARISING. JOINTS SHALL BE AT REGULAR INTERVALS AND THE SPACING BETWEEN JOINTS SHALL NOT EXCEED 3 METRES WITHOUT THE APPROVAL OF THE SUPERINTENDENT.





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 ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO  
 GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

DRAWN D.J	DESIGNED M.D	CHECKED Y.C	APPROVED	DATE SEPT 2024	SCALE @ A1 1:200
PROJECT No 132564		DRAWING No DUPS-MHT-00-00-DR-C-0060			REV P3



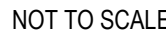
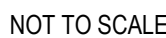
1. IT HAS BEEN ASSUMED THAT HOARDINGS/SILT FENCING WILL BE PROVIDED TO THE STAGE BOUNDARY SUFFICIENT TO PREVENT SEDIMENT RUNOFF FROM LEAVING SITE (EXCEPT IN THE CASE OF ENTRY/EXIT LOCATIONS WHERE TEMPORARY CONSTRUCTION ENTRY/EXIT SEDIMENT TRAP ARE PROVIDED). IF THIS IS NOT THE CASE, PROVIDE SEDIMENT FENCE TO STANDARD DETAIL BELOW AS REQUIRED TO PREVENT SEDIMENT FROM LEAVING SITE, DIRECT RUNOFF TO SEDIMENT BASIN.
2. ALL SEDIMENT CONTROL MEASURES TO BE INSTALLED IN ACCORDANCE WITH LANDCOM MANAGING URBAN STORMWATER "BLUE BOOK".
3. MINIMISE CLEARING OUTSIDE BASEMENT EXTENT AND IN ACCORDANCE WITH THE ARBORIST REPORT.
4. SEDIMENT CONTROL FOR LANDSCAPED WORKS DOWNSTREAM OF THE BUILDING TO INCLUDE A SILTFENCE AND SANDBAGS AS REQUIRED. INSTALL BUND TO DIRECT UPSTREAM CATCHMENT AWAY FROM DISTURBED SOIL AREA. TO BE MANAGED AT A RATE OF 166L/PER HA BY THE CONTRACTOR ON SITE.

1. SEDIMENT FENCES WILL BE INSTALLED AS SHOWN AND ELSEWHERE AT THE DISCRETION OF THE SITE MANAGER TO CONTAIN COARSER SEDIMENT FRACTIONS INCLUDING AGGREGATED FINES) AS NEAR AS POSSIBLE TO THEIR SOURCE.
2. SEDIMENT REMOVED FROM ANY TRAPPING DEVICE WILL BE RELOCATED WHERE FURTHER POLLUTION TO DOWNSLOPE LANDS & WATERWAYS CANNOT OCCUR.
3. STOCKPILES WILL BE PLACED WHERE SHOWN ON DRAWING OR ELSEWHERE AT THE DISCRETION OF THE SITE MANAGER AND NOT WITHIN 5m OF HAZARD AREAS INCLUDING LIKELY AREAS OF HIGH VELOCITY FLOWS SUCH AS WATERWAYS, PAVED AREAS & DRIVEWAYS.
4. WATER WILL BE PREVENTED FROM DIRECTLY ENTERING THE PERMANENT DRAINAGE SYSTEM WITH INLET FILTERS (SEE DETAILS) UNLESS IT IS SEDIMENT FREE.
5. TEMPORARY SEDIMENT TRAPS WILL BE RETAINED UNTIL AFTER THE LANDS THEY ARE PROTECTING ARE COMPLETELY REHABILITATED.
6. CONTRACTOR TO DESIGN/SIZE/CONSTRUCT TEMPORARY SEDIMENT BASIN. WATER SHOULD BE ALLOWED TO SETTLE BEFORE DISCHARGE. CONTRACTOR MUST VERIFY THAT WATER QUALITY MEETS AUTHORITIES REQUIREMENTS PRIOR TO DISCHARGE. ACCUMULATED SEDIMENT SHOULD THEN BE REMOVED & DISPOSED OF IN ACCORDANCE WITH ENVIRONMENTAL MANAGEMENT PROCEDURES.

1. ENSURE THAT DRAINS OPERATE PROPERLY & TO EFFECT ANY NECESSARY REPAIRS
2. REMOVE SPILLED SAND OR OTHER MATERIALS FROM HAZARD AREAS, INCLUDING LANDS CLOSER THAN 500' TO AREAS OF LIKELY CONCENTRATED OR HIGH VELOCITY FLOWS ESPECIALLY WATERWAYS & PAVED AREAS.
3. REMOVE TRAPPED SEDIMENT WHENEVER LESS THAN DESIGN CAPACITY REMAINS WITHIN THE STRUCTURE
4. ENSURE REHABILITATED LANDS HAVE EFFECTIVELY REDUCED THE EROSION HAZARD AND TO INITIATE UPGRADING OR REPAIR AS APPROPRIATE.
5. CONSTRUCT ADDITIONAL EROSION AND/OR SEDIMENT CONTROL WORKS AS MIGHT BECOME NECESSARY TO ENSURE THE DESIRED PROTECTION IS GIVEN TO DOWNSLOPE LANDS AND WATERWAYS.
6. MAINTAIN EROSION & SEDIMENT CONTROL MEASURES IN A FULLY FUNCTIONING CONDITION UNTIL ALL EARTHWORK ACTIVITIES ARE COMPLETED AND THE SITE IS REHABILITATED.
7. REMOVE TEMPORARY SOIL CONSERVATION STRUCTURES AS THE LAST ACTIVITY IN THE REHABILITATION PROGRAM.

1. THE VOLUME & INTENSITY OF ANY RAINFALL EVENTS
2. THE CONDITION OF ANY SOIL & WATER MANAGEMENT WORKS
3. THE CONDITION OF VEGETATION & ANY NEED TO IRRIGATE
4. THE NEED FOR DUST PREVENTION STRATEGIES
5. ANY REMEDIAL WORKS TO BE UNDERTAKEN

ALL SURFACE WATER TO BE EITHER DIVERTED INTO SWALE OR DIRECTED TOWARDS SEDIMENTATION TANK TO PREVENT ATER INFILTRATION TOWARDS TUNNELS AS DOCUMENTED ON THIS SHEET.



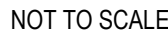
1. INSTALL THIS TYPE OF SEDIMENT FENCE WHEN USE OF SUPPORT POSTS IS NOT DESIRABLE OR NOT POSSIBLE. SUCH CONDITIONS MIGHT APPLY, FOR EXAMPLE, WHERE APPROVAL IS GRANTED FROM THE APPROPRIATE AUTHORITIES TO PLACE THESE FENCES IN HIGHLY SENSITIVE ESTUARINE AREAS.
2. USE BENT TRENCH MESH TO SUPPORT THE F82 WELDED MESH FACING AS SHOWN ON THE DRAWING ABOVE. ATTACH THE JUTE MESH TO THE WELDED MESH FACING USING UV-RESISTANT CABLE TIES.
3. STABILISE THE WHOLE STRUCTURE WITH SANDBAG OR ROCK ANCHORING OVER THE TRENCH MESH AND THE LEADING EDGE OF THE JUTE MESH. THE ANCHORING SHOULD BE SUFFICIENTLY LARGE TO ENSURE STABILITY OF THE STRUCTURE IN THE DESIGN STORM EVENT, USUALLY THE 10 YEAR EVENT.



NOT TO SCALE



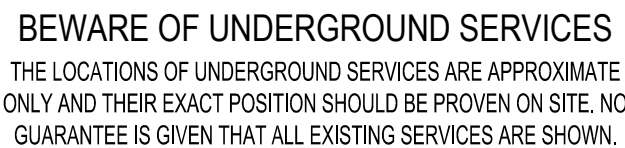
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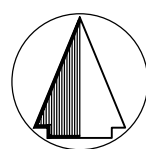
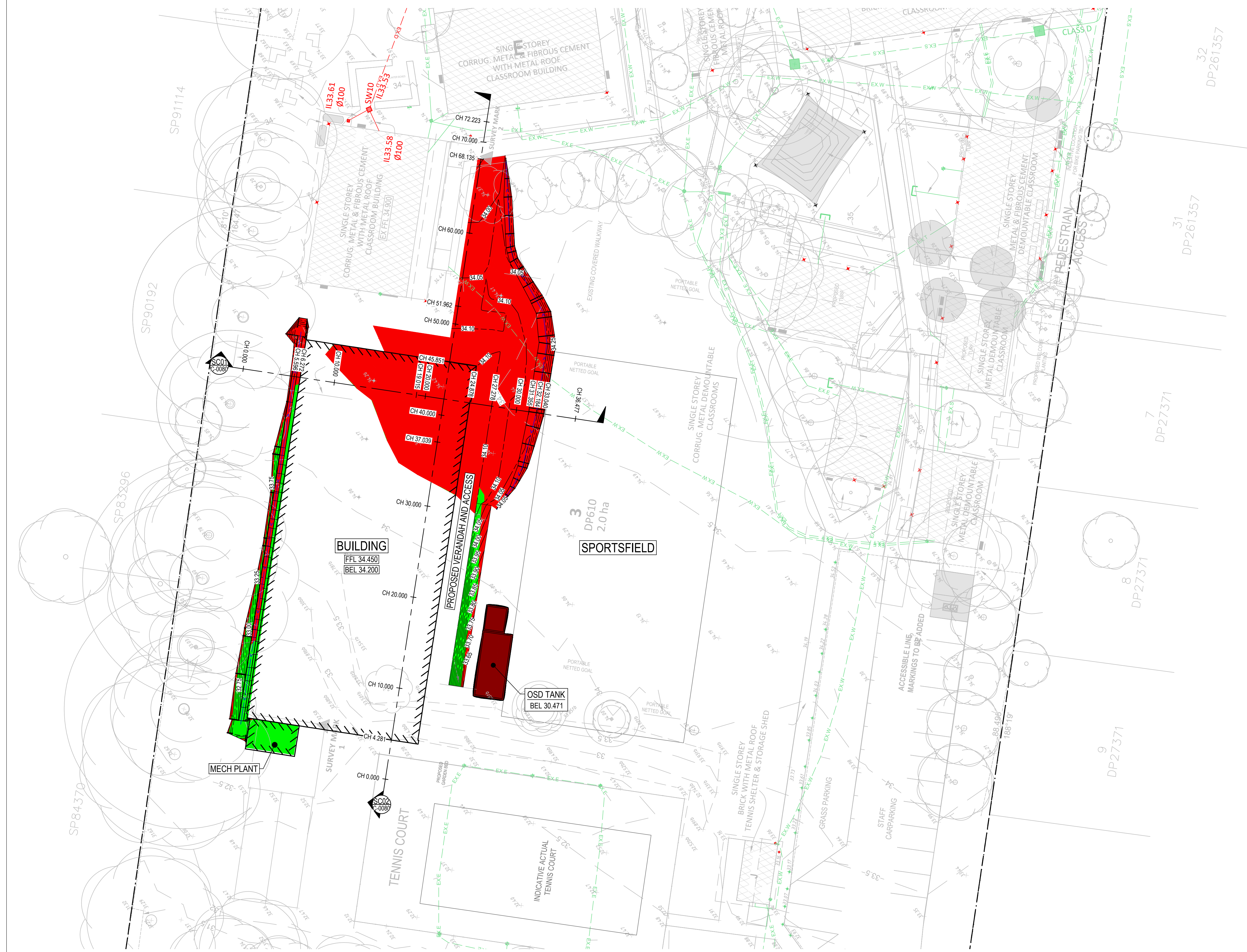


NOT TO SCALE



AMH PLOT TIME: 18 Dec 2024, 12:18pm





BULK EARTHWORKS			
ID	MIN. ELEVATION	MAX. ELEVATION	COLOUR
1	-4.000m	-3.500m	
2	-3.500m	-3.000m	
3	-3.000m	-2.500m	
4	-2.500m	-2.000m	
5	-2.000m	-1.500m	
6	-1.500m	-1.000m	
7	-1.000m	-0.500m	
8	-0.500m	0.000m	
9	0.000m	0.500m	
10	0.500m	1.000m	
11	1.000m	1.500m	
12	1.500m	2.000m	

LEGEND	
ITEM	DESCRIPTION
	EXISTING SURFACE CONTOURS
	PROPOSED SURFACE CONTOURS
	EXISTING SURFACE SPOT LEVELS
	TITLE BOUNDARY
	PROPOSED SPOON DRAIN
	EXISTING STORMWATER DRAIN
	EXISTING STORMWATER PIT
	EXISTING STORMWATER PIT TO BE MODIFIED
	EXISTING SEWER
	EXISTING GAS
	EXISTING WATER
	EXISTING RECYCLED WATER
	EXISTING ELECTRICITY
	EXISTING OVERHEAD ELECTRICITY
	EXISTING LOW VOLTAGE ELECTRICITY
	EXISTING HIGH VOLTAGE ELECTRICITY
	EXISTING TELECOM CABLE
	EXISTING FIBRE OPTIC CABLE
	EXISTING NBN COMMS CABLE
	EXISTING FEATURES TO BE REMOVED

EARTHWORKS QUANTITIES	
150mm STRIPPED VOLUME =	89m³
(BUILDING AREA ONLY)	
TOTAL CUT VOLUME =	175m³
TOTAL FILL VOLUME =	9m³
NET EXPORT VOLUME =	166m³
(NET VOLUME EXCLUDES STRIPPED SOIL, AS THIS IS ASSUMED TO BE REMOVED FROM SITE)	

EARTHWORKS SUMMARY	
NOTES:	
1.	BULK EARTHWORKS VOLUME IS BULK EARTHWORKS SURFACE MINUS THE FOLLOWING:
•	STRIPPED NATURAL SURFACE (150mm)
2.	EXCLUDES COMPACTION FACTORS
3.	ALL BATTERS TO BE 1 IN 2 MAX UNLESS NOTED OTHERWISE
4.	THE ABOVE VOLUMES ARE APPROXIMATE ONLY. IT IS RESPONSIBILITY OF THE TENDERERS TO CONFIRM THE SCOPE OF WORKS, CONDUCT OWN EARTHWORK CHECK AND CONFIRM ACCURACY.
5.	ASSUMED BULK EARTHWORKS DEPTH FOR BUILDING IS 250mm (BUILDING SLAB THICKNESS PLUS BEDDING THICKNESS).

THESE PLANS ARE BASED UPON THE EXISTING CONDITIONS  
SURVEY PREPARED BY SDG PTY LTD, REFERENCE No 9010 REV A  
DATED 11 SEPTEMBER 2024.

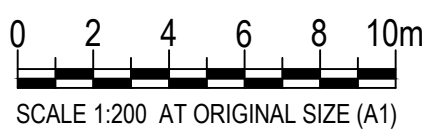
THESE DESIGN PLANS SHALL BE READ IN CONJUNCTION WITH GEOTECHNICAL REPORT No. A201023.0722.03\_A v 11 DATED 28 FEBRUARY 2024 PREPARED BY ADE CONSULTING GROUP. THE PROVISIONS AND RECOMMENDATIONS CONTAINED WITHIN THE REPORT ARE TO BE STRICTLY COMPLIED WITH. ALL COMPACTION REQUIREMENT RESULTS SHALL BE CARRIED OUT IN ACCORDANCE WITH GEOTECHNICAL REPORT RECOMMENDATIONS.



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REV	DESCRIPTION	BY	DES	CHKD	DATE
P1	ISSUED FOR 75% SCHEMATIC DESIGN	D.J.	M.D.	Y.C.	22.11.24
P2	ISSUED FOR 100% SCHEMATIC DESIGN	D.J.	M.D.	Y.C.	18.12.24
P3	ISSUED FOR 100% SCHEMATIC DESIGN	D.J.	M.D.	Y.C.	13.01.25



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info@meinhardtgroup.com  
http://www.meinhardtgroup.com  
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CLIENT	
	School Infrastructure NSW
TITLE	
BULK EARTHWORKS PLAN	

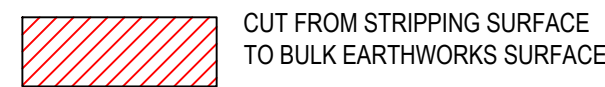
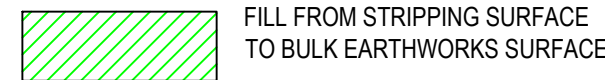
PROJECT  
DUNDAS PUBLIC SCHOOL  
85 KISSING POINT ROAD, DUNDAS NSW 2117

STATUS  
**SCHEMATIC DESIGN**  
NOT TO BE USED FOR CONSTRUCTION

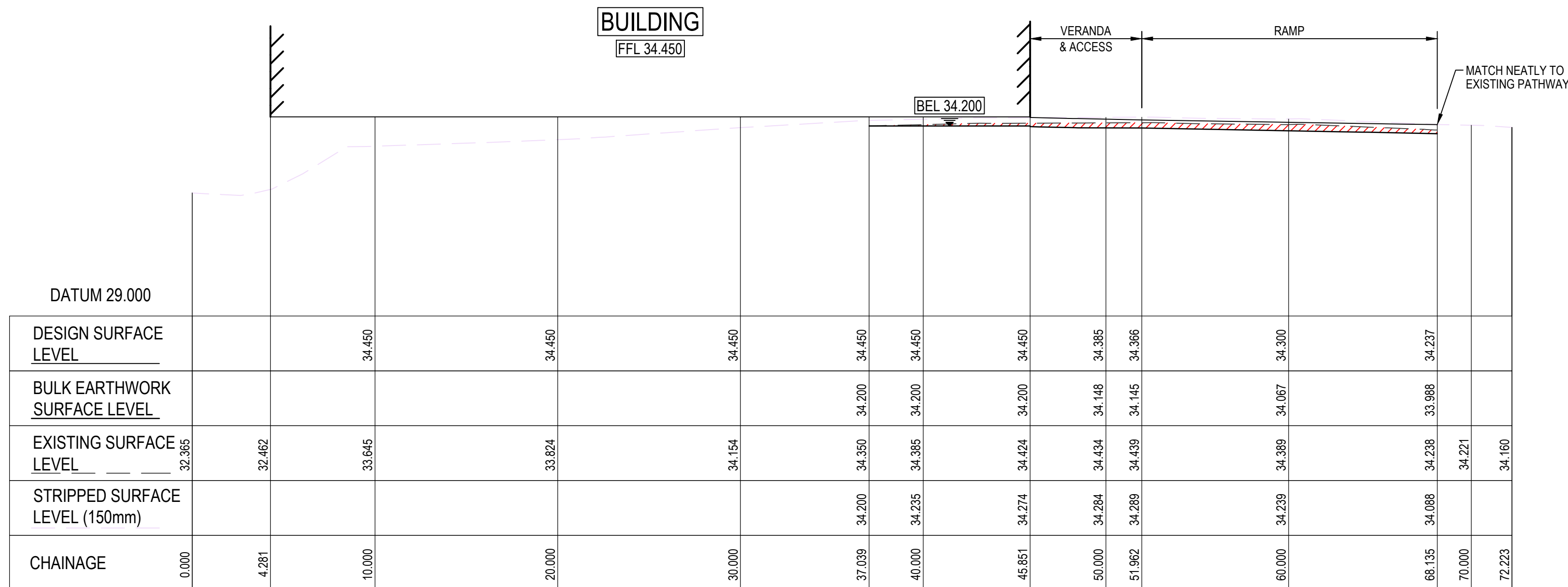
DRAWN	DESIGNED	CHECKED	APPROVED	DATE	SCALE @ A1
D.J.	M.D.	Y.C.		SEPT 2024	1:200
PROJECT No		DRAWING No		REV	
132564		DUPS-MHT-00-00-DR-C-0070		P3	



### LEGEND



REFER TO STRUCTURAL  
DRG FOR SUSPENDED SLAB  
AND FOUNDATION DETAILS.

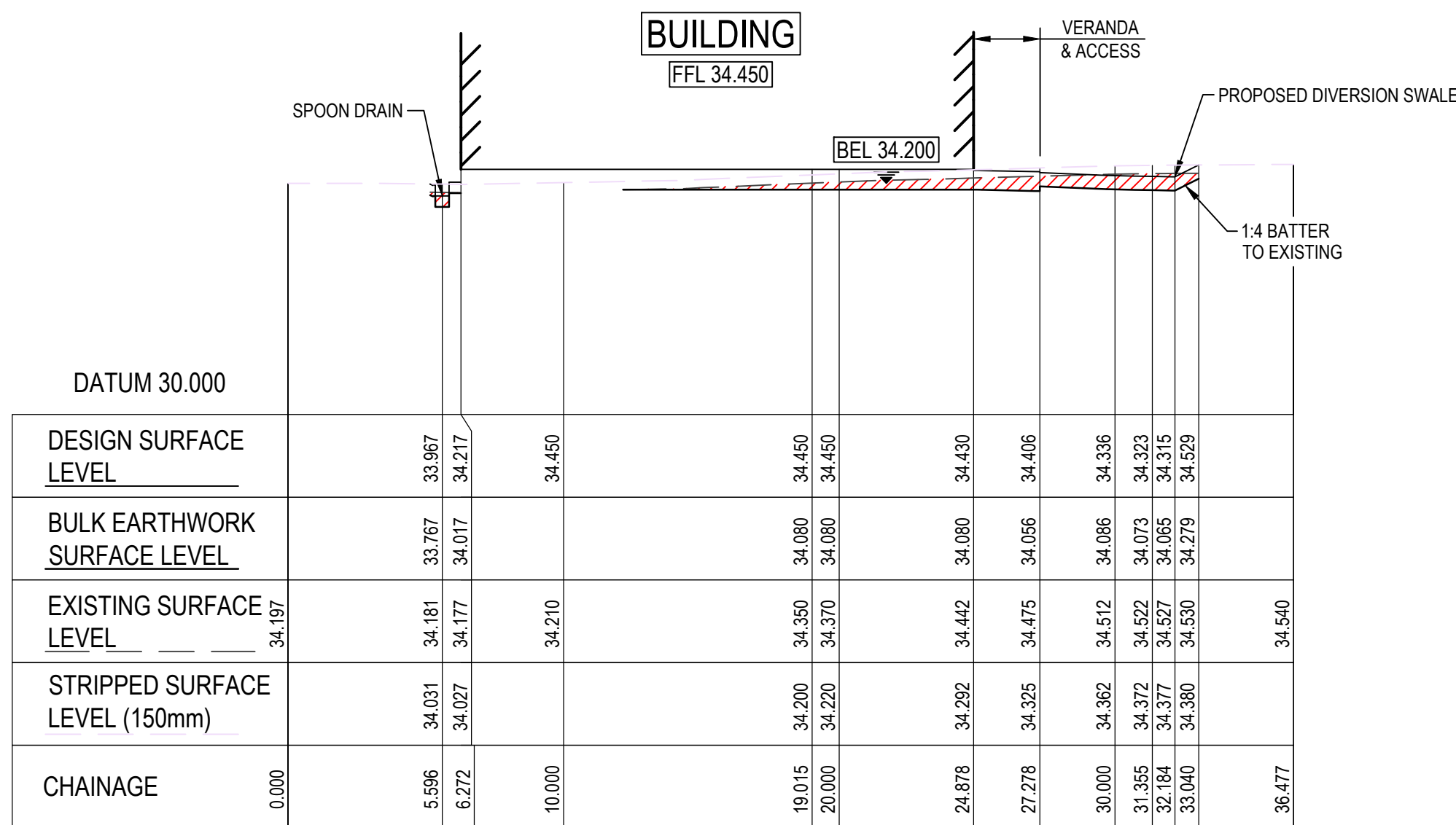


SECTION SC02

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C-0070

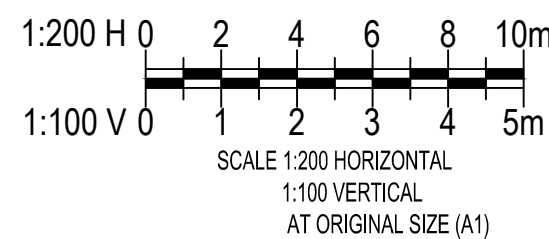
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DRG FOR SUSPENDED SLAB  
AND FOUNDATION DETAILS.



SECTION SC01

1:200 (H)  
1:100 (V)

C-0070

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**Meinhardt Infrastructure and Environment PTY. LTD.**  
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**School Infrastructure NSW**

TITLE  
BULK EARTHWORKS  
LONGITUDINAL SECTIONS

PROJECT

DUNDAS PUBLIC SCHOOL  
85 KISSING POINT ROAD, DUNDAS NSW 2117

STATUS
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**SCHEMATIC DESIGN**  
NOT TO BE USED FOR CONSTRUCTION

DRAWN

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CHECKED

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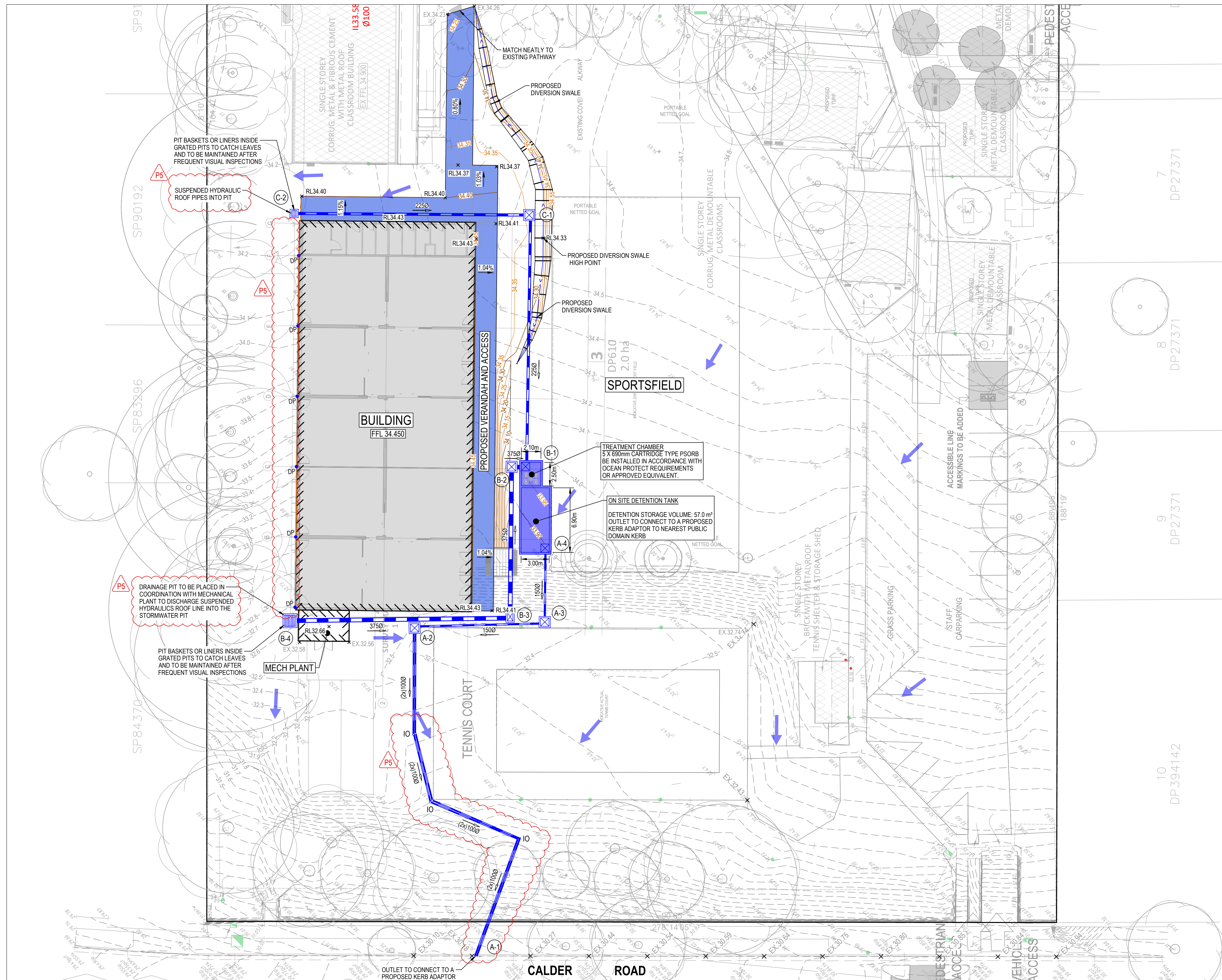
SCALE @ A1

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REV

REV  
D0





LEGEND	
ITEM	DESCRIPTION
156.6	EXISTING SURFACE CONTOURS
156.6	PROPOSED SURFACE CONTOURS
+156.60	EXISTING SURFACE SPOT LEVELS
+156.600	PROPOSED SURFACE SPOT LEVELS
- - -	TITLE BOUNDARY
RW	PROPOSED RETAINING WALL
EX.D	EXISTING STORMWATER DRAIN
2250	PROPOSED STORMWATER DRAIN AND FLOW DIRECTION
SYNCHONIC CONNECTION (REFER HYDRAULIC ENGINEERS DRG'S)	
AG	PROPOSED 1000 UPVC AGRICULTURAL DRAIN CLASS 400
>	PROPOSED SPOON DRAIN
⊕	EXISTING STORMWATER PIT
⊕	EXISTING STORMWATER PIT TO BE MODIFIED
⊕	PROPOSED STORMWATER PIT
GI	1000 GRATED INLET (UNLESS NOTED OTHERWISE)
DP	DOWNPIPE
IO	INSPECTION OPENING
TG	TRENCH GRATE
→	OVERLAND FLOW ARROW
	LIGHT DUTY CONCRETE PAVEMENT-PEDESTRIAN
EX.S	EXISTING SEWER
EX.G	EXISTING GAS
EX.W	EXISTING WATER
EX.W(R)	EXISTING RECYCLED WATER
EX.E	EXISTING ELECTRICITY
EX.E OH	EXISTING OVERHEAD ELECTRICITY
EX.E LV	EXISTING LOW VOLTAGE ELECTRICITY
EX.E HV	EXISTING HIGH VOLTAGE ELECTRICITY
EX.T	EXISTING TELECOM CABLE
EX.FD	EXISTING FIBRE OPTIC CABLE
EX.NBN	EXISTING NBN COMMS CABLE
X	EXISTING FEATURES TO BE REMOVED

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SURVEY PREPARED BY SDG PTY LTD, REFERENCE No 9010 REV A  
DATED 11 SEPTEMBER 2024.

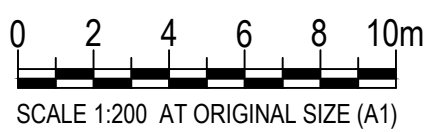
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REPORT No. A201023.0722.03, A v 1f DATED 28 FEBRUARY 2024 PREPARED BY  
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THE LOCATIONS OF UNDERGROUND SERVICES ARE APPROXIMATE  
ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO  
GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

REV	DESCRIPTION	BY	DES	CHKD	DATE
P1	ISSUED FOR 75% SCHEMATIC DESIGN	D.J.	M.D.	Y.C.	22.11.24
P2	ISSUED FOR 100% SCHEMATIC DESIGN	D.J.	M.D.	Y.C.	18.12.24
P3	ISSUED FOR 100% SCHEMATIC DESIGN	D.J.	M.D.	Y.C.	13.01.25
P4	FOR COORDINATION	D.J.	M.D.	Y.C.	17.02.25
P5	UPDATE AFTER ARBORIST REVIEW OF TPZ	D.J.	M.D.	Y.C.	19.02.25



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CLIENT  
 School Infrastructure NSW  
TITLE  
CIVIL SITWORKS PLAN

PROJECT  
DUNDAS PUBLIC SCHOOL  
85 KISSING POINT ROAD, DUNDAS NSW 2117

STATUS  
**SCHEMATIC DESIGN**  
NOT TO BE USED FOR CONSTRUCTION

DRAWN	DESIGNED	CHECKED	APPROVED	DATE	SCALE @ A1
D.J.	M.D.	Y.C.		SEPT 2024	1:200
PROJECT No 132564		DRAWING No DUPS-MHT-00-00-DR-C-0101		REV P5	





PIT SCHEDULE												
PIT				INTERNAL		INLET		OUTLET		PIT		REMARKS
Name	TYPE	EASTING	NORTHING	WD	LEN	DIA	INV LEV	DIA	INV LEV	SETOUT RL	DEPTH	
A-4	JUNCTION PIT 900x900	318215.737	6257726.788	0.90	0.90			150	30.621	33.895	3.273	OSD TANK
A-3	JUNCTION PIT 900x900	318214.560	6257719.151	0.90	0.90	150	30.534	150	30.514	32.363	1.848	
A-2	JUNCTION PIT 900x900	318200.729	6257720.494	0.90	0.90	150	30.375	(2x)100	30.355	32.470	2.115	
A-1	KERB ADAPTOR	318195.670	6257685.885			(2x)100	30.005			30.143	0.138	
B-4	SURFACE INLET PIT 1200x1200	318187.672	6257723.149	1.20	1.20			375	31.502	32.750	1.248	
B-3	JUNCTION PIT 600x900	318210.983	6257720.234	0.90	0.60	375	31.267	375	31.247	32.348	1.101	
B-2	JUNCTION PIT 900x900	318213.418	6257736.048	0.90	0.90	375	31.087	375	31.067	34.009	2.942	
B-1	JUNCTION PIT 900x900	318215.000	6257735.804	0.90	0.90	375	31.051			33.965	2.934	TREATMENT CHAMBER
						225	32.684					
C-2	SURFACE INLET PIT 600x600	318194.287	6257766.101	0.60	0.60			225	33.225	33.950	0.725	
C-1	JUNCTION PIT 900x900	318219.081	6257762.375	0.90	0.90	225	32.974	225	32.954	34.345	1.391	

REV		DESCRIPTION	BY	DES	CHKD	DATE											CLIENT	PROJECT							
P1		ISSUED FOR 100% SCHEMATIC DESIGN	D.J	M.D	Y.C	18.12.24											 <b>Meinhardt Infrastructure and Environment PTY. LTD.</b> A.C.N. 051 627 591  Level 4, 85 Clarence Street Sydney NSW 2000 Australia T: +61 2 9699 3058 F: +61 2 9319 7518 info@meinhardtgroup.com http://www.meinhardtgroup.com © Copyright	 <b>School Infrastructure NSW</b>	DUNDAS PUBLIC SCHOOL 85 KISSING POINT ROAD, DUNDAS NSW 2117						
P2		ISSUED FOR 100% SCHEMATIC DESIGN	D.J	M.D	Y.C	13.01.25													TITLE STORMWATER DRAINAGE PIT SCHEDULE		STATUS <b>SCHEMATIC DESIGN</b> NOT TO BE USED FOR CONSTRUCTION		DRAWN D.J DESIGNED M.D CHECKED Y.C APPROVED DATE SEPT 2024 SCALE @ A1 N.T.S		PROJECT No 132564 DRAWING No DUPS-MHT-00-00-DR-C-0710 REV P2



STRUCTURAL DOCUMENTATION

PROJECT TITLE:

DUNDAS PUBLIC SCHOOL

PROJECT ADDRESS:

85 KISSING POINT ROAD, DUNDAS, NSW 2117

SHEET TITLE:

COVER SHEET

MEINHARDT PROJECT No:

132564

CLIENT

SCHOOL INFRASTRUCTURE NSW

DRAWING No:

DUPS -MHT-XX-XX-DR-0000

REVISION

P04

STRUCTURAL DRAWING LIST	
SHEET NUMBER	SHEET NAME
S-0000	COVER SHEET
S-0001	STRUCTURAL NOTES - SHEET 1
S-0002	STRUCTURAL NOTES - SHEET 2
S-0200	STANDARD DETAILS MASONRY RETAINING WALLS
S-0205	TYPICAL MASONRY DETAILS
S-0206	TYPICAL MASONRY STIFFENERS DETAILS
S-0210	TYPICAL FOOTING DETAILS - SHEET 1
S-0211	TYPICAL FOOTING DETAILS - SHEET 2
S-0230	TYPICAL COLUMN DETAILS
S-0240	TYPICAL WALL DETAILS
S-0250	TYPICAL STEELWORK DETAILS
S-0260	TYPICAL SLAB ON GROUND DETAILS
S-1010	GROUND FLOOR LOADING PLAN
S-1020	ROOF LOADING PLAN
S-2000	FOOTING PLAN
S-2010	GROUND FLOOR STRUCTURAL PLAN
S-2020	ROOF FRAMING PLAN

REV	DESCRIPTION	BY	APP	DATE
P01	CONCEPT DESIGN DEVELOPMENT	RM	JB	12.11.24
P02	75% SCHEMATIC DESIGN	RM	JB	22.11.24
P03	85% SCHEMATIC DESIGN	RM	JB	13.12.24
P04	100% SCHEMATIC DESIGN	RM	JB	19.12.24

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT SITE INSTRUCTIONS, SKETCHES, SHOP DRAWINGS, SUB-CONTRACTOR DRAWINGS AND PROJECT CORRESPONDENCE. ACCURACY AND SET-OUT IS TO BE CONFIRMED BY SITE SURVEY.



# STRUCTURAL NOTES

## STANDARD NOTES:

### GENERAL

- G1 THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ARCHITECTURAL AND OTHER CONSULTANTS DRAWINGS AND SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS OR SKETCHES AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCY SHALL BE REFERRED TO THE SUPERINTENDENT BEFORE PROCEEDING WITH WORK.
- G2 MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE SPECIFICATION, CURRENT SAA CODES, BUILDING REGULATIONS AND THE REQUIREMENTS OF ANY OTHER RELEVANT STATUTORY AUTHORITIES.
- G3 THESE DRAWINGS MUST NOT BE SCALED. ALL DIMENSIONS ARE IN mm. ALL SET OUT DIMENSIONS AND LEVELS, INCLUDING THOSE SHOWN ON THESE DRAWINGS SHALL BE IN ACCORDANCE WITH THE ARCHITECT'S DRAWINGS AND VERIFIED ON SITE.
- G4 THE CONSULTING ENGINEER HAS DESIGNED THE PERMANENT STRUCTURE. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN, IMPLEMENTATION AND CERTIFICATION OF ALL TEMPORARY WORKS, PROPPING, NEEDLING, FALSE WORK, BRACING, BACK PROPPING, AND SO FORTH, NECESSARY TO COMPLETE THE WORK DURING CONSTRUCTION. THE STRUCTURE SHALL BE MAINTAINED IN A STABLE CONDITION AND NO PART SHALL BE OVERSTRESSED. THE CONTRACTOR SHALL ALLOW TO ENGAGE A CHARTERED (NPER.3) ENGINEER TO DESIGN, INSPECT THE TEMPORARY WORKS AND VERIFY THE TEMPORARY STABILITY OF THE STRUCTURE. THE APPROVAL OF A SUBSTITUTION SHALL BE SOUGHT FROM THE SUPERINTENDENT BUT IS NOT AN AUTHORIZATION OF A COST VARIATION. THE SUPERINTENDENT MUST APPROVE ANY COST VARIATION INVOLVED BEFORE ANY WORK STARTS.
- G7 THESE DRAWINGS SHALL NOT BE USED FOR CONSTRUCTION UNTIL ISSUED AS \*FOR CONSTRUCTION BY THIS OFFICE.
- G8 THE CONTRACTOR RETAINS RESPONSIBILITY OF THE WORKS EVEN IF THE ENGINEER HAS INSPECTED THE WORKS DURING CONSTRUCTION.
- G9 WHERE ADDITIONAL CONSTRUCTION LOADS, SUCH AS TEMPORARY SHORING, MOBILE CRANES, ETC. ARE TO BE IMPOSED ON THE STRUCTURE, THE CONTRACTOR SHALL SUBMIT FULL DETAILS OF THE DRAINING EXTERNAL, AND INTERNAL BEAMS AND LOAD BEARING THICKENINGS ARE TO BE FOUNDED ON NATURAL SOIL WITH AN ALLOWABLE BEARING PRESSURE OF NOT LESS THAN 100 kPa.
- G10 IF THE CONTRACTOR INTENDS TO VARY THE SCOPE OR METHOD OF WORKS OR MATERIALS USED, THE CONTRACTOR SHALL SUBMIT FULL DETAILS OF THE PROPOSAL TO THE DESIGN SUPERINTENDENT FOR DESIGN CHECK.
- G11 ALL PROPRIETARY PRODUCTS SHALL BE INSTALLED STRICTLY IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- G12 ALL REQUIRED TESTS TO COMPLETE THE WORKS SHALL BE AT THE CONTRACTOR'S EXPENSE.

### HEALTH AND SAFETY

- H1 THE OBLIGATION OF MEINHARDT GROUP PTY LTD (OR OTHER RELEVANT MEINHARDT ENTITY) AS THE DESIGN ENGINEER IS LIMITED TO ENSURING THAT THOSE PARTS OF THE STRUCTURE THAT ARE TO BE USED AS A WORKPLACE ARE, AS FAR AS REASONABLY PRACTICABLE, DESIGNED TO BE SAFE AND WITHOUT DANGEROUS TO THE HEALTH OF THOSE PERSONS USING THE STRUCTURE AS A WORKPLACE FOR THE PURPOSE FOR WHICH IT WAS DESIGNED IN ACCORDANCE WITH SECT. 28 OF THE OCCUPATIONAL HEALTH AND SAFETY ACT 2004 (VIC).
- H2 MEINHARDT IS NOT RESPONSIBLE FOR THE OCCUPATIONAL HEALTH AND SAFETY OF PERSONS AT THE SITE AS THOSE OBLIGATIONS RESIDE WITH THE CONTRACTORS AND/OR SUBCONTRACTORS WHO OCCUPY OR USE THE STRUCTURE AT THE SITE IN ACCORDANCE WITH APPLICABLE OCCUPATIONAL HEALTH AND SAFETY LEGISLATION, CODES OR PRACTICE, GUIDANCE NOTES, AUSTRALIAN STANDARDS AND OTHER RELEVANT DOCUMENTATION.
- H3 ANY ADVICE OR GUIDANCE CONCERNING OCCUPATIONAL HEALTH AND SAFETY ISSUES ARISING AT THE SITE SHOULD BE DIRECTED TO THE HEALTH AND SAFETY EXECUTIVE OR OFFICER NOMINATED FOR THE PROJECT.

### FOUNDATIONS

- F1 REFER TO THE GEOTECHNICAL REPORT FOR A DESCRIPTION OF THE ANTICIPATED SITE CONDITIONS. THE BUILDER IS TO STUDY THE REPORT AND MAKE HIS OWN EVALUATION ON THE SITE CONDITIONS. ANY ADDITIONAL COSTS INCURRED SHALL BE BORNE BY THE BUILDER.
- F2 ALL FOOTINGS SHALL BE FOUNDED AT THE RECOMMENDED DEPTH AND INTO THE APPROPRIATE MATERIAL AS SPECIFIED IN THE GEOTECHNICAL REPORT. THE ALLOWABLE BEARING CAPACITY SHALL BE AS SPECIFIED IN THE FOOTING SCHEDULE. THE TOP OF FOOTINGS SHALL BE A MINIMUM OF 300mm BELOW THE LOWEST ADJACENT STRUCTURAL FLOOR LEVEL UNLESS NOTED OTHERWISE.
- F3 THE ALLOWABLE BEARING CAPACITY SHALL BE VERIFIED BY GEOTECHNICAL ENGINEER, WHO SHALL BE EMPLOYED BY THE BUILDER, BEFORE ANY CONCRETE IS PLACED. WHEREVER THE BEARING CAPACITY AT THE FOOTING BASE IS INADEQUATE, EXCAVATION SHALL CONTINUE UNTIL SUITABLE MATERIAL IS FOUND OR THE FOOTING IS ENLARGED TO THE ENGINEER DETAILS.
- F4 BASES OF ALL FOOTINGS SHALL BE CLEARED OF ALL LOOSE MATERIAL PRIOR TO POURING OF CONCRETE. IN WET CONDITIONS, A 300 x 300 x 300 PIT SHALL BE DUG AT THE CORNER OF THE FOOTING FOR DEWATERING THE EXCAVATION BEFORE CONCRETING. A 50mm MINIMUM BLINDING LAYER OF N15 GRADE CONCRETE SHALL BE USED, UNLESS OTHERWISE APPROVED BY THE ENGINEER.
- F5 WHENEVER A FOOTING IS LOCATED CLOSE TO A BATTER, AN EXISTING FOOTING, EXISTING OR NEW SERVICES, A LINE DRAWN AT THE BOTTOM OF THE FOOTING AT 40 DEGREES TO THE HORIZONTAL SHALL FALL BELOW THE BATTER, EXISTING FOOTING OR SERVICES. IF THIS DOES NOT HAPPEN THE FOOTING BASE SHALL BE DEEPENED AS REQUIRED TO ACHIEVE THE FORMER.
- F6 THE OVER BREAK BETWEEN THE APPROVED FOUNDING LEVEL AND THE UNDERSIDE OF THE FOOTING SHALL BE FILLED WITH GRADE N15 CONCRETE. ANY OVER BREAK AT THE SIDES OF THE FOOTING SHALL BE FILLED WHEN CONCRETING THE FOOTING.
- F7 THE BUILDER SHALL REMOVE ALL SPOIL FROM THE SITE, AND DEWATER THE EXCAVATION AS REQUIRED.

### CONCRETE GRADE

PAD AND STRIP FOOTINGS: N40

### STRUCTURAL DESIGN BASED ON GEOTECHNICAL INVESTIGATION REPORT

REFERENCE: A201023.022.03. A.1.1

BY: ADE CONSULTING GROUP Pty Ltd  
DATED: 28 February 2024

### SLAB ON GROUND NOTES

- SOG1 ALL CONCRETE WORK TO COMPLY WITH AS 3600 CONCRETE CODE, AND BCA SECTIONS 3.1 AND 3.2
- SOG2 CONCRETE GRADE N40 MINIMUM (SOG)
- SOG3 ALL VEGETATION SHALL BE STRIPPED TO A MINIMUM DEPTH OF 150mm. ANY SOFT SPOTS OR DELETERIOUS MATERIAL SHALL BE REMOVED AND REPLACED WITH APPROVED GRANULAR FILLING COMPACTED TO 100% AS STANDARD COMPACTION. MINOR FILLING 800 MAXIMUM SHALL BE PROVIDED WHERE REQUIRED TO BRING SUB GRADE TO REQUIRED LEVEL IN ACCORDANCE WITH LIMITS STATED IN AS 2870 AND BCA. FILLING SHALL BE APPROVED GRANULAR MATERIAL PLACED IN 150mm AND COMPACTED TO 100% AS STANDARD COMPACTION.
- SOG4 A 2mm VAPOUR BARRIER SHALL BE USED, LAPPED A MINIMUM OF 200mm AT JOINTS AND TAPED AROUND SERVICES. FITTINGS WITH ADHESIVE TAPE NOT INFRIOR TO DOUBLE SIDED BUTYL ADHESIVE TAPE. THE VAPOUR BARRIER SHALL BE PLACED ON A 50mm MINIMUM SAND BED OR SIMILAR APPROVED MATERIAL. PROTECT MEMBRANE FROM DAMAGE.
- SOG5 TRENCH MESH IN BEAMS SHALL BE OVERLAPPED BY THE WIDTH OF FABRIC AT 'T' AND 'L' INTERSECTIONS AND SPLICED WITH A LAP OF 500mm. RANDOM LAP N12 BARS BY 500mm STAGGERED. THE OUTER BAR AT 'L' INTERSECTION MUST BE BENT AND CONTINUED FOR 500mm AROUND THE CORNER.
- SOG6 SLAB FABRIC TO BE LAPPED SUCH THAT THE TWO OUTERMOST TRANSVERSE WIRE OF ONE SHEET OF MESH OVERLAP THE TWO OUTERMOST TRANSVERSE WIRES OF THE SHEET BEING LAPPED BY A MINIMUM OF 25mm AND BE SUPPORTED ON BAR CHAIRS AT 800mm MAXIMUM CENTRES.
- SOG7 THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE SITE INVESTIGATION REPORT TO DETERMINE FOUNDING DEPTHS.
- SOG8 SITE CLASSIFICATION TO AS 2870 CLASS H ENGINEERING PRINCIPLES TO SECTIONS 4 OF AS 2870.
- SOG9 LUBRICATING EXTERNAL AND INTERNAL BEAMS AND LOAD BEARING THICKENINGS ARE TO BE FOUNDED ON NATURAL SOIL WITH AN ALLOWABLE BEARING PRESSURE OF NOT LESS THAN 100 kPa.
- SOG10 SLAB PANELS ARE TO BE FOUNDED ON NATURAL SOIL WITH AN ALLOWABLE BEARING PRESSURE OF NOT LESS THAN 50 kPa.
- SOG11 TOP OF SLAB SHALL BE 15mm MINIMUM ABOVE THE FINAL GROUND LEVEL.
- SOG12 DRAINAGE AND GRADING AWAY FROM SLAB SHALL BE PROVIDED TO PREVENT WATER COLLECTING ADJACENT TO SLAB. TREATMENT OF AREAS SURROUNDING SLAB SHALL ALSO BE IN ACCORDANCE WITH RECOMMENDATIONS BY THE HOUSING GUARANTEE FUND AND THE OWNER/OCCUPYER SHALL BE PROVIDED WITH A COPY OF CSIRO INFORMATION SHEET No. 10-19.
- SOG13 BRICKWORK CONTROL JOINTS ARE TO BE PROVIDED ON SIDES EXCEEDING 6000mm IN LENGTH OR THROUGH LARGE OPENINGS FROM EAVES TO SLAB OR THROUGH FULL HEIGHT WINDOWS.
- SOG14 WHERE REQUIRED BY COUNCIL PROTECT THE STRUCTURE FROM SUBTERRANEAN TERMITES IN ACCORDANCE WITH AS 3660 AND BCA

### SUSPENDED SLAB ON GROUND NOTES

- SSG1 ALL CONCRETE WORK TO COMPLY WITH AS 3600 CONCRETE CODE, AND BCA VOLUME 1, SECTIONS 3.1 AND 3.2
- SSG2 CONCRETE GRADE N40 MINIMUM
- SSG3 ALL VEGETATION SHALL BE STRIPPED TO A MINIMUM DEPTH OF 150mm.
- SSG4 ALLOW FOR COMPACTION OF EXISTING GROUND SURFACE OR FILL SUFFICIENT TO SUPPORT NET WEIGHT OF SUSPENDED SLAB ON GROUND PLUS FORMWORK AND PROPPED STRUCTURE ABOVE, AS ADVISED BY GEOTECHNICAL CONSULTANT.
- SSG5 ANY SOFT SPOTS OR DELETERIOUS MATERIAL SHALL BE REMOVED AND REPLACED WITH SELECTED FILL COMPACTED IN ACCORDANCE WITH NOTE SSG4.
- SSG6 PROVIDE SELECTED FILL TO ACHIEVE REQUIRED SUB-GRADE R.L., COMPACTED IN ACCORDANCE WITH NOTE SSG4.
- SSG7 A 0.2mm VAPOUR BARRIER SHALL BE USED, LAPPED A MINIMUM OF 200mm AT JOINTS AND TAPED AROUND SERVICES. FITTINGS WITH ADHESIVE TAPE NOT INFRIOR TO DOUBLE SIDED BUTYL ADHESIVE TAPE. THE VAPOUR BARRIER SHALL BE PLACED ON A 50mm MINIMUM SAND BED OR SIMILAR APPROVED MATERIAL TO PROTECT MEMBRANE FROM DAMAGE.
- SSG8 TOP OF SLAB SHALL BE 150mm MINIMUM ABOVE THE FINAL GROUND LEVEL.
- SSG9 DRAINAGE AND GRADING AWAY FROM SLAB SHALL BE PROVIDED TO PREVENT WATER COLLECTING ADJACENT TO SLAB.
- SSG10 WHERE REQUIRED BY COUNCIL PROTECT THE STRUCTURE FROM SUBTERRANEAN TERMITES IN ACCORDANCE WITH AS 3660 AND BCA.
- SSG11 BAR CHAIR BASES ARE TO BE PROVIDED BENEATH ALL REINFORCING BAR CHAIRS TO ENSURE NO SETTLEMENT TO REINFORCEMENT OR DAMAGE TO VAPOUR BARRIER.
- SSG12 SUB-GRADE AND SAND LAYER TO BE PREPARED SUCH THAT A STABLE AND LEVEL PLATFORM IS CONSTRUCTED ENSURING UNIFORM COVER TO REINFORCEMENT IS ACHIEVED ACROSS THE ENTIRE EXTENT OF THE SLAB.

### BORED PILES

- BP1 REFER TO THE GEOTECHNICAL REPORT FOR A DESCRIPTION OF THE ANTICIPATED SITE CONDITIONS. THE PILING CONTRACTOR IS TO STUDY THE REPORT AND MAKE HIS OWN EVALUATION OF THE SITE CONDITIONS. ANY ADDITIONAL COSTS INCURRED SHALL BE BORNE BY THE PILING CONTRACTOR.
- BP2 THE BORED PILES ARE PROPORTIONED FOR THE SCHEDULED LOADS WITH ALLOWABLE SOCKET SKIN FRICTION AND END BEARING CAPACITY AS INDICATED IN THE REPORT. THE DEPTHS AND LENGTHS NOMINATED IN THE SCHEDULE ARE INDICATIVE ONLY. THEY MAY NEED TO BE VARIED DEPENDING ON THE SITE CONDITIONS ENCOUNTERED. THE PILING CONTRACTOR NEEDS TO INCORPORATE ANY DESIGN CHANGES REQUIRED.
- BP3 THE BORED PILES SHALL BE INSTALLED TO A MAXIMUM TOLERANCE OF ±75mm FROM THAT REQUIRED IN PLAN AND INCLINED AT NOT MORE THAN 1 IN 75 FROM THE VERTICAL OR SPECIFIED RAKE.
- BP4 ALL WORKMANSHIP AND MATERIAL SHALL BE IN ACCORDANCE WITH AS 2159.
- BP5 THE BORED PILES SHALL BE LOCATED CONCENTRIC WITH THE COLUMNS AND WALLS UNLESS NOTED OTHERWISE.
- BP6 DRILL AND INSTALL THE BORED PILES IN THE LOCATIONS SHOWN ON THE DRAWINGS AND THE ABOVE REQUIREMENTS.
- BP7 BEFORE ANY CONCRETE IS POURED, ALL ROCK SOCKETS SHALL BE DEWATERED AND INSPECTED BY THE GEOTECHNICAL ENGINEER, WHO SHALL BE EMPLOYED BY THE BUILDER, TO VERIFY THE SOIL PARAMETERS, THE SOCKET BASE AND WALLS MUST BE CLEAN AND FREE FROM CLAY.
- BP8 IF THE CONCRETE NEEDS TO BE TREMED, SUPER PLASTICIZER MUST BE ADDED TO THE MIX AND THE CONCRETE GRADE INCREASED BY 30% REFER TO THE SPECIFICATIONS FOR THE INSPECTION OF THE HOLE PRIOR TO CONCRETING.
- BP9 THE PILING CONTRACTOR SHALL ALLOW FOR THE COST OF INTEGRITY TESTING FOR A MINIMUM OF 10% OF ALL BORED PILES IN ACCORDANCE TO THE PILING CODE A.S. 2159.
- BP10 ANY ALTERNATIVE DESIGN SHALL MEET THE ABOVE REQUIREMENTS AND THE SCHEDULED LOADS. THE PILING CONTRACTOR SHALL OBTAIN CERTIFICATION FOR THE CALCULATIONS OF THE ALTERNATIVE SYSTEM. THE DETAILS AND CALCULATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE PERFORMANCE OF THE ALTERNATIVE BORED PILES.

### CONCRETE

SHALL COMPLY TO AS3600 AND AS 3610

- C1 CONCRETE SIZES DO NOT INCLUDE FINISHES.
- C2 NO HOLES, CHASES OR EMBEDMENTS OTHER THAN THOSE SHOWN ON DRAWINGS SHALL BE MADE IN CONCRETE ELEMENTS WITHOUT ENGINEER'S APPROVAL.
- C3 DEPTHS OF BEAMS ARE GIVEN FIRST AND INCLUDE SLAB THICKNESS. SLABS AND BEAMS SHALL BE CAST TOGETHER UNLESS OTHERWISE NOTED.
- C4 CONCRETE SHALL BE KEPT FREE OF SUPPORTING MASONRY WITH TWO LAYERS OF SUITABLE MEMBRANE (MALTHOD OR EQUAL). VERTICAL FACES SHALL BE SEPARATED BY 12mm STAINLESS CANETE. ALL NON-LOAD BEARING WALLS SHALL BE KEPT 20mm CLEAR OF THE UNDERSIDE OF SLABS AND BEAMS UNLESS NOTED OTHERWISE.
- C5 CONSTRUCTION JOINTS SHALL BE PROPERLY FORMED AND LOCATED TO THE ADVANTAGE OF THE STRUCTURE. THE ENGINEER BUILDER SHALL ALLOW FOR ALL NECESSARY CONSTRUCTION JOINTS.
- C6 WHERE NOTED ON DRAWINGS CAMBER TO SUSPENDED SLABS AND BEAMS SHALL BE 5 FOR EVERY 2500 OF SPAN UNLESS OTHERWISE NOTED. WHERE THE CONCRETE SOFFITS ARE CAMBERED, THE UPPER SURFACE SHALL BE SIMILARLY CAMBERED. DEPTH GAUGES SHALL BE USED TO VERIFY THE SLAB THICKNESS.
- C7 REINFORCEMENT IS SHOWN DIAGRAMMATICALLY AND IS NOT NECESSARILY IN TRUE PROJECTION. SPLICES TO REINFORCEMENT SHALL BE MADE ONLY AT THE LOCATION SHOWN OR AS OTHERWISE APPROVED BY THE ENGINEER. WELDING OF REINFORCEMENT SHALL BE CARRIED OUT BY A QUALIFIED WELDER OF ACCORDANCE WITH AS/NZS 1554 AND THE REINFORCEMENT SUPPLIER RECOMMENDATIONS. THE INTERSPACE TEMPERATURE SHALL BE LESS THAN 200 DEGREES IN ACCORDANCE WITH AS/NZS 1554 PART 3.
- C8 THE REINFORCEMENT SYMBOLS ARE:  
N NORMAL DUCTILITY CLASS HOT ROLLED 500N DEFORMED BARS WITH fy = 500 MPa  
R NORMAL DUCTILITY CLASS 250N PLAN ROUND BARS WITH fy = 250 MPa  
L LOW DUCTILITY CLASS HARD DRAWN 500L WIRE REINFORCING MESH WITH fy = 500MPa  
REINFORCEMENT SHALL BE KEPT TO THE CLASS L REINFORCEMENT UNLESS SHOWN ON THE DRAWINGS.
- C9 HOOKS AND COGS SHALL COMPLY WITH AS3600 UNLESS NOTED OTHERWISE. ALL BOLT END BARS SHALL BE TAPERED BARS OR APPROVED EQUIVALENTS.  
- AT CHANGES IN WALL HEIGHT  
- AT CHANGES IN WALL THICKNESSES OTHER THAN PIERS OR BUTTRESSES  
- AT CONTROL JOINTS IN THE ADJACENT STRUCTURAL ELEMENTS  
- AT CHANGES AND RECESSES FOR PIPING, COLUMNS FIXTURES ETC.  
- AT BOTH SIDES OF WALL OPENINGS  
- NEAR WALL INTERSECTIONS  
- NEAR RETURN ANGLES IN L, T AND U SHAPED STRUCTURES  
- WHERE SHOWN IN THE ARCHITECTURAL DRAWINGS  
THE CONTRACTOR IS TO OBTAIN APPROVED DRAWINGS SHOWING THE CONTROL JOINTS PRIOR TO BUILDING ANY WALLS.
- C10 COVER TO REINFORCEMENT (IN mm) AND CONCRETE GRADES SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE: THE COVER SHALL NOT BE LESS THAN THE BAR DIAMETER AND:  
- FORMED AND EXPOSED TO WEATHER (1)  
- NOT INFORMED CAST AGAINST GROUND (2)

ELEMENT	FORMED INTERNAL	EXPOSED TO WEATHER (1)	NOT INFORMED CAST AGAINST GROUND (2)
FOOTINGS, PILE CAPS		60	75
COLUMNS, PEDESTALS	20	50	75
SLABS, BAND BEAMS	20(3)	40	60
BEAMS	20	40	60
WALLS			
HORIZONTAL	20	40	60
VERTICAL	30	50	60

- MINIMUM CONCRETE GRADE N40 N40 N40
- (1) FOR EXPOSURE CLASSIFICATION B2 ADD 5mm TO THE COVER AND THE CONCRETE GRADE SHALL BE N40 MINIMUM.
- (2) IF THE ELEMENT IS CAST ON A DAMP-PROOF MEMBRANE, DECREASE THE COVER BY 20mm.
- (3) FOR PRESTRESSING TENDONS THE MINIMUM COVER SHALL BE 25mm.
- (4) IN CORROSIVE SOILS AND WATER: N50
- NOTES:  
(i) COVER IS THE CLEAR DISTANCE BETWEEN ANY REINFORCING (INCLUDING FITMENTS) AND THE FACE OF THE STRUCTURAL ELEMENT.  
(ii) FOR ALL EXTERNAL SURFACES, PROVIDING PLASTIC BAR CHAIRS, THE WIRE SHALL NOT BE NAILED TO THE FORMS, REINFORCING BARS SHALL NOT BE USED TO KEEP FORMS APART AND A THROUGH THE SYSTEM SHALL BE USED TO THE FORMS.  
(iii) PROVIDE AN APPROVED VAPOUR BARRIER FOR SLABS, BEAMS AND THICKENING CAST AGAINST THE GROUND.  
(iv) THE COVERS SHALL BE MAINTAINED USING APPROVED BAR CHAIRS. BAR CHAIRS SUPPORTING MESH SHALL BE AT 800 x 800mm MAXIMUM CENTRES. BAR CHAIRS SUPPORTING BARS SHALL BE AT 60 BAR DIAMETERS OR 1500 MAXIMUM CENTRES WHICHEVER IS THE LESSER. BAR CHAIRS SHALL BE PROVIDED ALONG THE EDGES OF ALL CONSTRUCTION JOINTS. STOP ENDS SHALL NOT BE USED TO MAINTAIN THE COVERS. CONSTRUCTION JOINTS. STOP ENDS SHALL NOT BE USED TO MAINTAIN THE COVERS.
- (v) EXTERNAL ELEMENTS ARE THOSE EXPOSED TO WEATHER, RAIN AND WATER PENETRATION AND ARE CLASSIFIED B1 UNLESS NOTED OTHERWISE.

- C11 EXTERNAL CONCRETE ELEMENTS ABOVE GROUND SHALL MEET THE FOLLOWING REQUIREMENTS: MINIMUM PORTLAND CEMENT CONTENT 330 kg/m³, MAXIMUM WATER/CEMENT RATIO 0.5, AND THE CHLORIDE CONTENT RESTRICTED AS PER CLAUSE 4.9 OF AS3600.
- C12 ALL CONCRETE SUPPLIED SHALL HAVE A SLUMP OF 80mm AND A MAXIMUM NOMINAL AGGREGATE SIZE OF 20mm. VARIATIONS FROM THESE SHALL BE APPROVED BY THE ENGINEER.
- C13 THE MIX DESIGN WITH THE 7 AND 28 DAYS TARGET STRENGTHS AND THE BASIC SHRINKAGE STRAIN AT 56 DAYS SHALL BE SUBMITTED FOR REVIEW PRIOR TO POURING ANY CONCRETE. ALL CONCRETE IN CONTACT WITH AGGRESSIVE SOIL SHALL HAVE SULPHATE RESISTING CEMENT. THE CSA CONTENT OF THE CEMENT SHALL BE LESS THAN 5%.
- C14 CONDUITS AND PIPES WHEN CAST IN SLABS OR WALLS ARE TO BE PLACED BETWEEN THE TWO REINFORCEMENT LAYERS, WHERE THERE IS ONLY ONE LAYER OF REINFORCEMENT. PROVIDE 50mm COVER TO CONDUIT. THE CONDUIT LOCATIONS ARE TO BE APPROVED BY THE ENGINEER.
- C15 WHERE DISTRIBUTION BARS TO MAIN REINFORCEMENT ARE NOT SHOWN ON DRAWINGS PROVIDE MINIMUM N16 AT 400 CENTRES, LAPPED 500mm AT SPLICES.
- C16 FORMWORK SHALL BE DESIGNED, CONSTRUCTED AND SUPPLIED IN ACCORDANCE WITH AS 3610. REFER TO ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR CLASSES OF SURFACE FINISHES.
- C17 STRIPPING AND BACKPROPPING OF SOFFITS SHALL NOT OCCUR UNTIL CONCRETE HAS REACHED 75% OF SPECIFIED STRENGTH. BACK PROPPING (OR A SECOND SET OF TABLE FORMS) IS TO EXTEND DOWN SO THAT EACH NEW FLOOR IS SUPPORTED BY AT LEAST 3 FINISHED FLOORS OR AS CALCULATED. DO NOT STRIP BAYS ADJACENT CONSTRUCTION JOINTS UNTIL THE ADJACENT BAYS ARE AT LEAST 3 DAYS OLD. CALCULATIONS ON THE BACKPROPPING REQUIREMENTS SHALL BE SUBMITTED FOR APPROVAL.
- C18 CURING OF THE CONCRETE ELEMENTS SHALL BE STARTED AS SOON AS THE CONCRETE HAS HARDENED AND SHALL COMPLY WITH THE SPECIFICATIONS.
- C19 PROVIDE A 25mm x 25mm CHAMFER TO ALL CORBELS, UNLESS OTHERWISE INDICATED ON THE DRAWING. ENSURE THAT POLYSTYRENE IS PLACED AROUND THE BEARING, SO THAT THE CONCRETE SURFACES ARE NOT IN CONTACT. SUBMIT CONFIRMATION OF THE SPECIFICATIONS OF ALL BEARING MATERIALS TO THE ENGINEER.
- C20 ENSURE ALL MOVEMENT JOINTS ARE INSTALLED WITH THE SPECIFIED ARCHITECTURAL FINISH, INCLUDING SEALANT, FILLERS, EXPANSION MATERIALS AND REBATES AS REQUIRED.
- C21 CONCRETE TESTING METHOD SHALL BE PREPARED IN ACCORDANCE WITH AS1379 AND CONCRETE SPECIFICATION.
- C22 MINIMUM FORMWORK STRIPPING TIME FOR IN-SITU CONCRETE FORMWORK SHALL COMPLY WITH AS3610.1.2016 APPENDIX C UNLESS SPECIFIED OTHERWISE IN THE DRAWINGS.

### STRUCTURAL MASONRY

- M1 ALL BLOCKWORK WALLS SHALL BE CONSTRUCTED IN UNITS WITH A MINIMUM CHARACTERISTIC UNCONFINED COMPRESSIVE STRENGTH fu = 15 MPa.
- M2 ALL BRICKS SHALL HAVE A MINIMUM CHARACTERISTIC UNCONFINED COMPRESSIVE STRENGTH fu = 15 MPa AND HAVE NOMINAL PROPERTIES OF 1:1:6 OF CEMENT, LIME, SAND. NO PLASTICISERS SHALL BE USED IN THE MIX.
- M3 GROUT USED TO FILL CAVITIES AND CORES IN REINFORCED MASONRY SHALL HAVE A MINIMUM 28 COMPRESSIVE STRENGTH fu OF 20 MPa AND A SLUMP OF 250 ±25mm. MAXIMUM AGGREGATE SHALL BE OF 10mm ROUNDED GRAVEL. NOMINAL PROPORTIONS SHALL BE 1:0.1:3:2 OF CEMENT, LIME, SAND, AGGREGATE AND 3 WITH A MINIMUM CEMENT CONTENT OF 300 kg/m³. PROVIDE CLEAN OUT HOLES AT BASE OF PILASTERS AND EVERY CORE OF REINFORCED WALLS. CLEAN OUT AND WET DOWN CORES BEFORE GROUTING. ALL CORES CONTAINING VERTICAL AND HORIZONTAL REINFORCEMENT ARE TO BE GROUTED.
- M4 HORIZONTAL JOINT REINFORCEMENT CONSISTING OF GALVANISED WOVEN WIRE MESH OR WELDED WIRE SHALL BE PROVIDED. THE WIDTH SHALL BE SUCH THAT 15mm COVER FROM THE MORTAR FACE IS PROVIDED. THE MESH SHALL BE PLACED IN THE FIRST THREE COURSES AT THE TOP AND BOTTOM OF THE WALL AND AT A MAXIMUM 600 mm VERTICAL SPACING IN BETWEEN. FOR ALL CONCRETE BLOCKWORK, CONCRETE BRICKWORK AND CALCIUM SILICATE BRICKWORK, THE MESH SHALL BE LAPPED 400mm AT SPLICES AND FOLDED AND BENDED AT THE CORNERS SO THAT THE LONGITUDINAL WIRES ARE CONTINUOUS. THE MESH IS STOPPED 100mm SHORT OF CONTROL JOINTS OR ENDS OF WALLS.
- M5 FULLY BED FACE SHELLS AND CROSS WEBS IN HOLLOW BLOCK WALLS, SOLID OR CORED UNITS SHALL BE LAID ON A FULL BED OF MORTAR.
- M6 HOLLOW BLOCKWORK OPENINGS GREATER THAN 600mm VERTICALLY OR HORIZONTALLY SHALL BE TRIMMED AT THE SIDES AND BOTTOM BY FILLING ONE CORE AND REINFORCED WITH N12 EXTENDING 600mm PAST OPENING. THE TOP OF THE OPENING SHALL HAVE A REINFORCED LINTEL BEAM, ARCH BAR OR STEEL ANGLE SUPPORT AS DETAILED.
- M7 ALL TIES AND REINFORCEMENT SHALL HAVE MINIMUM CLEAR COVER OF 50mm TO EXTERNAL FACE OF MASONRY. TIES SHALL COMPLY TO AS 2699. ALL TIES SHALL BE BY "CERRA METALWORKS" OR APPROVED EQUIVALENT. THE TIES SHALL BE FIXED TO THE MANUFACTURERS RECOMMENDATIONS BUT WITH A MINIMUM OF 2 NO. 6mm DIAMETER STEEL WIRE PINS. ALL TIES SHALL BE AT 400mm MAXIMUM CENTRES UNLESS NOTED OTHERWISE.
- M8 NO CAVITY OR CORE SHALL BE FILLED TO A HEIGHT GREATER THAN 1200mm WITHOUT SUITABLE SHORING.
- M9 NO CHASES OR HOLES SHALL BE MADE WITHOUT PRIOR APPROVAL OF THE ENGINEER. CONDUITS AND THE LIKE SHALL NOT BE PLACED INSIDE CORES CONTAINING REINFORCEMENT.
- M10 VERTICAL JOINTS SHALL BE AT THE LESSER OF 6000mm OR TWICE THE HEIGHT OF THE WALL AND AT THE FOLLOWING LOCATIONS:  
- AT MAJOR CHANGES IN WALL HEIGHT  
- AT CHANGES IN WALL THICKNESSES OTHER THAN PIERS OR BUTTRESSES  
- AT CONTROL JOINTS IN THE ADJACENT STRUCTURAL ELEMENTS  
- AT CHANGES AND RECESSES FOR PIPING, COLUMNS FIXTURES ETC.  
- AT BOTH SIDES OF WALL OPENINGS  
- NEAR WALL INTERSECTIONS  
- NEAR RETURN ANGLES IN L, T AND U SHAPED STRUCTURES  
- WHERE SHOWN IN THE ARCHITECTURAL DRAWINGS  
THE CONTRACTOR IS TO OBTAIN APPROVED DRAWINGS SHOWING THE CONTROL JOINTS PRIOR TO BUILDING ANY WALLS.
- M11 ALL INTERSECTIONS THAT DON'T HAVE A CONTROL JOINT SHALL BE OF BONDED CONSTRUCTION OR TIED WITH HEAVY DUTY TIES AT 400mm MAXIMUM VERTICAL CENTRES.
- M12 ALL CAVITY WALLS ARE TO BE CONSTRUCTED USING MEDIUM DUTY MASONRY TIES AT 600mm MAXIMUM CENTRES BOTH WAYS AND 300mm AVERAGE CENTRES EACH SIDE OF OPENINGS. THE TIES SHALL BE EMBEDDED 50mm MINIMUM INTO EACH LEAF. WITH A 30mm COVER TO THE EXPOSED FACE.
- M13 WHERE A CONCRETE SLAB IS SUPPORTED ON MASONRY WALLS, THE TOP COURSE OF BLOCKS SHALL BE SOLID OR HOLLOW BLOCKS WITH CAVITIES FILLED TO A SMOOTH SURFACE OR A REINFORCED BOND BEAM. IN THE CASE OF BRICKS THE UPPER COURSE SHALL BE FROGS DOWN, OR HOLES FILLED WITH MORTAR TO A SMOOTH SURFACE. FOR NON-LOAD BEARING WALLS, LEAVE A 20mm GAP TO THE UNDERSIDE OF THE STRUCTURE.
- M14 BONDING SHALL BE STRETCHER BOND UNLESS NOTED OTHERWISE.
- M15 WHEN CONSTRUCTING MASONRY WALLS ON SUSPENDED SLABS, ALL MASONRY UNITS SHALL BE STACKED NEAR THE FINAL LOCATION BEFORE BUILDING THE WALL. THE SUPPORTING ELEMENT MUST NOT BE PROPPED AND MUST HAVE ACHIEVED ITS DESIGN STRENGTH.
- M16 FOR AREAS OF THE STRUCTURAL FLOOR SYSTEM WHICH SUPPORT MASONRY WALLS, PARTITIONS OR OTHER SENSITIVE ATTACHMENTS AT THE TIME OF THE INITIAL DESIGN, THE FLOOR SYSTEM HAS BEEN DESIGNED FOR NOT LESS THAN THE REQUIREMENTS OF AS 3600 TABLE 2.4.2 WHERE PROVISION IS MADE TO MINIMISE THE EFFECT OF MOVEMENT.
- M17 GENERAL JOINT DETAILS ARE INDICATED ON THESE DRAWINGS FOR INFORMATION, BUT IT IS THE ARCHITECT'S RESPONSIBILITY TO IDENTIFY JOINT LOCATIONS AND TYPES WHERE APPROPRIATE ON ARCHITECTURAL DRAWINGS, AND TO PROVIDE DETAILS OF NON-STANDARD ELEMENTS TO ACCOMMODATE ANTICIPATED MOVEMENT.
- M18 OBSERVATION OF CONSTRUCTION OF NON-LOAD BEARING MASONRY WALLS, PARTITIONS AND OTHER NON-LOAD BEARING ELEMENTS IS NOT INCLUDED IN THE STRUCTURAL ENGINEER'S SCOPE OF WORKS.
- M19 STACKING OF BLOCKWORK:  
- THE COVERS SHALL BE MAINTAINED USING APPROVED BAR CHAIRS. BAR CHAIRS SUPPORTING MESH SHALL BE AT 800 x 800mm MAXIMUM CENTRES. BAR CHAIRS SUPPORTING BARS SHALL BE AT 60 BAR DIAMETERS OR 1500 MAXIMUM CENTRES WHICHEVER IS THE LESSER. BAR CHAIRS SHALL BE PROVIDED ALONG THE EDGES OF ALL CONSTRUCTION JOINTS. STOP ENDS SHALL NOT BE USED TO MAINTAIN THE COVERS. CONSTRUCTION JOINTS. STOP ENDS SHALL NOT BE USED TO MAINTAIN THE COVERS.
- M20 MASONRY UNDER CONSTRUCTION SHALL BE BRACED OR OTHERWISE STABILIZED AS NECESSARY TO RESIST WIND AND OTHER LATERAL FORCES, IN SUCH A MANNER THAT THE STRUCTURAL INTEGRITY OF THE MEMBER OR STRUCTURE IS NOT IMPAIRED. IN ACCORDANCE WITH THE ARCHITECTURAL DRAWINGS.
- M21 MASONRY CORES SHALL BE CONCRETE FILLED WHERE MASONRY ANCHORS ARE REQUIRED.

### AUTOCLAVED AERATED CONCRETE BLOCKWORK

- A1 WHERE SPECIFIED, ALL BLOCKS ARE TO CONSIST OF THERMOBLOCK GRADE 1 BLOCKS.
- A2 INSTALLATION OF ALL AAC WALLS SHALL BE IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND SPECIFICATION.
- A3 ATTACHMENT OF FIXINGS SHALL BE IN ACCORDANCE WITH MANUFACTURERS SPECIFICATION.
- A4 WHERE AAC BLOCKWORK IS CONSTRUCTED ADJACENT TO PRECAST / CONCRETE BLOCKWORK OR CONCRETE SLABS THEY SHALL BE FIXED IN ACCORDANCE TO MANUFACTURERS RECOMMENDATIONS. THE MINIMUM REQUIREMENTS SHALL BE AS PER THE TYPICAL BLOCKWORK DETAILS WITH TIES AT 600mm MAX. CTRS INTERNALLY AND AT 400mm MAX. CTRS EXTERNALLY.

### SECONDARY STEELWORK NOTES

- SS1 SECONDARY STEELWORK IS ALL STEELWORK THAT IS NOT REQUIRED TO SUPPORT THE MAIN BUILDING STRUCTURE. SECONDARY STEELWORK SHALL INCLUDE, BUT NOT BE LIMITED TO STEELWORK ASSOCIATED WITH; CEILING SYSTEMS, CLADDING SYSTEMS, INTERNAL PARTITIONS, DOOR AND GLAZING SYSTEMS, FURNITURE AND FIXTURES, MECHANICAL PLUMBING SYSTEMS, SIGNAGE, HANDRAIL SYSTEMS, BARRIER SYSTEMS, LIGHTING SYSTEMS, FALL ARREST / RESTRAINT SYSTEMS, ACCESS SYSTEMS AND PROPRIETARY PRODUCTS.
- SS2 SECONDARY STEELWORK IS NOT INCLUDED IN THE STRUCTURAL DOCUMENTATION IRRESPECTIVE OF WHETHER THE OTHER CONSULTANTS DOCUMENTATION MAKE REFERENCE TO THE STRUCTURAL DOCUMENTATION FOR THE SAME.
- SS3 THE CONTRACTOR SHALL REFER TO THE OTHER CONSULTANTS DOCUMENTATION FOR ALL SECONDARY STEELWORK REQUIREMENTS.
- SS4 THE CONTRACTOR SHALL ALLOW TO DESIGN, SUPPLY AND INSTALL ALL SECONDARY STEELWORK AS REQUIRED ON THE OTHER CONSULTANTS DOCUMENTATION.
- SS5 THE CONTRACTOR SHALL ALLOW PROVISION FOR THE COST OF ADDITIONAL ENGINEERING SERVICES SHOULD THEY REQUEST MEINHARDT TO ASSIST WITH THE DESIGN AND/OR DOCUMENTATION OF THE SECONDARY STEELWORK.
- SS6 PLEASE REFER TO STANDARD STEEL CONNECTION DETAIL SHEETS FOR TYPICAL CONNECTION DETAILS. STEELWORK CONNECTION DETAILS ARE LIMITED TO MAJOR CONNECTIONS ONLY. FURTHER DETAILING MAY BE REQUIRED DURING DEVELOPING FOR CONSTRUCTION DRAWINGS.

STEELWORK SHALL COMPLY TO AS 4100, AS/NZS 4600 AND AS/NZS 3628

- S1 THE FABRICATOR SHALL BE RESPONSIBLE FOR SUBMITTING SHOP DRAWINGS, WHICH SHALL COMPLY WITH THE CONTRACT DRAWINGS AND SPECIFICATIONS, FOR REVIEW BEFORE FABRICATION IS STARTED. REVIEW DOES NOT INCLUDE CHECKING OF DIMENSIONS, NOR TAKE RESPONSIBILITY FOR CONTRACTORS OBLIGATIONS. ALLOW 3 WORKING DAYS MINIMUM FOR REVIEW.
- S2 WHERE CONNECTION FORCES (IN KILOWEIGHTONS) ARE SHOWN ON THE DRAWINGS, CONNECTIONS SHALL BE PROVIDED TO TRANSMIT THESE FORCES. CONNECTIONS SHALL PROVIDE FOR A MINIMUM FORCE OF 18kN.
- S3 ALL DETAILS, GAUGE LINES, ETC. WHERE NOT SPECIFICALLY SHOWN SHALL BE IN ACCORDANCE WITH AISC DESIGN CAPACITY TABLES FOR STRUCTURAL STEEL AND AISC STANDARDIZED STRUCTURAL CONNECTIONS.
- S4 UNLESS OTHERWISE NOTED, WELDS TO BE 10mm ROUNDED GRAVEL. NOMINAL PROPORTIONS SHALL BE 1:0.1:3:2 OF CEMENT, LIME, SAND, AGGREGATE AND 3 WITH A MINIMUM CEMENT CONTENT OF 300 kg/m³. PROVIDE CLEAN OUT HOLES AT BASE OF PILASTERS AND EVERY CORE OF REINFORCED WALLS. CLEAN OUT AND WET DOWN CORES BEFORE GROUTING. ALL CORES CONTAINING VERTICAL AND HORIZONTAL REINFORCEMENT ARE TO BE GROUTED.
- S5 FABRICATOR SHALL PROVIDE ALL FIXINGS FOR ARCHITECTURAL ELEMENTS ETC. WITHOUT WEAKENING STRUCTURAL MEMBER IN ANY WAY.
- S6 CAMBER SHALL BE PROVIDED TO ALL ROOF BEAMS, TRUSSES, AND PORTALS ETC. AT 5 PER 2000 OF SPAN UNLESS OTHERWISE NOTED. FOR ALL MEMBERS SPANNING IN EXCESS OF 6m, NO MEMBER SHALL BE ERECTED WITH NEGATIVE CAMBER, UNLESS SPECIFICALLY NOTED. FOR CONCRETE SLABS ON TOP OF STEELWORK DEPTH GAUGES SHALL BE USED TO VERIFY THE SLAB THICKNESS.
- S7 ALL STEELWORK BELOW GROUND SHALL BE ENCASED IN CONCRETE WITH MIN. COVER OF 75mm. CONCRETE ENCASED STRUCTURAL STEEL TO BE WRAPPED WITH PRE-GALVANIZED G444HS MESH PLATED 25mm CLEAR OF STEEL. PROVIDE 50mm MINIMUM COVER.
- S8 ALL STEELWORK NOT TO BE ENCASED IN CONCRETE OR GALVANIZED SHALL BE GIVEN ONE SHOP COAT OF AN APPROVED PRIMER UNLESS OTHERWISE NOTED. FACES OF FRICTION GRIP CONNECTIONS SHALL NOT BE PAINTED.
- S9 THE BOLTING PROCEDURE IS DESIGNATED AS FOLLOWS:  
- 4.6/5 REFERS TO COMMERICAL BOLTS OF STRENGTH GRADE 4.6 TO AS/NZS 1111 TIGHTENED USING A STANDARD WRENCH TO A SNUG-TIGHT CONDITION.  
- 8.8/8 REFERS TO HIGH STRENGTH BOLTS OF STRENGTH GRADE 8.8 TO AS/NZS 1252 TIGHTENED USING A STANDARD WRENCH TO A SNUG-TIGHT CONDITION.  
- 8.8/10 REFERS TO HIGH STRENGTH BOLTS OF STRENGTH GRADE 8.8 TO AS/NZS 1252 FULLY TENSIONED TO AS 1511, DESIGNED AS A BEARING TYPE JOINT.  
- 8.8/10 REFERS TO HIGH STRENGTH BOLTS OF STRENGTH GRADE 8.8 TO AS/NZS 1252 FULLY TENSIONED TO AS 1511, DESIGNED AS A BEARING TYPE JOINT. LOAD INDICATING WASHERS SHALL BE USED TO VERIFY TIGHTENING OF BOLTS IN T, T, AND T, TO CONNECTIONS. A HARDENED WASHER SHALL BE USED UNDER THE BOLT HEAD OR NUT, WHICHEVER IS ROTATED. FULLY TENSIONED BOLTS SHALL NOT BE RE-USED. WELDING OF CAPTIVE NUTS TO STEELWORK SHALL BE GRADE 4.6S, CLASS 5 NUTS. THE ELECTRODES USED SHALL BE COMPATIBLE WITH THE CHEMISTRY OF THE STEEL. INVOLVATIONS:  
- AT CHANGES IN WALL THICKNESSES OTHER THAN PIERS OR BUTTRESSES  
- AT CONTROL JOINTS IN THE ADJACENT STRUCTURAL ELEMENTS  
- AT CHANGES AND RECESSES FOR PIPING, COLUMNS FIXTURES ETC.  
- AT BOTH SIDES OF WALL OPENINGS  
- NEAR WALL INTERSECTIONS  
- NEAR RETURN ANGLES IN L, T AND U SHAPED STRUCTURES  
- WHERE SHOWN IN THE ARCHITECTURAL DRAWINGS  
THE CONTRACTOR IS TO OBTAIN APPROVED DRAWINGS SHOWING THE CONTROL JOINTS PRIOR TO BUILDING ANY WALLS.
- S11 ALL BOLTS SHALL BE OF SUCH LENGTH THAT AT LEAST ONE FULL THREAD IS EXPOSED BEYOND THE NUT AFTER THE NUT HAS BEEN TIGHTENED.
- S12 THE END OF TUBULAR MEMBERS SHALL BE SEALED WITH NOMINAL THICKNESS PLATES AND CONTINUOUS FILLET WELDED UNLESS NOTED OTHERWISE.
- S13 WHERE MEMBERS SHOWN ON THE STRUCTURAL OR ARCHITECTURAL DRAWINGS ARE REQUIRED TO BE CURVED, BENT OR ROLLED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE METHODS REQUIRED TO ACHIEVE THE REQUIRED SHAPES WITHOUT LOCALIZED DISTORTION OF THE MEMBERS.
- S14 THE CONTRACTOR SHALL PROVIDE AND LEAVE IN PLACE, UNTIL PERMANENT BRACING ELEMENTS ARE CONSTRUCTED, SUCH TEMPORARY BRACING AS IS NECESSARY TO STABILIZE THE STRUCTURE DURING ERECTION. REFER TO NOTES AND GS.
- S15 SUBMIT DETAILS OF THE MANUFACTURER, MATERIAL AND SECTION PROPERTIES OF THE PURLINS AND GIRTS TO BE USED FOR APPROVAL. PURLIN AND GIRT BOLTS AND BRIDGING SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS DETAILS UNLESS SHOWN OTHERWISE.
- S16 TRIMMING MEMBERS FOR MECHANICAL/HYDRAULIC PENETRATIONS, DRAINAGE GUTTERS, SUMPS ETC., ARE NOT NECESSARILY SHOWN. SUPPORT OF HEAVY PIPES AND DUCTS IS TO BE APPROVED BY THE ENGINEER. SERVICES SHALL BE HUNG FROM THE WEB OF PURLIN NOT FLANGES.
- S17 THE DESIGN, SUPPLY AND INSTALLATION OF SECONDARY STEELWORK REQUIRED TO SUPPORT/CONNECT THE FACADE TO BASE STRUCTURE IS THE RESPONSIBILITY OF THE CONTRACTOR.
- S18 CERTIFICATION OF ARCHITECTURAL FIXINGS/BRACING OF CEILINGS AND NON-STRUCTURAL WALLS TO THE BASE STRUCTURE IS THE RESPONSIBILITY OF THE CONTRACTOR. FORWARD TO THE ENGINEER A CERTIFICATE OF SUFFICIENCY BY THE SUPPLIER FOR THE ARCHITECTURAL FIXTURES/PANELS/DORY-WALL TO RESIST THE PRESSURES DESIGNATED IN THE DESIGN DOCUMENTS.

### DEFLECTION LIMITS APPLICABLE TO STEEL FRAMED ROOFS:

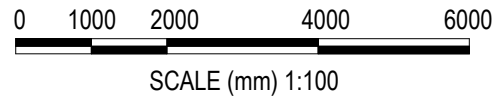
PROPOSED DEFLECTION CRITERIA FOR STEEL FRAMED ROOFS

TYPE	MAXIMUM DEFLECTION LIMITS			
	DEAD (G)	IMPOSED (W+Q)	WIND	LONG TERM DEAD+IMPOSED (G+W+Q)
NO CEILINGS WITH ROOF PITCH > 3°	SPAN/360	SPAN/250	SPAN/150	SPAN/150
NO CEILINGS WITH ROOF PITCH < 3°	SPAN/600	SPAN/250	SPAN/150	SPAN/150
LIGHTWEIGHT CEILINGS WITH ROOF PITCH > 3°	SPAN/360 25 mm MAX.	SPAN/300	SPAN/250	SPAN/250
LIGHTWEIGHT CEILINGS WITH ROOF PITCH < 3°	SPAN/600	SPAN/300	SPAN/250	SPAN/250
COMMERICAL PLASTERBOARD AND ACOUSTIC CEILINGS	SPAN/600 25 mm MAX.	SPAN/600	SPAN/600	SPAN/250

NOTE:  
1. ENSURE PONDING DOES NOT OCCUR AND MINIMUM PITCH OF ROOF IS MAINTAINED FOR FALLS TO DRAINAGE OUTLETS.

## PRELIMINARY

REV	DESCRIPTION	BY	APP	DATE
P01	CONCEPT DESIGN DEVELOPMENT	RM	JB	12.11.24
P02	75% SCHEMATIC DESIGN	RM	JB	22.11.24
P03	85% SCHEMATIC DESIGN	RM	JB	13.12.24
P04	100% SCHEMATIC DESIGN	RM	JB	19.12.24



PROJECT NORTH





# STRUCTURAL NOTES

## POST TENSIONED CONCRETE BY PT CONTRACTOR

DESIGNED AND CERTIFIED BY PT CONTRACTOR SHALL COMPLY TO AS3600 AND AS3610

PTC1 SCOPE OF WORKS: THE SCOPE OF WORKS SHALL CONSIST OF THE DESIGN, INSTALLATION AND CERTIFICATION OF THE POST-TENSIONED PRESTRESSING AND THE NON-TENSIONED REINFORCEMENT FOR THE FLOOR SLABS. SHOWN THE POST-TENSIONED PRESTRESSING AND THE NON-TENSIONED REINFORCEMENT SHALL EXTEND FOR THE FULL PLAN AREA INCLUDING ALL STRUCTURAL HOBS, FOLDS, SETDOWNS FORMING PART OF THE FLOOR SLAB. OTHER THAN HATCHED AREAS DENOTED AS DESIGNED BY MENHARDT BONACCI GROUP. IT IS THE SUB-CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE POST-TENSIONED PRESTRESSING AND THE NON-TENSIONED REINFORCEMENT IS DESIGNED, INSTALLED AND CERTIFIED IN ACCORDANCE WITH THESE NOTES AND THE REQUIREMENTS OF AS3600 AND AS1170. THE NON-TENSIONED REINFORCEMENT INCLUDES ANCHORAGE ZONE BURSTING SPALLING REINFORCEMENT. THE REINFORCEMENT OF ANY SLAB AREAS NOT INCLUDED IN THE PRESTRESSED AREAS AND, ANY ADDITIONAL REINFORCEMENT USED TO COMPLEMENT THE PRESTRESS IN THE SLAB.

PTC2 COLUMN STIFFNESS: CONTRIBUTION OF THE COLUMNS IN THE FLOOR SLAB DESIGN SHALL BE BASED ON MAX. 20% EQUIVALENT COLUMN STIFFNESS.

PTC3 APPROVAL: THE SUB-CONTRACTOR MUST SUBMIT ONE COPY OF THE TENDON AND REINFORCEMENT LAYOUT PLANS FOR APPROVAL AT LEAST 1 WEEKS PRIOR TO THE COMMENCEMENT OF ANY INSTALLATION WORK. THESE PLANS MUST SHOW EACH TENDON LOCATION AND SIZE, THE DRAPE POINTS AND, ANY NON-TENSIONED REINFORCEMENT. NO INSTALLATION WORK MAY COMMENCE UNTIL THE APPROVED LAYOUT PLAN INCORPORATING ANY BUILDER'S REQUIREMENTS IS RETURNED TO THE SUB-CONTRACTOR. THIS APPROVAL PERIOD WILL NORMALLY TAKE 7 DAYS.

PTC4 DESIGN CERTIFICATION: A CPENG STRUCTURAL ENGINEER (WITH NER) SHALL CERTIFY THE SLAB DESIGN. THE CERTIFICATION MUST STATE THAT THE SLAB IS STRUCTURALLY ADEQUATE TO RESIST THE DESIGN LOADS IN ACCORDANCE WITH ALL RELEVANT AUSTRALIAN STANDARDS. THE CERTIFYING ENGINEER SHALL MAINTAIN PROFESSIONAL INDEMNITY INSURANCE OF \$20 MILLION AND PROVIDE A COPY OF THEIR CERTIFICATE OF INSURANCE CURRENCY.

PTC5 CONSTRUCTION CERTIFICATION: A CPENG STRUCTURAL ENGINEER (WITH NER) SHALL CERTIFY THAT THE PRESTRESSING AND REINFORCEMENT AS INSTALLED IN THE SLAB, COMPLIES WITH THE APPROVED CONSTRUCTION DESIGN PLAN AND, IN PARTICULAR, THAT ALL TENDONS AND REINFORCEMENT WAS ACCURATELY POSITIONED WITH THE CORRECT COVER AND THAT ALL TENDONS HAVE BEEN CORRECTLY STRESSED AND GROUTED. THE CERTIFYING ENGINEER SHALL MAINTAIN PROFESSIONAL INDEMNITY INSURANCE OF \$20 MILLION AND PROVIDE A COPY OF THEIR CERTIFICATE OF INSURANCE CURRENCY.

PTC6 GENERAL DEFLECTION CRITERIA FOR ALL FLOORS.

MAXIMUM DEFLECTION LIMITS				
TYPE	DEAD (G)	INCREMENTAL	IMPOSED (W+Q)	LONG TERM DEAD + IMPOSED (G+W+Q)
SUPPORTING NON-MASONRY PARTITIONS	SPAN/360 25 mm MAX.	-	L/500	SPAN/300 30 mm MAX.
SUPPORTING MASONRY PARTITIONS	SPAN/360 25 mm MAX.	SPAN/1000 OR: SPAN/750 IF MASONRY ARTICULATED	L/500	SPAN/360 25 mm MAX.
COMPACTUS AREAS	SPAN/360 25 mm MAX.	SPAN/750 10 mm MAX.	L/500	SPAN/360 25 mm MAX.

### NOTES:

- INCREMENTAL DEFLECTION IS DEFINED AS LONG-TERM DEFLECTION MINUS SHORT-TERM DEFLECTION AND OCCURS AFTER THE ADDITIONAL OR ATTACHMENT OF THE FINISH WALL OR PARTITION ELEMENTS LONG-TERM CREEP, WHEN PRESENT, NEEDS TO BE INCLUDED IN ASSESSING THE LONG-TERM DEFLECTION OF MEMBERS THAT ARE PRONE TO CREEP.
- 

PTC7 NATURAL FLOOR FREQUENCY: 4 HERTZ MINIMUM

PTC8 COVER: ALL TENDONS AND REINFORCEMENT SHALL HAVE COVER SUFFICIENT TO ACHIEVE THE REQUIREMENTS FOR EXPOSURE CLASSIFICATION: INTERIOR AREAS - A1 BALCONIES AND EXTERIOR AREAS - A2 FIRE RESISTANCE: REFER TO BUILDING REGULATORY ADVICE FOR REQUIRED FIRE RESISTANCE LEVEL (FRL) OF DIFFERENT BUILDING ELEMENTS

PTC9 MINIMUM PRESTRESS: EACH SLAB SHALL HAVE AN AVERAGE P/A > 1.4 MPa POOLUMS, COURTYARDS AND TERRACES FORMING ROOFS ARE TO BE DESIGNED TO BE WATERTIGHT AND WITH A MINIMUM P/A > 1.8 MPa.

PTC10 CONCRETE: THE CONCRETE STRENGTH SHALL BE THE SAME AS THAT SHOWN ON GENERAL ARRANGEMENT PLANS. SHOULD A HIGHER STRENGTH BE REQUIRED, THE SUB-CONTRACTOR MUST SEEK APPROVAL FROM THE ENGINEER PRIOR TO COMPLETION OF THE DESIGN. THE TRANSFER STRENGTH MUST BE NOTED ON THE SUB-CONTRACTOR'S PLAN. THE SLAB THICKNESS SHALL BE AS INDICATED ON THE PLAN AND SECTIONS.

PTC11 CONSTRUCTION NOTES: ANCHORAGES SHALL NOT BE EXPOSED ON ANY EXTERIOR FACE OF THE BUILDING. ALL TENDONS AND REINFORCEMENT MUST BE SECURELY POSITIONED AND FIXED PRIOR TO CONCRETE PLACEMENT.

PTC12 STRESSING RECORDS OF THE PRESSURE GAUGE AND EXTENSIONS SHALL BE ACCURATELY MADE AND SUBMITTED TO THE ENGINEER FOR APPROVAL. ALL TENDONS MUST BE GROUTED IN THEIR DUCTS WITH PORTLAND CEMENT BASED GROUT, AFTER APPROVAL OF THE STRESSING RECORDS.

PTC13 ALL ANCHORAGE RECESSES AND ANY PANS (USED TO ACCESS INTERNAL LIVE ANCHORAGES) MUST BE FILLED WITH 30 MPa GROUT, FINISHED TO A SMOOTH AND LEVEL SURFACE. THE CONTRACTOR IS TO ALLOW FOR THE DRILLING OF EDGE BOARDS TO ALLOW FOR THE FIXING OF ANCHORS.

PTC14 WHERE SLAB THICKNESS EXCEEDS 270mm THE SUBCONTRACTOR SHALL ALLOW FOR SL7Z MESH TOP AND HEAVY DUTY BAR CHAIRS.

PTC15 THE SUBCONTRACTOR IS RESPONSIBLE FOR DETAILING ALL POST-TENSIONED SLABS/BEAMS TO RESIST THE EFFECTS OF ANY SHRINKAGE OR RESTRAINT THAT MAY OCCUR FROM SURROUNDING WALLS, MULTIPLE LIFT CORES, GROUND WORKS, UNBALANCED P/A STRESSES ETC. THAT MAY LEAD TO CONCRETE ELEMENTS BOTH HORIZONTALLY AND VERTICALLY CRACKING. SUBCONTRACTOR TO SUPPLY REINFORCEMENT WHERE REQUIRED AND CONSTRUCT SLAB USING APPROPRIATE STAGING METHODS AND/OR DETAILING TO ACCOUNT FOR ABOVE EFFECTS.

## STRUCTURAL GREEN STAR SPECIFICATIONS (FOR REFERENCE ONLY):

ITEM / MATERIAL	REQUIREMENT
CONCRETE	<ul style="list-style-type: none"><li>- USE MATERIALS COMPLYING WITH AS BASED ON THE WHOLE OF LIFE APPROACH TO MATERIALS SELECTION.</li><li>- DO NOT USE BRECCIA OR DOLERITE IN CONCRETE MIXES.</li><li>- FLY ASH IS A MANUFACTURING BY-PRODUCT THAT CAN BE USED AS A CEMENT REPLACEMENT BUT SHOULD LIMITED TO A MAXIMUM OF 20% BY WEIGHT OF CEMENT CONTENT.</li><li>- PORTLAND CEMENT CONTENT IS REDUCED BY 30% (1 POINT) OR 40% (2 POINTS), MEASURED BY MASS ACROSS ALL CONCRETE USED IN THE PROJECT COMPARED TO THE REFERENCE CASE.</li><li>- THE MIX WATER FOR ALL CONCRETE USED IN THE PROJECT CONTAINS AT LEAST 90% CAPTURED OR RECLAIMED WATER (MEASURED ACROSS ALL CONCRETE MIXES IN THE PROJECT)</li></ul> EITHER OF THE FOLLOWING IS TO BE ACHIEVED: 1- AT LEAST 40% OF COARSE AGGREGATE IN THE CONCRETE IS CRUSHED SLAG AGGREGATE OR ANOTHER ALTERNATIVE MATERIALS (MEASURED BY MASS ACROSS ALL CONCRETE MIXES IN THE PROJECT), PROVIDED THAT THE USE OF SUCH MATERIALS DOES NOT INCREASE THE USE OF PORTLAND CEMENT BY OVER FIVE KILOGRAMS PER CUBIC METRE OF CONCRETE; OR 2- AT LEAST 25% OF FINE AGGREGATE (SAND) INPUTS IN THE CONCRETE ARE MANUFACTURED SAND OR OTHER ALTERNATIVE MATERIALS (MEASURED BY MASS ACROSS ALL CONCRETE MIXES IN THE PROJECT), PROVIDED THAT USE OF SUCH MATERIALS DOES NOT INCREASE THE USE OF PORTLAND CEMENT BY OVER FIVE KILOGRAMS PER CUBIC METRE OF CONCRETE.
TIMBER	<ul style="list-style-type: none"><li>- EITHER NO NEW ENGINEERED WOOD PRODUCTS ARE USED IN THE BUILDING, OR AT LEAST 95% (BY AREA) OF ALL ENGINEERED WOOD PRODUCTS MEET THE FORMALDEHYDE EMISSION LIMITS SPECIFIED IN THE GREEN STAR - DESIGN &amp; AS BUILT V1.3 TOOL.</li><li>- ALL ENGINEERED WOOD PRODUCTS SHOULD BE USED MUST MEET THE AUSTRALIAN STANDARDS FOR FORMALDEHYDE EMISSION LIMIT E1 (NEWKAS CLASSIFICATION) OR LOWER.</li><li>- NO RAINFOREST TIMBERS, OR TIMBERS FROM HIGH CONSERVATION FORESTS, ARE TO BE USED UNLESS PLANTATION GROWN. USE ONLY RECYCLED TIMBER, ENGINEERED AND GLUED TIMBER COMPOSITE PRODUCTS, OR TIMBER FROM PLANTATIONS OR FROM SUSTAINABLY MANAGED REGROWTH FORESTS THAT IS FSC, AFS OR PEFC CERTIFIED. ALL TIMBER USED IS TO BE TERMITE (WHITE ANT) RESISTANT OR TREATED TO BE TERMITE RESISTANT TO THE APPROPRIATE HAZARD LEVEL.</li><li>- 95% (BY COST) OF ALL TIMBER USED IN THE BUILDING AND CONSTRUCTION WORKS IS EITHER:<ul style="list-style-type: none"><li>- CERTIFIED BY A FOREST CERTIFICATION SCHEME THAT MEETS THE GBCA 'S ESSENTIAL' CRITERIA FOR FOREST CERTIFICATION; OR IS FROM A REUSED SOURCE.*</li></ul></li></ul>
STEEL	<ul style="list-style-type: none"><li>- 95% OF ALL STEEL IS SOURCED FROM A RESPONSIBLE STEEL MAKER AND EITHER 60% OF FABRICATED STRUCTURAL STEELWORK IS SUPPLIED BY A STEEL FABRICATOR ACCREDITED TO ASI, OR 60% OF ALL REINFORCING BAR AND MESH IS PRODUCED USING ENERGY-REDUCING PROCESSES IN ITS MANUFACTURE.</li></ul>
RISK	<ul style="list-style-type: none"><li>- ALL RISK ITEMS IDENTIFIED AS 'HIGH' OR 'EXTREME' FROM THE CLIMATE RISK WORKSHOP MUST BE ADDRESSED BY SPECIFIC DESIGN RESPONSES. AT LEAST TWO RISK ITEMS IDENTIFIED MUST ALSO BE ADDRESSED IN THE DESIGN.</li></ul>

### DESIGN LOADS:

#### EARTHQUAKE

PROJECT WILL BE DESIGNED IN ACCORDANCE WITH AS1170.4-2024.

HAZARD FACTOR: Z = 0.08

LIFE SPAN: 50 YEARS

SITE SUBSOIL: CLASS C E

PROBABILITY OF EXCEEDANCE KP = 1:3

IMPORTANCE LEVEL: 3

#### WIND

REGION: A2

DESIGN REGIONAL WIND SPEED: 46 m/s

TC = 3

Mt = 1.0

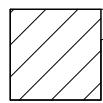
Md = AS PER AS1170.2

Mz cat = AS PER AS1170.2

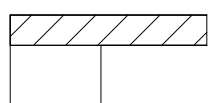
#### NOTE:

IT IS RECOMMENDED TO KEEP THE AREAS WITH LIVE LOADS BEYOND 7.5 KPA IN GROUND LEVEL.

## REINFORCEMENT RATES MEASURED ON CONCRETE VOLUMES AS NOTED



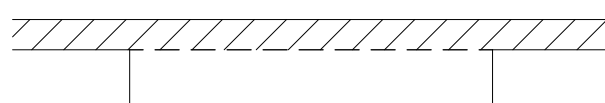
EDGE BEAM



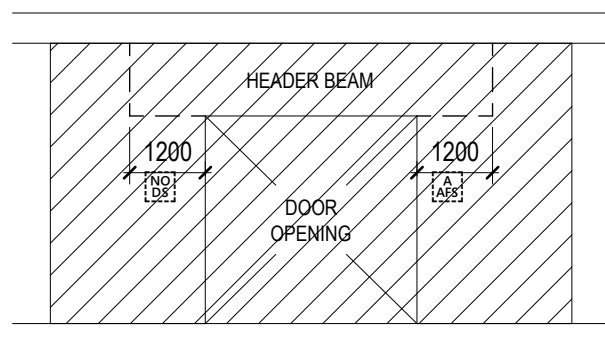
SLAB AT EDGE BEAM



BAND BEAM



SLAB AT BAND BEAM



REINFORCEMENT RATES FOR CORE WALLS ARE TO APPLY TO ENTIRE WALL ALLOWING FOR NO OPENINGS OR HEADER BEAMS

CORE WALL ELEVATION

## REINFORCEMENT RATE

ITEM	REINFORCEMENT RATE kg/m <sup>3</sup>	POST-TENSIONING RATE kg/m <sup>2</sup>
PILE CAPS & FOOTING BEAMS	160	N/A
COLUMNS	180	N/A
RC STAIRS	120	N/A
SUSPENDED SLAB ON GROUND	150	N/A

- WASTAGE, ROLLING MARGIN, CONSTRUCTION JOINTS, MOVEMENT JOINTS, DISTRIBUTION BARS, CHAIRS, ANTI-BURST REINFORCEMENT ARE EXCLUDED FROM THE RATES.
- CAST-IN ITEMS ARE NOT INCLUDED IN THE RATES.
- CORE CONNECTIONS ARE NOT INCLUDED IN THE RATES.
- PLINTHS AND HOBS ARE NOT INCLUDED IN THE RATES.
- RATES DO NOT INCLUDE ANY ALLOWANCE FOR CONSTRUCTION-RELATED REQUIREMENTS SUCH AS HOISTS, SAFETY MESH, CRANE CONNECTIONS, SCREENS AND TEMPORARY LOADINGS UNO.

## BAR COG SCHEDULE

Ø BAR	MINIMUM COG LENGTH
N12	180mm
N16	210mm
N20	260mm
N24	310mm
N28	360mm
N32	400mm
N36	450mm

### NOTE:

COG LENGTHS TO BE AS PER SCHEDULE UNLESS NOTED OTHERWISE

## ANCHORAGE / SPLICE LENGTH TABLE

### SPLICE LENGTHS of TENSION BARS in SLABS and BEAMS (mm)

Bar Size	Less than 300mm of concrete below bar or vertical bar				More than 300mm of concrete below bar			
	CONCRETE GRADE				CONCRETE GRADE			
	N32		>= N40		N32		>= N40	
	SLAB	BEAM	SLAB	BEAM	SLAB	BEAM	SLAB	BEAM
N10	400	400	400	400	500	450	500	400
N12	500	500	500	500	650	550	600	500
N16	750	650	700	650	1000	850	900	750
N20	1000	900	900	800	1300	1150	1150	1050
N24	1250	1150	1100	1050	1600	1500	1450	1350
N28	1500	1450	1350	1300	2000	1900	1750	1700
N32	1800	1750	1600	1600	2300	2300	2050	2050
N36	2100	2100	1900	1900	2700	2700	2400	2400
Approximate Splice Rule	55 db		50 db		75 db		65 db	
Approximate Anchorage Rule	45 db		40 db		60 db		55 db	

- These lengths apply for all bars in beams and slabs.
- The minimum cover to the bar under consideration is to be the greater of 20mm for slabs, 35mm for beams, or the bar diameter.
- The clear spacing between spliced bars must be less than one bar diameter.
- For N25 concrete, multiply the lengths of N32 concrete by 1.15
- Unless shown on the drawings the splice locations must be approved by the engineer.
- For Anchorage lengths of bars, multiply the Splice lengths by 0.8
- db denotes bar diameter.
- The minimum clear spacing of bars to be 120mm.

## VERTICAL SPLICE LENGTHS IN WALLS (mm)

BAR DIAMETER	CONCRETE GRADE			
	N32	N40	N50	N65-N100
12	500	500	500	500
16	650	650	650	650
20	850	800	800	800
24	1100	1000	1000	1000
28	1400	1250	1150	1150
32	1700	1550	1400	1300
36	2050	1850	1650	1450

MAXIMUM CLEAR GAP BETWEEN BARS ONE BAR DIAMETER.

MINIMUM COVER 40mm

NOTE: ADJACENT SHUTTERS VERTICAL BARS MAY BE PLACED IN OUTER LAYER

MINIMUM CLEAR SPACING 120mm

## HORIZONTAL SPLICE LENGTHS IN WALLS (mm)

BAR DIAMETER	CONCRETE GRADE			
	N32	N40	N50	N65-N100
12	650	600	550	500
16	1000	900	800	700
20	1300	1150	1050	900

MAXIMUM CLEAR GAP BETWEEN BARS ONE BAR DIAMETER.

MINIMUM COVER 20mm

NOTE: FOR WALLS EXPOSED TO WEATHER REFER GENERAL NOTES.

MINIMUM CLEAR SPACING 120mm

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT SITE INSTRUCTIONS, SKETCHES, SHOP DRAWINGS, SUB-CONTRACTOR DRAWINGS AND PROJECT CORRESPONDENCE. ACCURACY AND SET-OUT IS TO BE CONFIRMED BY SITE SURVEY.

## PRELIMINARY

REV	DESCRIPTION	BY	APP	DATE
P01	CONCEPT DESIGN DEVELOPMENT	RM	JB	12.11.24
P02	75% SCHEMATIC DESIGN	RM	JB	22.11.24
P03	85% SCHEMATIC DESIGN	RM	JB	13.12.24
P04	100% SCHEMATIC DESIGN	RM	JB	19.12.24

PROJECT NORTH



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CLIENT  
SCHOOL INFRASTRUCTURE NSW

TITLE  
STRUCTURAL NOTES  
SHEET 2

PROJECT  
DUNDAS PUBLIC SCHOOL

85 KISSING POINT ROAD, DUNDAS, NSW 2117

SCHEMATIC DESIGN

DESIGNED	DRAWN	APPROVED	DATE	SCALE @ A1	REVISION
TG	AA	JB	23.09.24	As indicated	P04

PROJECT No 132564  
DRAWING No  
DUPS-MHT-XX-XX-DR-S-0002



STRUCTURAL SIZES (UNLESS OTHERWISE NOTED)

RC COLUMNS REFER TO COLUMN SCHEDULE

CONCRETE GRADE

ALL FLOOR ELEMENTS N40 (DENSEWEIGHT)

PILE DESIGN NOTE

- A D+C PILING CONTRACTOR MAY TO IMPROVE ON THESE PARAMETERS IF PROVIDED WITH DETAILED TEST RESULTS OR THROUGH CARRYING OUT ADDITIONAL ON SITE TESTING.
- ALL PILES (EXCLUDING CAPPING BEAMS AND PILE CAPS) SHALL BE DELIVERED ON A DESIGN AND CONSTRUCT BASIS, BY A SPECIALIST PILING CONTRACTOR. THE ENGAGEMENT OF THE SPECIALIST PILING CONTRACTOR SHALL BE TO THE SATISFACTION OF THE SUPERINTENDENT.
- REFER GEOTECHNICAL REPORT BY ADECONSULTING GROUP.
- THE SPECIALIST PILING CONTRACTOR SHALL DESIGN, CERTIFY AND CONSTRUCT THE PILES TO MEET THE SCHEDULED LOADS, SETTLEMENT LIMITS AND MINIMUM REQUIREMENTS.
- UNLESS NOTED OTHERWISE, ALL PILES LENGTH, REINFORCEMENT AND CONCRETE STRENGTH SHOWN ARE FOR COSTING ONLY.
- DURING INSTALLATION, ANY PILE CONSTRUCTED BEYOND THE SPECIFIED TOLERANCES SHALL BE IMMEDIATELY REPORTED TO THE SUPERINTENDENT, WITH ALL RELEVANT AS-BUILT INFORMATION IN DIGITAL FORMAT (CAD) TO ENABLE REVIEW. ANY ASSOCIATED ENGINEERING COSTS INCURRENT BY NON-COMPLIANT CONSTRUCTION SHALL BE BORNE BY THE PILING CONTRACTOR. SUFFICIENT TIME SHALL BE ALLOWED FOR THE REVIEWS, ANY ASSOCIATED RE-DESIGN AND RE-DOCUMENTATION WORKS.
- THE BUILDER / PILING CONTRACTOR SHALL PROVIDE WRITTEN CONFIRMATION TO THE SUPERINTENDENT THAT THE AS-BUILT PILES COMPLY FULLY WITH PERFORMANCE SPECIFICATIONS.
- THE BUILDER SHALL EMPLOY A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER TO VALIDATE ALL ADOPTED GEOTECHNICAL PARAMETERS SPECIFIED ON THE STRUCTURAL, CIVIL AND GEOTECHNICAL ENGINEERING REPORTS AND PROVIDE NOTIFICATION OF ANY DISCREPANCIES. THIS SHALL INCLUDE, BUT NOT LIMITED TO, SUB-GRADE PREPARATION, BATTER SLOPES AND STABILITY AND BEARING CAPACITY.
- THE SCHEDULED LOADS DO NOT INCLUDE PILES SELF WEIGHT. THE PILING CONTRACTOR SHALL ALLOW AS APPROPRIATE.

LEGEND (UNLESS OTHERWISE NOTED)

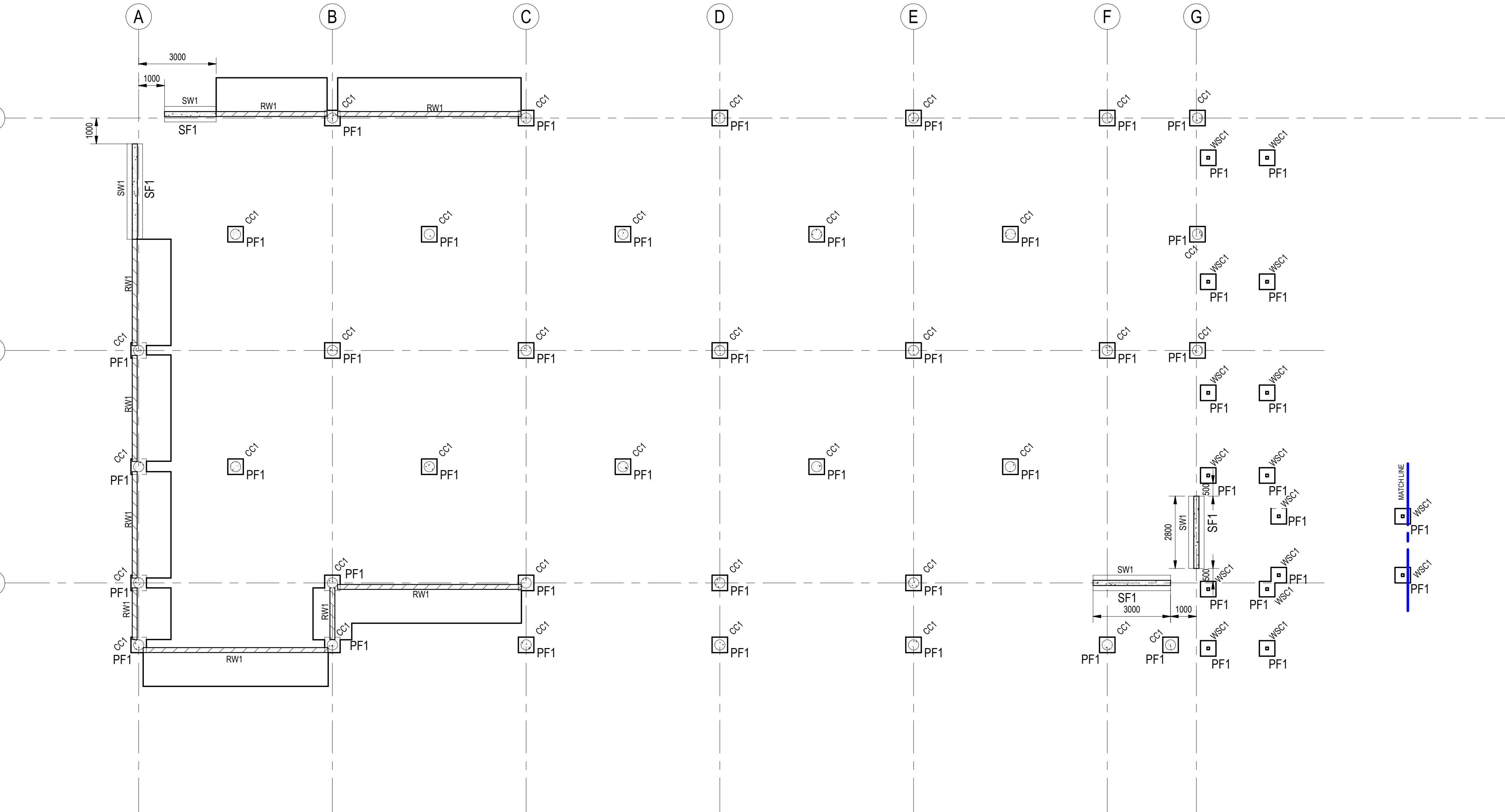
- 250

250
- DENOTES THICKNESS OF SLAB
- 
- 100

100
- DENOTES CONCRETE ELEMENT OVER
- 
- 100

100
- DENOTES BLOCKWORK WALL OVER
- 
- ⊗

⊗
- PILE LOAD CENTROID.
- 
- REFER DWG S2001 FOR PILE LOAD TABLE.



D & C PILING SCHEDULE.					
MARK	SIZE	WORKING LOADS (kN)			NOTES
		COMPRESSION	TENSION	SHEAR	

- PILE SETOUT TO BE DOCUMENTED BY PROJECT ARCHITECT
- PILE ARRANGEMENT ARE SHOWN INDICATIVE ONLY. EXACT NUMBER OF PILES TO BE CONFIRMED BY D&C CONTRACTOR BASED ON LOADING ON PILES

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FOOTING PLAN

SCALE: 1 : 100

PAD FOOTING SCHEDULE						
MARK	DIMENSIONS			CONCRETE GRADE	REINFORCEMENT	ALLOWABLE BEARING PRESSURE (KPa)
	WIDTH	LENGTH	DEPTH			
PF1	600	600	450			1000

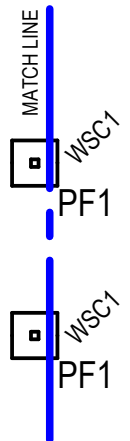
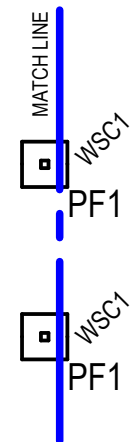
RC COLUMN SCHEDULE		
MARK	SIZE	REINFORCEMENT
CC1	DIA. 400	

SHEAR WALL SCHEDULE		
MARK	WIDTH	REMARKS
SW1	200	IN-SITU

RETAINING WALL SCHEDULE		
MARK	WIDTH	REMARKS
RW1	190	BLOCK WALL

STEEL COLUMN SCHEDULE		
MARK	SIZE	REMARKS
WSC1	100 x 100 x 6 SHS	

- Note:
- REFER DRAWING S2001 AND S2002 FOR REINFORCEMENT ARRANGEMENT.
  - STRUCTURAL ENGINEER NEED TO BE NOTIFIED IF ANY DISCREPANCY IN PILE DIAMETER .



WALK WAY FOOTING PLAN

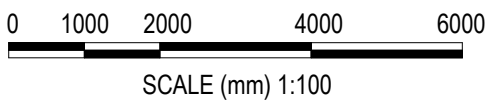
SCALE: 1 : 100

STRIP FOOTING & GROUND BEAM SCHEDULE						
MARK	WIDTH	DEPTH	REINFORCEMENT			REMARKS
			BOTTOM	TOP	TIES	
SF1	600	500				SF1 TO BE FULLY EMBEDDED IN THE UNIT 5-A ROCK

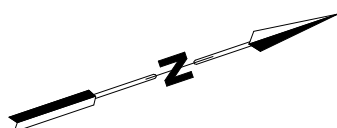
PRELIMINARY

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REV	DESCRIPTION	BY	APP	DATE
P01	CONCEPT DESIGN DEVELOPMENT	RM	JB	12.11.24
P02	75% SCHEMATIC DESIGN	RM	JB	22.11.24
P03	85% SCHEMATIC DESIGN	RM	JB	13.12.24
P04	100% SCHEMATIC DESIGN	RM	JB	19.12.24



PROJECT NORTH



School Infrastructure NSW



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TITLE  
FOOTING PLAN

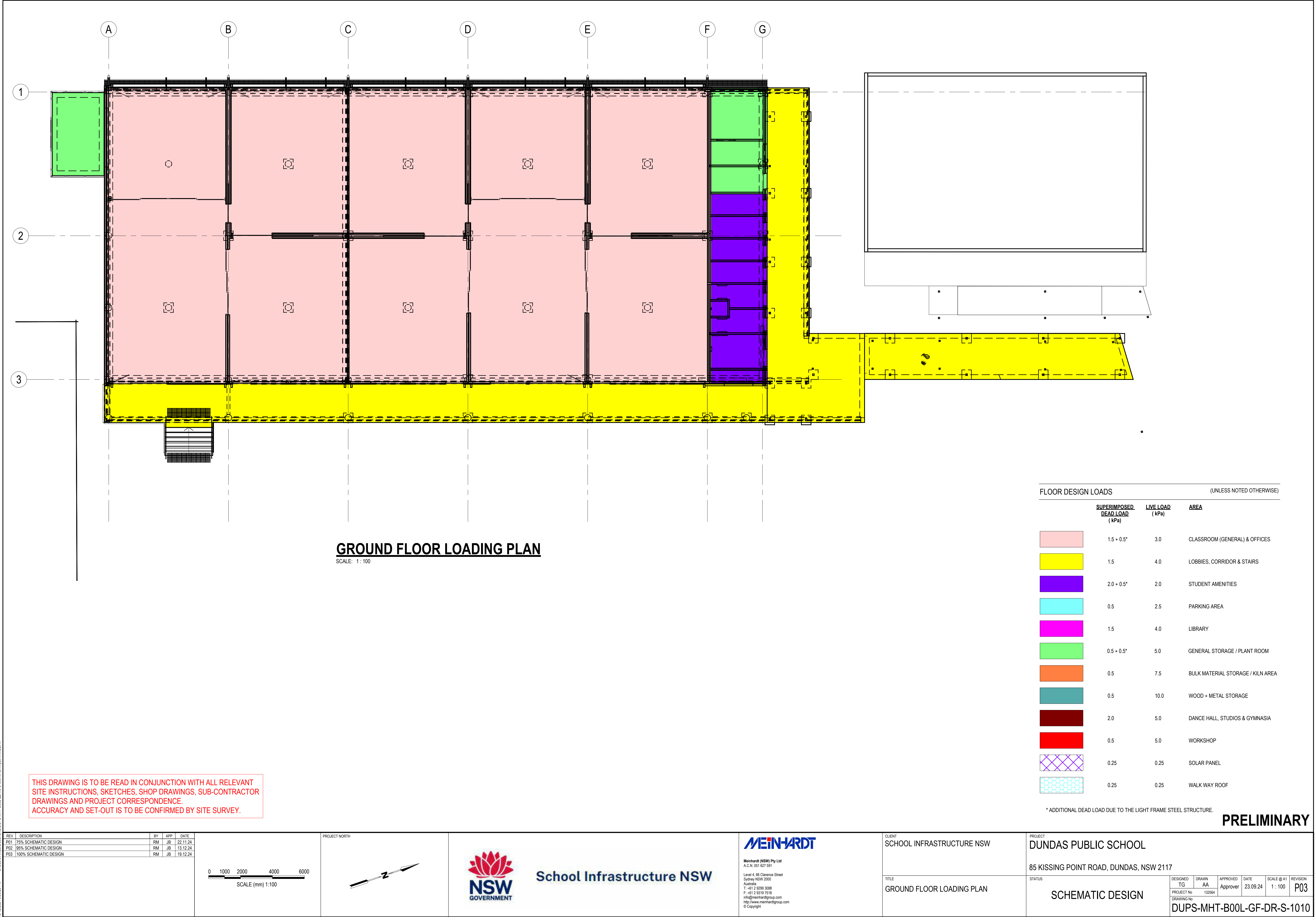
PROJECT  
DUNDAS PUBLIC SCHOOL

85 KISSING POINT ROAD, DUNDAS, NSW 2117

SCHEMATIC DESIGN

DESIGNED	DRAWN	APPROVED	DATE	SCALE @ A1	REVISION
TG	AA	JB	23.09.24	As indicated	P04
PROJECT No 132564					
DRAWING No					
DUFS-MHT-B00L-FF-DR-S-2000					

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**GROUND FLOOR LOADING PLAN**  
SCALE: 1 : 100

FLOOR DESIGN LOADS (UNLESS NOTED OTHERWISE)

	SUPERIMPOSED DEAD LOAD (kPa)	LIVE LOAD (kPa)	AREA
	1.5 + 0.5*	3.0	CLASSROOM (GENERAL) & OFFICES
	1.5	4.0	LOBBIES, CORRIDOR & STAIRS
	2.0 + 0.5*	2.0	STUDENT AMENITIES
	0.5	2.5	PARKING AREA
	1.5	4.0	LIBRARY
	0.5 + 0.5*	5.0	GENERAL STORAGE / PLANT ROOM
	0.5	7.5	BULK MATERIAL STORAGE / KILN AREA
	0.5	10.0	WOOD + METAL STORAGE
	2.0	5.0	DANCE HALL, STUDIOS & GYMNASIA
	0.5	5.0	WORKSHOP
	0.25	0.25	SOLAR PANEL
	0.25	0.25	WALK WAY ROOF

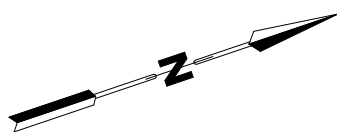
\* ADDITIONAL DEAD LOAD DUE TO THE LIGHT FRAME STEEL STRUCTURE.

**PRELIMINARY**

REV	DESCRIPTION	BY	APP	DATE
P01	75% SCHEMATIC DESIGN	RM	JB	22.11.24
P02	95% SCHEMATIC DESIGN	RM	JB	13.12.24
P03	100% SCHEMATIC DESIGN	RM	JB	19.12.24

0 1000 2000 4000 6000  
SCALE (mm) 1:100

PROJECT NORTH



**School Infrastructure NSW**



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SCHOOL INFRASTRUCTURE NSW

TITLE  
GROUND FLOOR LOADING PLAN

PROJECT  
DUNDAS PUBLIC SCHOOL

85 KISSING POINT ROAD, DUNDAS, NSW 2117

STATUS  
SCHEMATIC DESIGN

DESIGNED	DRAWN	APPROVED	DATE	SCALE @ A1	REVISION
TG	AA	Approver	23.09.24	1 : 100	P03
PROJECT No 132664					
DRAWING No					
DUFS-MHT-B00L-GF-DR-S-1010					



STRUCTURAL SIZES (UNLESS OTHERWISE NOTED)

SLAB  
GENERALLY 200mm THICK S.S.O.G. U.N.O.  
ON WATERPROOFING MEMBRANE OVER 120mm  
DRAINAGE LAYER. THICKNESS OF DRAINAGE LAYER TO  
BE CONFIRMED BY HYDRAULIC ENGINEER.

CONCRETE GRADE

ALL FLOOR ELEMENTS N40 (DENSEWEIGHT)

NOTES

1. ALL STEPS, REBATES AND HOBS LOCATIONS AND EXTENT REFER TO ARCHITECTURAL SET OUT PLANS. REFER STRUCTURAL DRAWINGS FOR TYPICAL HOB AND SET DOWN DETAILS.

LEGEND (UNLESS OTHERWISE NOTED)

- 250  
CJ  
T.M.J  
P.M.J  
S.J  
I.J  
STEP  
250  
DENOTES THICKNESS OF SLAB  
DENOTES CONSTRUCTION JOINT  
DENOTES TEMPORARY MOVEMENT JOINT  
DENOTES PERMANENT MOVEMENT JOINT  
DENOTES SAW CUT JOINT  
DENOTES ISOLATION JOINT  
DENOTES SLAB STEP  
REFER TO ARCHITECTUAL DRAWINGS FOR  
SETOUT AND DIMENSIONS  
DENOTES CONCRETE ELEMENT OVER  
DENOTES LOAD-BEARING ELEMENT UNDER  
DENOTES LOAD-BEARING ELEMENT UNDER  
AND CONCRETE ELEMENT OVER  
VOID FORMER NOT REQUIRED  
USE 50mm BLINDING INSTEAD  
NLBW  
DENOTES NON LOAD BEARING WALL, 200TK RC,  
40MPA CONCRETE, N12-250 EF/EW.  
DENOTES S.O.G. WITH 300x300 EDGE BEAM  
(ET1) U.N.O. REFER CIVIL DRAWINGS FOR  
DETAIL.

RC COLUMN SCHEDULE

MARK	SIZE	REINFORCEMENT
CC1	DIA. 400	

STEEL COLUMN SCHEDULE

MARK	SIZE	REMARKS
WSC1	100 x 100 x 6 SHS	

GROUND FLOOR STRUCTURAL PLAN

SCALE: 1 : 100

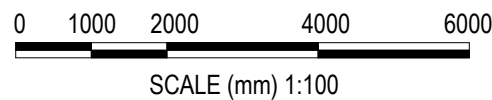
GROUND FLOOR WALK WAY PLAN

SCALE: 1 : 100

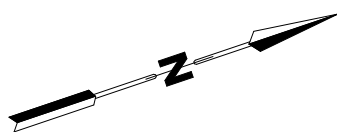
THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT  
SITE INSTRUCTIONS, SKETCHES, SHOP DRAWINGS, SUB-CONTRACTOR  
DRAWINGS AND PROJECT CORRESPONDENCE.  
ACCURACY AND SET-OUT IS TO BE CONFIRMED BY SITE SURVEY.

PRELIMINARY

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P04	100% SCHEMATIC DESIGN	RM	JB	



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SCHOOL INFRASTRUCTURE NSW

TITLE  
GROUND FLOOR STRUCTURAL PLAN

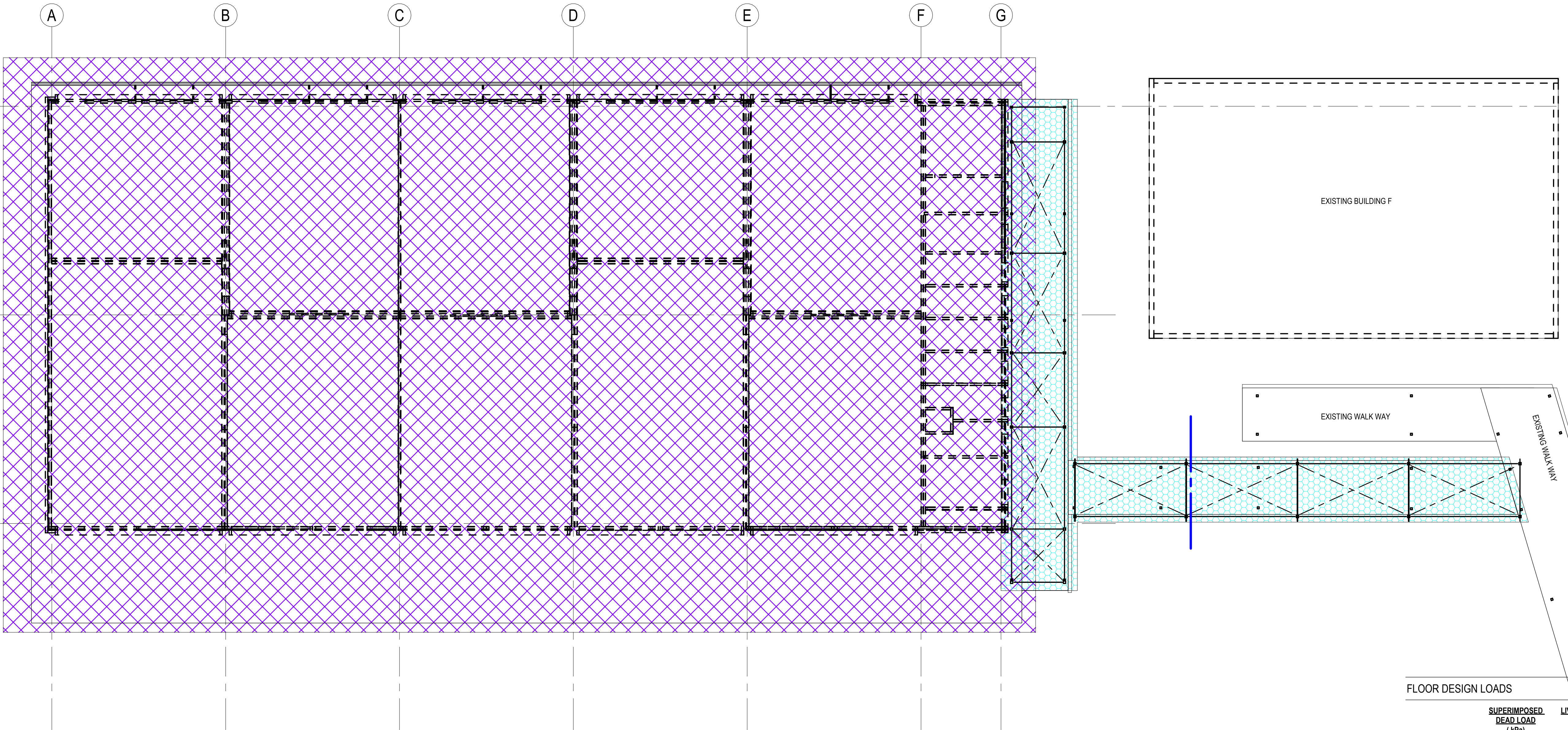
PROJECT  
DUNDAS PUBLIC SCHOOL

85 KISSING POINT ROAD, DUNDAS, NSW 2117

STATUS  
SCHEMATIC DESIGN

DESIGNED	DRAWN	APPROVED	DATE	SCALE @ A1	REVISION
TG	AA	JB	23.09.24	1 : 100	P04
PROJECT No 132564 DRAWING No DUPS-MHT-B00L-GF-DR-S-2010					





ROOF LOADING PLAN

SCALE: 1 : 100

FLOOR DESIGN LOADS (UNLESS NOTED OTHERWISE)

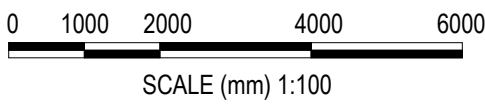
	SUPERIMPOSED DEAD LOAD (kPa)	LIVE LOAD (kPa)	AREA
	1.5 + 0.5*	3.0	CLASSROOM (GENERAL) & OFFICES
	1.5	4.0	LOBBIES, CORRIDOR & STAIRS
	2.0 + 0.5*	2.0	STUDENT AMENITIES
	0.5	2.5	PARKING AREA
	1.5	4.0	LIBRARY
	0.5 + 0.5*	5.0	GENERAL STORAGE / PLANT ROOM
	0.5	7.5	BULK MATERIAL STORAGE / KILN AREA
	0.5	10.0	WOOD + METAL STORAGE
	2.0	5.0	DANCE HALL, STUDIOS & GYMNASIA
	0.5	5.0	WORKSHOP
	0.25	0.25	SOLAR PANEL
	0.25	0.25	WALK WAY ROOF

\* ADDITIONAL DEAD LOAD DUE TO THE LIGHT FRAME STEEL STRUCTURE.

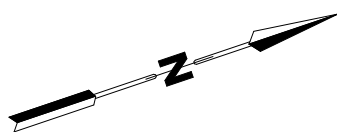
PRELIMINARY

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT  
SITE INSTRUCTIONS, SKETCHES, SHOP DRAWINGS, SUB-CONTRACTOR  
DRAWINGS AND PROJECT CORRESPONDENCE.  
ACCURACY AND SET-OUT IS TO BE CONFIRMED BY SITE SURVEY.

REV	DESCRIPTION	BY	APP	DATE
P01	75% SCHEMATIC DESIGN	RM	JB	22.11.24
P02	95% SCHEMATIC DESIGN	RM	JB	13.12.24
P03	100% SCHEMATIC DESIGN	RM	JB	19.12.24



PROJECT NORTH



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CLIENT  
SCHOOL INFRASTRUCTURE NSW

TITLE  
ROOF LOADING PLAN

PROJECT  
DUNDAS PUBLIC SCHOOL

85 KISSING POINT ROAD, DUNDAS, NSW 2117

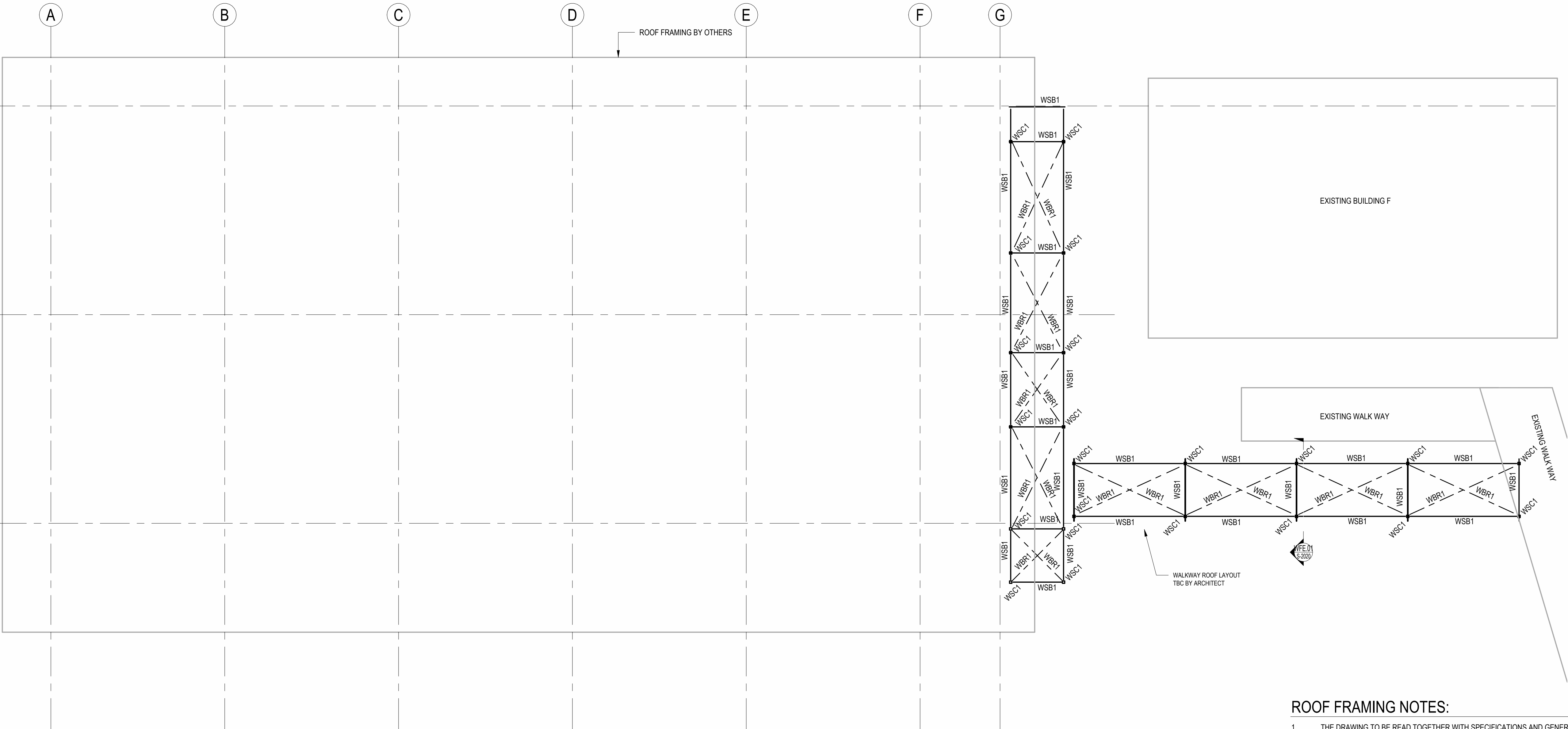
STATUS  
SCHEMATIC DESIGN

DESIGNED	DRAWN	APPROVED	DATE	SCALE @ A1	REVISION
TG	AA	Approver	23.09.24	1 : 100	P03
PROJECT No 132664					
DRAWING No					

DUPS-MHT-B00L-LR-DR-S-1020



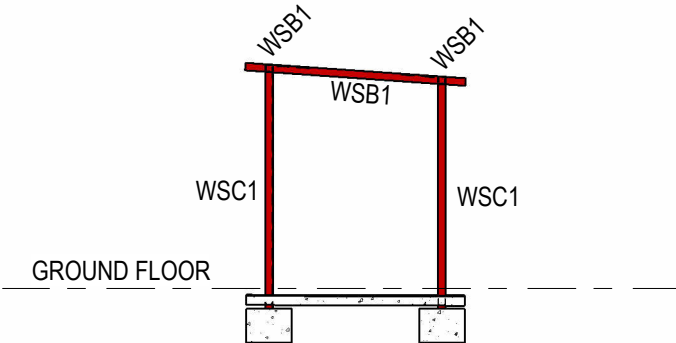
C:\Users\Ryan\Documents\DUPS-MHT-B00L-LR-DR-S-2020 - Rev MyerWMD2.rvt 19/12/2024 5:45:48 PM



## ROOF FRAMING PLAN

SCALE: 1 : 100

STEEL FRAMING SCHEDULE		
MARK	SIZE	REMARKS
WBR1	M16 ROD	CROSS BRACING WITH TURNBUCKLE
WSB1	100 x 100 x 5.0 SHS	
WSC1	100 x 100 x 6 SHS	



ELEVATION  
SCALE 1 : 100

WFE.01  
S-2010

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT SITE INSTRUCTIONS, SKETCHES, SHOP DRAWINGS, SUB-CONTRACTOR DRAWINGS AND PROJECT CORRESPONDENCE. ACCURACY AND SET-OUT IS TO BE CONFIRMED BY SITE SURVEY.

### ROOF FRAMING NOTES:

(UNLESS OTHERWISE NOTED)

- THE DRAWING TO BE READ TOGETHER WITH SPECIFICATIONS AND GENERAL NOTES
- MECHANICAL PENETRATIONS IN ROOF ARE SHOWN INDICATIVELY ONLY  
REFER MECHANICAL ENGINEERS DRAWINGS FOR SIZE AND EXACT LOCATIONS
- ALL EXPOSED STEEL TO BE HOT DIPPED GALVANISED
- ALLOWANCE FOR THE SUPPORT OF MECHANICAL SERVICES SHOULD BE MADE BY THE CONTRACTOR AS FOLLOWS:
  - FULL HEIGHT VERTICAL DUCTS ARE TO BE SUPPORTED FROM THE CONCRETE FLOOR SLAB BELOW
  - SERVICES ARE TO BE SUPPORTED FROM THE PURLIN WEBS ONLY
  - DUCTS, PIPES, CABLE TRAYS ETC. PERPENDICULAR TO PURLINS ARE TO BE SUPPORTED FROM EVERY PURLIN (1500 MAX. CTS.)
  - DUCTS, PIPES, CABLE TRAYS ETC. PARALLEL TO PURLINS ARE TO BE SUPPORTED FROM 3 No. PURLINS USING 75 x 75 x 6 EA SPREADERS AT 1500 MAX. CTS.
  - ALL HEAVY LOAD SUPPORTS ARE TO BE APPROVED BY THE ENGINEER. LOADS GREATER THAN 300kg TO BE SUPPORTED BY STEELWORK PROVIDED BY THE SUB-CONTRACTOR AND APPROVED BY THE ENGINEER
- ALLOW FOR AN ADDITIONAL 2 No. 250 UB 31 TRIMMER BEAMS TO MECHANICAL ROOF VENTS. LOCATIONS TO ARCHITECT AND MECHANICAL DRAWINGS (TYPICALLY)
- ALLOW FOR 50 x 50 x 3 EA FLY BRACES TO ROOF BEAMS AT 1/3 POINTS (TYPICALLY)

### PURLIN NOTES:

(UNLESS OTHERWISE NOTED)

- REFER MEMBER SCHEDULE FOR PURLIN SIZE AND CENTRES
- PURLINS TO BE LAPPED AT 900mm MAX. CTS. AT SUPPORTS (UNO).
- REFER ARCHITECTURAL DRAWINGS FOR ADDITIONAL PURLINS REQUIRED TO SUPPORT FLASHING, GUTTERS AND OTHER NON-STRUCTURAL ITEMS
- PROVIDE BRIDGING AS INDICATED IN MEMBER SCHEDULE, FIXED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS
- PROVIDE TRIMMING ANGLE TO END OF PURLINS TO SUPPORT END OF SHEETING
- PURLIN SETOUT SHOWN ON PLAN INDICATIVE ONLY, SHOP DETAILER TO CONFIRM ACTUAL NUMBER OF PURLINS REQUIRED

### LEGEND:

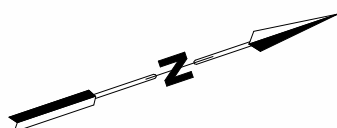
- FB DENOTES 'FLY BRACING'
- M.S. DENOTES 'BEAM MOMENT SPLICE CONNECTION'

PRELIMINARY

REV	DESCRIPTION	BY	APP	DATE
P01	75% SCHEMATIC DESIGN	RM	JB	22.11.24
P02	95% SCHEMATIC DESIGN	RM	JB	13.12.24
P03	100% SCHEMATIC DESIGN	RM	JB	

0 1000 2000 4000 6000  
SCALE (mm) 1:100

PROJECT NORTH



School Infrastructure NSW



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CLIENT  
SCHOOL INFRASTRUCTURE NSW

TITLE  
ROOF FRAMING PLAN

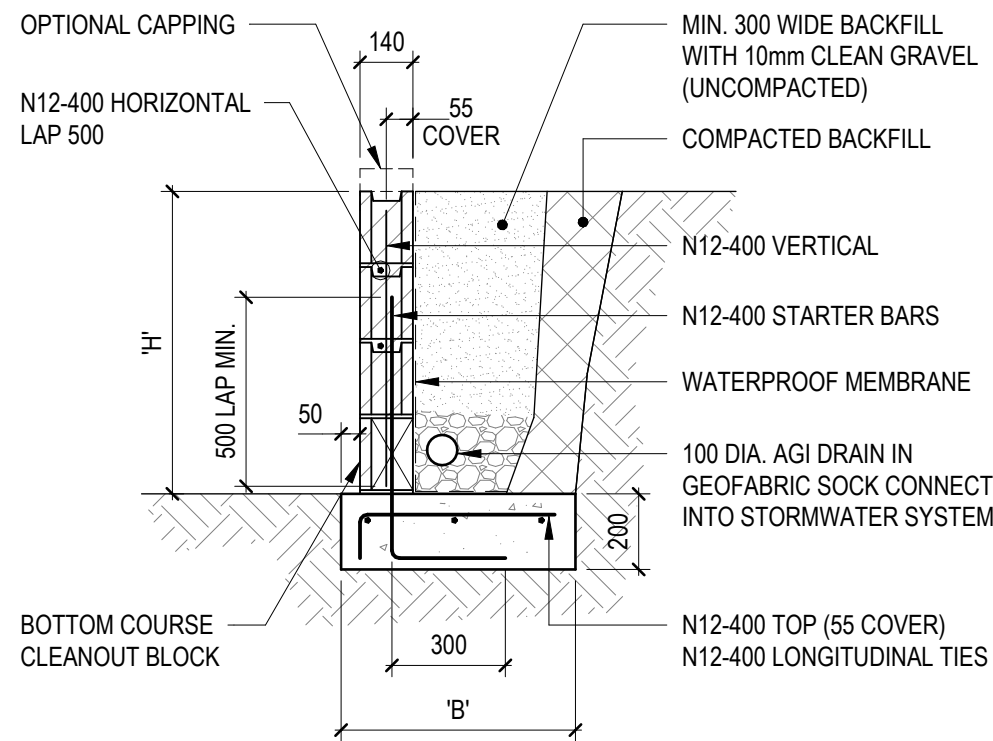
PROJECT  
DUNDAS PUBLIC SCHOOL

85 KISSING POINT ROAD, DUNDAS, NSW 2117

SCHEMATIC DESIGN

DESIGNED	DRAWN	APPROVED	DATE	SCALE @ A1	REVISION
TG	AA	JB	23.09.24	1 : 100	P03
PROJECT No 132564					
DRAWING No					
DUPS-MHT-B00L-LR-DR-S-2020					



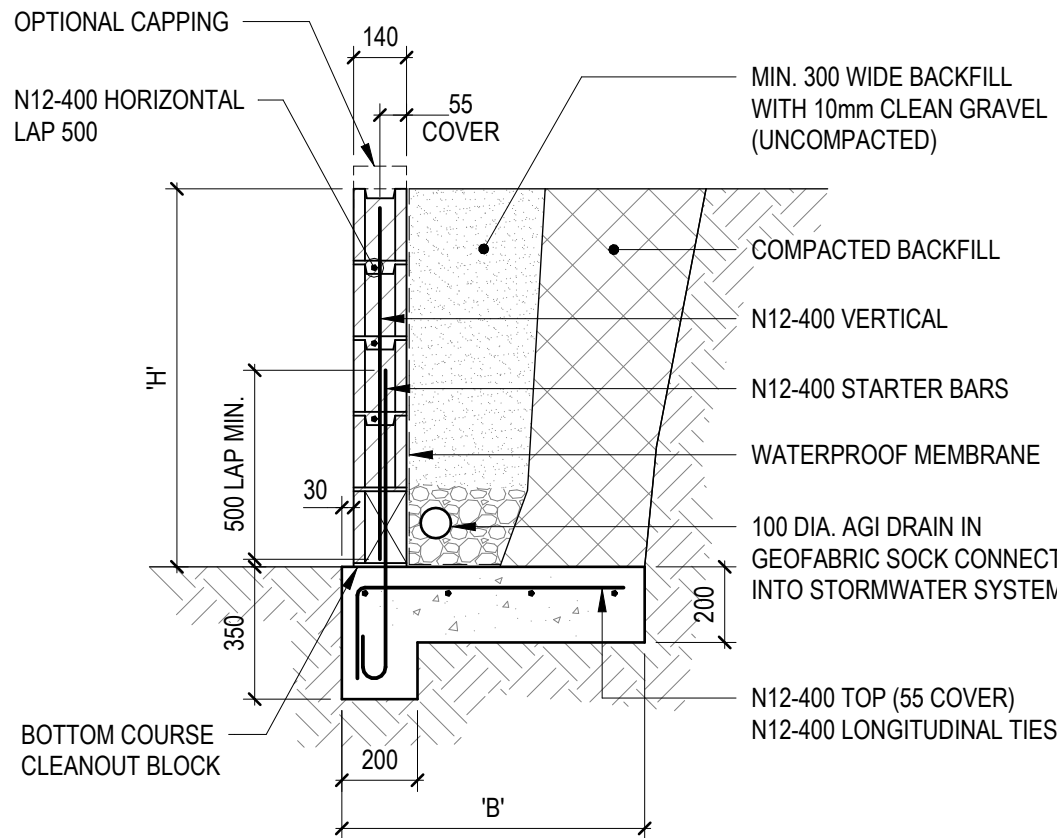


### RETAINING WALL - 1.0m HIGH MAX. (ALTERATION)

- WALLS TO BE CONSTRUCTED USING 140 'H' BLOCKS
- ALL BLOCKWORK TO BE CONCRETE CORE FILLED AS PER NOTES

SCALE 1:20

BASE DIMENSIONS	
'H' (HEIGHT mm)	'B' (BASE mm)
600	600

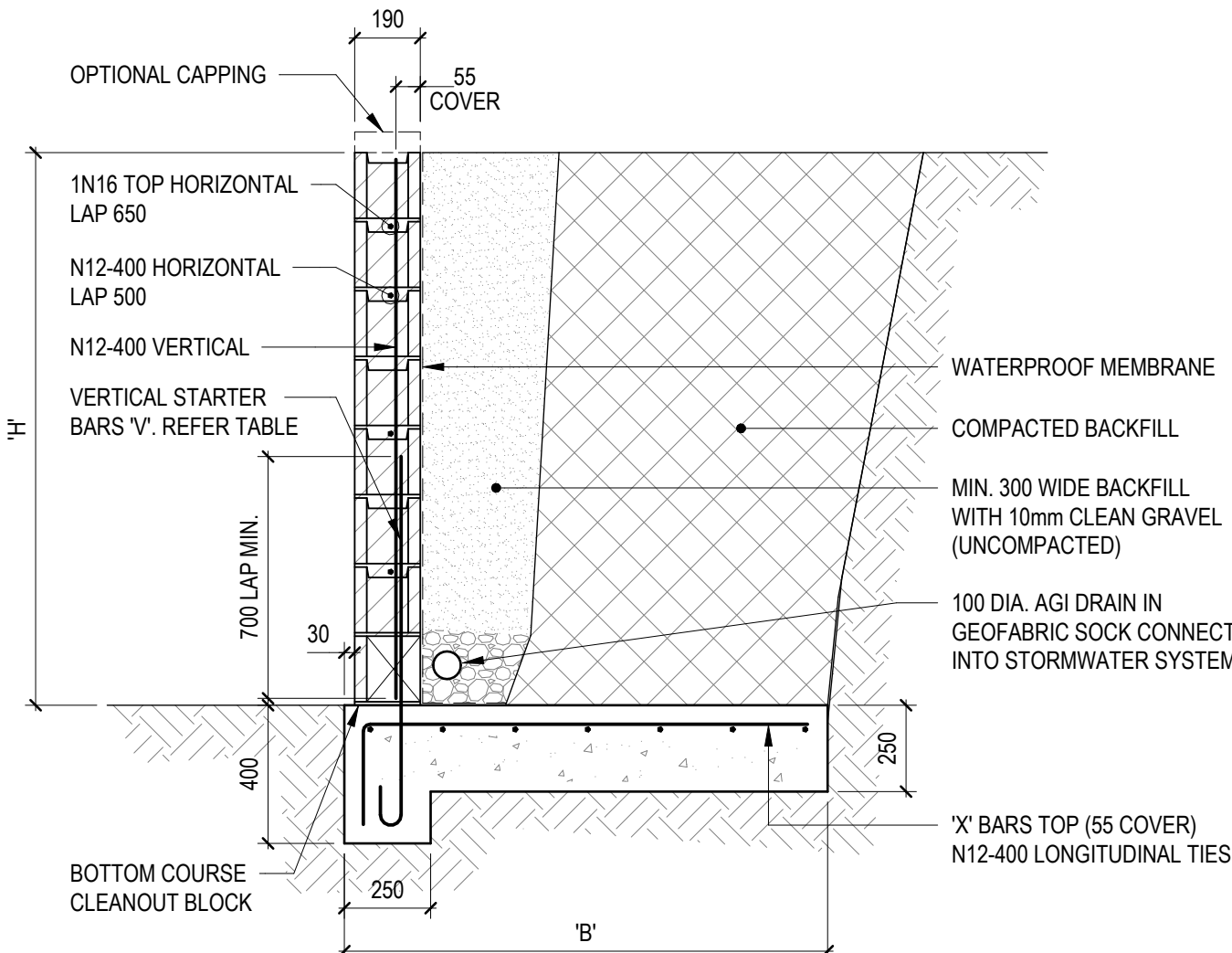


### RETAINING WALL - 1.2m HIGH MAX. (ALTERATION)

- WALLS TO BE CONSTRUCTED USING 140 'H' BLOCKS
- ALL BLOCKWORK TO BE CONCRETE CORE FILLED AS PER NOTES

SCALE 1:20

BASE DIMENSIONS		
'H' (HEIGHT mm)	NO SURCHARGE 'B' (BASE mm)	5 kPa SURCHARGE 'B' (BASE mm)
800	600	800
1000	700	1000
1200	800	1000

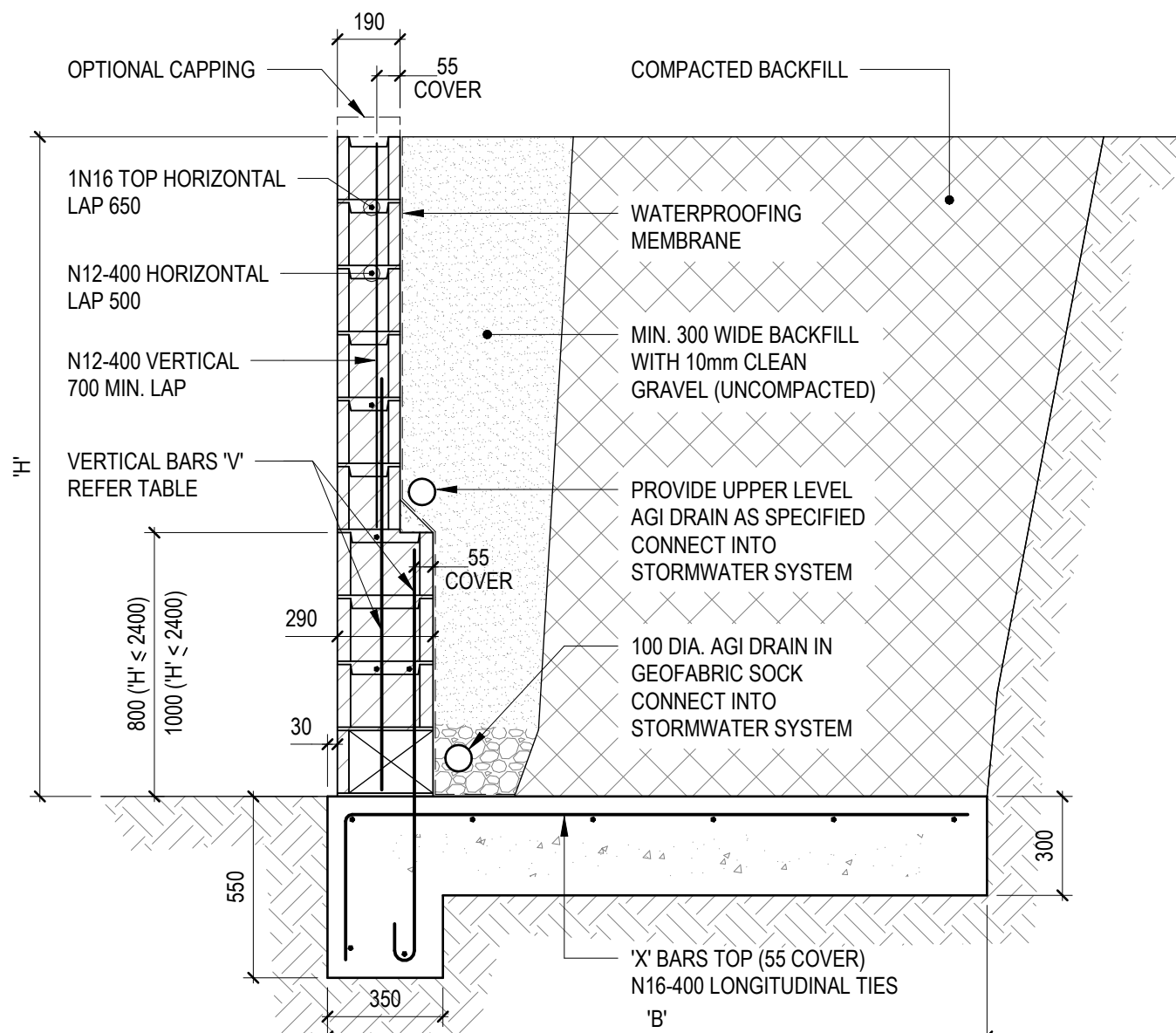


### RETAINING WALL - 2.0m HIGH MAX. (ALTERATION)

- WALLS TO BE CONSTRUCTED USING 190 'H' BLOCKS
- ALL BLOCKWORK TO BE CONCRETE CORE FILLED AS PER NOTES

SCALE 1:20

BASE DIMENSIONS			
'H' (HEIGHT mm)	NO SURCHARGE 'B' (BASE mm)	5 kPa SURCHARGE 'B' (BASE mm)	REINFORCEMENT 'V' AND 'X' BARS
1400	1300	1700	N12-400
1600	1400	2000	N16-400
1800	1600	2200	N16-400
2000	1700	2500	N16-400



### RETAINING WALL - 3.0m HIGH MAX. (ALTERATION)

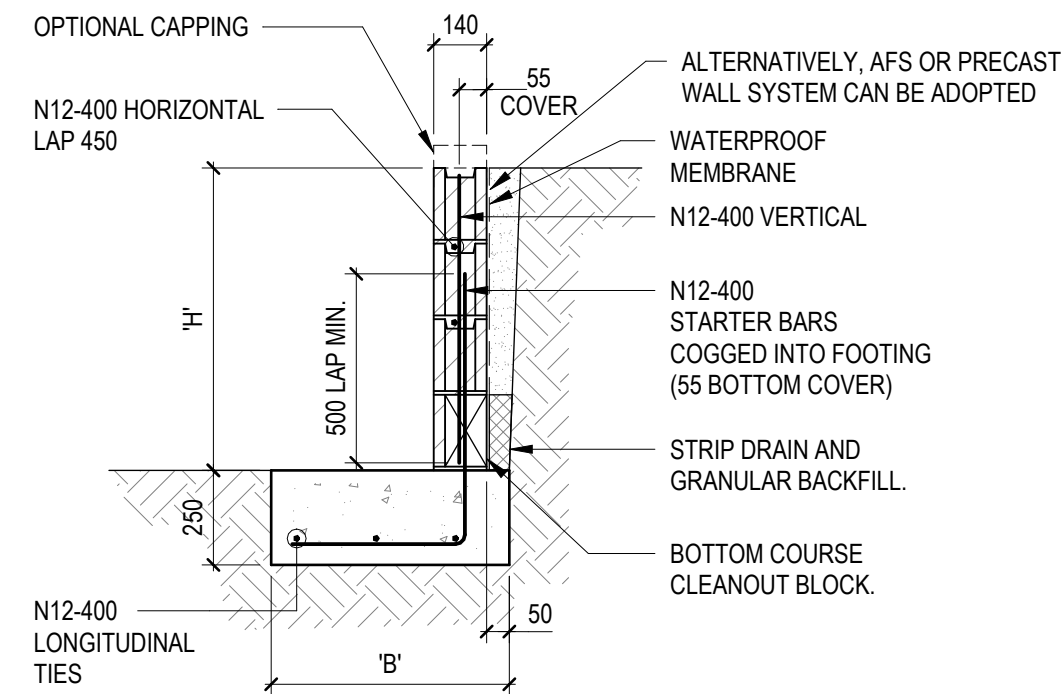
- WALLS TO BE CONSTRUCTED USING 190 + 240 'H' BLOCKS
- ALL BLOCKWORK TO BE CONCRETE CORE FILLED AS PER NOTES

SCALE 1:20

BASE DIMENSIONS			
'H' (HEIGHT mm)	NO SURCHARGE 'B' (BASE mm)	5 kPa SURCHARGE 'B' (BASE mm)	REINFORCEMENT 'V' AND 'X' BARS
2200	1900	2800	N16-400
2400	2000	3100	N16-400
2600	2200	3300	N20-400
2800	2400	3600	N20-400
3000	2600	3900	N16-200

#### BLOCK RETAINING WALL NOTES

- ALL BLOCK/CAVITY CORES TO BE CONCRETE FILLED, CONCRETE  $F_c = 20$  MPa, 10mm MAX. AGGREGATE SIZE, 250mm SLUMP
- FOOTING CONCRETE GRADE N25 U.N.O. COVER TO FOOTING REINFORCEMENT = 55mm U.N.O.
- FOOTING DESIGNED FOR AN ALLOWABLE BEARING CAPACITY OF 100kPa. ALL FOOTINGS TO BE FOUND IN FIRM NATURAL GROUND AND CONFIRMED ON SITE BY THE GEOTECHNICAL ENGINEER
- RETAINING WALLS TO HAVE NO SURCHARGE, UNLESS NOTED IN TABLE
- PROVIDE VERTICAL CONTROL JOINTS AT 6000 CTS. MAX.
- PROVIDE N12 CORNER BARS AT 600 CTS. LAP 600 EACH WAY FOR WALL RETURNS
- BLOCKS  $F_{uc} = 15$  MPa
- MORTAR CEMENT 1 : LIME 0.5 : SAND 4.5
- BUILDER IS TO MAINTAIN STABILITY OF WALL DURING BACKFILLING PROCEDURE
- INTERNAL WALL TO HABITABLE AREAS TO BE TANKED TO PREVENT MOISTURE PENETRATION. REFER TANKING SUPPLIERS FOR DETAILS
- IF OTHER RETAINING WALLS EXIST OR ARE TO BE CONSTRUCTED ADJACENT TO OR EITHER ABOVE OR BELOW THE RETAINING WALLS DETAILED, THEN THE ENGINEER SHOULD BE CONTACTED IMMEDIATELY FOR REVISED DESIGN.
- IF OTHER RETAINING WALLS EXIST OR ARE TO BE CONSTRUCTED ADJACENT TO OR EITHER ABOVE OR BELOW THE RETAINING WALLS DETAILED, THEN THE CONTRACTOR TO ENSURE STABILITY OF THE EXISTING RETAINING STRUCTURE.

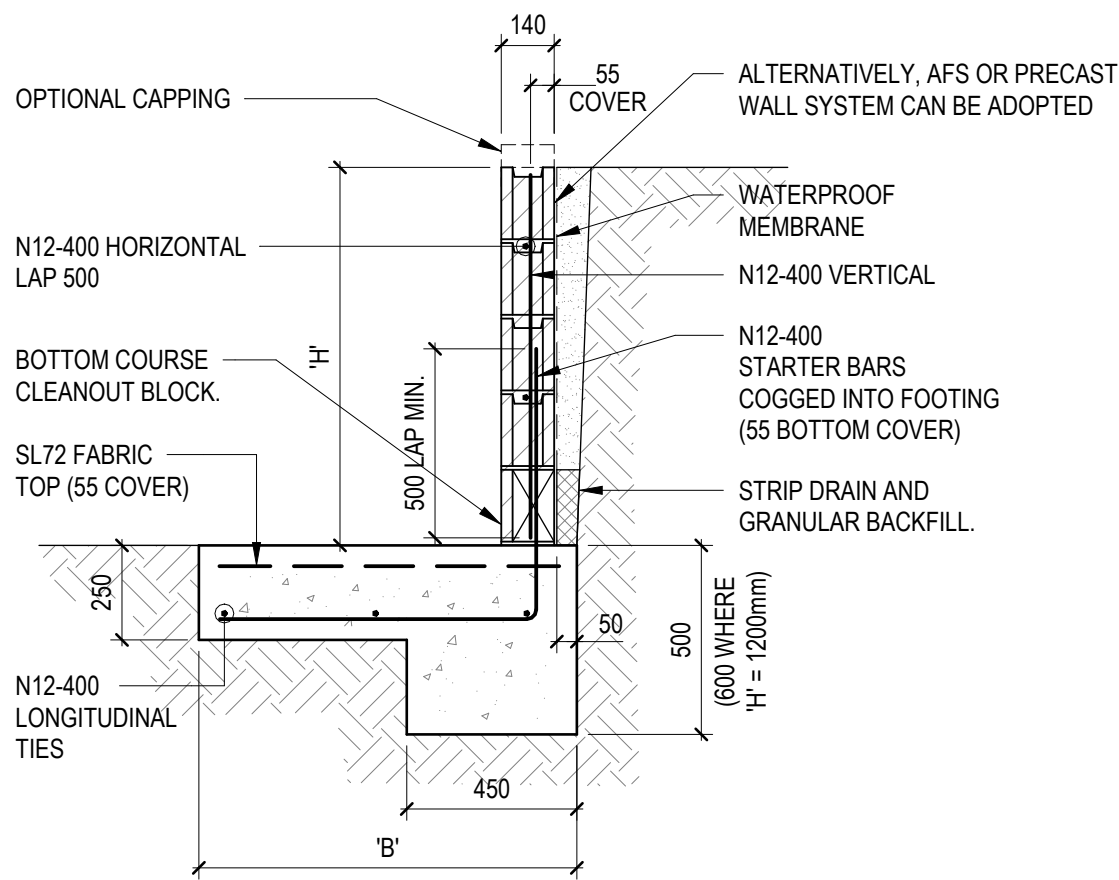


### RETAINING WALL - 1.0m HIGH MAX. (RW1)

- WALLS TO BE CONSTRUCTED USING 140 'H' BLOCKS
- ALL BLOCKWORK TO BE CONCRETE CORE FILLED AS PER BLOCKWORK RETAINING WALL NOTES

SCALE 1:20

BASE DIMENSIONS	
'H' (HEIGHT mm)	'B' (BASE mm)
600	600

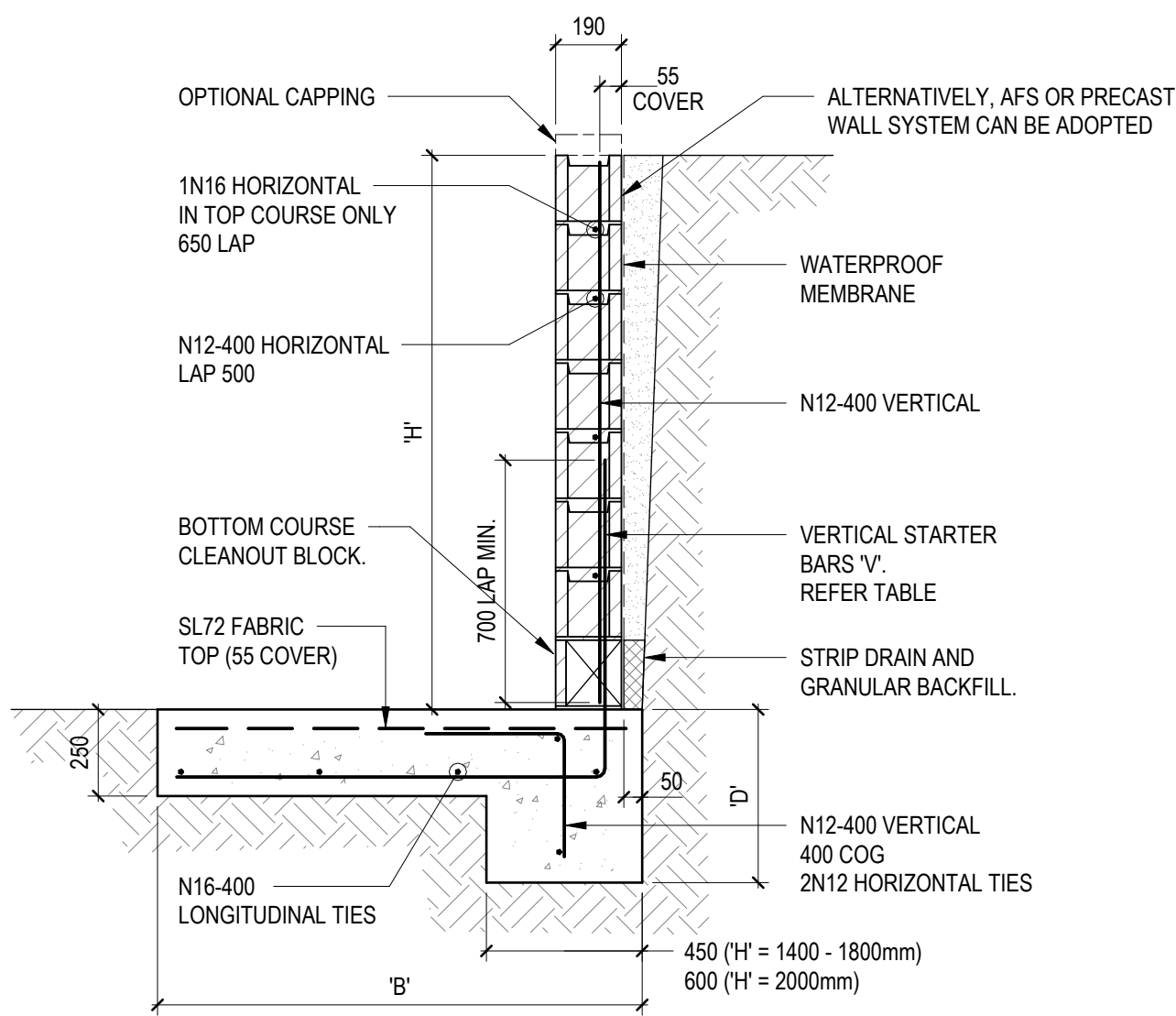


### RETAINING WALL - 1.2m HIGH MAX. (RW2)

- WALLS TO BE CONSTRUCTED USING 140 'H' BLOCKS
- ALL BLOCKWORK TO BE CONCRETE CORE FILLED AS PER BLOCKWORK RETAINING WALL NOTES

SCALE 1:20

BASE DIMENSIONS		
'H' (HEIGHT mm)	NO SURCHARGE 'B' (BASE mm)	5 kPa SURCHARGE 'B' (BASE mm)
800	800	800
1000	800	1000
1200	1000	1200

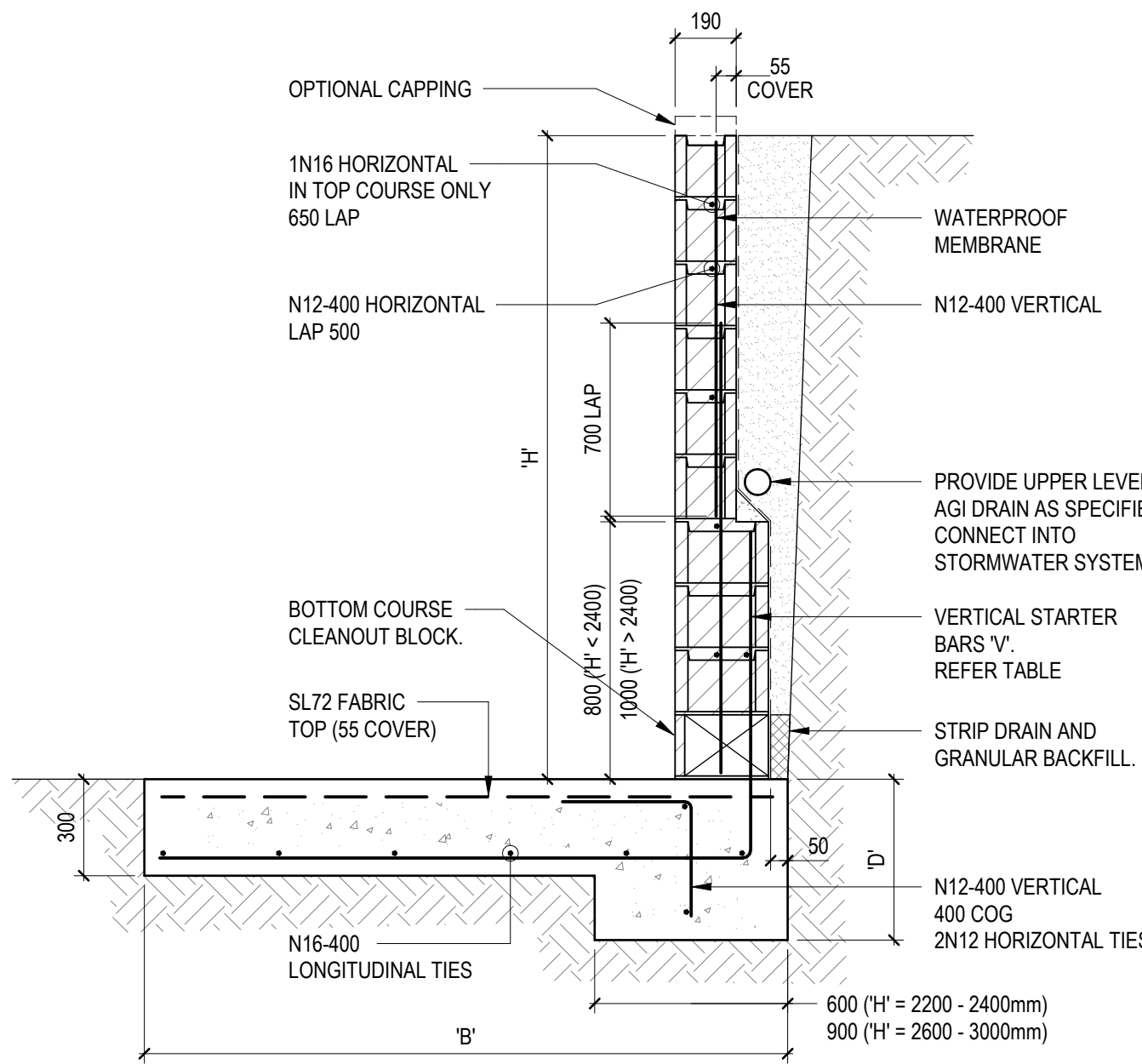


### RETAINING WALL - 2.0m HIGH MAX. (RW3)

- WALLS TO BE CONSTRUCTED USING 190 'H' BLOCKS
- ALL BLOCKWORK TO BE CONCRETE CORE FILLED AS PER BLOCKWORK RETAINING WALL NOTES

SCALE 1:20

BASE DIMENSIONS					
'H' (HEIGHT mm)	NO SURCHARGE		5 kPa SURCHARGE		REINFORCEMENT 'V' BARS
	'B' (mm)	'D' (mm)	'B' (mm)	'D' (mm)	
1400	1200	500	1400	600	N16-400
1600	1400	600	1600	700	N16-400
1800	1600	700	1800	800	N16-400
2000	1800	700	2000	800	N16-200



### RETAINING WALL - 3.0m HIGH MAX.

- WALLS TO BE CONSTRUCTED USING 190 + 240 'H' BLOCKS
- ALL BLOCKWORK TO BE CONCRETE CORE FILLED AS PER BLOCKWORK RETAINING WALL NOTES

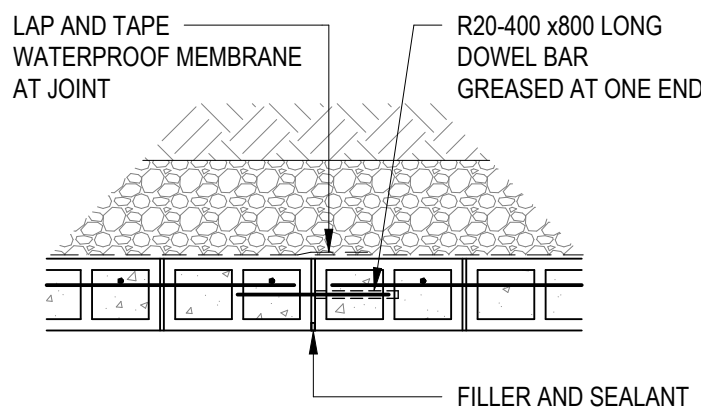
SCALE 1:20

BASE DIMENSIONS					
'H' (HEIGHT mm)	NO SURCHARGE		5 kPa SURCHARGE		REINFORCEMENT 'V' BARS
	'B' (mm)	'D' (mm)	'B' (mm)	'D' (mm)	
2200	2200	800	2200	900	N16-400
2400	2200	900	2400	1000	N16-400
2600	2400	900	2600	1000	N20-400
2800	2600	900	2800	1100	N20-400
3000	2800	1000	3000	1200	N16-200

#### BLOCK RETAINING WALL NOTES

- THIS RETAINING WALL HAS BEEN DESIGNED USING TYPICAL SITE PARAMETERS. FINAL CONFIRMATION OF THE ADEQUACY OF THE DESIGN MUST BE VERIFIED FOLLOWING RECEIPT OF A SITE-SPECIFIC GEOTECHNICAL INVESTIGATION REPORT.
- STIFF CLAY SITES WITH SHALE OR STONE INCLUSIONS ARE NOT COVERED IN THIS DESIGN
- ALL BLOCK/CAVITY CORES TO BE CONCRETE FILLED, CONCRETE  $F_c = 20$  MPa, 10mm MAX. AGGREGATE SIZE, 250mm SLUMP
- FOOTING CONCRETE GRADE N25 U.N.O. COVER TO FOOTING REINFORCEMENT = 55mm U.N.O. FOOTING DESIGNED FOR AN ALLOWABLE BEARING CAPACITY OF 100kPa. ALL FOOTINGS TO BE FOUND IN FIRM NATURAL GROUND AND CONFIRMED ON SITE BY THE GEOTECHNICAL ENGINEER.
- RETAINING WALLS TO HAVE NO SURCHARGE, UNLESS NOTED IN TABLE
- PROVIDE VERTICAL CONTROL JOINTS AT 6000 CTS. MAX.
- PROVIDE N12 CORNER BARS AT 600 CTS. LAP 600 EACH WAY FOR WALL RETURNS
- BLOCKS  $F_{uc} = 15$  MPa
- MORTAR CEMENT 1 : LIME 0.5 : SAND 4.5
- BUILDER IS TO MAINTAIN STABILITY OF WALL DURING BACKFILLING PROCEDURE
- INTERNAL WALL TO HABITABLE AREAS TO BE TANKED TO PREVENT MOISTURE PENETRATION. REFER TANKING SUPPLIERS FOR DETAILS
- IF OTHER RETAINING WALLS EXIST OR ARE TO BE CONSTRUCTED ADJACENT TO OR EITHER ABOVE OR BELOW THE RETAINING WALLS DETAILED, THEN THE ENGINEER SHOULD BE CONTACTED IMMEDIATELY FOR REVISED DESIGN.
- IF OTHER RETAINING WALLS EXIST OR ARE TO BE CONSTRUCTED ADJACENT TO OR EITHER ABOVE OR BELOW THE RETAINING WALLS DETAILED, THEN THE CONTRACTOR TO ENSURE STABILITY OF THE EXISTING RETAINING STRUCTURE.

USE THE ABOVE NOTES IF  
NO SOIL TEST AVAILABLE



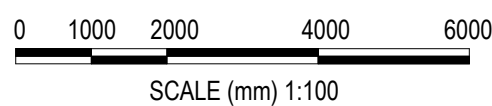
### RETAINING WALL JOINT DETAIL

JOINTS AT 6m MAX CTS.

SCALE 1:20

PRELIMINARY

REV	DESCRIPTION	BY	APP	DATE
P01	CONCEPT DESIGN DEVELOPMENT	AA	JB	12.11.24
P02	75% SCHEMATIC DESIGN	RM	JB	22.11.24
P03	85% SCHEMATIC DESIGN	RM	JB	13.12.24
P04	100% SCHEMATIC DESIGN	RM	JB	19.12.24



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SCHOOL INFRASTRUCTURE NSW

TITLE  
STANDARD DETAILS  
MASONRY RETAINING WALLS

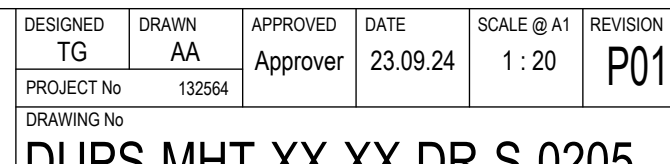
PROJECT  
DUNDAS PUBLIC SCHOOL

85 KISSING POINT ROAD, DUNDAS, NSW 2117

SCHEMATIC DESIGN

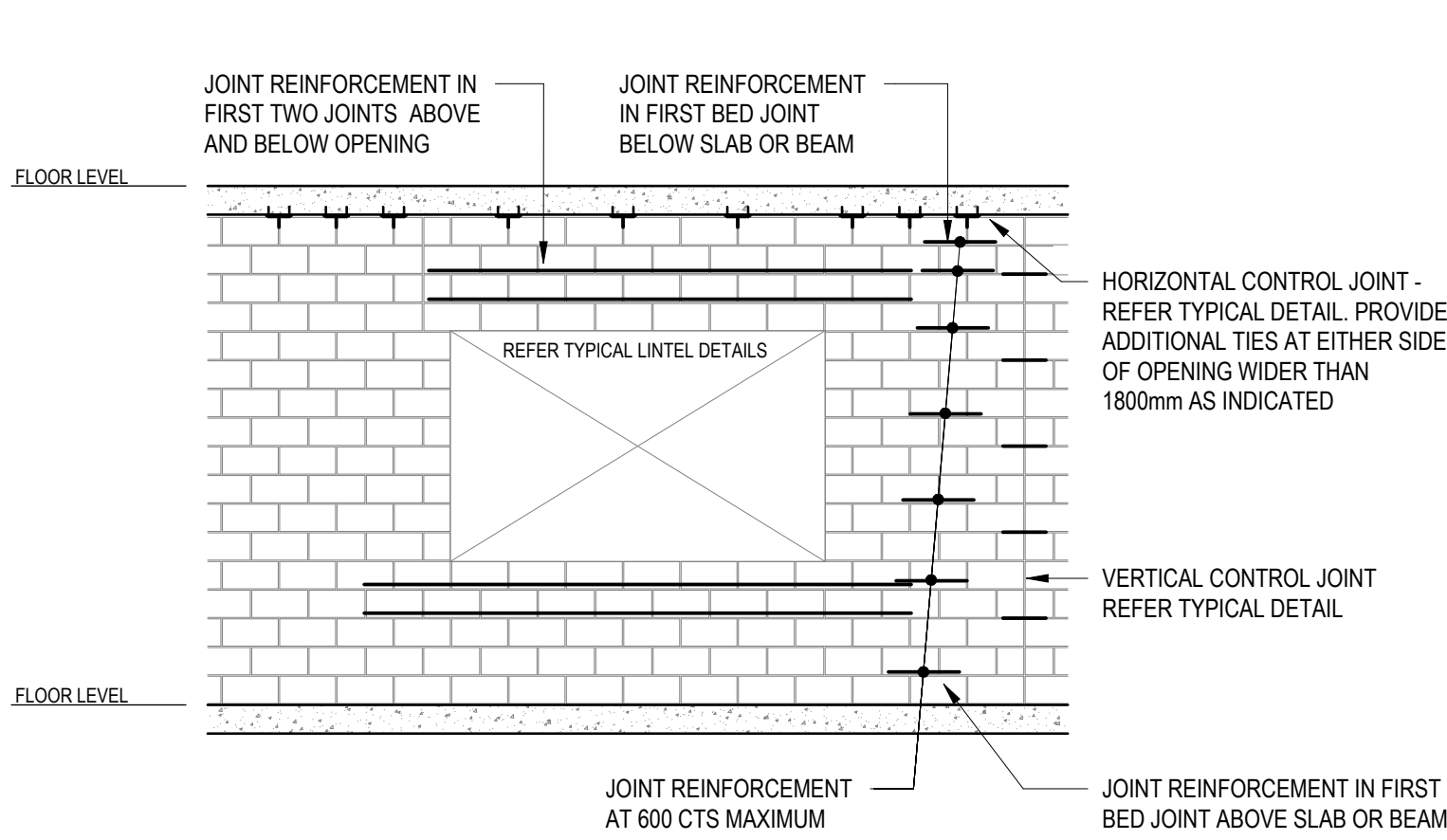
DESIGNED	DRAWN	APPROVED	DATE	SCALE	REVISION
TG	AA	Approver	23.09.24	@ A1	P04
PROJECT No 123664					
DRAWING No					
DUPS-MHT-XX-XX-DR-S-0200					





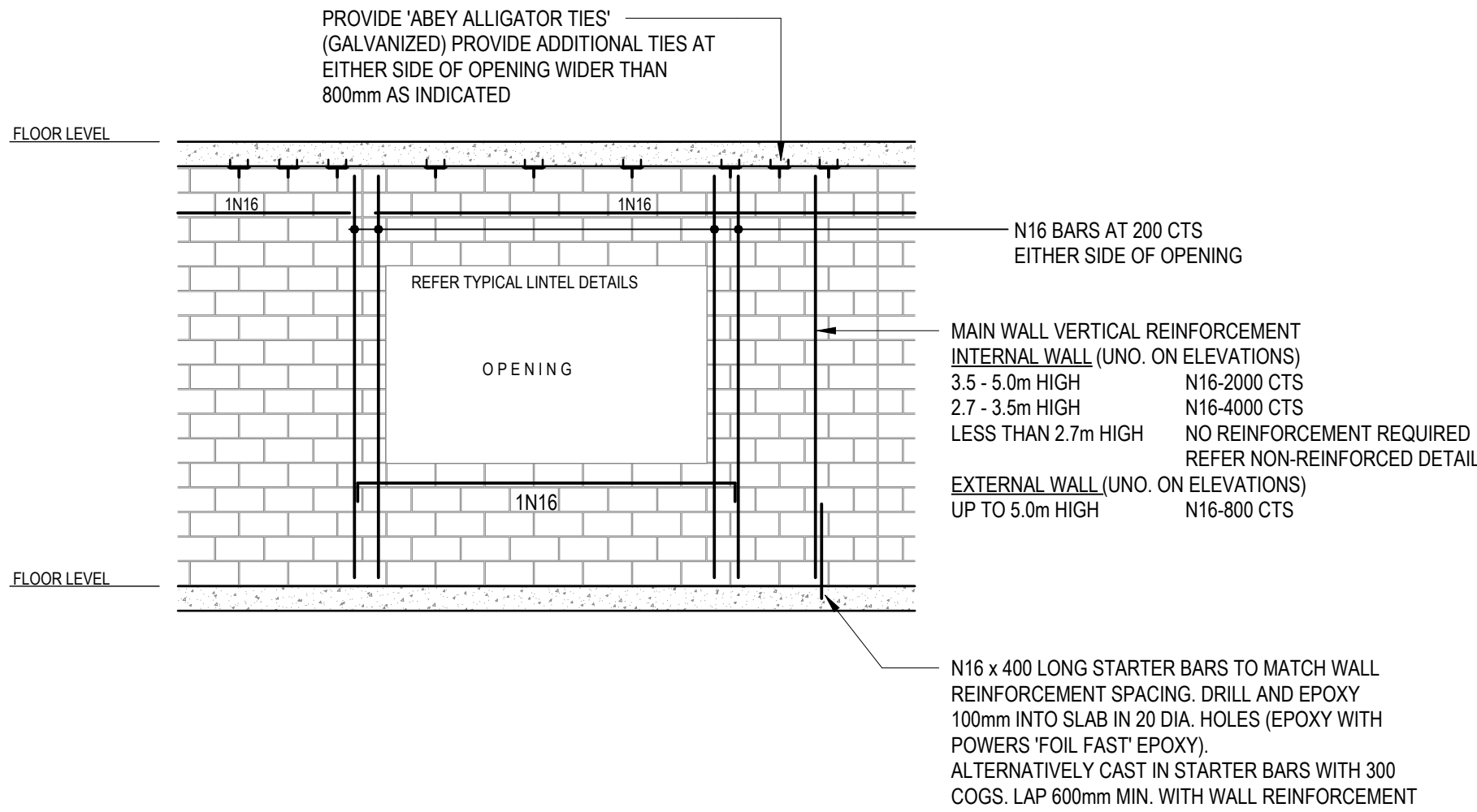


C:\Users\RM\My Documents\DUFS-MHT-800L-ZZ-ALS-001 - Rev MyaRWD2.dwg 19/12/2024 4:52:42 PM



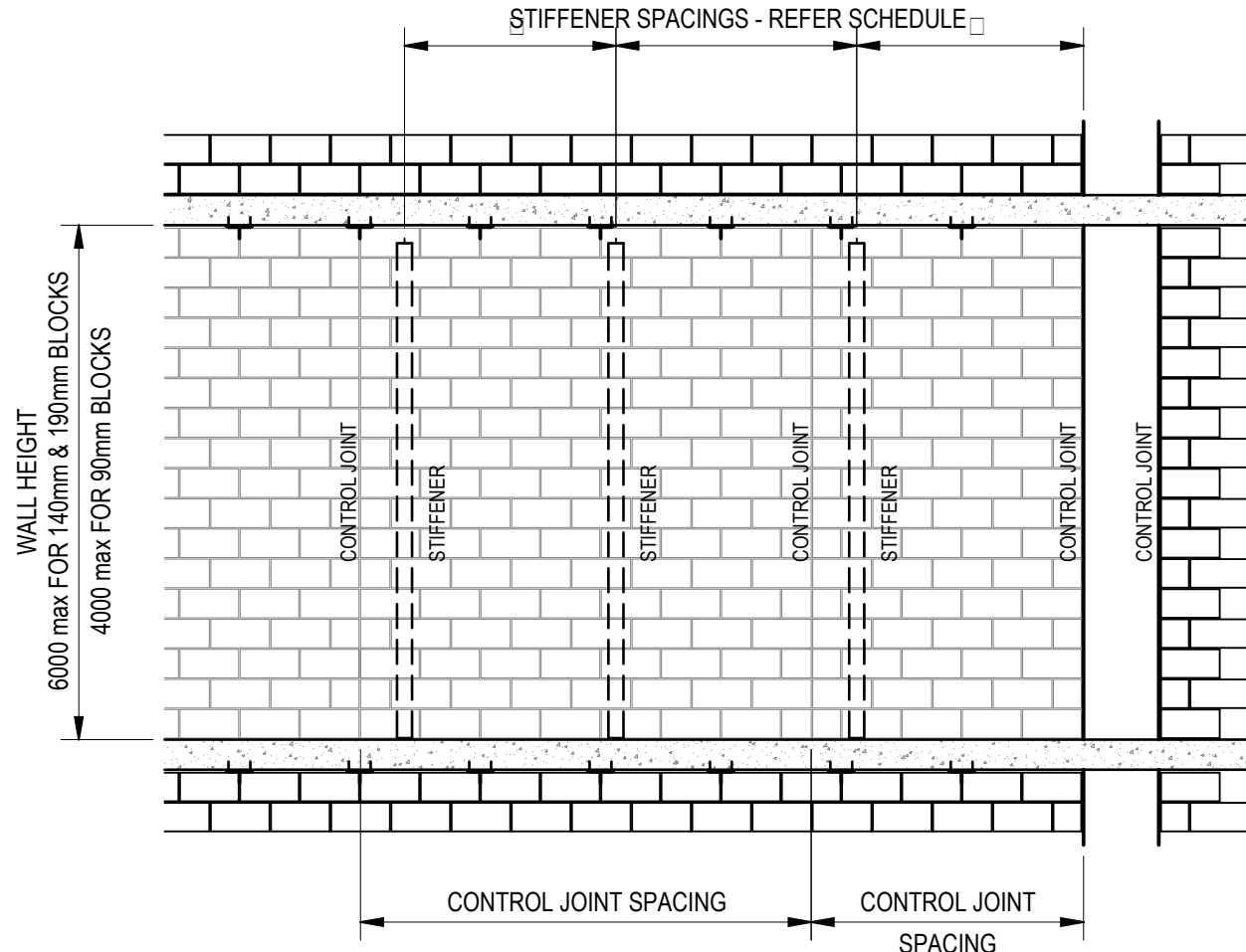
### TYPICAL 'NON-REINFORCED' MASONRY WALL ELEVATION

JOINT REINFORCEMENT SHOWN ON THIS ELEVATION IS TYPICAL FOR ALL MASONRY WALLS U.N.O



### TYPICAL REINFORCED BLOCK WALL ELEVATION

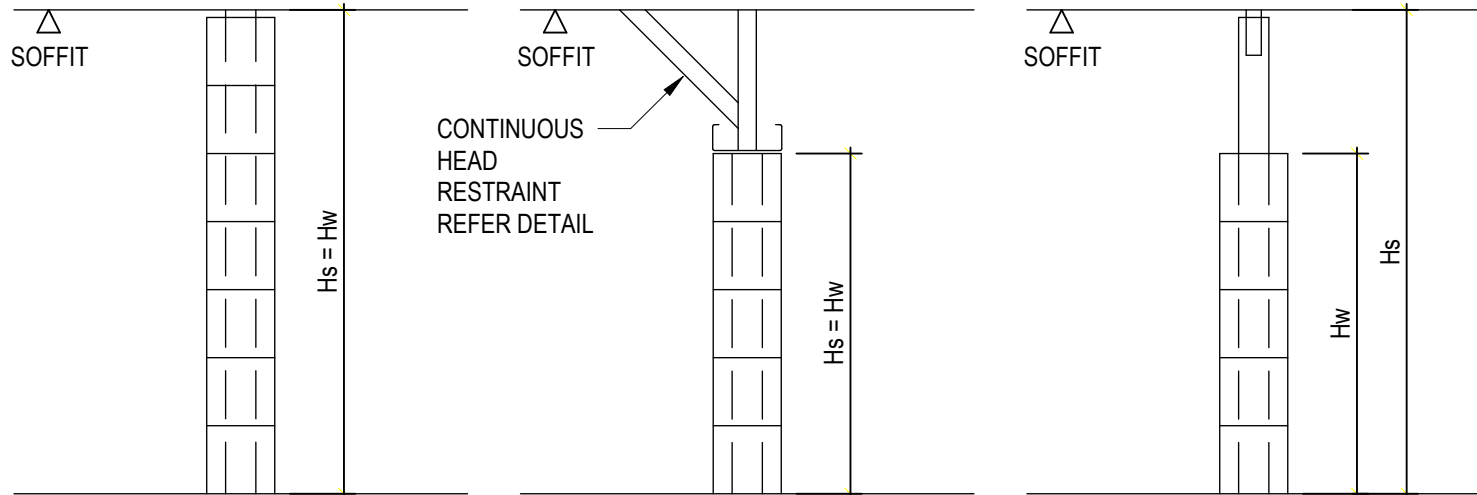
REFER TYPICAL NON-REINFORCED ELEVATION ABOVE FOR ALL OTHER REINFORCEMENT DETAILS. FILL ALL REINFORCED CORES WITH 20MPa GROUT TYPICALLY. FOR FIRE RATED WALLS REFER SPECIFICATIONS AND ARCHITECTURAL DRAWINGS REGARDING EXTENT OF CORE WALL FILLING. FOR JOINT REINFORCEMENT REFER TYPICAL NON-REINFORCED BLOCK WALL ELEVATION. FOR TOP COURSE AT REINFORCEMENT LOCATION. CLEAN OUT BLOCKS MAY BE USED IN ORDER TO ADJUST THE BAR AND POUR THE GROUT. FILL THE TOP CORES BY RAM PACKING A DRY MIX OF GROUT



### TYPICAL 'NON-REINFORCED' MASONRY WALL ELEVATION

#### INTERNAL WALLS ONLY

CONTROL JOINTS TO BE PLACED ADJACENT TO WALL STIFFENERS. SPACING OF WALL STIFFENERS IS DICTATED BY STRENGTH REQUIREMENTS OF PROPOSED STIFFENERS. THIS SPACING SHALL BE REDUCED TO MATCH SPACING OF CONTROL JOINTS AS DETERMINED BY ARCHITECT

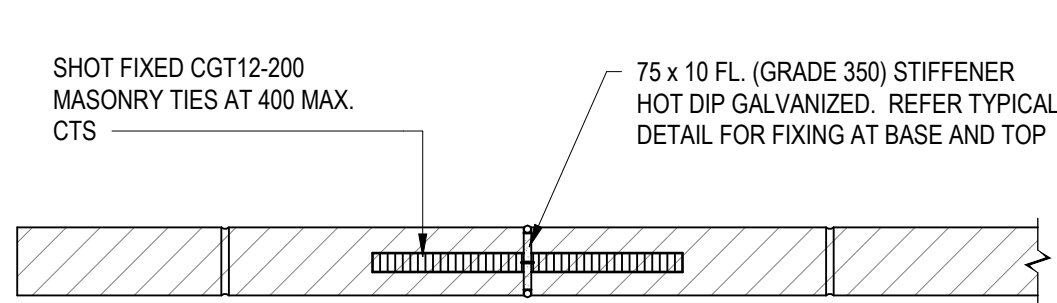


### STIFFENER SELECTION KEY

Hw - DENOTES HEIGHT OF WALL  
Hs - DENOTES HEIGHT OF STIFFENER

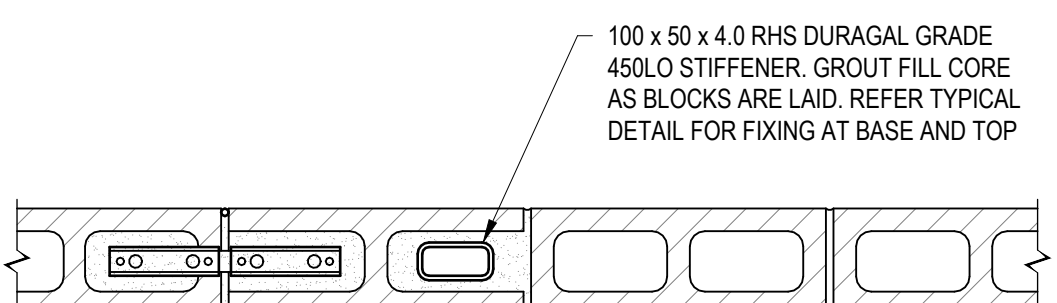
BLOCKWALL STIFFENER SCHEDULE							
HEIGHT OF STIFFENER 'Hs'	BLOCK THICKNESS (mm)	HEIGHT OF WALL 'Hw' = HEIGHT 'Hs'			HEIGHT OF WALL 'Hw' < 'Hs'		
		STIFFENER	MAX SPACING 'S'	TYPE	STIFFENER	MAX SPACING 'S'	TYPE
INTERNAL WALLS (V <sub>U</sub> =0.4KPa)							
0-1800	90	NOT REQUIRED	-	-	-	-	-
	140	NOT REQUIRED	-	-	75x75x4 SHS (WS2)	5000	B
	190	NOT REQUIRED	-	-	75x75x4 SHS (WS2)	5000	B
1800-2800	90	75x10 PL	2800	A	-	-	-
	140	NOT REQUIRED	-	-	75x75x4 SHS (WS2)	5000	-
	190	NOT REQUIRED	-	-	75x75x4 SHS (WS2)	5000	B
2800-3800	140	65x65x4SHS (WS1)	5000	-	75x75x4 SHS (WS2)	5000	B
	190	NOT REQUIRED	-	B	75x75x4 SHS (WS2)	5000	B
3800-4500	140	65x65x4SHS (WS1)	5000	B	75x75x4 SHS (WS2)	3400	B
	190	75x75x4 SHS (WS2)	5000	B	89x89x5 SHS (WS3)	5000	B
4500-5000	140	65x65x4SHS (WS1)	4000	B	75x75x4 SHS (WS2)	2400	B
	190	75x75x4 SHS (WS2)	5000	B	89x89x5 SHS (WS3)	4400	B
5000-5500	140	65x65x4SHS (WS1)	2800	B	75x75x4 SHS (WS2)	2000	B
	190	75x75x4 SHS (WS2)	4600	-	89x89x5 SHS (WS3)	3200	B
EXTERNAL WALLS - INCLUDES WALLS ADJACENT TO LARGE OPENINGS (V <sub>U</sub> =0.85KPa)					NOTE: FOR WALLS LESS THAN HEIGHT 'Hs' IT IS ASSUMED THE WALL IS OF A HEIGHT OF 60% x 'Hs' OR 3.8m, WHICHEVER IS LESS.		
0-1800	140	NOT REQUIRED	-	-			
	190	NOT REQUIRED	-	-			
1800-2500	140	65x65x4 SHS (WS1)	3000	B			
	190	NOT REQUIRED	-	-			
2500-4000	140	65x65x4 SHS (WS1)	2200	B			
	190	89x89x5 SHS (WS3)	5000	B			
4000-4500	190	89x89x5 SHS (WS3)	4200	B			
	190	89x89x5 SHS (WS3)	3600	B			
5000-5500	190	89x89x5 SHS (WS3)	3000	B			
	190	89x89x5 SHS (WS3)	2600	B			

- NOTE:
- ALL WALL STIFFENERS ARE TO BE DURAGAL SECTIONS GRADE C450LO.
  - WHERE CONTINUOUS HEAD RESTRAINT DETAIL IS PROVIDED, STIFFENER SIZE & SPACING FOR 'Hw'='Hs' CAN BE SELECTED FOR WALLS.
  - ALTERNATIVE WALL STIFFENER SIZE 100x50x4 RHS WHERE NECESSARY DUE TO BLOCK DIMENSIONAL RESTRAINTS.



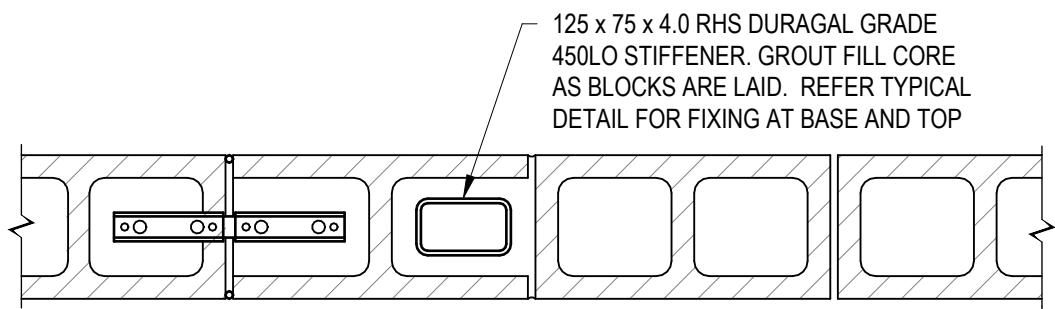
### STIFFENER TYPE A - 90mm BLOCKS / BRICKS

SCALE 1:10



### STIFFENER TYPE B - 140mm BLOCKS

SCALE 1:10



### STIFFENER TYPE C - 190mm BLOCKS

SCALE 1:10

PRELIMINARY

REV	DESCRIPTION	BY	APP	DATE
P01	100% SCHEMATIC DESIGN	RM	JB	19.12.24

0 200 400 800 1200  
SCALE (mm) 1:20

PROJECT NORTH



School Infrastructure NSW



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Sydney NSW 2000  
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CLIENT  
SCHOOL INFRASTRUCTURE NSW

TITLE  
TYPICAL MASONRY STIFFENERS DETAILS

PROJECT  
DUNDAS PUBLIC SCHOOL

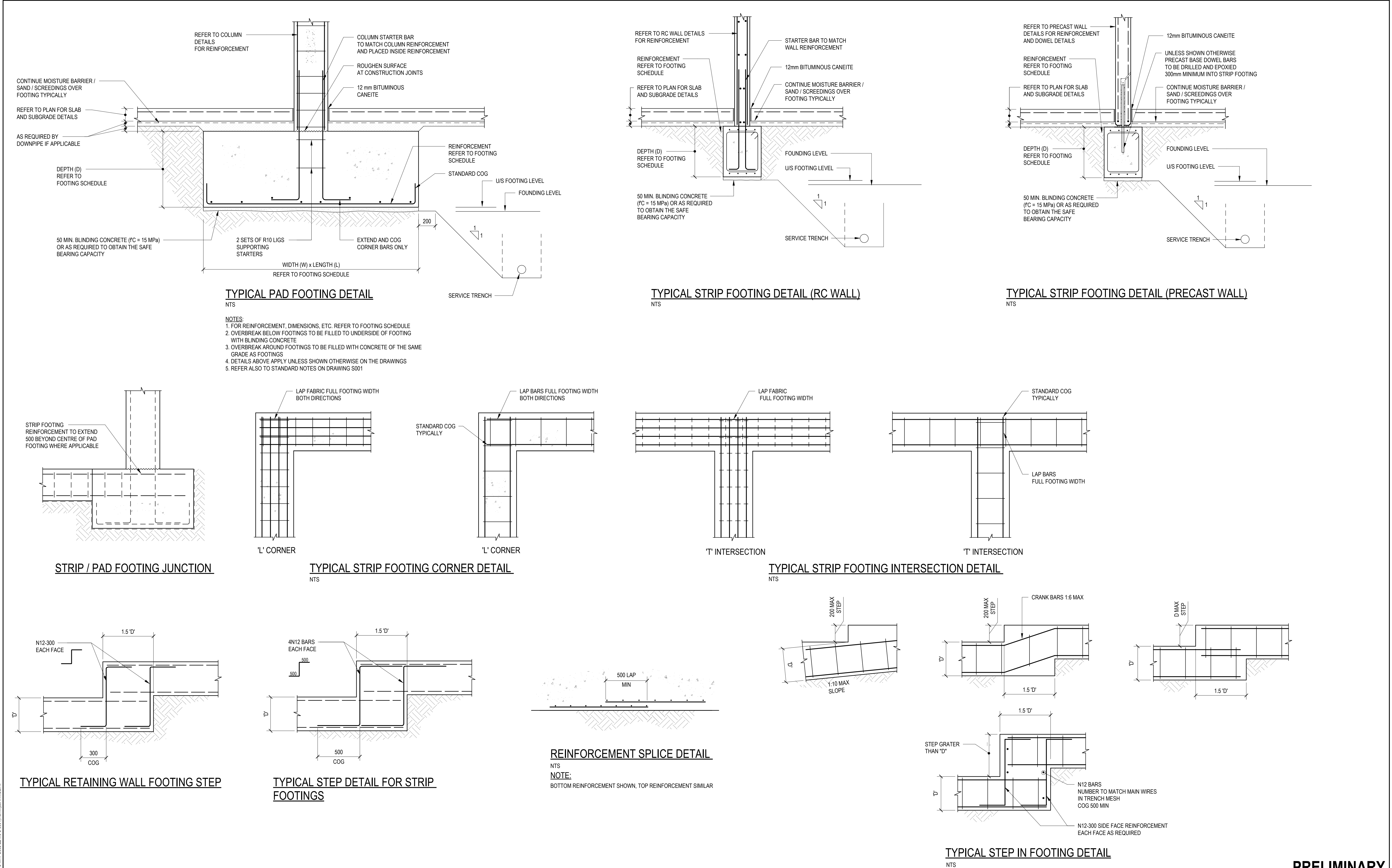
85 KISSING POINT ROAD, DUNDAS, NSW 2117

SCHEMATIC DESIGN

DESIGNED	DRAWN	APPROVED	DATE	SCALE @ A1	REVISION
TG	AA	Approver	23.09.24	1 : 50	P01
PROJECT No 132564 DRAWING No DUPS-MHT-XX-XX-DR-S-0206					



C:\Users\RM\My Documents\DUFS-MHT-0001-ZZ-ALS-S-0001 - Rev MyerWMD2.rvt 19/12/2024 4:52:46 PM



PRELIMINARY

REV		DESCRIPTION	BY	APP	DATE
P01		100% SCHEMATIC DESIGN	RM	JB	19.12.24

PROJECT NORTH

School Infrastructure NSW

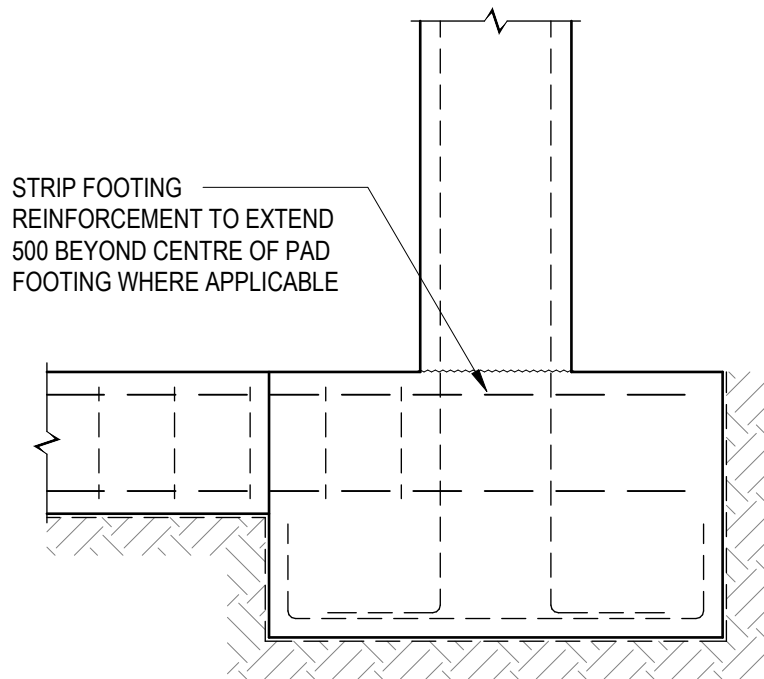
Meinhardt (NSW) Pty Ltd  
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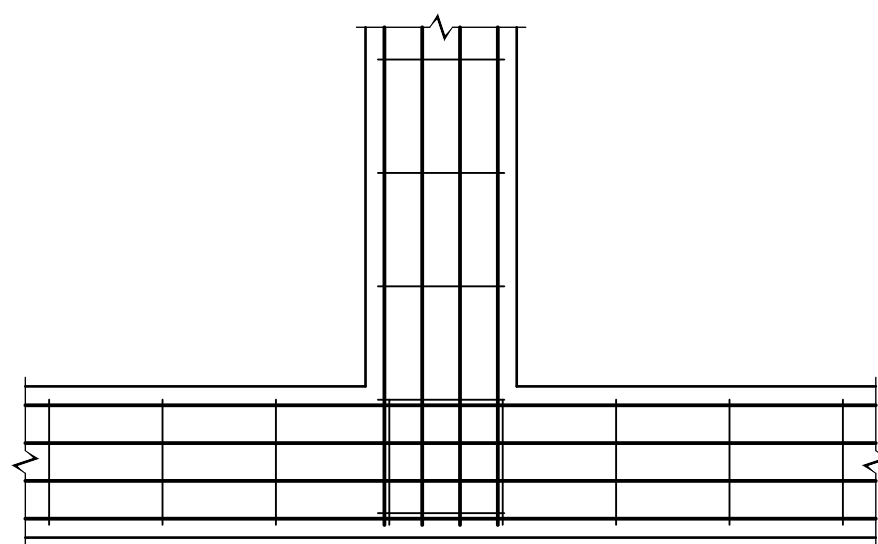
PROJECT  
DUNDAS PUBLIC SCHOOL  
  
85 KISSING POINT ROAD, DUNDAS, NSW 2117

TITLE		STATUS		DESIGNED		DRAWN		APPROVED		DATE		SCALE @ A1		REVISION	
TYPICAL FOOTING DETAILS SHEET 1		SCHEMATIC DESIGN		TG		AA		Approver		23.09.24		1 : 20		P01	
DRAWING No		DUPS-MHT-XX-XX-DR-S-0210													



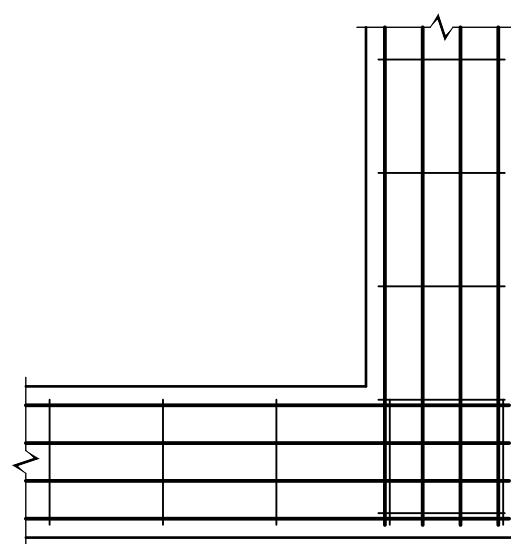


STRIP / PAD FOOTING JUNCTION



T INTERSECTION

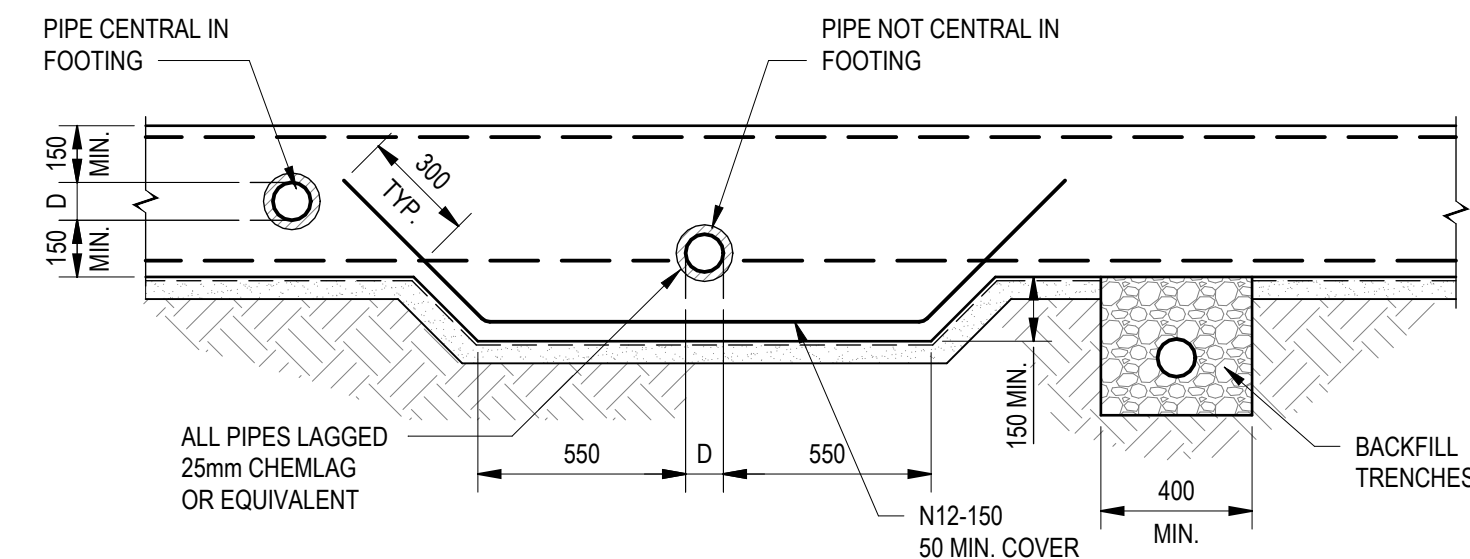
'S' SIMILAR



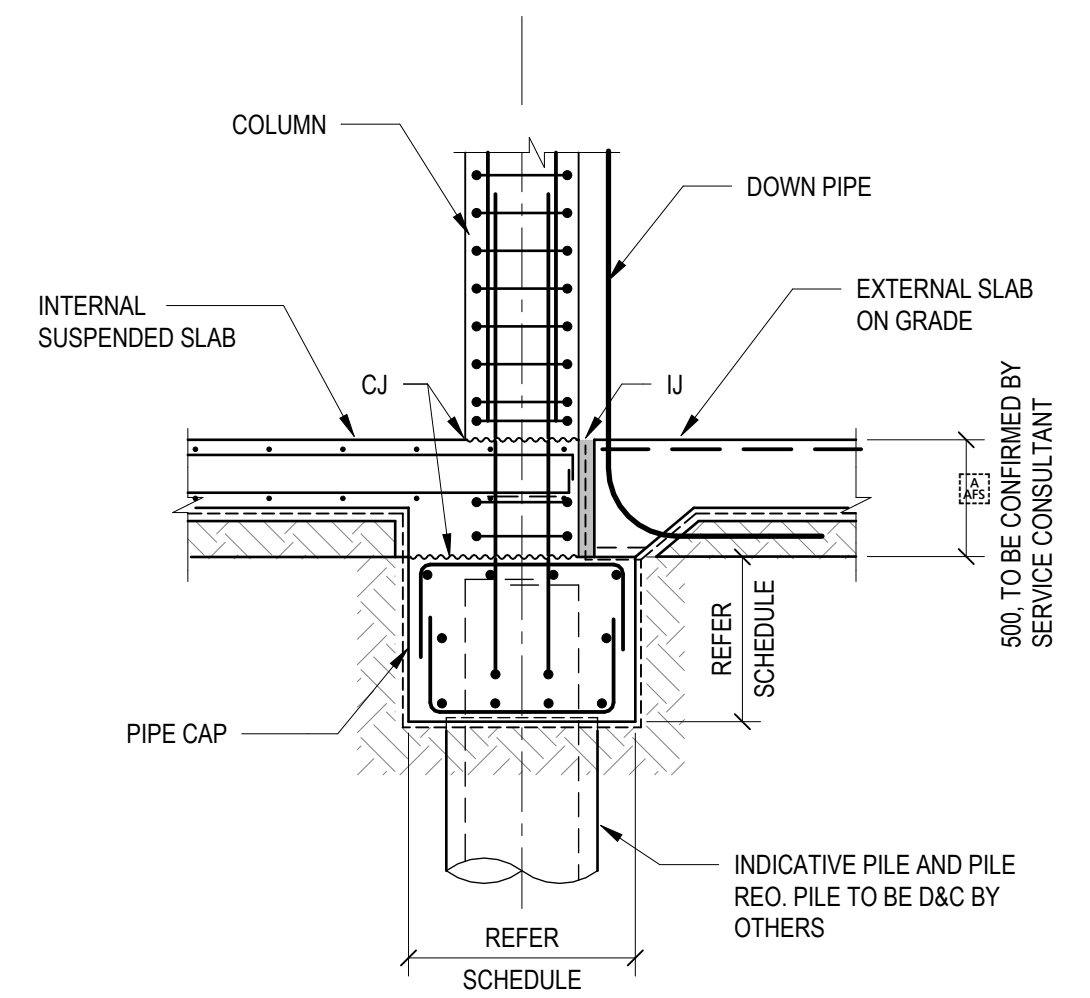
L CORNER

NOTE: EACH LAYER OF TRENCH MESH IS TO BE MADE 'CONTINUOUS' BY LAPPING WHERE REQUIRED AS FOLLOWS -  
- AT 'T' INTERSECTIONS AND 'L' INTERSECTIONS - FOR THE FULL WIDTH OF THE TRENCH MESH  
- AT 'L' CORNERS - FOR FULL WIDTH OF TRENCH MESH  
- AT SPLICES WHERE NEEDED - 500mm MINIMUM

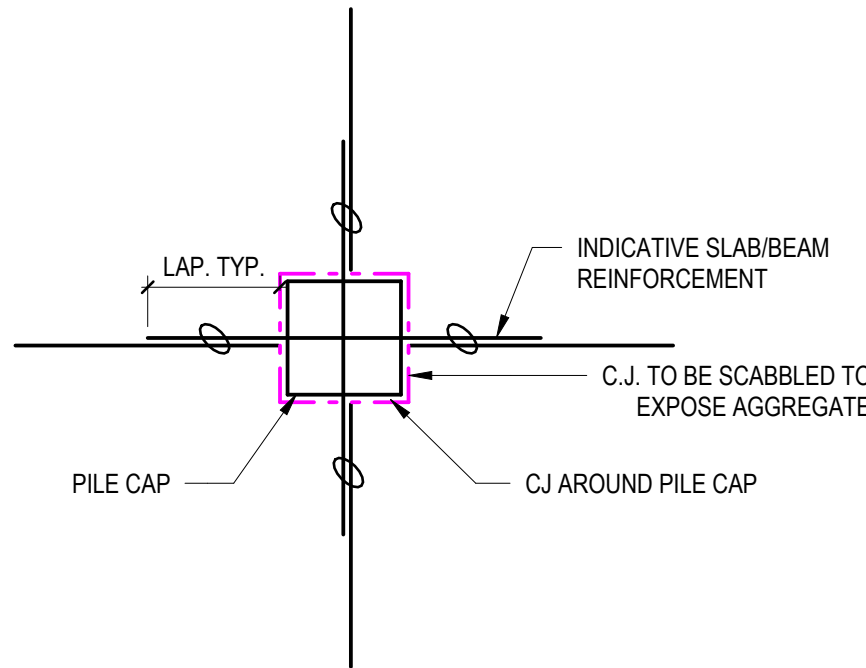
PLAN VIEWS - STRIP FOOTINGS



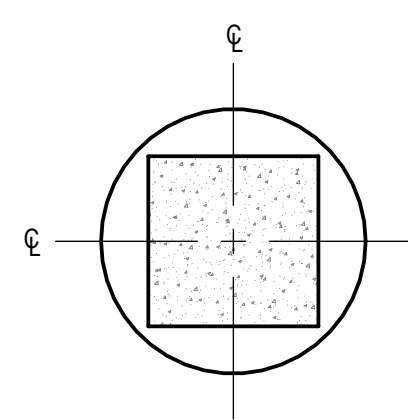
SERVICE PIPE IN FOOTING DETAIL



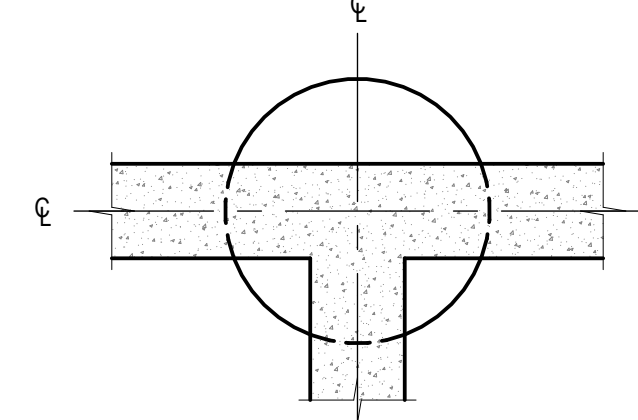
TYPICAL LOWERED PILE CAP TO AVOID CLASHING WITH DOWN PIPE



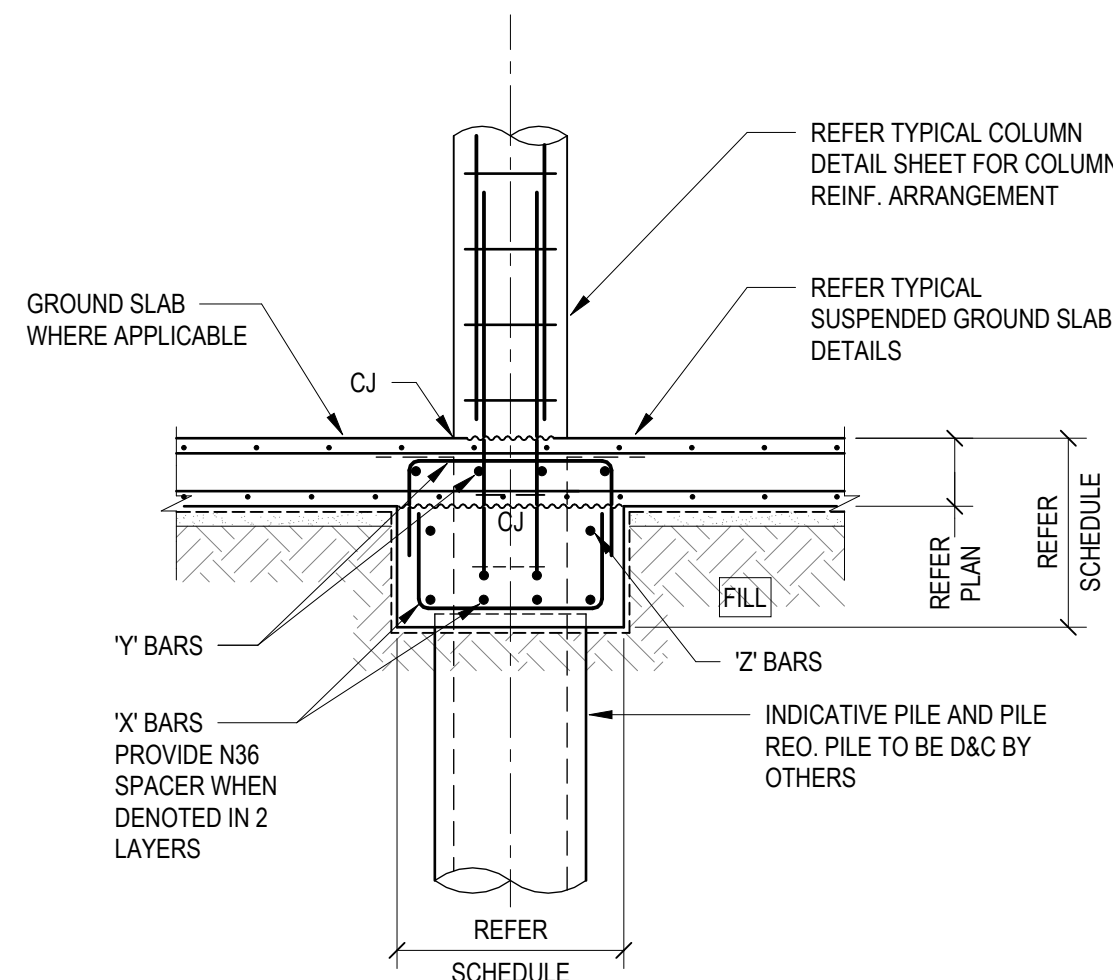
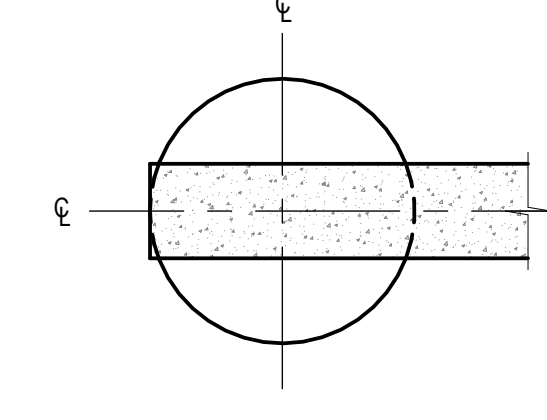
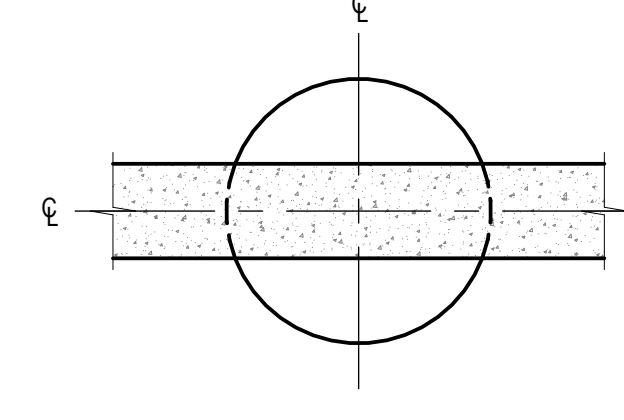
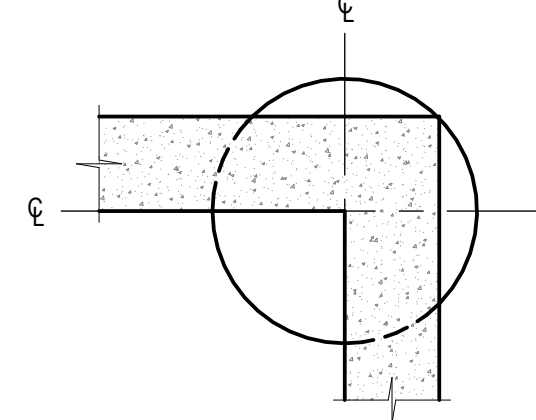
TYPICAL REO ARRANGEMENT FOR C.J. AROUND THE PILE CAP



TYPICAL PILE LOCATIONS AT COLUMNS



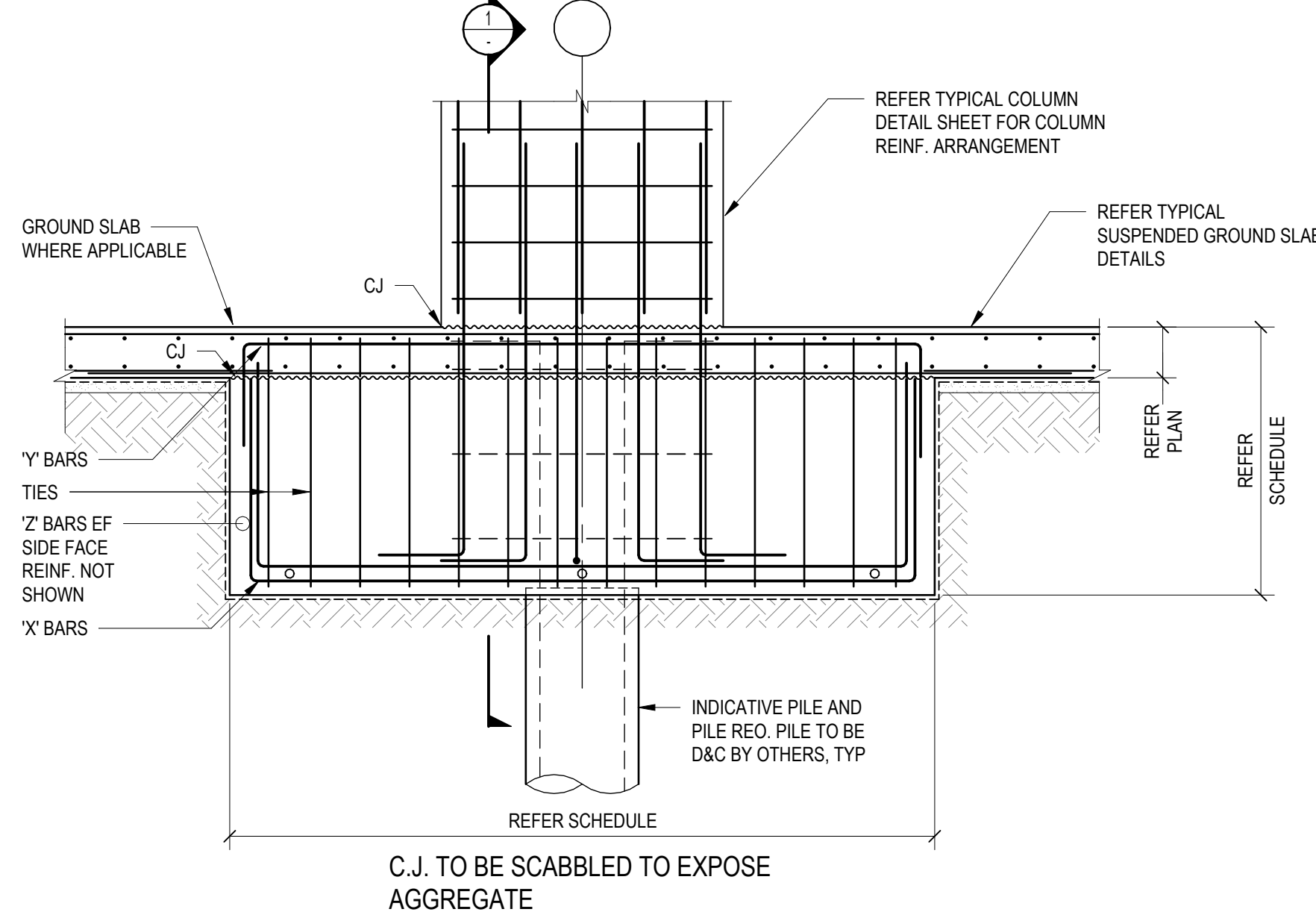
TYPICAL PILE LOCATIONS AT COLUMNS/WALLS



TYPICAL PILE CAP (SQUARE OR ROUND COLUMN) U.N.O.

PILE CAPS ARE LOCATED ON ALL PILES WHERE SHOWN ON THE GENERAL ARRANGEMENT PLAN APPLICABLE TO PILE CAPS AT SUSPENDED SLAB AREA

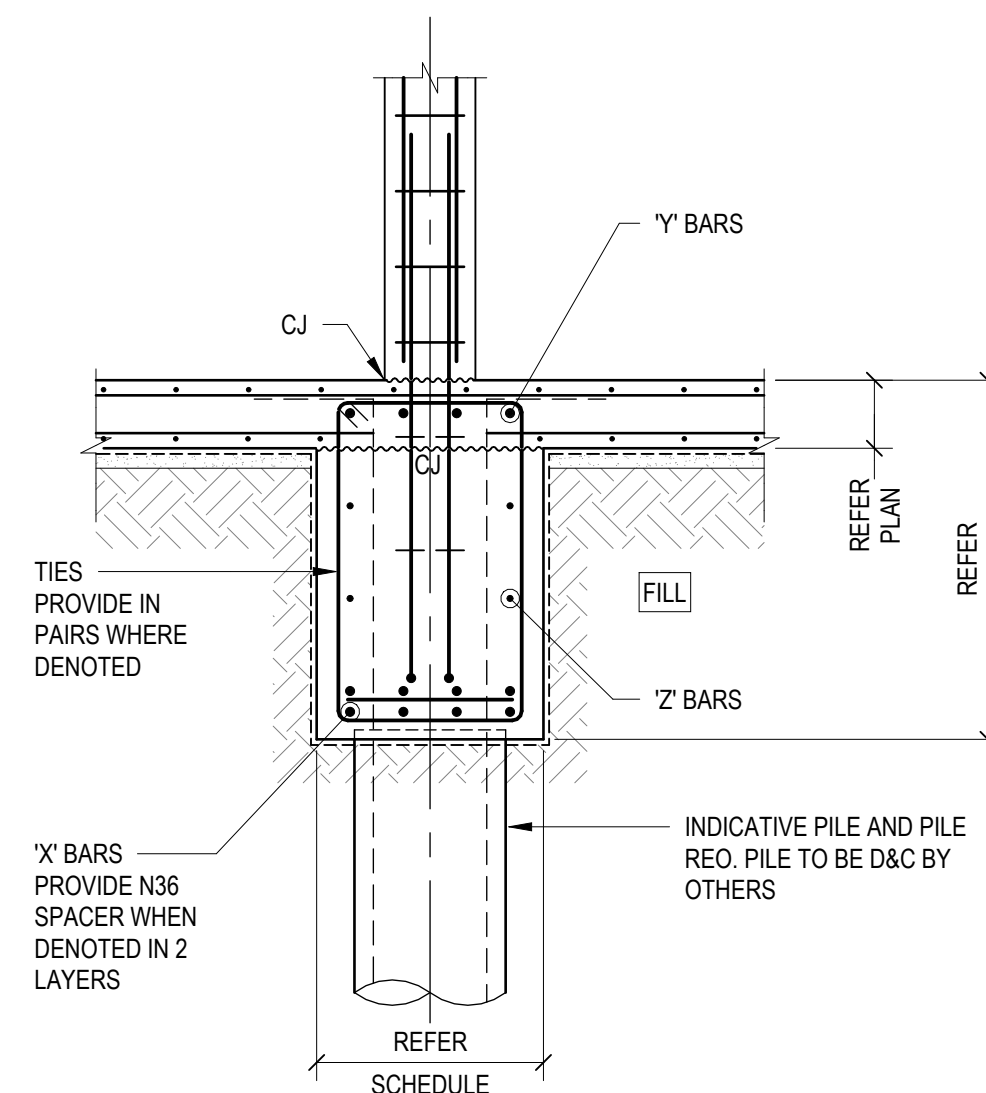
- NOTE:
- PILE CAP DETAIL SHOWN ABOVE IS PRELIMINARY AND SUBJECT TO CHANGE AS DESIGN DEVELOPS.
  - DETAIL REINFORCEMENT (X, Y, Z BARS) TO BE DEVELOPED IN DETAILED DESIGN PHASE.



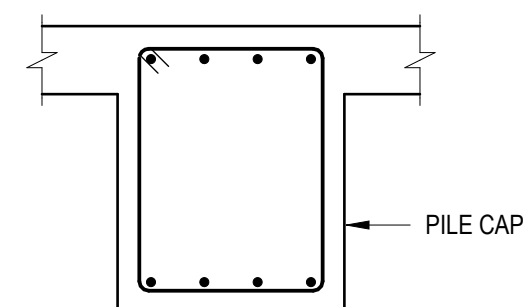
TYPICAL PILE CAP (BLADE COLUMN) U.N.O.

PILE CAPS ARE LOCATED ON ALL PILES WHERE SHOWN ON THE GENERAL ARRANGEMENT PLAN APPLICABLE TO PILE CAPS AT SUSPENDED SLAB AREA

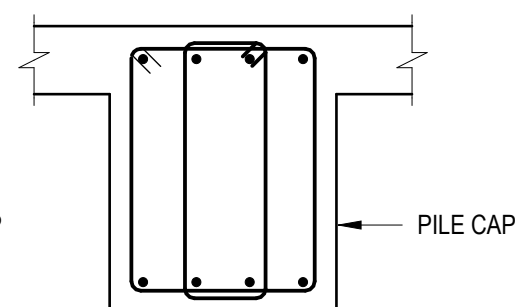
- NOTE:
- PILE CAP DETAIL SHOWN ABOVE IS PRELIMINARY AND SUBJECT TO CHANGE AS DESIGN DEVELOPS.
  - DETAIL REINFORCEMENT (X, Y, Z BARS) TO BE DEVELOPED IN DETAILED DESIGN PHASE.



SECTION 1



2 LEGS TIE



4 LEGS TIE

PRELIMINARY

REV   DESCRIPTION		BY	APP	DATE
P01	100% SCHEMATIC DESIGN	RM	JB	19.12.24

02004008001200

SCALE (mm) 1:20

PROJECT NORTH



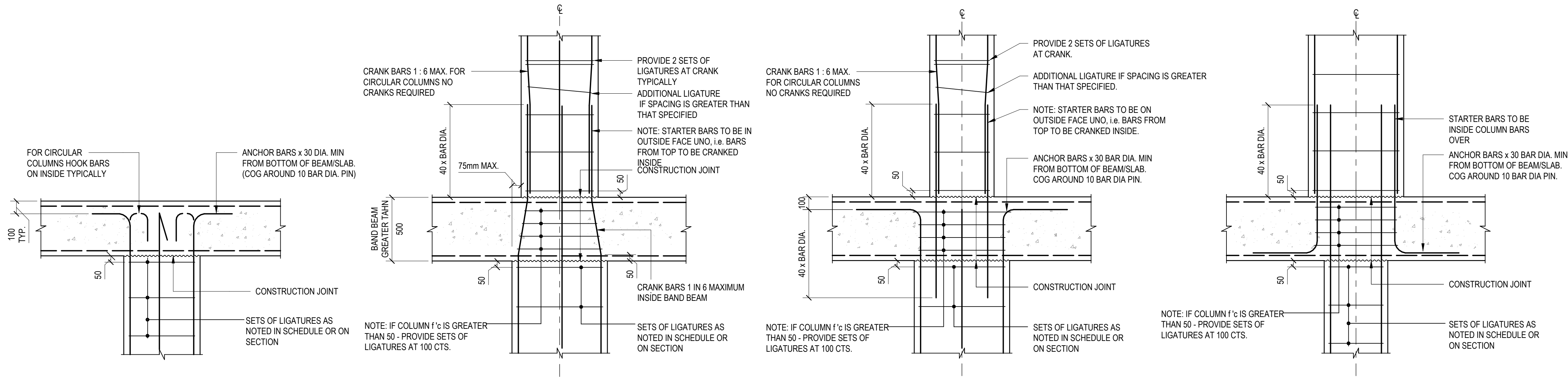
School Infrastructure NSW



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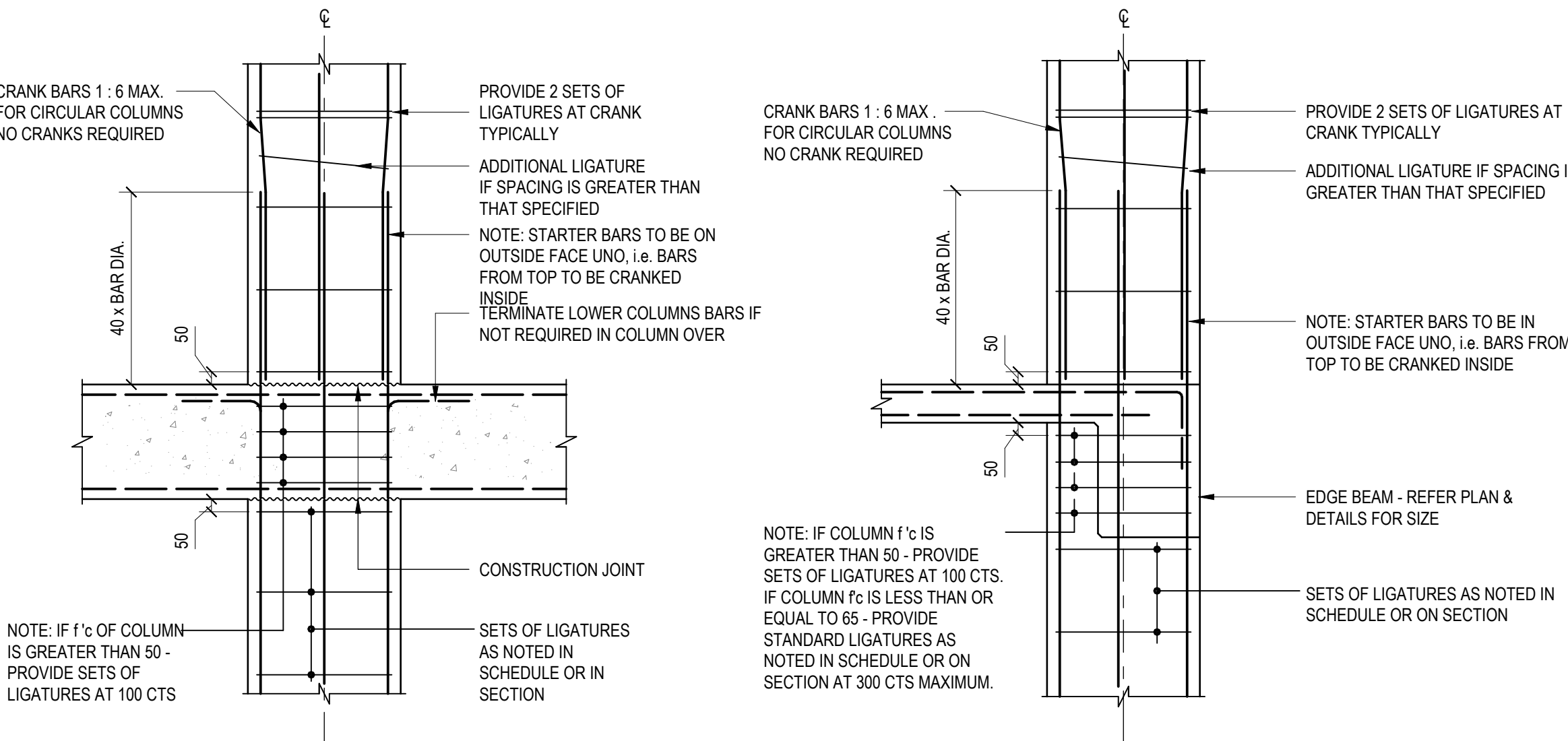
CLIENT SCHOOL INFRASTRUCTURE NSW		PROJECT DUNDAS PUBLIC SCHOOL  85 KISSING POINT ROAD, DUNDAS, NSW 2117							
TITLE TYPICAL FOOTING DETAILS SHEET 2		STATUS SCHEMATIC DESIGN		DESIGNED TG	DRAWN AA	APPROVED Approver	DATE 23.09.24	SCALE @ A1 1 : 20	REVISION P01
DRAWING No DUPS-MHT-XX-XX-DR-S-0211									





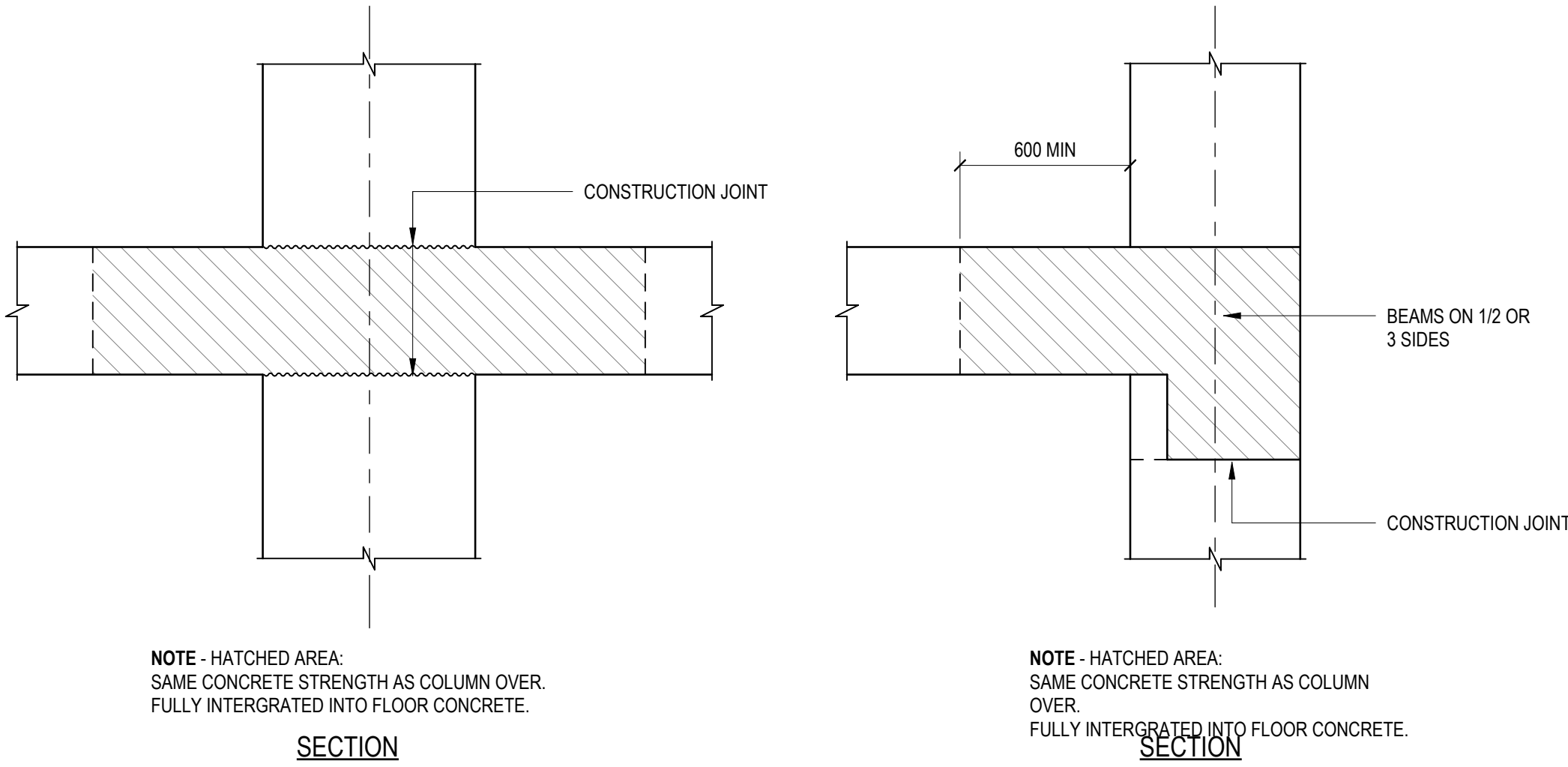
SECTION AT TERMINATION

SECTIONS THROUGH SLAB JUNCTIONS SHOWING VARYING CHANGE IN COLUMN WIDTH



SECTION AT BAND BEAM

SECTION AT EDGE BEAM

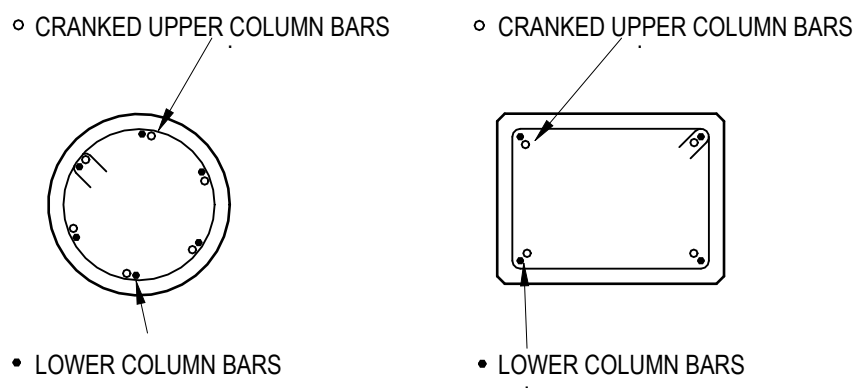


TYPICAL INTERNAL COLUMN

TYPICAL PERIMETER COLUMN

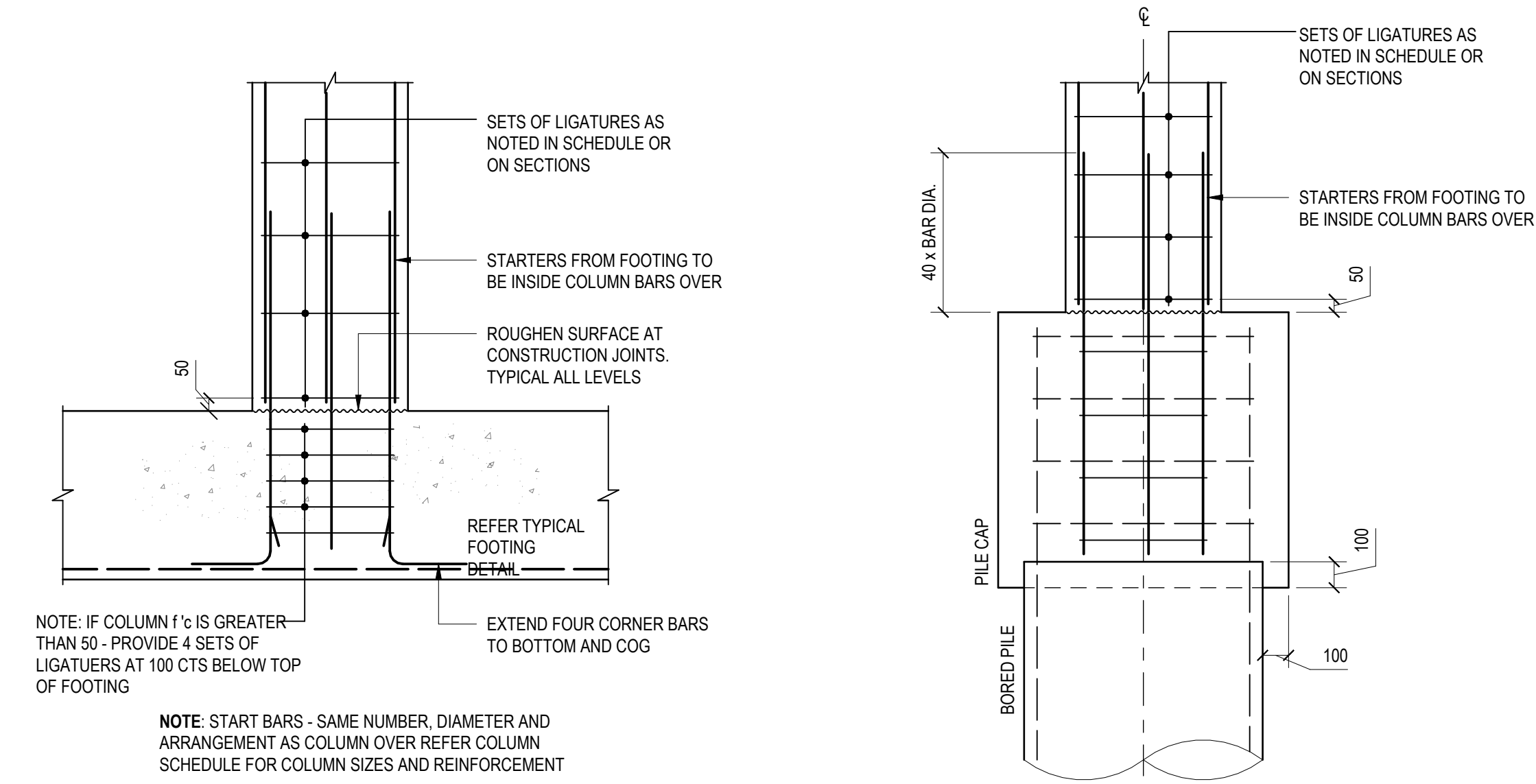
FLOOR CONCRETE AT SPECIFIED COLUMN LOCATIONS

WHERE DENOTED ON PLANS



REFER COLUMN SCHEDULE FOR SIZES

COLUMN SECTIONS AT SPLICE

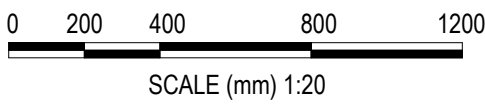


SECTION AT FOOTING

SECTION AT PILE CAP

PRELIMINARY

REV	DESCRIPTION	BY	APP	DATE
P01	100% SCHEMATIC DESIGN	RM	JB	19.12.24



PROJECT NORTH



School Infrastructure NSW



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SCHOOL INFRASTRUCTURE NSW

TITLE  
TYPICAL COLUMN DETAILS

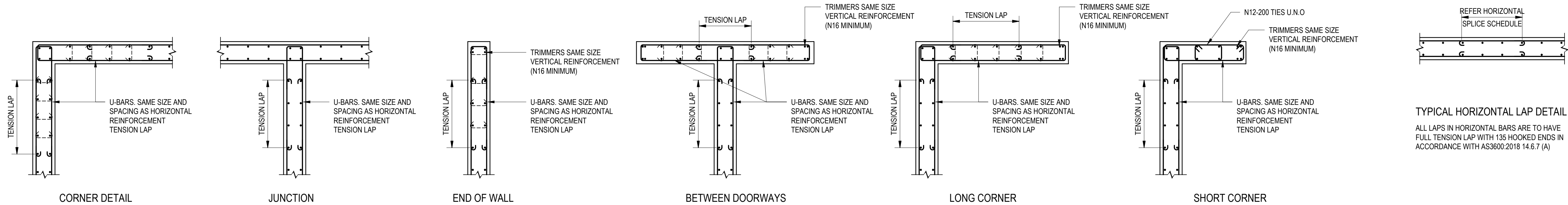
PROJECT  
DUNDAS PUBLIC SCHOOL

85 KISSING POINT ROAD, DUNDAS, NSW 2117

SCHEMATIC DESIGN

DESIGNED	DRAWN	APPROVED	DATE	SCALE @ A1	REVISION
TG	AA	Approver	23.09.24	1 : 20	P01
PROJECT No 132564					
DRAWING No					
DUPS-MHT-XX-XX-DR-S-0230					



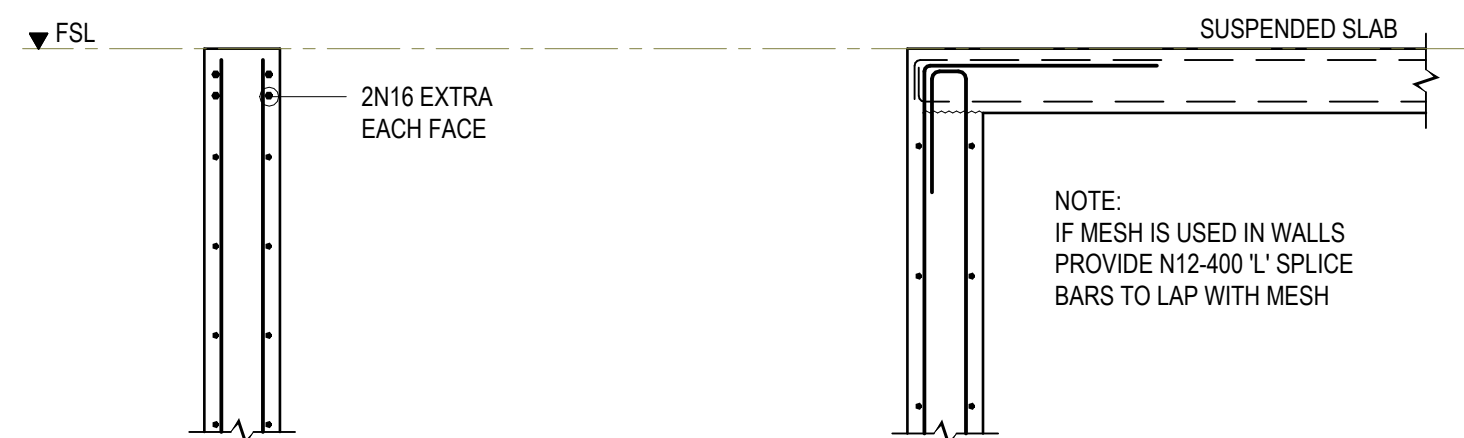


### TYPICAL WALL PLAN DETAILS

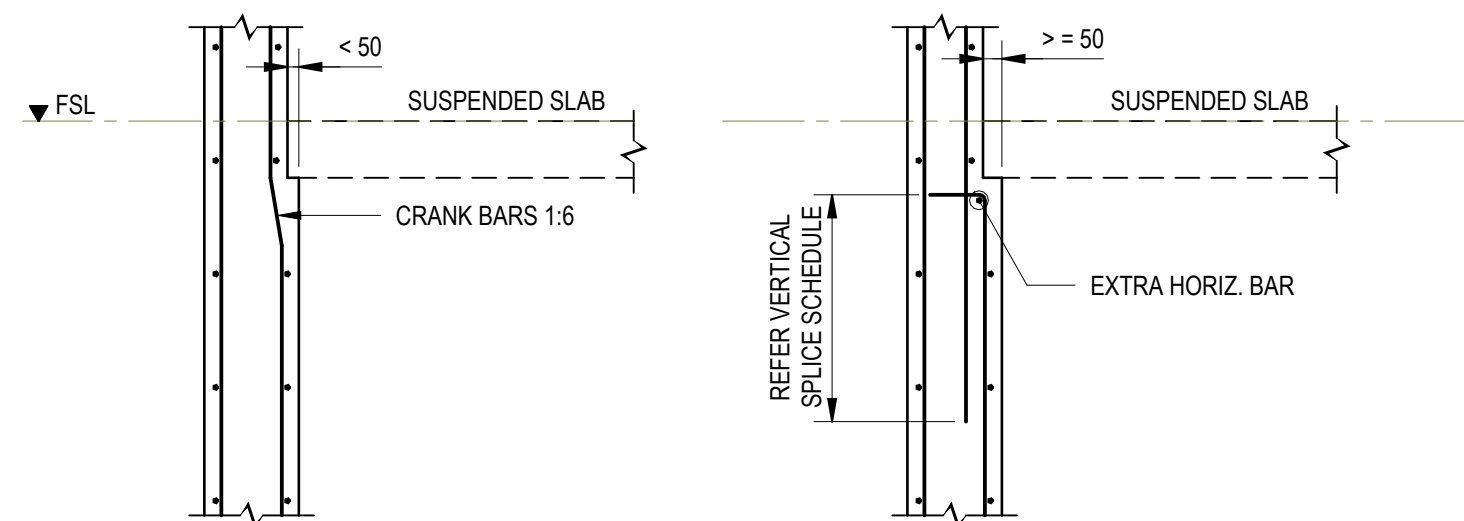
NOTE:  
CONFINEMENT TIES WITH 135° HOOKS EACH END SHOWN INDICATIVELY AT ENDS OF WALLS, EITHER SIDES OF OPENINGS & WALL CORNERS. EXTENT TO BE CONFIRMED DURING DETAILED DESIGN. CONTRACTOR TO MAKE ALLOWANCE ACCORDINGLY.

REFER TO WALL DETAIL DRAWINGS FOR ADDITIONAL DETAILS ON CONFINEMENT TIES.

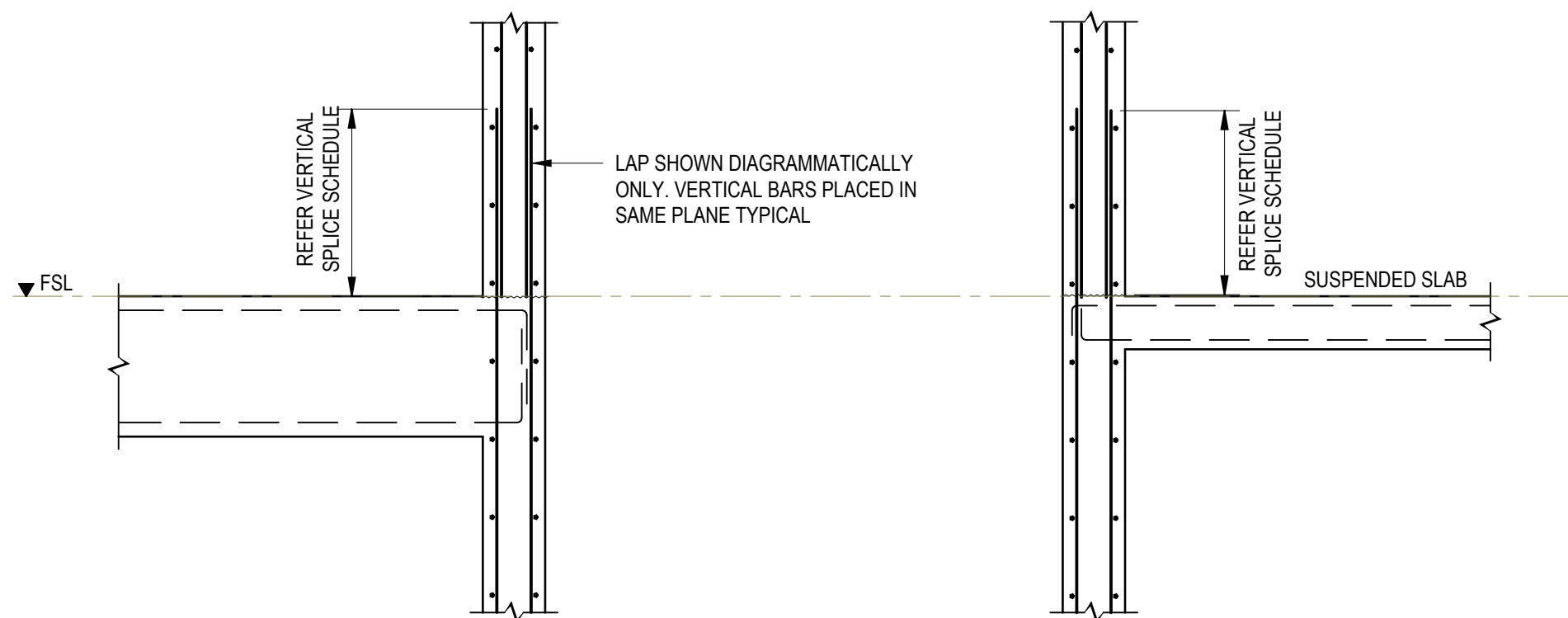
ALTERNATIVE TIE ARRANGEMENT



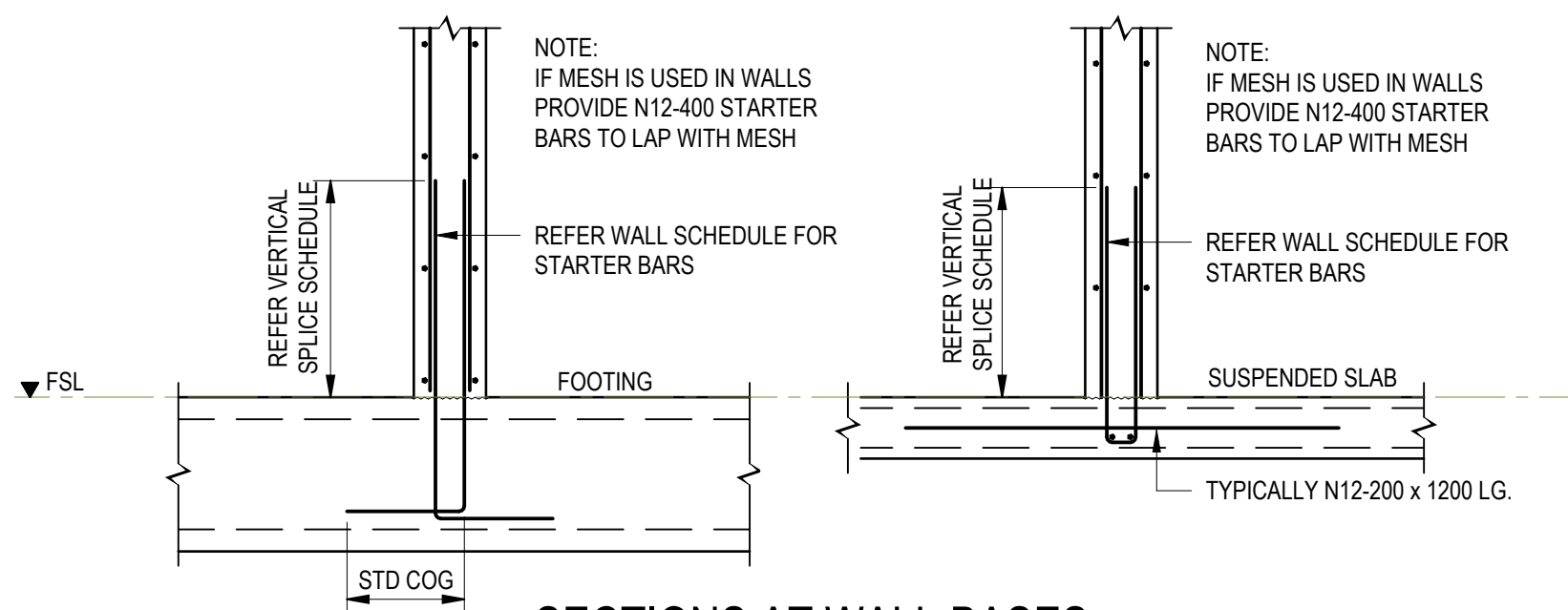
### SECTIONS AT TOP OF WALL ( TERMINATION )



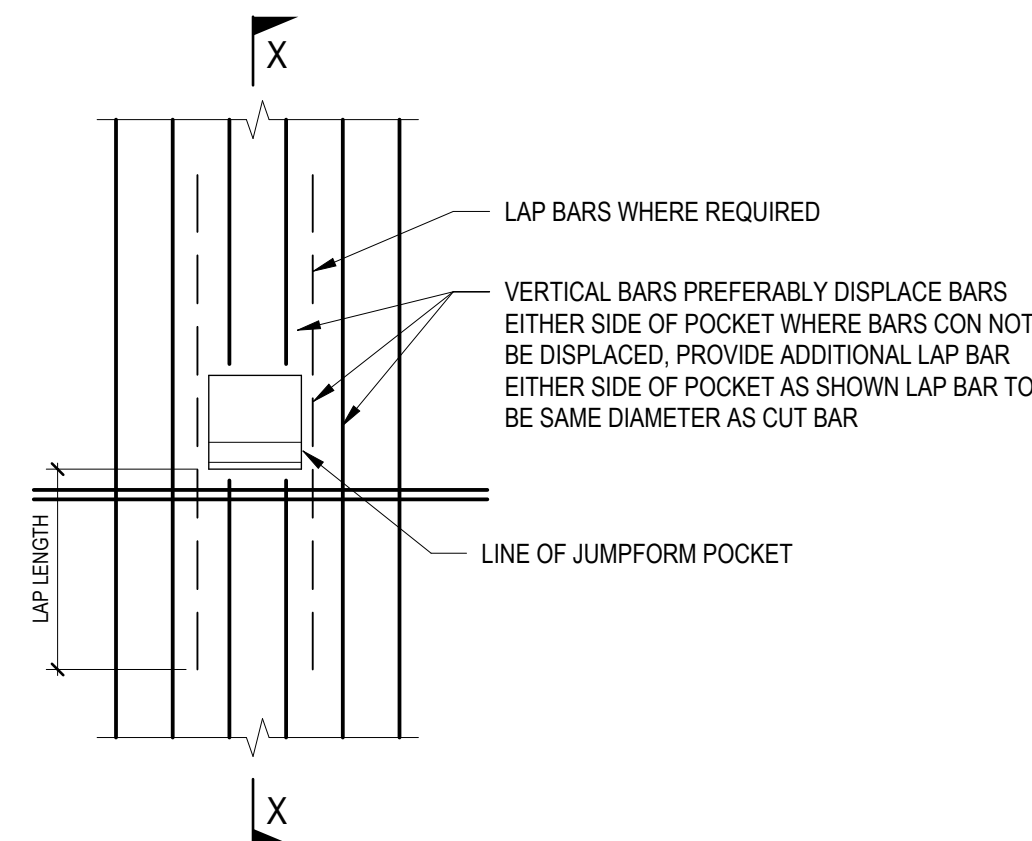
### CHANGE IN WALL THICKNESS SECTIONS



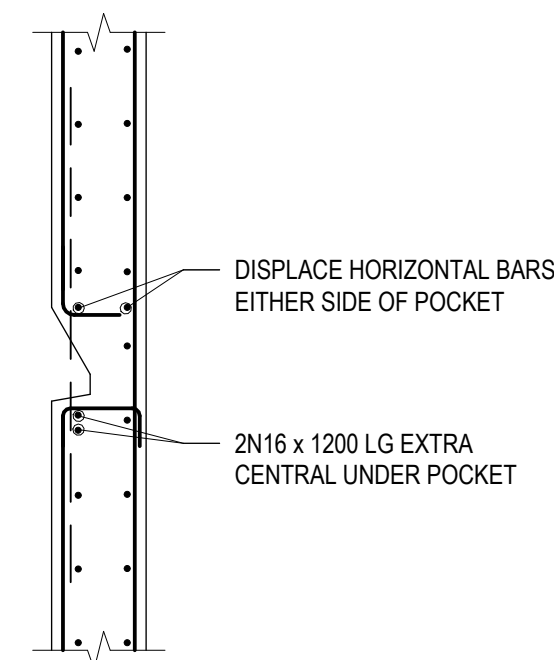
### SECTIONS AT FLOOR JUNCTIONS



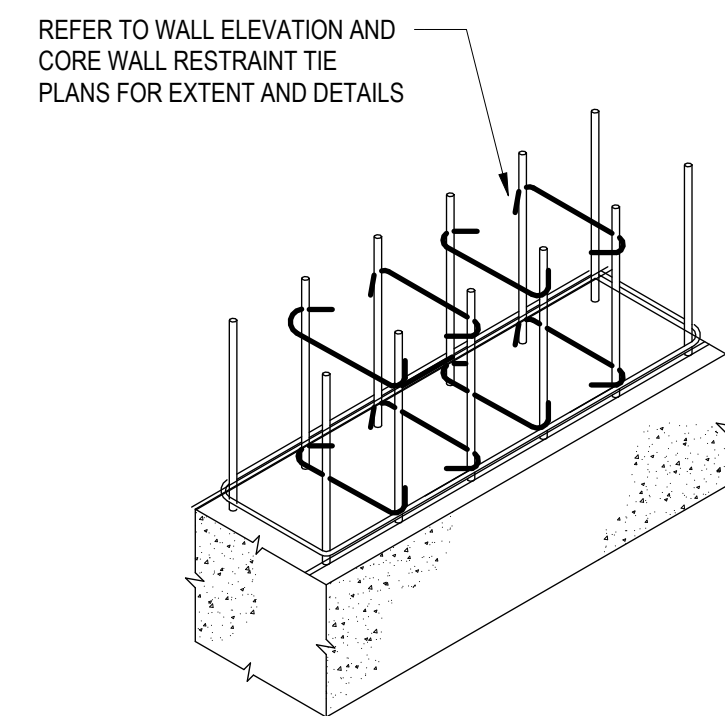
### SECTIONS AT WALL BASES



### TYPICAL DETAIL OF ELEVATION OF JUMPFORM POCKET



### SECTION X - X



### WALL RESTRAINT TIES ISOMETRIC

### TYPICAL SINGLE TIE ALTERNATION DETAIL

DENOTES R10-125 RESTRAINT TIES TO WALL. REFER TO DRG 16-XX0001 TO 5 FOR DETAILS. REFER TO WALL ELEVATIONS FOR LOCATIONS

DENOTES R10-200 RESTRAINT TIES TO WALL. REFER TO DRG 16-XX0001 TO 5 FOR DETAILS. REFER TO WALL ELEVATIONS FOR LOCATIONS

### VERTICAL SPLICE LENGTHS IN WALLS (mm)

BAR DIAMETER	CONCRETE GRADE			
	N32	N40	N50	N65-N100
12	500	500	500	500
16	650	650	650	650
20	850	800	800	800
24	1100	1000	1000	1000
28	1400	1250	1150	1150
32	1700	1550	1400	1300
36	2050	1850	1650	1450

MAXIMUM CLEAR GAP BETWEEN BARS ONE BAR DIAMETER.  
MINIMUM COVER 40mm  
NOTE: ADJACENT SHUTTERS VERTICAL BARS MAY BE PLACED IN OUTER LAYER  
MINIMUM CLEAR SPACING 120mm

### HORIZONTAL SPLICE LENGTHS IN WALLS (mm)

BAR DIAMETER	CONCRETE GRADE			
	N32	N40	N50	N65-N100
12	650	600	550	500
16	1000	900	800	700
20	1300	1150	1050	900

MAXIMUM CLEAR GAP BETWEEN BARS ONE BAR DIAMETER.  
MINIMUM COVER 20mm  
NOTE: FOR WALLS EXPOSED TO WEATHER REFER GENERAL NOTES.  
MINIMUM CLEAR SPACING 120mm

PRELIMINARY

REV	DESCRIPTION	BY	APP	DATE
P01	100% SCHEMATIC DESIGN	RM	JB	19.12.24

0 200 400 800 1200  
SCALE (mm) 1:20

PROJECT NORTH



School Infrastructure NSW



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TITLE  
TYPICAL WALL DETAILS

PROJECT  
DUNDAS PUBLIC SCHOOL

85 KISSING POINT ROAD, DUNDAS, NSW 2117

STATUS  
SCHEMATIC DESIGN

DESIGNED	DRAWN	APPROVED	DATE	SCALE @ A1	REVISION
TG	AA	Approver	23.09.24	As indicated	P01
PROJECT No 132564 DRAWING No DUPS-MHT-XX-XX-DR-S-0240					

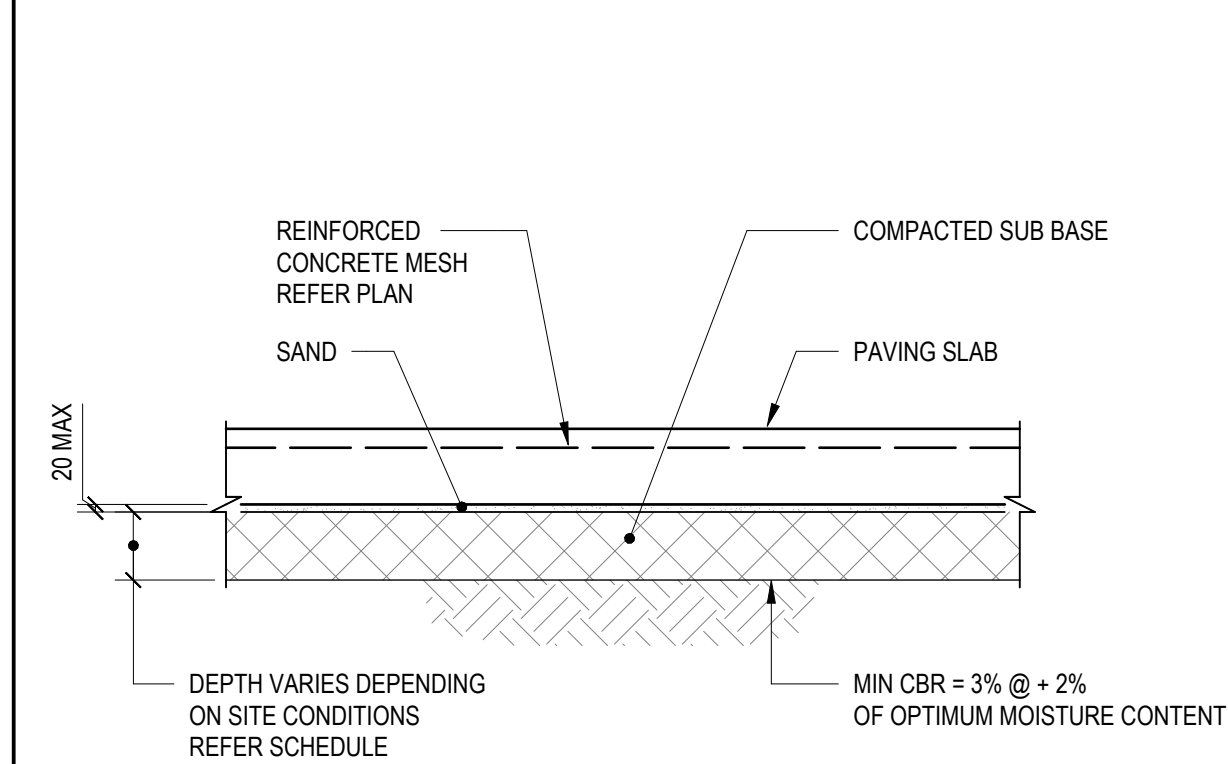




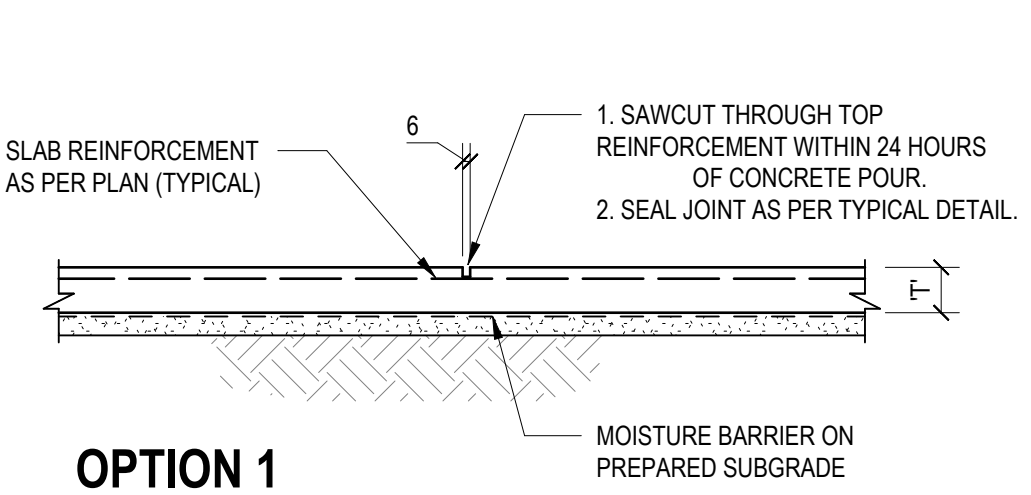
DESIGNED TG	DRAWN AA	APPROVED Approver	DATE 23.09.24	SCALE @ A1 1 : 10	REVISION P03
PROJECT No 132564					
DRAWING No					
DUPS-MHT-XX-XX-DR-S-0250					



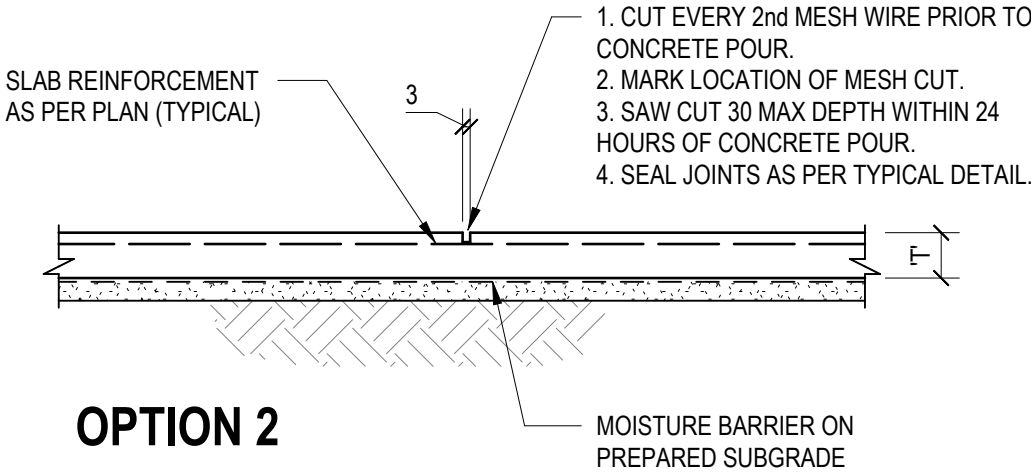
C:\Users\Ryan\Documents\DU\PS-MHT-8000-ZZ\AUS-0001\_P01\_MyHardt.dwg 19/12/2024 4:53:06 PM



EXTERNAL PAVING SLAB DETAIL



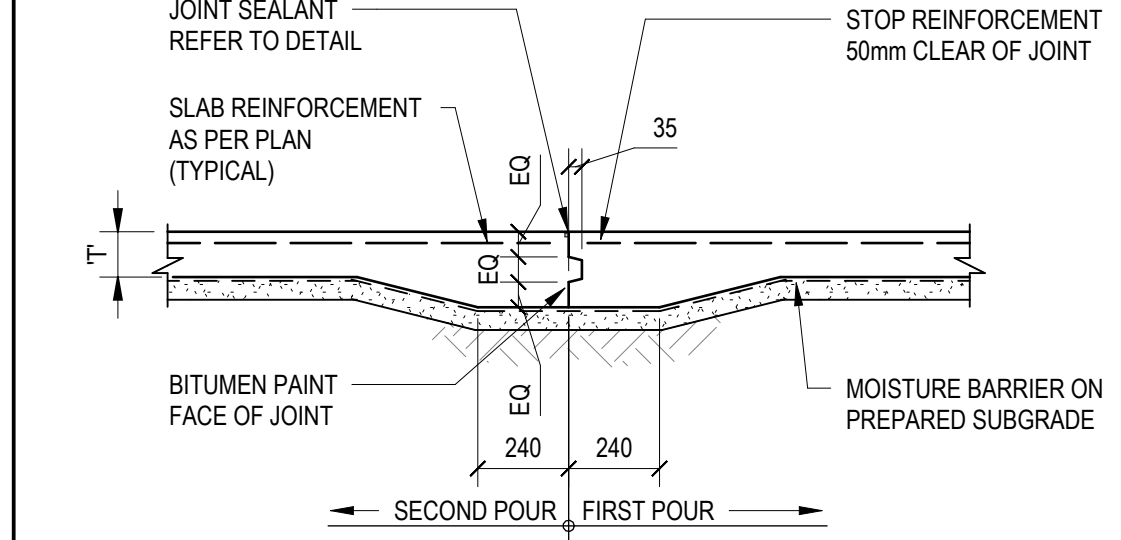
OPTION 1



OPTION 2

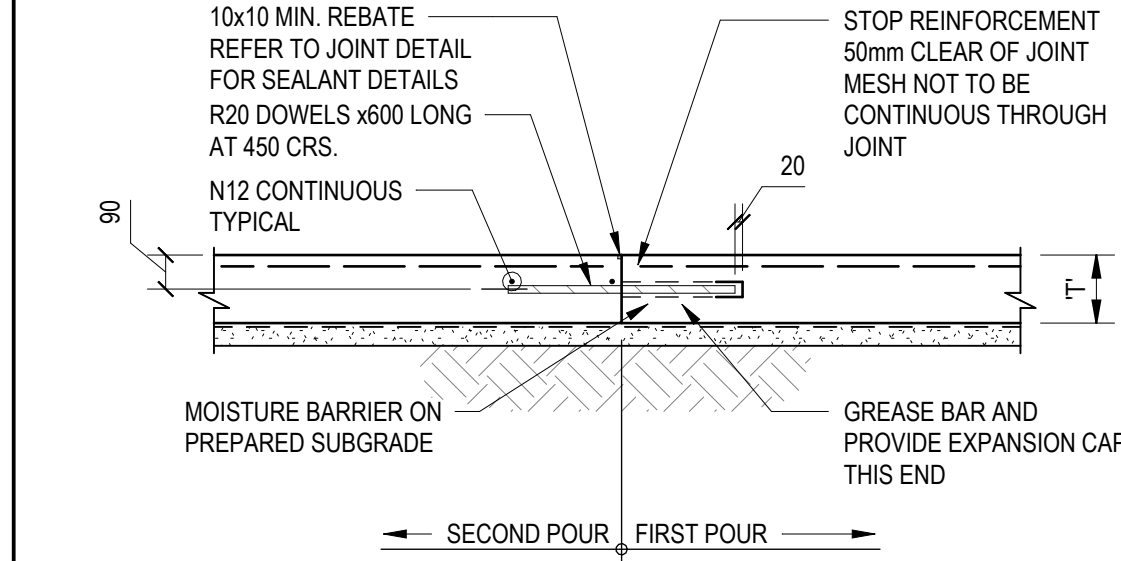
TYPICAL SLAB ON GROUND  
SAWCUT JOINT DETAIL

DENOTED AS 'SCJ' ON PLAN



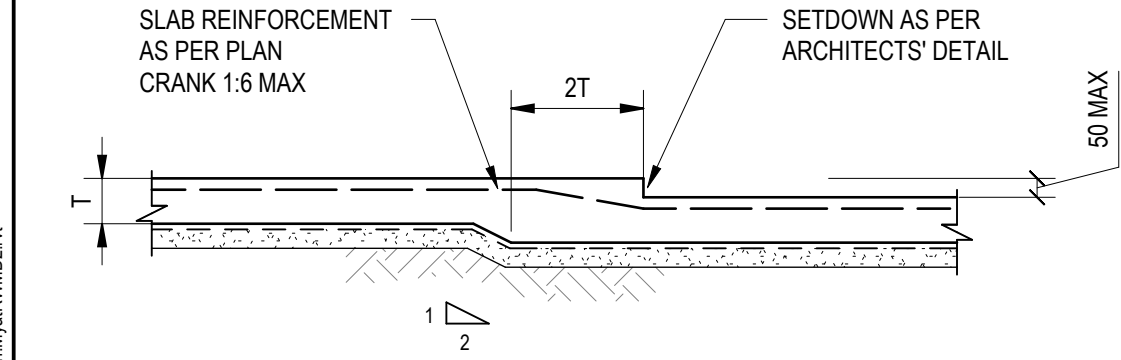
TYPICAL SLAB ON GROUND  
KEYED JOINT DETAIL

(DENOTED AS 'KCJ' ON PLAN)

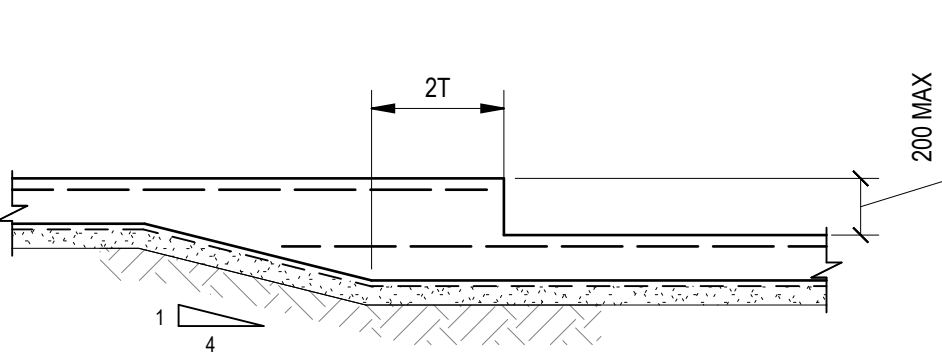


TYPICAL SLAB ON GROUND  
EXPANSION JOINT DETAIL

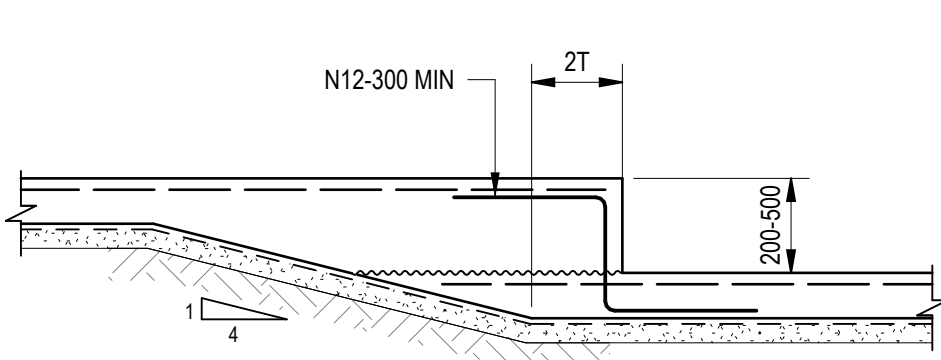
(DENOTED AS 'EJ' ON PLAN)



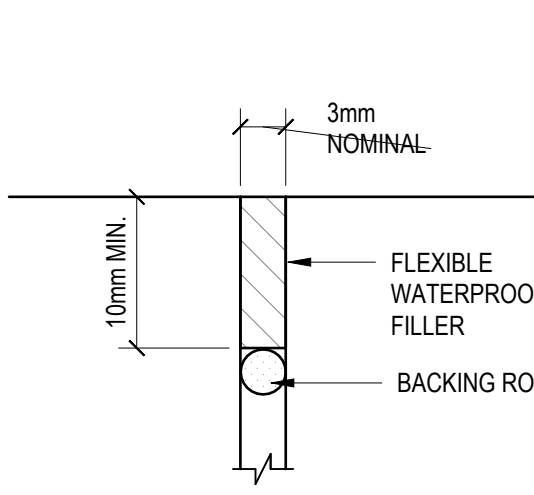
(a) STEP LESS THAN 50mm



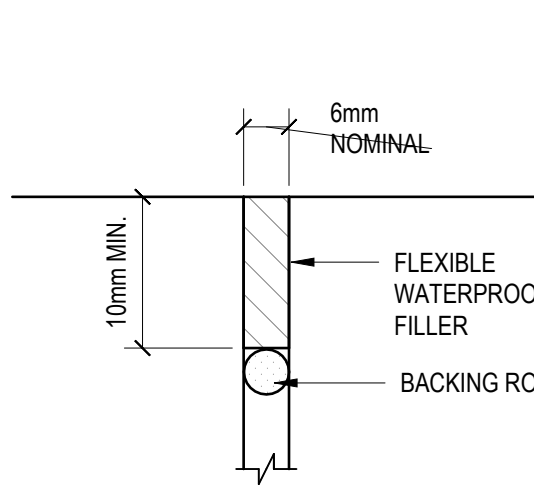
(b) STEP LESS THAN 200mm



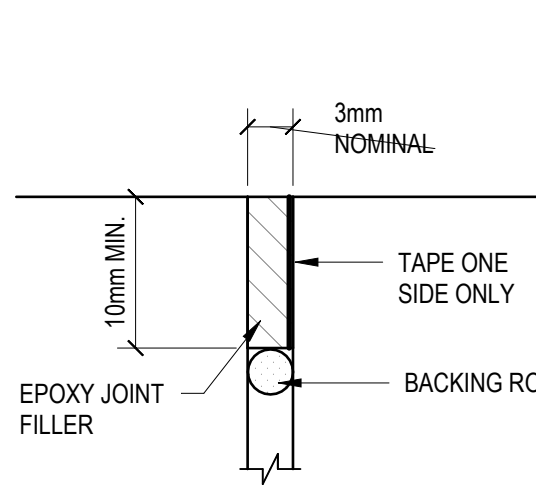
(c) 200mm < STEP < 500mm



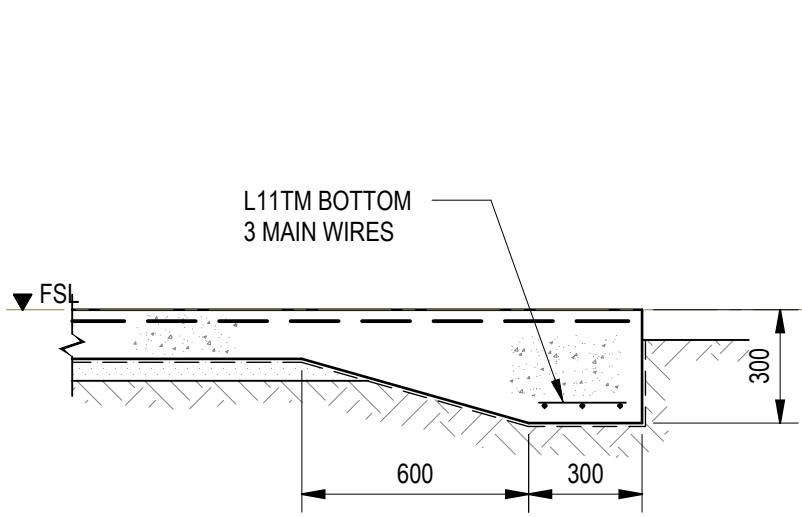
TYPICAL JOINT FILLER (NON-FORKLIFT TRAFFIC AREA)



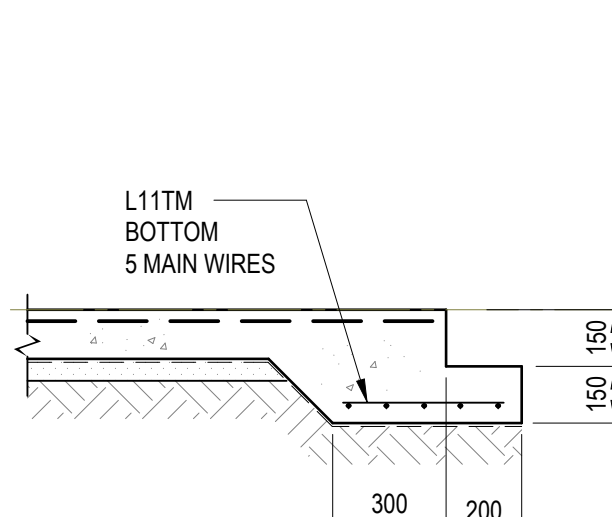
TYPICAL JOINT FILLER (FORKLIFT TRAFFIC AREA)



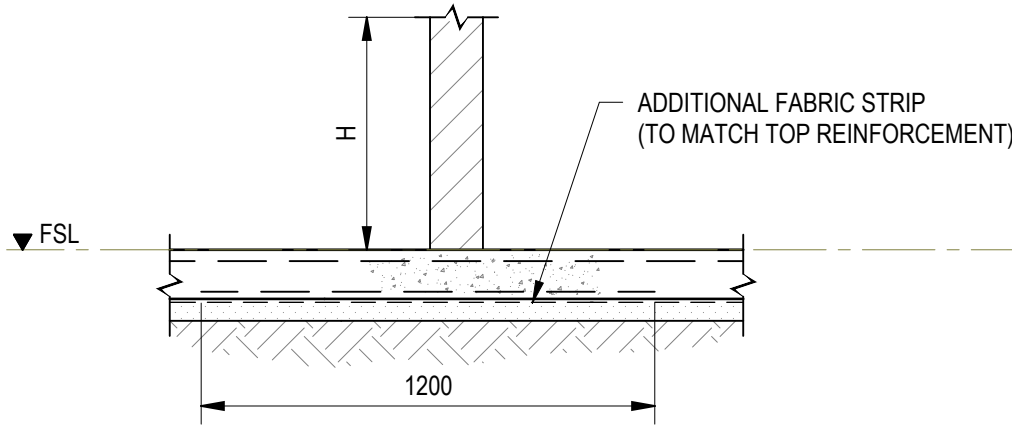
TYPICAL INTERNAL JOINT SEALANT DETAILS



EDGE THICKENING ET1

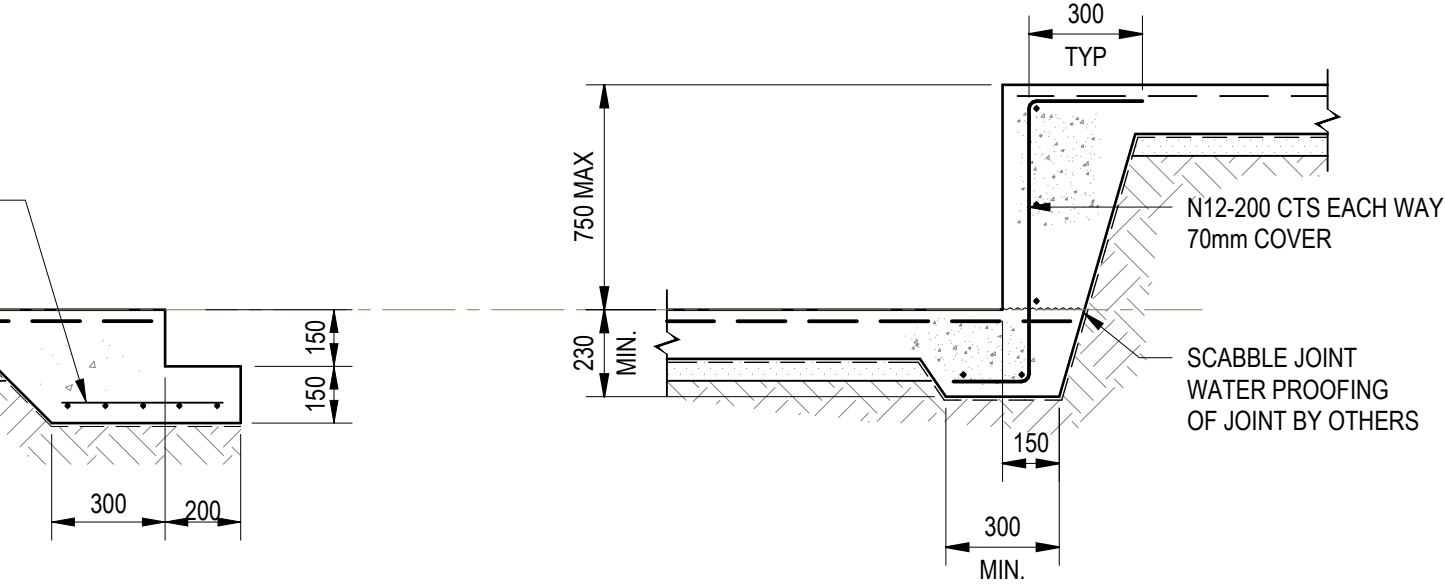


EDGE THICKENING ET2

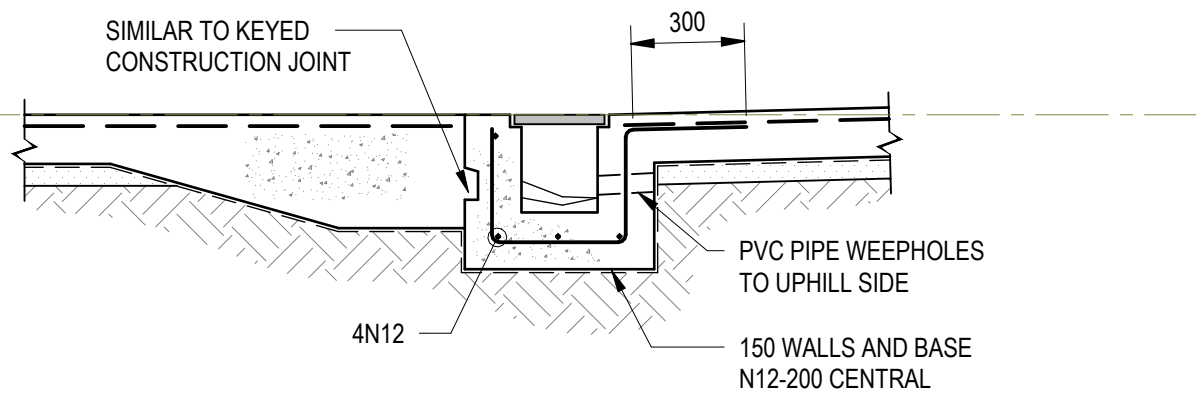


SLAB THICKENING DETAIL  
AT BLOCKWALL

REFER TO ARCHITECTURAL DRAWINGS FOR BLOCKWALL LAYOUT

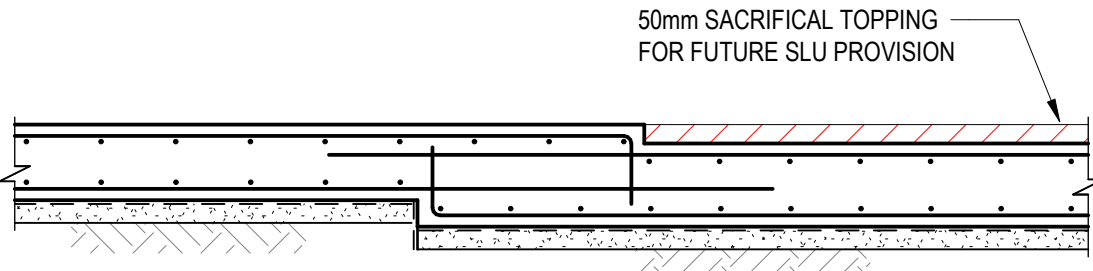


FOLD IN SLAB



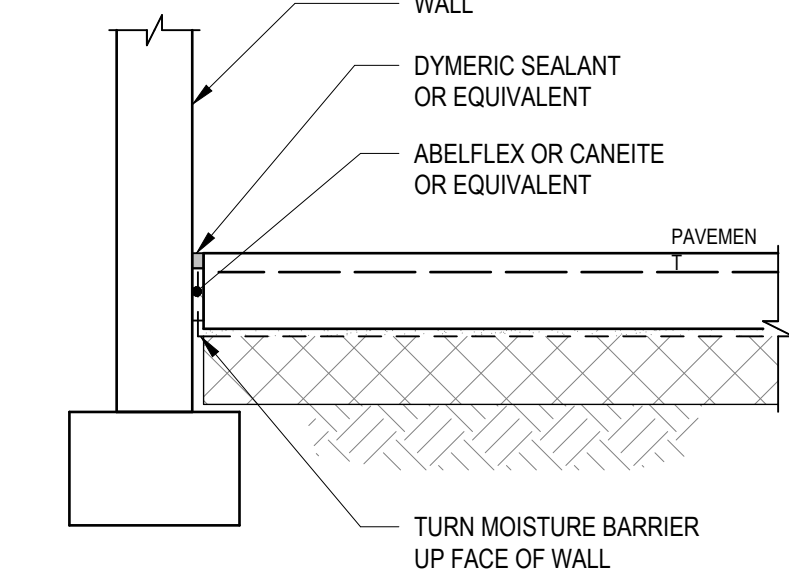
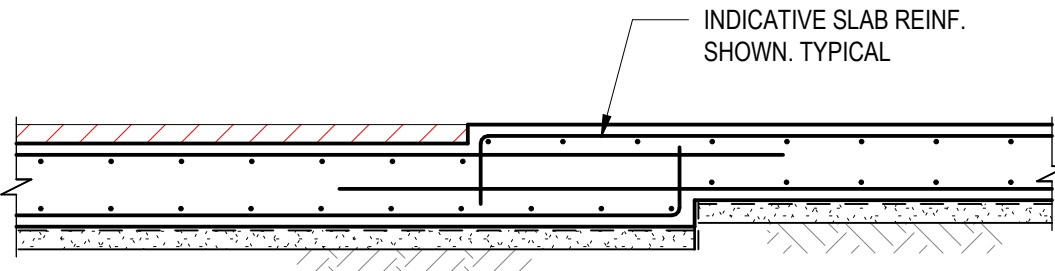
TYPICAL GRATED DRAIN DETAIL

WATER PROOFING OF JOINT BY OTHERS



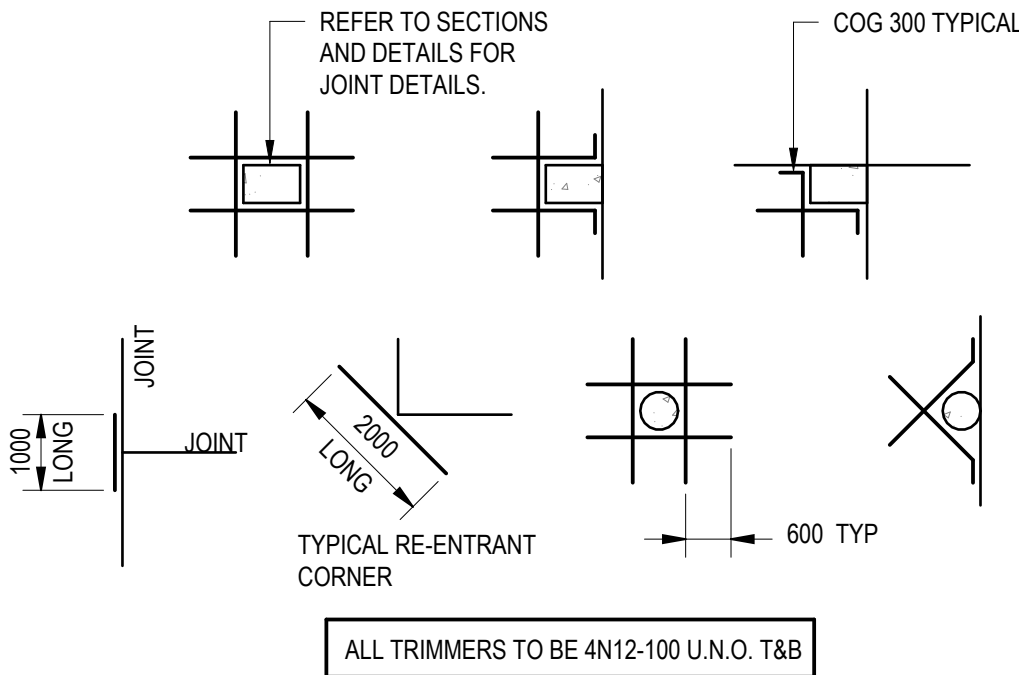
TYPICAL SECTION FOR FUTURE SLU PROVISION

SCALE 1 : 20



TYPICAL PAVEMENT TO BUILDING DETAIL

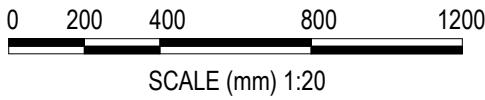
NOTE: TYPICAL ISOLATION JOINT AT COLUMN SIMILAR



TYPICAL SLAB ON GROUND TRIMMER DETAILS

AT ALL COLUMNS, WALLS, PITS, FLOOR WASTES, ETC THAT CAUSE A PENETRATION THROUGH THE SLAB.

REV	DESCRIPTION	BY	APP	DATE
P01	100% SCHEMATIC DESIGN	RM	JB	19.12.24



PROJECT NORTH



School Infrastructure NSW



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CLIENT  
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TITLE  
TYPICAL SLAB ON GROUND DETAILS

PROJECT  
DUNDAS PUBLIC SCHOOL

85 KISSING POINT ROAD, DUNDAS, NSW 2117

STATUS  
SCHEMATIC DESIGN

DESIGNED	DRAWN	APPROVED	DATE	SCALE	REVISION
TG	AA	Approver	23.09.24	@ A1	P01
PROJECT No 132664					
DRAWING No					
DUPS-MHT-XX-XX-DR-S-0260					

PRELIMINARY