

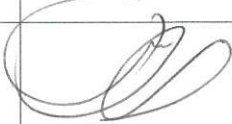
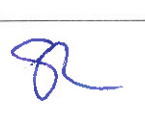
Construction Traffic Management Plan

Artarmon Substation Site Operations

Line-Wide Works Contract Sydney Metro City & Southwest

Project number:	C600
Document number:	SMCSWLWC-SYC-ATS-TF-PLN-002690
Revision date:	28 February 2020
Revision:	0

Document Approval

Rev.	Date	Prepared by	Reviewed by	Recommended by	Approved by	Remarks
A	6 Dec 2019	Mong Sim	Kia Arbabi	Paul Ryan	Adam Stuart	
B	17 Jan 2020	Mong Sim	Kia Arbabi	Scott Brown	Adam Stuart	General comments.
C	18 Feb 2020	Mong Sim	Kia Arbabi	Scott Brown	Scott Hunter	Minor comments.
0	28 Feb 2020	Mong Sim	Kia Arbabi	Scott Brown	Scott Hunter	Approval.
Signature:						

Details of Revision Amendments

Document Control

The Project Director is responsible for ensuring that this plan is reviewed and approved. The Project Traffic Manager is responsible for updating this plan to reflect changes to legal and other requirements.

Amendments

Any revisions or amendments must be approved by the Project Director and/or client before being distributed / implemented.

Revision Details

Revision	Details
A	Issued to TTLG for stakeholder review.
B	Revision per comments from CTMP review process. Figure 3 updated with latest model. Figure 6 added. Design drawings updated in Appendix A with the latest design. General update to the TCPs.
C	Additional Metro's comment. Clarification to Fig.6 and traffic control at Whiting St.
0	RMS approval.

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1. PART A – Management Systems, Compliance and CTMP Overview

1.1. Structure of this Plan

This Construction Traffic Management Plan (CTMP) describes Systems Connect traffic management planning and compliance during the construction stage for the Sydney Metro City & Southwest.

Part A: Overview	This section clearly defines: • Project Overview, Objectives, Management and Compliance • Overall project summary and overview
Part B: Implementation	This section outlines in detail the key aspects for Traffic Management on the Project including: • Implementation Details • Traffic Impact Assessment • Transport Management • Communications
Part C: Appendices	This section provides the following Appendices: • Design/Staging drawings • Copy of correspondence

This Construction and Traffic Management Plan (CTMP) forms part of the Systems Connect Integrated Management Systems.

1.2. Management and Planning Strategy

This CTMP dictates the overall traffic management plan including resources, processes and procedures during construction of Sydney Metro Chatswood to Bankstown works.

This Plan aims to address the following objectives:

- Local road staging and traffic management plan
- Obtaining relevant approvals, whether from Local Council, Roads and Maritime Services (RMS), Sydney Coordination Office (SCO), Sydney Metro
- Specific community / stakeholder consultation process and community relations strategies for managing changed traffic conditions
- Potential road network impacts and the mitigation and management of them
- Auditing, inspections and monitoring the road network
- Fulfil the requirements of Principal's G10 Specification – Traffic and Transport Management
- Meet the contractual requirements
- Management of incidents
- Provide and facilitate a mechanism for the monitoring, ongoing regular review and updating of this CTMP.

1.3. Compliance

The CTMP is in compliance and is consistent with the following framework and applicable conditions. They are:

- Planning Approval Sydney Metro City and Southwest Sydneyham to Bankstown.
- Critical State Significant Infrastructure (CSSI) Revised Environment Mitigation Measure
- Sydney Metro City and Southwest Construction Environment Management Framework
- Sydney Metro City and Southwest Construction Traffic Management Framework

1.4. Relevant Legislation

The key legislation relevant to traffic management includes:

- Environmental Planning and Assessment (EPA) Act, 1979
- The Roads Act 1993, Road Rules 2019

- Heavy Vehicle National Law 2014
- Work Health and Safety (WHS) Act 2011
- Principal's General Specification G10 – Traffic and Transport Management
- Traffic Control at Worksites Manual
- Relevant Australian Standards (AS) and Ausroads Guidelines

1.5. LW Project Overview and Scope

Line-Wide Works (LW) is delivered by Systems Connect, a CPB Contractors and UGL Engineering Joint Venture. Systems Connect is delivering LW in four distinct portions as follows, and as described in detail in Section 1.3.

- Portion 1 – Sydney Metro Train Facilities (SMTF) (Tallawong) expansion works
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The SMCSW project is being delivered through a series of contracts for the tunnels, stations, line wide infrastructure and systems.

LW is a key component of the SMCSW project, with works taking place over the full length of the project as shown in Figure 2 between Chatswood and Bankstown.

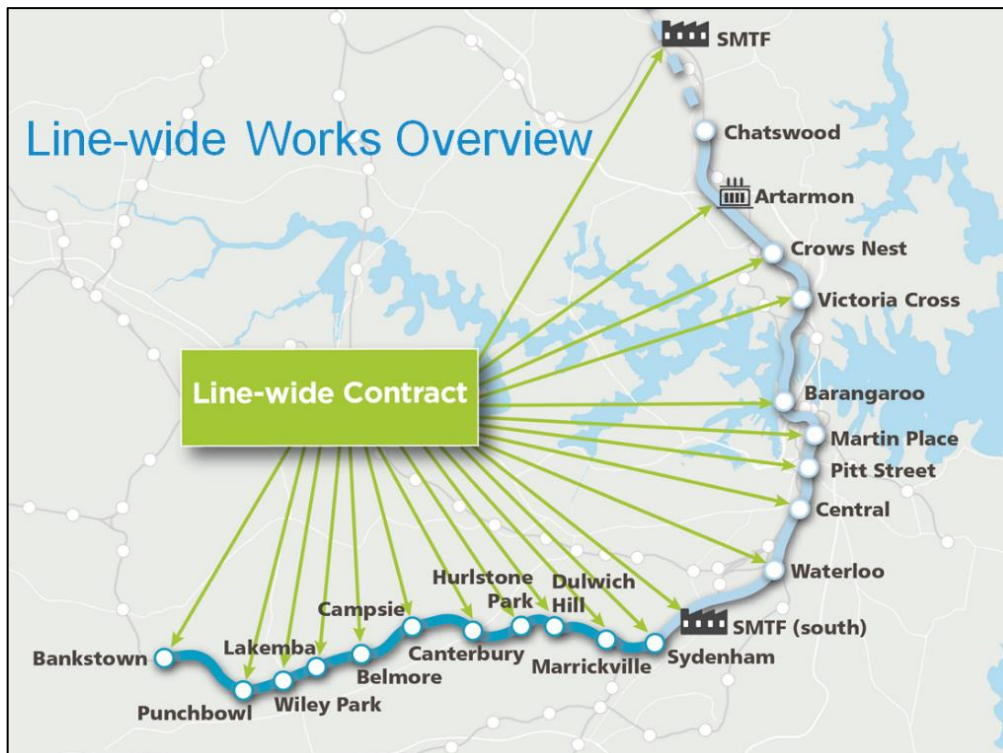


Figure 1. Line-Wide Works Line Diagram

2. PART B – Implementation

2.1. Artarmon Substation Works Site Description

Artarmon substation is located at the cul de sac of Whiting Street adjacent to Reserve Road, Artarmon. The site is a block size of approximately 37m x 28m. The substation will feed power to the Sydney Metro trains beneath. The site is on an industrial area with no immediate residential sites.

The substation building structure is consisting of pre-fabricated modules which will be transported via prime mover. The substation has only limited in-situ works but not limited to:

- Foundation work including piling for the substation
- Setting of up site office and temporary fencing
- Civil and structural works
- Installation of pre-fabricated module component for the substation installation/jointing
- Mechanical and electrical fittings

The substation work is mainly off trafficked lanes located within the block perimeter.

Work for the Artarmon substation is commencing from April 2020 and have a scheduled completion of approximately 11 months.



Figure 2 – Locality map of the Artarmon Substation in relative to Chatswood and Crows Nest stations.

3. Work Area Description

Access into the work site is via Whiting Street only. There are no other access route as Whiting Street is a dead end. Bulk of the work is strictly within the block perimeter. There will be occasions that an work area outside of the block needs to be temporarily set up. Temporary works requiring temporary and/or partial lane closure are shown below but not limited to:

- Initial site establishment
- Concrete pump set up and concrete trucks turn around
- Large sized deliveries (structural steel framing, building modules, electrical components etc)
- Large crane mobilisation and demobilisation

During the course of the substation construction, the following temporary traffic control are identified and required:

- At Reserve Road westbound Lane 1 (required only if a site office and hoarding is to be installed above the footpath at Reserve Road)
- At the end of Whiting Street (required for concrete pumps set up and the like)
- At the intersection of Clarendon Street and Whiting Street (required for large deliveries)

A temporary lane closure at Reserve Road westbound Lane 1 is potentially required for the setting up and demobilisation of temporary a site office above the Reserve Road footpath. At this stage, Systems Connect is still evaluating other locations for the site office other that the proposed location above the footpath at Reserve Road. A traffic control plan (TCP) for the work is attached for information. An evaluation for the final positioning of the site office will be assessed on site to determine its suitability and any risks factor.

Other temporary local traffic management are also required at the end of the Whiting Street to allow setting of concrete pumps and other deliveries and at the intersection of Clarendon Street and Whiting Street (refer to Appendix C).

Parking during the local traffic management at the of Whiting Street is not impacted as the area is signposted No Parking and/or Loading Zone. During the temporary and/or partial lane closure, a local traffic control plan will be in available during working hours.

An road occupancy license (ROL) and/or council permit will be applied for these areas.

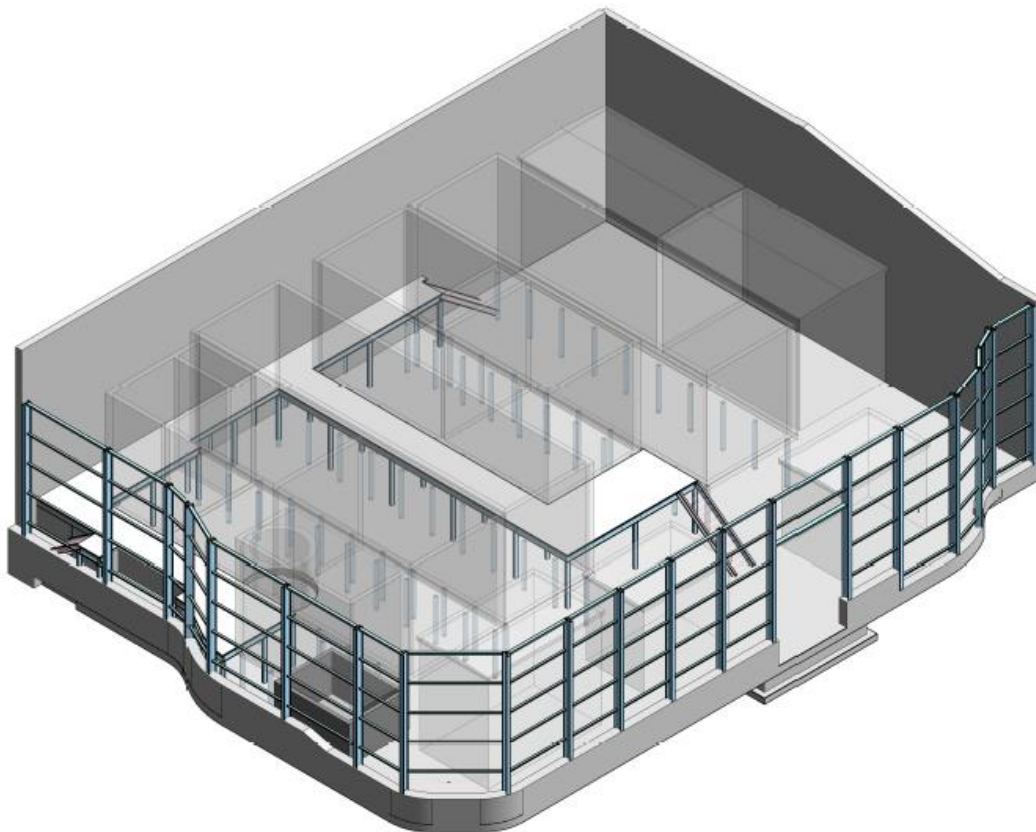


Figure 3 – updated Artist's impression of the Artarmon Substation (shown without cladding and other architectural features)



Figure 4 – View from Whiting Street looking towards the end of Whiting Street. Reserve Road is beyond the vegetation.



Figure 5 – View from Whiting Street looking towards Clarendon Street on the far end. Artarmon substation site on the left.

4. Traffic and Transport Management

4.1. Temporary Traffic Control

All temporary traffic control is in accordance to RMS Traffic Control at Worksite Manual and its references.

4.2. Parking

Designated parking area is not impacted. Work area setting up at the end Whiting Street is within a “No Parking” zone. See attached existing sign posting plan on Appendix B. During construction a long term “Work Zone” sign will be installed to manage the work site.

4.3. Pedestrians/Cyclists

Footpath are not closed during the work. Pedestrians are not impacted. These areas are not within a dedicated cycle route. No impact to cyclists.

4.4. Businesses Access

Business driveways are accessible at all times. Local traffic management is available to assist. Community engagement team to advise business in the area of the work.

4.5. Buses Operation

The work for the substation at Whiting Street is not within any active bus services. Willoughby’s Council loop bus stop before Curry Lane along Reserve Road is not impacted.

4.6. Emergency Services

Emergency Services are not directly impacted from the works as there are no road closures in place.

4.7. Construction Vehicles Route and Estimate

Construction vehicles route to Whiting Street is via Clarendon Street coming from either direction. The substation work site is expected to generate no higher volume than the previous site excavation by others. During normal working hour per day, heavy vehicle is capped at 26 vehicles and light vehicles capped at 34 vehicles into the area (Environment Impact Statement report Technical Paper 1:Traffic and Transport Figure 3.11). Components for the substation is approximately 15 semi deliveries throughout the project. These movements are insignificant. Refer to Figure 6 for estimated vehicle movement into the site. Refer to Appendix C for construction/heavy vehicles routes and details.

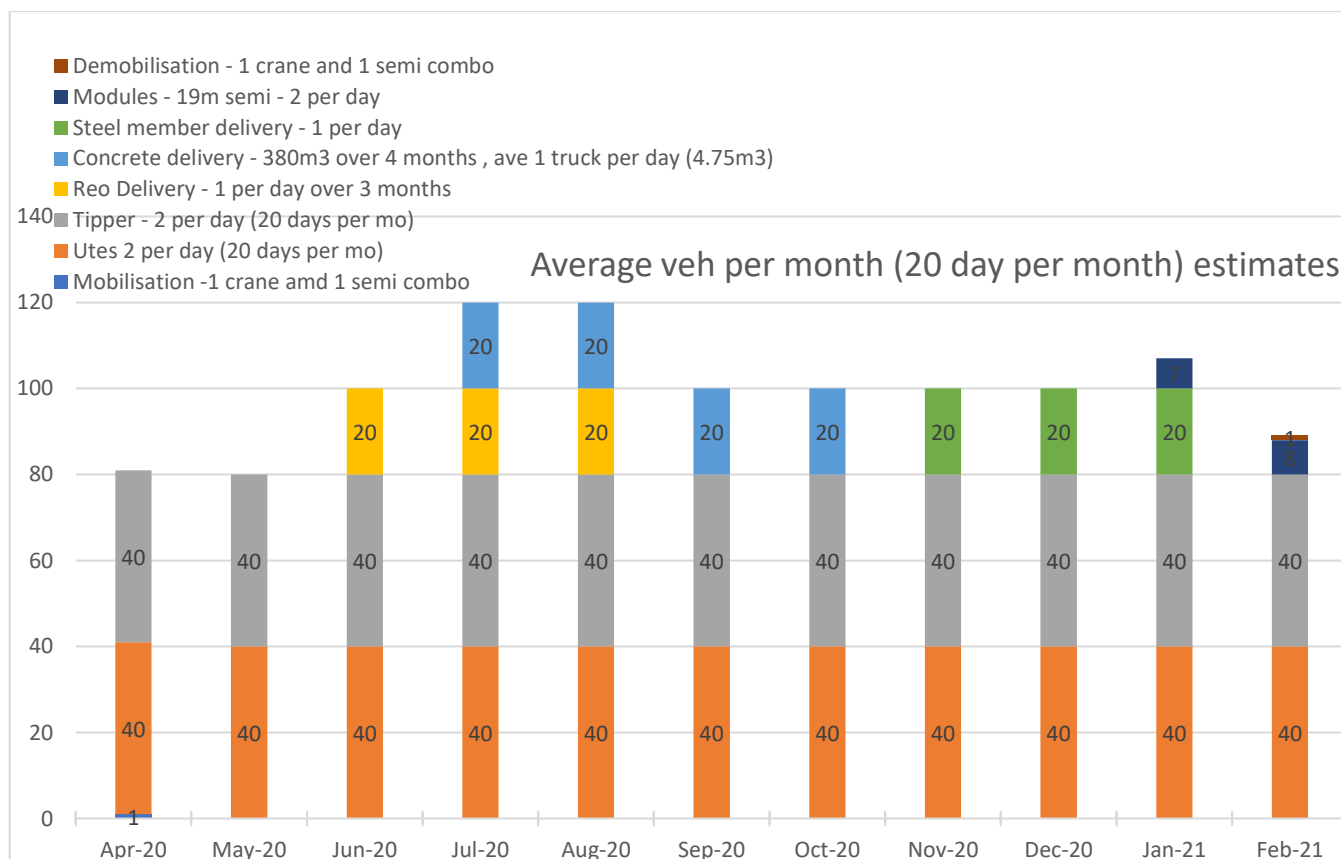


Figure 6 – Vehicle movements forecast

5. Systems Connect and Stakeholder Key Contacts

Systems Connect and key stakeholders contacts below for the overall integration of the CTMP.

Name	Role	Contact Details
Carl Mella	Roads and Maritime Services	13 22 13
Jake Coles	Sydney Coordination Office	1800 019 989
Phil Brogan / Ken Kind	Sydney Metro	1800 171 386
Gordon Fareilly	Willoughby Council – Project Manager	02 9707 9000
Matt Billings	Systems Connect – Environment Manager	0428 781 599
Kia Arbabi	Systems Connect – Senior Project Engineer	0428 250 284
Craig Godwin	Systems Connect – Safety Manager	0458 498 107
Helena Olen	Systems Connect – Community Manager	0419 705 798
Scott Francis	Systems Connect – Superintendant	0429 901 489
Mong Sim	Systems Connect – Traffic Engineer	0448 378 883

6. Communications and Community Strategy

Systems Connect will meet the reasonable needs and desires of the community for information on any changed traffic conditions, cyclist and pedestrian impacts and property access arrangement. Systems Connect will ensure that the public and other key stakeholders are informed of planned traffic arrangements, including any activities which may result in delays.

Communications, consultation and the dissemination of information associated with traffic and access will be undertaken as outlined in this section.

The aim of consultation and broad communication on traffic and access matters is to:

- Facilitate community feedback regarding traffic issues
- Recommend alternative and appropriate travel patterns during periods of change
- Manage traffic impacts to protect affected residential and business amenity
- Provide timely, accurate and comprehensive traffic information using all available media to inform road users and the community of the project's traffic impact mitigation measures.

Ongoing consultation with stakeholders will ensure that effective traffic management measures are developed and implemented to minimise disruption and inconvenience.

Systems Connect will coordinate engagement with Sydney Metro and the members of the Traffic and Transport Liaison Group (TTLG) to enable the local community and other stakeholders to receive timely and accurate information associated traffic and transport issues.

Tool	Purpose	Frequency
Traffic alert emails	Email alerts to RMS via the Transport Management Centre, Council, transport operators and emergency services to advise of major traffic changes including road or lane closures and detours, incidents or undue congestion	5 business days prior to changes As soon as practicable following incidents or undue congestion
Advertisements	To inform of significant traffic changes, detours and traffic disruptions as required to comply with approvals; in local newspapers, radio and project website	5 business days prior to changes
Letterbox notifications	Notification letters to inform local residents and businesses potentially affected by planned traffic changes	7 business days prior to changes
Community emails	To inform and update the community of project progress, milestones, activities planned for the following month, current and upcoming traffic changes	Monthly

Tool	Purpose	Frequency
Community information line	Access to the project team during construction hours with message service after hours via an 1800 number	N/A
TfNSW Sydney Metro website	Systems Connect will provide information in electronic format suitable to be uploaded onto the TfNSW Sydney Metro website, including copies of advertisements, traffic alerts, notification letters and other public material related to the works	To coincide with distribution
Systems Connect website	Information construction activities will be placed on the Systems Connect website including information about traffic changes, and executive summaries of publicly available reports relating to the project activities.	As required

Table above provides a guide to inform the community of changes to road and traffic conditions. It also provides a summary of the purpose and frequency of each method of communication.

7. Working Hours

The standard working hours 7am – 6pm on weekdays and 8am – 1pm on Saturdays. Some activities will need to be undertaken outside of these hours.

Construction Activity	Construction Hours / Comments
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Out of hours construction	Time subject to out of hours application and approval.

8. Manage Emergencies

Systems Connect acknowledge the inevitable nature of emergencies and their potentially significant social, economic and environmental consequences. Accordingly, we are aware that the NSW Government has enacted the State Emergency & Rescue Management Act 1989 to support emergency management activities.

Agencies primarily responsible for controlling hazards/emergencies are:

Unplanned Incident Agency Responsibility	
Law Enforcement / Emergencies	NSW Police
Fire	Fire and Rescue NSW
Hazardous Materials	Fire and Rescue NSW
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PART C – Appendices

Appendix A. Design Drawings

Appendix B. Existing Signposting plan – Whiting Street

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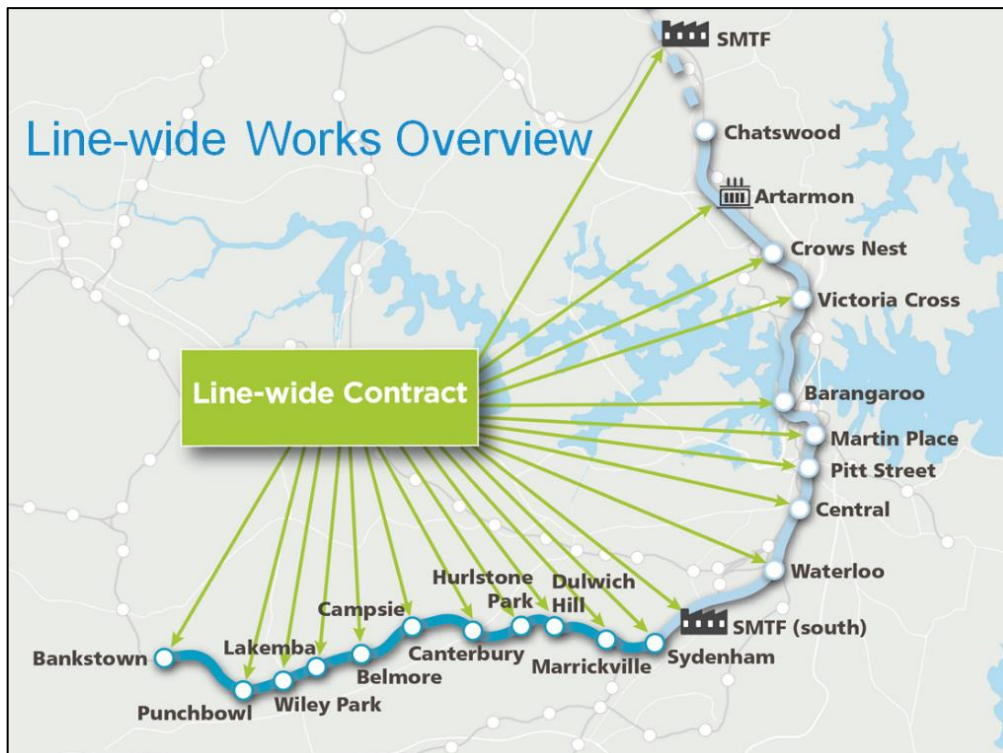


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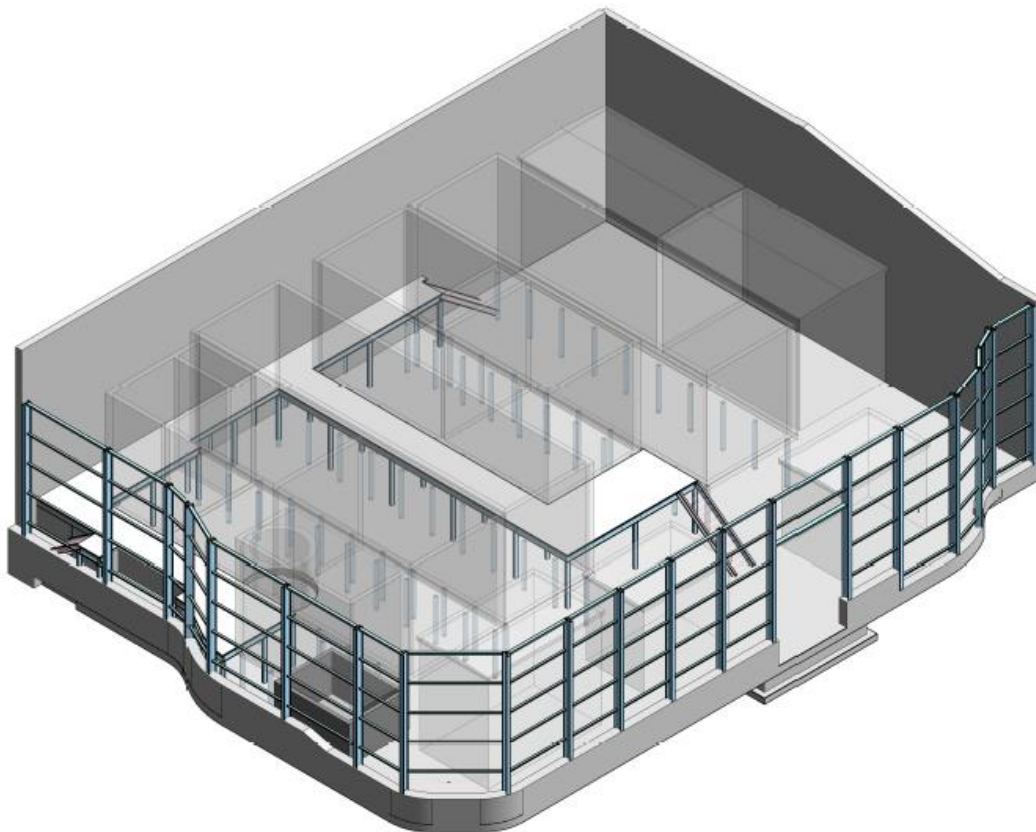


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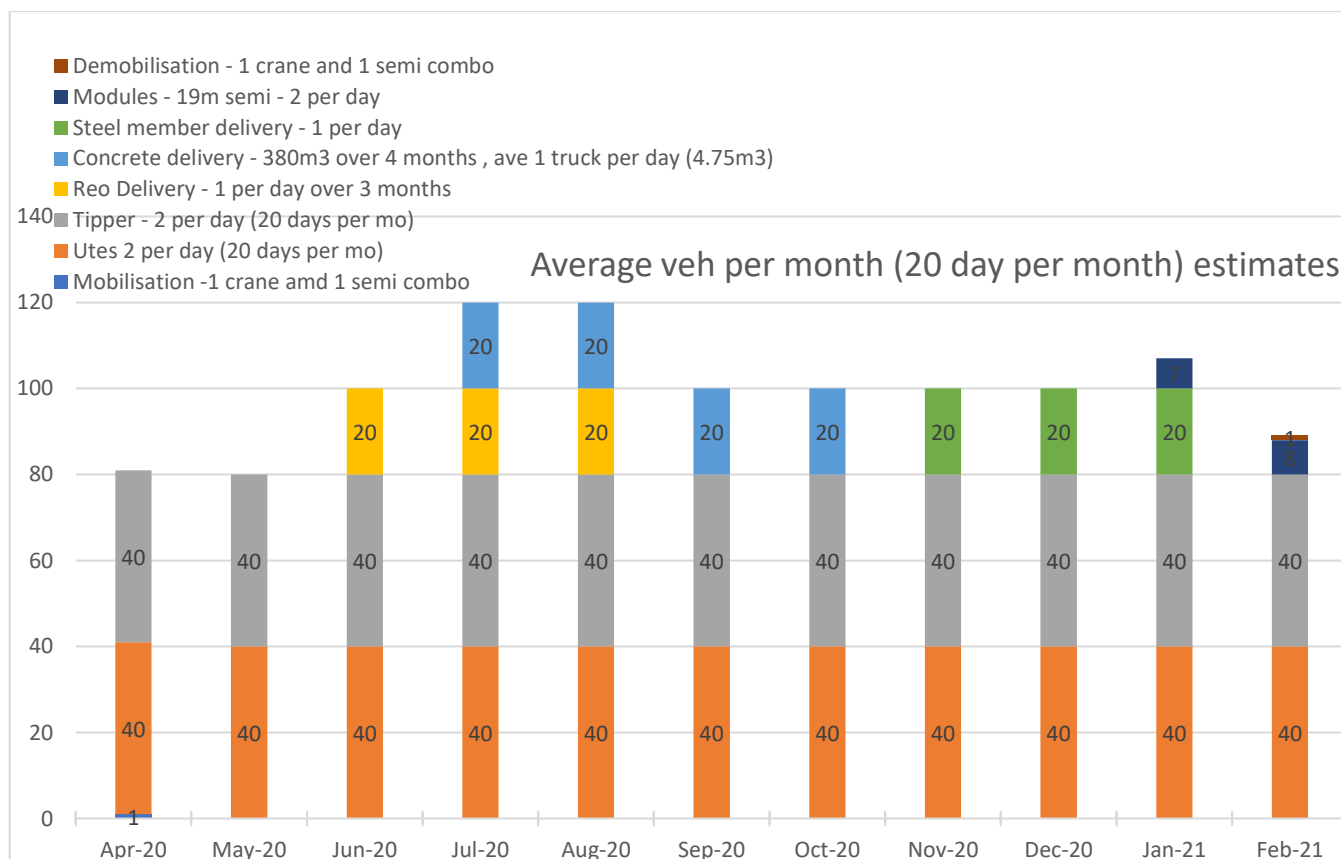


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Fire	Fire and Rescue NSW
Hazardous Materials	Fire and Rescue NSW
Flood	NSW State Emergency Service
Storm and Tempest	NSW State Emergency Service

PART C – Appendices

Appendix A. Design Drawings

Plot Date: 19/12/2019 2:37:10 PM Cad File: C:\pw_work\raul.santander\wsp-aus-pw\Bentley.com\dms84893\SMCSWLWC-SYC-ATS-CE-DWG-400002.dwg 100mm AT FULL SIZE

ARTARMON SUBSTATION

PKG1320 GENERAL CIVILS

DRAWING INDEX

DRAWING NUMBER

SMCSWLWC-SYC-ATS-CE-DWG-400001
SMCSWLWC-SYC-ATS-CE-DWG-400002
SMCSWLWC-SYC-ATS-CE-DWG-400006
SMCSWLWC-SYC-ATS-CE-DWG-400007

SMCSWLWC-SYC-ATS-CE-DWG-400051

SMCSWLWC-SYC-ATS-CE-DWG-400101
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SMCSWLWC-SYC-ATS-CE-DWG-400111

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SMCSWLWC-SYC-ATS-CE-DWG-400375

SMCSWLWC-SYC-ATS-CE-DWG-400380
SMCSWLWC-SYC-ATS-CE-DWG-400381

SMCSWLWC-SYC-ATS-CE-DWG-400390

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ISOMETRIC VIEWS

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WILLOUGHBY CITY COUNCIL
STANDARD DRAWING NO. SD105 SHEET 1 AND 2

REFERENCE DRAWING TITLE

VEHICULAR FOOTPATH CROSSING AND
KERB AND GUTTER DETAILS

DRAWING COLOUR CODED - PRINT ALL COPIES IN COLOUR

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SYDNEY METRO CITY & SOUTHWEST

ARTARMON SUBSTATION SHAFT AND PRECINCT

PKG1320 ARTARMON GENERAL CIVILS

DRAWING INDEX

STATUS: ISSUED FOR REVIEW

SHEET 1 OF 1

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DRG No SMCSWLWC-SYC-ATS-CE-DWG-400002

REV. B

- G1. THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ARCHITECTS AND OTHER CONSULTANTS' DRAWINGS AND SPECIFICATIONS AND SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. REFER TO SPECIFICATIONS FOR HOLD POINTS.
- G2. IF IN DOUBT, VERIFY WITH THE RELEVANT PARTY AS NECESSARY.
- G3. REFER ANY, DISCREPANCY, AMBIGUITY, OMISSION OR INCONSISTENCY TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
- G4. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SPECIFIED OTHERWISE.
- G5. LEVELS ARE IN METRES, REFERENCED TO AUSTRALIAN HEIGHT DATUM (A.H.D.)
- G6. CO-ORDINATES ARE TO MAP GRID OF AUSTRALIA (M.G.A.)
- G7. ALL WORKS TO BE UNDERTAKEN IN ACCORDANCE WITH THE RELEVANT PROJECT SPECIFICATIONS.
- G8. ALL CONSTRUCTION MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS, TOGETHER WITH THE REQUIREMENTS OF ALL RELEVANT CODES OF PRACTICE REFERRED TO THEREIN AND THE REQUIREMENTS OF ALL STATUTORY AUTHORITIES WHERE APPLICABLE.
- G9. ALL LOCATIONS, ORIENTATIONS AND LEVELS SHALL BE VERIFIED ON SITE BEFORE COMMENCING ANY WORK. REFER DISCREPANCIES TO THE CONSULTANT. DO NOT OBTAIN DIMENSIONS FROM SCALING.
- G10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PREPARATION AND IMPLEMENTATION OF A SEDIMENT CONTROL PLAN AND TEMPORARY DRAINAGE DIVERSION DURING CONSTRUCTION.
- G11. ANY PERMITS FOR DIVERSION WORKS REQUIRED DURING CONSTRUCTION SHALL BE OBTAINED BY THE CONTRACTOR.
- G12. EXISTING STORMWATER PIPES OR CULVERTS THAT ARE DEFINED TO BE DECOMMISSIONED ARE TO BE BACKFILLED WITH GROUT AND CAPPED OFF AT ENDS AND MAY REMAIN IN SITU UNLESS DAMAGED. STRUCTURALLY UNSOUND STORMWATER PIPES OR PIPES CONFLICTING WITH DESIGN ELEMENTS SHALL BE REMOVED.
- G13. FOUNDING MATERIAL FOR ALL STRUCTURES IS ASSUMED TO BE STIFF CLAY OR BETTER U.N.O WITH A MINIMUM UNRESTRAINED COHESION OF 50kPa, OR A MINIMUM EFFECTIVE COHESION OF 5kPa AND EFFECTIVE FRICTION ANGLE OF 26°. THESE ARE MINIMUM REQUIREMENTS. VARIATIONS IN GROUND CONDITIONS AND BEDROCK MAY BE ENCOUNTERED WITHIN THE DEPTH OF THE EXCAVATION.
- G14. FOR UTILITIES THAT HAVE BEEN RELOCATED OR REQUIRE ADJUSTMENT FOR THE WORKS, REFER TO INDIVIDUAL UTILITY DIVERSION DRAWINGS AND DETAILS FROM THE RELEVANT UTILITY AUTHORITY.
- G15. PRIOR TO THE CONSTRUCTION, THE FOUNDING CONDITIONS SHALL BE VERIFIED BY THE DESIGNERS SITE GEOTECHNICAL REPRESENTATIVE TO ENSURE THAT THE FOUNDING MATERIAL STRENGTHS MEET OR EXCEED THE ASSUMED DESIGN STRENGTH.THE DESIGNERS SITE GEOTECHNICAL REPRESENTATIVE SHALL ENSURE THAT ANY NECESSARY FOUNDATION TREATMENTS ARE COMPLETED PRIOR TO CONSTRUCTION. FOUNDING MATERIALS NOT MEETING THE REQUIRED STRENGTH SHALL BE REMOVED AND REPLACED WITH A GENERAL FILL IN ACCORDANCE WITH THE PROJECT SPECIFICATION R44 TO THE SATISFACTION OF THE DESIGNERS SITE GEOTECHNICAL REPRESENTATIVE.
- G16. PRIOR TO ANY EARTHWORKS OPERATIONS, STRIPPING OF ALL EXISTING SURFACE VEGETATION, TOP SOIL AND DELETERIOUS MATERIALS SHOULD BE UNDERTAKEN.
- G17. ALL WORK TO BE CARRIED OUT INLINE WITH WILLOUGHBY CITY COUNCIL ENGINEERING GUIDELINES. RMS GUIDELINES FOLLOWED BY AUSTRALIAN STANDARDS TO BE USED IN OTHER CIRCUMSTANCES.

THIS PACKAGE SHALL BE READ IN CONJUNCTION WITH THE FOLLOWING

INTERFACE PACKAGE	DRAWING
PKG4010 ARTARMON SUBSTATION ARCHITECTURE AND BUILDERS WORK	
PKG1405 ARTARMON SUBSTATION UTILITIES	
PKG2440 ARTARMON SUBSTATION 33KV BULK POWER SUPPLY FEEDS	SMCSWLWC-SYC-ATS-ED-DWG-400002
PKG1130 SYSTEM WIDE EARTHING AND BONDING AND LIGHTING PROTECTION	
PKG1540 MODULAR SUBSTATION	
PKG1206 ARTARMON TRACTION POWER	SMCSWLWC-SYC-ATS-TR-DWG-410002
PKG2405 SYSTEM WIDE HV RETICULATION SYSTEM	

FO1. MINIMUM FOOTPATH WIDTHS SHALL BE 1.2m. UNLESS SPECIFIED OTHERWISE

FO2. CONCRETE FOOTPATH SURFACE TO HAVE A NON-SLIP BRUSH FINISH. TACTILE GROUND SURFACE INDICATORS ARE TO BE PROVIDED AT ALL KERB RAMPS AND LOCATIONS WHERE FOOTPATHS MEET THE ROAD.

PT1. ALL PAVEMENTS ARE DESIGNED ASSUMING A CBR OF 3 FOR THE SUBGRADE.

PT2. THE CONTRACTOR SHALL CONSTRUCT THE PAVEMENTS AS SHOWN ON THE DRAWINGS AND IN ACCORDANCE WITH THE FOLLOWING ORDER OF STANDARDS:

- A) WILLOUGHBY CITY COUNCIL : VEHICULAR FOOTPATH CROSSING AND KERB AND GUTTER DETAILS DWG No. SD105 SHEET 1 AND 2 (HEAVY DUTY CROSSING)
- B) RESIDENTIAL PAVEMENTS: AS3727
- C) ASPHALT: AS2150 AND RMS R116
- D) BASE AND SUBBASE: RMS SPECIFICATION 3051
- E) CONCRETE PAVEMENTS: AS3600

PT3. ALL SUBBASE MATERIAL SHALL BE QUARRIED MATERIAL TO COMPLY WITH RMS FORM 3051 AND TABLE 3051.1 AND COMPACTED TO MINIMUM 95% MAXIMUM MODIFIED DRY DENSITY (MMDD) IN ACCORDANCE WITH AS 1289 5.2.1.

PT4. ALL BASE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH RMS FORM 3051 (UNBOUND) AND TABLE 3051.1, OR RMS FORM 3052 (BOUND) AND COMPACTED TO MINIMUM 98% MMDD IN ACCORDANCE WITH AS1289 5.2.1.

PT5. ASPHALTIC CONCRETE SHALL CONFORM TO RMS FORM R116 AND BE COMPACTED TO 98% MMDD. THE ASPHALT PAVEMENT SHALL BE COMPACTED WHILE HOT TO ACHIEVE A DENSE, SMOOTH SURFACE, FREE OF ROLLER MARKS OR LOOSE MATERIAL.

PT6. MATERIALS SHALL BE SPREAD, COMPACTED AND TRIMMED TO THE LEVELS AND DETAILS SHOWN ON THE DRAWINGS. PROVIDE A FINISHED SURFACE WHICH IS FREE DRAINING AND EVENLY GRADED.

PT7. FREQUENCY OF COMPACTION TESTING SHALL NOT BE LESS THAN 1 TEST PER 50m³ OF BASE COURSE MATERIAL PLACED.

PT8. FOLLOWING COMPACTION OF THE SUBBASE AND BASE AND WEARING SURFACE EACH LAYER SHALL BE PROOF ROLLED IN THE PRESENCE OF THE PRINCIPAL. PROOF ROLL THE SURFACE WITH AT LEAST A 10 TONNE MASS STATIC ROLLER.

PT9. FOLLOWING COMPLETION OF THE WEARING SURFACE THE CONTRACTOR SHALL SURVEY THE SURFACE AND PROVIDE DRAWINGS SHOWING THE AS BUILT LEVELS AND ANY DEVIATIONS IN ACCORDANCE WITH THE TOLERANCE SHOWN BELOW:

LOCATION / LAYER	LEVEL TOLERANCE	
	ABSOLUTE	RELATIVE
SUBBASE SURFACE	+5mm	+10mm
	-20mm	-10mm
LEAN MIX CONCRETE SUBBASE SURFACE	± 10mm	+5mm
BASE SURFACE	+5mm	-10mm
	-10m	-10mm
FINISHED SURFACE / WEARING COURSE	+5mm	+10mm
	-10mm	-10mm

- PT10. ABSOLUTE LEVEL TOLERANCE SHALL BE THE MAXIMUM DEVIATION FROM DESIGN
RELATIVE LEVEL TOLERANCE SHALL BE THE MAXIMUM DEVIATION FROM A 3m
STRAIGHT EDGE LAID ANYWHERE ON EACH PLANE SURFACE.

STEEL

THE FOLLOWING REQUIREMENTS APPLY TO STRUCTURAL AND REINFORCING STEEL SUPPLIED TO THE LW WORKS:

- I. REINFORCING BAR AND MESH USED DURING CONSTRUCTION TO BE PRODUCED THROUGH ENERGY REDUCTION PROCESSES, AS PER GREEN STAR DESIGN & AS BUILD V1.2 CREDIT 20.1B. ENERGY-REDUCTION PROCESSES INCLUDE POLYMER INJECTION TECHNOLOGY. THE PROJECT IS TARGETING A MINIMUM 60% REINFORCING STEEL FROM ENERGY-REDUCING PROCESSES;
- II. STEEL MUST BE SOURCED FROM SUPPLIERS THAT ARE CERTIFIED UNDER THE AUSTRALIAN CERTIFICATION AUTHORITY FOR REINFORCING AND STRUCTURAL STEELS OR A "DEMONSTRATED EQUIVALENT" ASSOCIATION OR ORGANISATION, WHERE AGREED BY THE PRINCIPAL'S REPRESENTATIVE;
- III. FABRICATED STRUCTURAL STEELWORK MUST BE SOURCED FROM A STEEL FABRICATOR/STEEL CONTRACTOR ACCREDITED TO THE ENVIRONMENTAL SUSTAINABILITY CHARTER OF THE AUSTRALIAN STEEL INSTITUTE; OR A "SIMILAR" ASSOCIATION OR ORGANISATION BY AGREEMENT WITH THE PRINCIPAL'S REPRESENTATIVE;
- IV. FABRICATED STEEL PRODUCTS MUST BE IN ACCORDANCE WITH AS 5131:2016 STRUCTURAL STEELWORK – FABRICATION AND ERECTION AND CERTIFIED THROUGH THE NATIONAL STRUCTURAL STEELWORK COMPLIANCE SCHEME.

THE FOLLOWING REQUIREMENT APPLIES TO REINFORCING AND STRUCTURAL STEEL, RAIL, CABLE CONTAINMENT, TUNNEL WALKWAY, AND METAL DECK ROOFING.

- V. STEEL MUST BE SOURCED FROM STEELMAKERS WITH AN ISO 14001:2015 ENVIRONMENTAL MANAGEMENT CERTIFIED ENVIRONMENTAL MANAGEMENT SYSTEM.

THE FOLLOWING REQUIREMENTS APPLY TO ALL CONCRETE SUPPLIED DIRECTLY TO THE LW WORKS, INCLUDING PRECAST CONCRETE:

- I. CONCRETE MUST BE SOURCED FROM MEMBERS OF THE CEMENT, CONCRETE AND AGGREGATE AUSTRALIA; OR A 'SIMILAR' ASSOCIATION OR ORGANISATION BY AGREEMENT WITH THE PRINCIPAL'S REPRESENTATIVE;
- II. FOR WATER USED ON SITE AND OFFSITE CONCRETE BATCHING PLANTS WHICH SUPPLY THE LW CONTRACTOR'S ACTIVITIES:
 - A. 80% OF OFFSITE AND ONSITE BATCHING PLANT CONCRETE PRODUCTION OPERATION WATER IS RECYCLED AND INCORPORATED INTO CONCRETE PRODUCTION; AND
 - B. SUSPENDED SOLIDS CONTENT OF RECYCLED CONCRETE PRODUCTION WATER MUST BE CONTROLLED SUCH THAT THE WATER DENSITY IS LESS THAN 1.01 G/ML AND THE SUSPENDED SOLIDS CONTENT DOES NOT EXCEED 15,000 PPM.
- III. CONCRETE USED IN ALL CIVIL AND STRUCTURAL WORKS MUST MEET THE FOLLOWING REQUIREMENTS:
 - A. THE MAXIMUM CEMENTITIOUS CONTENT FOR CONCRETE WITH A DESIGN CHARACTERISTIC COMPRESSIVE STRENGTH OF UP TO AND INCLUDING 20 MPA MUST BE 280KG PER CUBIC METRE OF CONCRETE.
 - B. THE MAXIMUM CEMENTITIOUS CONTENT FOR CONCRETE WITH A DESIGN CHARACTERISTIC COMPRESSIVE STRENGTH OF UP TO AND INCLUDING 25 MPA MUST BE 310KG PER CUBIC METRE OF CONCRETE
 - C. THE MAXIMUM CEMENTITIOUS CONTENT FOR CONCRETE WITH A DESIGN CHARACTERISTIC COMPRESSIVE STRENGTH OF UP TO AND INCLUDING 32 MPA MUST BE 360KG PER CUBIC METRE OF CONCRETE.
 - D. THE MAXIMUM CEMENTITIOUS CONTENT FOR CONCRETE WITH A DESIGN CHARACTERISTIC COMPRESSIVE STRENGTH BETWEEN AND INCLUDING 40 MPA TO 65 MPA MUST BE 450KG PER CUBIC METRE OF CONCRETE.
 - E. THE MAXIMUM CEMENTITIOUS CONTENT FOR CONCRETE WITH A DESIGN CHARACTERISTIC COMPRESSIVE STRENGTH GREATER THAN 65 MPA MUST BE 500KG PER CUBIC METRE OF CONCRETE.
- IV. PORTLAND CEMENT IN CONCRETE MIXES MUST BE REDUCED THROUGH USE OF SUPPLEMENTARY CEMENTITIOUS MATERIALS (SCM), SUCH AS FLY ASH AND BLAST FURNACE SLAG:
 - A. FOR CONCRETE ELEMENTS THICKER THAN 500mm AND WHERE THE DESIGN WATER/CEMENTITIOUS RATIO IS LESS THAN 0.40, THE CEMENTITIOUS CONTENT MUST CONTAIN AT LEAST 50% FLY ASH OR 70% SLAG;
 - B. FOR CONCRETE ELEMENTS LESS THAN OR EQUAL TO 500mm IN THICKNESS, THE CEMENTITIOUS CONTENT MUST CONTAIN AT LEAST 25% FLY ASH OR 50% SLAG;
 - C. CONCRETE ELEMENTS THAT HAVE A FLY ASH CONTENT WHICH IS GREATER THAN OR EQUAL TO 50% OF THE TOTAL CEMENTITIOUS CONTENT AND/OR A SLAG CONTENT WHICH IS GREATER THAN OR EQUAL TO 70% OF THE TOTAL CEMENTITIOUS CONTENT MUST RECEIVE A MINIMUM OF 7 DAYS OF CONTINUOUS MOIST CURING AFTER CASTING.

ALL TIMBER PRODUCTS ON THE PROJECT MUST BE SOURCED FROM EITHER:

- I. RE-USED TIMBER (REUSED FORMWORK MUST BE USED WHERE PRACTICAL AND FEASIBLE)
- II. 100% POST-CONSUMER RECYCLED TIMBER, OR
- III. FROM FOREST STEWARDSHIP COUNCIL (FSC) CERTIFIED TIMBER SUPPLIERS WITHIN AUSTRALIA (WHERE PRACTICABLE). WHERE THE CONTRACTOR DEMONSTRATES THAT IT IS NOT PRACTICABLE TO SOURCE FSC TIMBER, PROGRAMME FOR THE ENDORSEMENT OF FOREST CERTIFICATION (PEFC) CERTIFIED TIMBER SOURCED WITHIN AUSTRALIA MAY BE USED AS AN ALTERNATIVE.
- IV. TIMBER AND TIMBER PRODUCTS SOURCED FROM CERTIFIED FORESTS MUST BE ACCOMPANIED BY A RELEVANT CHAIN OF CUSTODY (COC) IN ORDER TO BE RECOGNISED AS CERTIFIED TIMBER. A COMBINATION OF THE ABOVE REQUIREMENTS IS AN ACCEPTABLE APPROACH.

PVC

FOR POLYVINYL CHLORIDE (PVC) USED IN PERMANENT FORMWORK, PIPES, FLOORING, BLINDS, MEMBRANES, AND CABLES:

I. POLYVINYL CHLORIDE (PVC) SHALL MEET BEST PRACTICE GUIDELINES FOR PVC IN THE BUILT ENVIRONMENT, OR SHALL NOT CONTAIN PVC, OR SHALL HAVE AN ENVIRONMENTAL PERFORMANCE DECLARATION. COMPLIANCE OF A PVC PRODUCT TO THE GUIDELINES SHALL BE DEMONSTRATED USING ANY OF THE FOLLOWING OPTIONS:

A. ENVIRONMENTAL MANAGEMENT SYSTEM (EMS): INCLUSION OF THE BEST PRACTICE GUIDELINES FOR PVC IN THE MANUFACTURER OR SUPPLIER'S INDEPENDENTLY AUDITED ISO 14001, ENVIRONMENTAL MANAGEMENT SYSTEMS (EMS). AUDITS MUST BE CONDUCTED BY A JAS-ANZ (OR EQUIVALENT) ACCREDITED CERTIFICATION BODY ON A BIENNIAL BASIS. THE COMPLIANCE CERTIFICATE ISSUED BY THE AUDITOR MUST PROVIDE WRITTEN ASSURANCE OF COMPLIANCE WITH THE CREDIT VIA THE EMS OPTION. THIS CERTIFICATE MUST BE VALID FOR UP TO THREE YEARS; OR

B. PRODUCT CERTIFICATION: INDEPENDENT ACCREDITATION PROGRAM(S) OR PRODUCT CERTIFICATION SCHEMES THAT INTEGRATE THE PRODUCER-SPECIFIC AND PRODUCT PERFORMANCE-SPECIFIC CRITERIA OF THE GUIDELINES INTO STANDARD(S) OR CERTIFICATION CRITERIA (E.G. TYPE 5 ISO PRODUCT CERTIFICATION, AND ECO LABELS). INDEPENDENT ACCREDITATION PROGRAMS AND PRODUCT CERTIFICATION SCHEMES MUST EITHER BE JAS-ANZ ACCREDITED OR PRE-QUALIFY FOR GBCA RECOGNITION BY DEMONSTRATING FULL COMPLIANCE WITH PART 1, SECTION A – GOVERNANCE AND TRANSPARENCY OF THE GBCA ASSESSMENT FRAMEWORK FOR PRODUCT CERTIFICATION SCHEMES. EVIDENCE OF INDEPENDENT ACCREDITATION OF THE PRODUCT(S)(E.G. TO AN ISO TYPE 5 CERTIFICATION SUCH AS AN AUSTRALIAN STANDARD OR TO A GBCA-RECOGNISED ECO LABEL) MUST BE PROVIDED TO GREEN STAR PROJECT TEAMS FOR INCLUSION IN GREEN STAR SUBMISSIONS AND SERVES AS THE DOCUMENTATION NEEDED TO ESTABLISH COMPLIANCE WITH THE CREDIT VIA THE PRODUCT CERTIFICATION THIS CERTIFICATE SHALL BE VALID FOR UP TO FIVE YEARS.

C. FOR SUPPLIERS WITHOUT CERTIFICATION, EQUIVALENCE TO PVC BEST PRACTICE GUIDELINES CAN BE DEMONSTRATED THROUGH A PVC BEST PRACTICE GUIDELINES QUESTIONNAIRE (TO BE REQUESTED FROM SYSTEMS CONNECT IF REQUIRED).

LOW VOC PAINTS, FINISHES, SEALANTS, ADHESIVES, CARPETS AND WOOD PRODUCTS:
I. FOR ALL ONSITE WORKS FOR INTERNAL SURFACES ONLY, LOW "VOLATILE ORGANIC COMPOUNDS" (VOCs) PAINTS, FINISHES, SEALANTS AND ADHESIVES AND CARPETS AND ZERO OR LOW FORMALDEHYDE EMISSION COMPOSITE WOOD PRODUCTS (AS DEFINED IN THE GREEN STAR DESIGN AND AS BUILT RATING TOOL V.12 CREDIT 13 "INDOOR POLLUTANTS") MUST BE USED.
II. ALL INTERNAL AND EXTERNAL SURFACE COATINGS MUST COMPLY WITH THE AUSTRALIAN PAINT APPROVAL SCHEME (APAS) VOLATILE ORGANIC COMPOUNDS LIMITS WHERE FIT FOR PURPOSE.

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100mm AT FULL SIZE

UTILITES

- U1. LOCATION AND LEVEL OF ALL EXISTING SERVICES MUST BE OBTAINED PRIOR TO CONSTRUCTION. ALL LEVELS MUST BE CHECKED FOR CONFLICT WITH ANY SERVICES. ANY CONFLICTS TO BE RESOLVED WITH THE DESIGN TEAMS SITE REPRESENTATIVE.
- U2. UTILITIES SHOWN ARE INDICATIVE ONLY. CONTRACTOR TO CONFIRM LOCATIONS AND LEVELS OF ALL UTILITIES PRIOR TO COMMENCING WORK. CONTRACTOR TO ENSURE THE PROPOSED WORKS AND ADOPTED METHOD OF CONSTRUCTION WILL AVOID DAMAGE TO ALL UTILITIES.
- U3. IN ORDER TO AVOID DAMAGE TO THE UTILITIES THE CONTRACTOR SHALL BE RESPONSIBLE FOR CO-ORDINATING THE WORKS ADJACENT TO ANY UTILITY WITH THE RELEVANT UTILITY AUTHORITY IN ACCORDANCE WITH THE AUTHORITY REQUIREMENTS.
- U4. THE CONTRACTOR SHALL CO-ORDINATE WITH THE RELEVANT UTILITY AUTHORITIES AND THE CJV WITH RESPECT TO ANY TEMPORARY DIVERSIONS NECESSARY FOR CONSTRUCTION STAGING WORKS.
- U5. PRIOR TO THE START OF EXCAVATION, ALL PROPOSED TEMPORARY EXCAVATIONS FOR UTILITIES NEAR CUT OR FILL BATTERS ARE TO BE ASSESSED ON SITE BY AN EXPERIENCED ENGINEERING GEOLOGIST OR DESIGNERS SITE GEOTECHNICAL REPRESENTATIVE FOR THEIR POTENTIAL IMPACT ON BATTER STABILITY DURING CONSTRUCTION.
- U6. ALL EARTHING AND BONDING REQUIREMENTS TO BE IN ACCORDANCE WITH THE PROJECT EARTHING AND BOUNDING DESIGN DRAWINGS

DRAINAGE

- PITS
- DR1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SPECIFIED OTHERWISE.
- DR2. THE DOCUMENTED DRAINAGE SYSTEM IS DETAILED FOR PERMANENT CONFIGURATION ONLY.
- DR3. REFER TO DRAINAGE SCHEDULE FOR TYPE OF PITS.
- DR4. REINFORCED CONCRETE PITS TO BE IN ACCORDANCE WITH AS3600. REINFORCEMENT TO CONFORM TO AS4671:2001 AS APPLICABLE. WELDING OF REINFORCEMENT TO BE IN ACCORDANCE WITH AS1554.3. ALL PITS LESS THAN OR EQUAL TO 900mm x 900mm SQUARE ARE TO BE PROVIDED WITH A HEAVY DUTY CAST IRON GRATE. PITS LARGER THAN 900 x 900 SQUARE ARE TO BE PROVIDED WITH A HINGED CLASS D GRATE & FRAME BOLTED DOWN AND TO BE CAST INTO SURROUND AS PER AS 3996.
- DR6. PIT RISERS ARE TO BE SELECTED SO THAT STEP RUNGS DO NOT COME WITHIN 50mm OF THE TOP OR BOTTOM OF THE RISER.

- PIPES
- DR7. MINIMUM PIPE SIZE IS 250mm.
- DR8. ALL PIPES TO HAVE A TYPICAL MINIMUM GRADE OF 0.5% .
- DR9. PIPE LENGTHS SHOWN ARE CALCULATED BETWEEN SET OUT POINTS OF PITS WITH NO ALLOWANCE FOR PIT.
- DR10. ALL PIPES TO HAVE A DESIGN LIFE OF 50 YEARS.
- DR11. PIPE BEDDING TO BE MINIMUM HS2.

- MODIFICATION TO EXISTING DRAINAGE
- DR12. EXISTING DRAINAGE LINES (PITS AND PIPES) TO BE CONFIRMED ON SITE PRIOR TO INTEGRATING THEM WITH PROPOSED DRAINAGE SYSTEM OR RETAINING THEM.
- DR13. EXISTING PIPES TO BE ABANDONED SHALL BE REMOVED OR FILLED WITH 14:1 CEMENT STABILIZED SAND, UNLESS NOTED OTHERWISE.
- DR14. WHERE NEW PIPES AND PITS ARE TO BE CONNECTED TO THE ENDS OF EXISTING PIPES, A WATERTIGHT SEAL IS TO BE PROVIDED AT THE CONNECTION POINT.

- UTILITY COORDINATION
- DR15. COORDINATE ALL DRAINAGE LINES WITH PROPOSED AND EXISTING SERVICES PRIOR TO CONSTRUCTION. EXISTING SERVICE LOCATIONS SHOULD BE CONFIRMED PRIOR TO CONSTRUCTION.

- DRAINAGE DESIGN CRITERIA NOTES
- DR16. DESIGN LIFE = 50 YEARS FOR ALL DRAINAGE ELEMENTS.
- DR17. DRAINAGE IMMUNITY = 100 YEAR ARI FOR ALL DURATION STORMS.

REFERENCED STANDARDS AND CONSTRUCTION SPECIFICATIONS

- DRAWINGS- STANDARD DETAILS
- TYPE SA PIT RMS DRAWING R 0220-01 AND 28
 - TYPE SA GRATE AND FRAME RMS DRAWING R 0220-04 AND 05
 - INSPECTION PIT RMS DRAWING R 0220-39

CONCRETE NOTES

- C1. ALL CONCRETE WORKMANSHIP AND MATERIALS TO IN ACCORDANCE WITH AS3600:2009, AS2870:2011 AND THE SPECIFICATION
- C2. CONCRETE QUALITY, AND REQUIRED PROPERTIES OF CONCRETE SHALL BE IN ACCORDANCE WITH AS1329:2002
- C3. SURFACE FINISH, FORMWORK IS TO BE IN ACCORDANCE WITH THE SAI FORMWORK CODE AS3610:1995. EXCEPT WHERE SPECIFIED OTHERWISE, CONCRETE EXPOSED TO VIEW IN THE FINAL PRODUCT IS TO BE CLASS 2 FINISH AND TO CLASS 4 ELSEWHERE.
- C4. CONCRETE REQUIREMENTS AS SHOWN IN TABLE BELOW UNLESS NOTED OTHERWISE ON THE DRAWINGS. NO "BRECCIA" TYPE AGGREGATE IS TO BE USED:

DESCRIPTION	DESIGNATION	STRENGTH f _c (MPa)	MIN/MAX CEMENTITIOUS MATERIAL kg/m ³	TARGET SLUMP (mm)	MAX. SHRINKAGE (us) AT 56 DAYS IN ACCORDANCE WITH AS1012	MAX W/C RATIO
DRAINAGE PITS	S40	40	320 / 450	80 +/- 15	600	0.5

- C5. ALL CONCRETE SHALL BE SUBJECT TO ASSESSMENT AND TESTING TO AS1379:2007.
- C6. MECHANICALLY VIBRATE CONCRETE IN THE FORM TO GIVE MAXIMUM COMPACTION WITHOUT SEGREGATION OF THE CONCRETE..
- C7. CURE CONCRETE AS REQUIRED BY SECTION 17 OF AS3600:2009
- C8. UNLESS SHOWN ON THE DRAWINGS, THE LOCATION OF ALL CONSTRUCTION JOINTS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.
- C9. DO NOT PLACE CONDUITS, PIPES AND THE LIKE WITHIN COVER CONCRETE. CONDUITS CAST INTO CONCRETE MEMBERS SHALL BE SPACED AT MAXIMUM DISTANCE POSSIBLE AND UNDER NO CIRCUMSTANCES CLOSER THAN A CLEAR SPACING OF TWICE THE LARGER CONDUIT DIAMETER FROM PARALLEL REINFORCEMENT OR ANY OTHER CONDUIT.
- C10. CONCRETE SIZES AS DRAWN ARE MINIMUM AND DO NOT INCLUDE APPLIED FINISHES.
- C11. UNLESS NOTED OTHERWISE, ALL SLABS CAST ON GROUND REQUIRE 30mm THICK COMPACTED FREE DRAINING SAND BEDDING WITH A 0.3mm POLYTHENE MEMBRANE GENERALLY, DRAWINGS ARE DETAILED IN ACCORDANCE WITH THE PRINCIPALS SET OUT IN THE CONCRETE INSTITUTE OF AUSTRALIA (CIA) "REINFORCEMENT DETAILING HANDBOOK" OF 2010.
- C12. THE FACE OF ALL CONCRETE WHICH HAS REINFORCEMENT PROTRUDING FROM IT AND AGAINST WHICH NEW CONCRETE TO BE CAST, IS TO BE THOROUGHLY MECHANICALLY SCRABBLED, FULLY EXPOSING THE AGGREGATE MATRIX, WITH SURFACE ROUGHNESS NOT LESS THAN 3mm U.N.O.
- C13. SURFACE FINISH OF CONCRETE TO BE COMPATIBLE WITH SUBSEQUENT TRADES AND FINISHES AND COMPATIBLE WITH USES AND FUNCTIONS, AND U.N.O.
- UNDER CONCRETE TOPPING OR SIMILAR - SCREEDED.
- UNDER OTHER FINISHES - STEEL TROWEL.
- IN TRAFFICABLE AREAS - BROOM FINISH.

CONCRETE COVER

CONCRETE GRADE AND COVER

ELEMENT	EXPOSURE CLASSIFICATION	CONCRETE STRENGTH f _c (MPa) AT 28 DAYS	MINIMUM COVER (mm)
DRAINAGE PITS	B2	40	50 ALL ROUND

REFER TO DURABILITY AND STRUCTURAL SECTIONS OF DESIGN REPORT
SMCSWLWC-SYC-ATS-CE-REP-400001 FOR FURTHER INFORMATION

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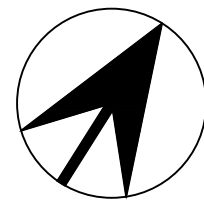
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100mm AT FULL SIZE

100mm



LEGEND

- -69.2 — — MAJOR DESIGN CONTOURS
- - - - MINOR DESIGN CONTOURS
——-1.2—— BULK EARTHWORKS CONTOURS
DEPTH BELOW NATURAL SURFACE

WHITING STREET

RESERVE ROAD

NOTE

1. FOR GENERAL NOTES REFER TO DRAWING SMCSWLWC-SYC-ATS-CE-DWG-400006 AND 400007
2. REFER TO PKG 4010 ARTARMON SUBSTATION ARCHITECTURE AND BUILDERS WORK FOR TSS ENCLOSURE / SCREENS.
3. BULK EARTHWORKS CUT DEPTHS = NATURAL SURFACE LEVEL TO 600mm BELOW FINISHED SURFACE LEVEL.

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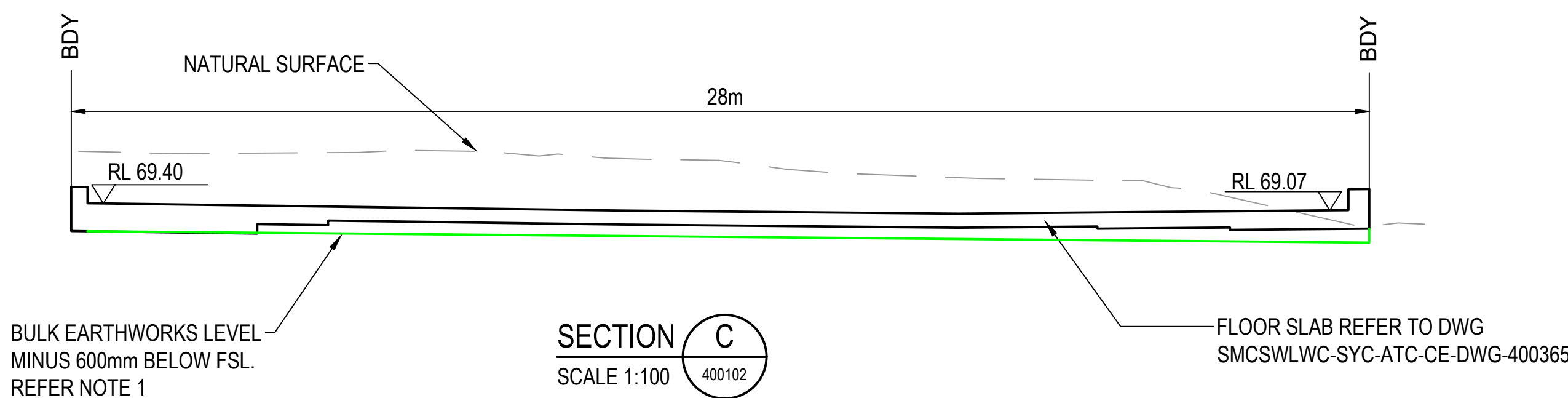
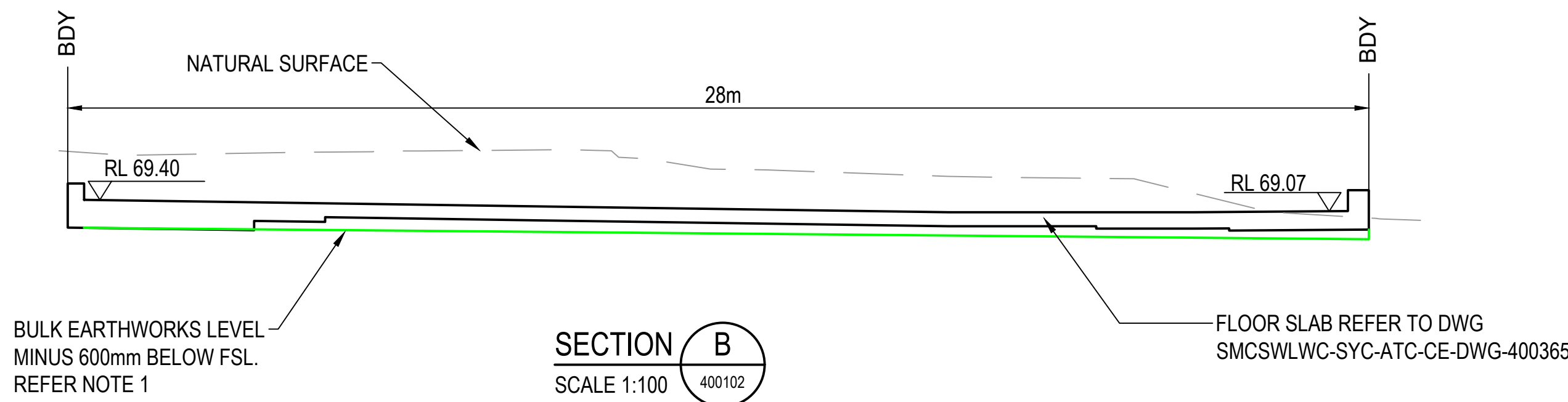
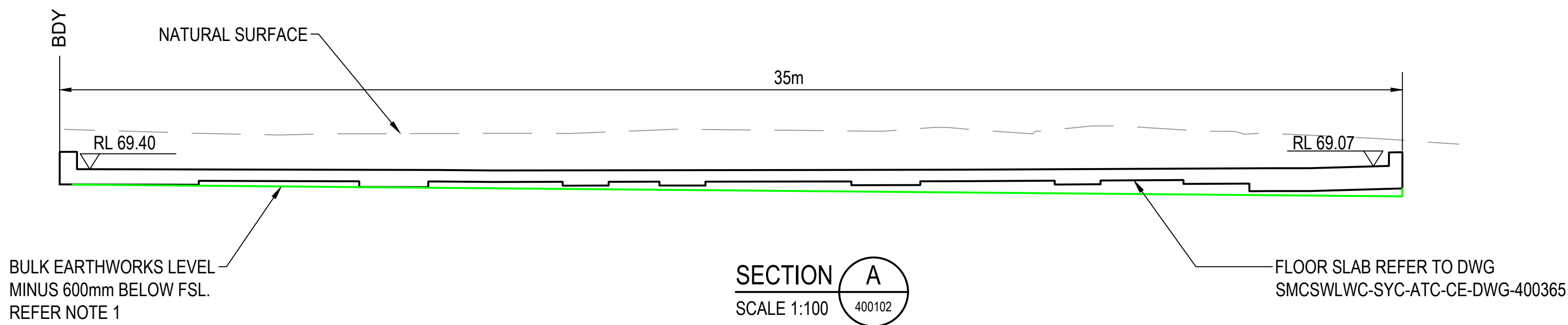
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				SCALES		CLIENT		The information shown on this drawing is for the purposes of the Sydney Metro Project only. No warranty is given or implied as to its suitability for any other purpose. The Service Providers accept no liability arising from the use of this drawing and the information shown thereon for any purpose other than the Sydney Metro Project. SERVICE PROVIDERS     WSP Aurecon Line Wide Joint Venture DRAWN_ KATE MERCER 19/12/19 DESIGNED_ ELIZABETH YUSTIRA 19/12/19 DRG CHECK_ RAUL SANTANDER 19/12/19 DESIGN CHECK_ MARK CAMERON 19/12/19 APPROVED_ MARK CAMERON 19/12/19	SYDNEY METRO CITY & SOUTHWEST ARTARMON SUBSTATION SHAFT AND PRECINCT PKG1320 ARTARMON GENERAL CIVILS BULK EARTHWORKS PLAN						
A	RS	19/12/19	STAGE 1 DESIGN SUBMISSION	MC	1 0 2 4m SCALE 1:100					STATUS: ISSUED FOR REVIEW		SHEET 1 OF 1		©	
REV.	BY	DATE	DESCRIPTION	APPD.											
A1	Original	Co-ordinate System: MGA Zone 56		Height Datum: A.H.D.	This sheet may be prepared using colour and may be incomplete if copied		NOTE: Do not scale from this drawing.		ALT. DRG No.	DRG No SMCSWLWC-SYC-ATS-CE-DWG-400102		REV.	A		

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100mm AT FULL SIZE

100mm



NOTE

1. NO GEOTECHNICAL INFORMATION AVAILABLE. BULK EARTHWORKS LEVEL SUBJECT TO CHANGE BASED ON RESULTS FROM THE GIR.

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33kV & 11kV Cable Schedule

CABLE ID	FROM LOCATION	FROM ROOM	FROM ASSET ID	FROM BUS	FROM PANEL TIER	TO LOCATION	TO ROOM	TO ASSET ID	TO BUS	TO PANEL TIER	CABLE SIZE	1C OR 3C	POWER CABLE VOLTS KV	CABLE DIA	CABLE BENDING RADIUS - PULLING	CABLE BENDING RADIUS - SET POSITION	NO.	CONDUIT SIZE	CONDUIT CHECK
ATS1-H0001-R1	ARTARMON TRACTION SUB	SWR-A	ATS1-HSB601	BUS 1	HC611	ARTARMON TRACTION SUB	SWR-A	ATS1-RTX601	BUS 1	RTX601	185mm² Cu	1C	19/33	50 mm	1150 mm	700 mm	2	150 mm	OKAY
ATS1-H0001-W1	ARTARMON TRACTION SUB	SWR-A	ATS1-HSB601	BUS 1	HC611	ARTARMON TRACTION SUB	SWR-A	ATS1-RTX601	BUS 1	RTX601	185mm² Cu	1C	19/33	50 mm	1150 mm	700 mm			
ATS1-H0001-B1	ARTARMON TRACTION SUB	SWR-A	ATS1-HSB601	BUS 1	HC611	ARTARMON TRACTION SUB	SWR-A	ATS1-RTX601	BUS 1	RTX601	185mm² Cu	1C	19/33	50 mm	1150 mm	700 mm			
ATS2-H0007-R1	ARTARMON TRACTION SUB	SWR-B	ATS2-HSB602	BUS 2	HC621	ARTARMON TRACTION SUB	SWR-B	ATS2-RTX602	BUS 2	RTX602	185mm² Cu	1C	19/33	50 mm	1150 mm	700 mm	2	150 mm	OKAY
ATS2-H0007-W1	ARTARMON TRACTION SUB	SWR-B	ATS2-HSB602	BUS 2	HC621	ARTARMON TRACTION SUB	SWR-B	ATS2-RTX602	BUS 2	RTX602	185mm² Cu	1C	19/33	50 mm	1150 mm	700 mm			
ATS2-H0007-B1	ARTARMON TRACTION SUB	SWR-B	ATS2-HSB602	BUS 2	HC621	ARTARMON TRACTION SUB	SWR-B	ATS2-RTX602	BUS 2	RTX602	185mm² Cu	1C	19/33	50 mm	1150 mm	700 mm			
ATS2-H0010-R1	ARTARMON TRACTION SUB	SWR-B	ATS2-HSB602	BUS 2	HC626	ARTARMON TRACTION SUB	310.000	ATS2-HTX601	TX BUS 2	HTX601	300mm² Cu	1C	19/33	54 mm	1250 mm	750 mm	2	150 mm	OKAY
ATS2-H0010-W1	ARTARMON TRACTION SUB	SWR-B	ATS2-HSB602	BUS 2	HC626	ARTARMON TRACTION SUB	310.000	ATS2-HTX601	TX BUS 2	HTX601	300mm² Cu	1C	19/33	54 mm	1250 mm	750 mm			
ATS2-H0010-B1	ARTARMON TRACTION SUB	SWR-B	ATS2-HSB602	BUS 2	HC626	ARTARMON TRACTION SUB	310.000	ATS2-HTX601	TX BUS 2	HTX601	300mm² Cu	1C	19/33	54 mm	1250 mm	750 mm			
ATS1-H0002-C1	ARTARMON TRACTION SUB	SWR-A	ATS1-HSB601	BUS 1	HC612	TUNNEL UPTRACK	CH: 6135	SVC1-HVJ02-U1	HV JOINT	HV JOINT	185mm² Cu	3C	19/33	95 mm	2300 mm	1350 mm	2	150 mm	OKAY
ATS1-H0004-C1	ARTARMON TRACTION SUB	SWR-A	ATS1-HSB601	BUS 1	HC614	ARTARMON TRACTION SUB	SWR-B	ATS2-HSB602	BUS 2	HC624	185mm² Cu	3C	19/33	95 mm	2300 mm	1350 mm	2	150 mm	OKAY
ATS1-H0005-C1	ARTARMON TRACTION SUB	SWR-A	ATS1-HSB601	BUS 1	HC615	ARTARMON TRACTION SUB	311A	ATS1-HHF01	BUS 1	HHF01	185mm² Cu	3C	19/33	95 mm	2300 mm	1350 mm	2	150 mm	OKAY
ATS2-H0006-C1	ARTARMON TRACTION SUB	SWR-B	ATS2-HSB602	BUS 2	HC625	ARTARMON TRACTION SUB	311B	ATS2-HHF02	BUS 2	HHF02	185mm² Cu	3C	19/33	95 mm	2300 mm	1350 mm	2	150 mm	OKAY
ATS2-H0008-C1	ARTARMON TRACTION SUB	SWR-B	ATS2-HSB602	BUS 2	HC622	TUNNEL DOWNTRACK	CH: 6100	SVC2-HVJ02-D1	HV JOINT	HV JOINT	185mm² Cu	3C	19/33	95 mm	2300 mm	1350 mm	2	150 mm	OKAY
ATS1-M0011-C1	ARTARMON TRACTION SUB	SWR-A	ATS1-MSB601	BUS 1	MCB612	TUNNEL UPTRACK	CH: 7650	SCN1-MVJ02-U1	HV JOINT	HV JOINT	240mm² Cu	3C	6.35/11	80 mm	1850 mm	1110 mm	2	150 mm	OKAY
ATS1-M0011-C2	ARTARMON TRACTION SUB	SWR-A	ATS1-MSB601	BUS 1	MCB612	TUNNEL UPTRACK	CH: 7650	SCN1-MVJ02-U2	HV JOINT	HV JOINT	240mm² Cu	3C	6.35/11	80 mm	1850 mm	1110 mm	2	150 mm	OKAY
ATS1-M0013-C1	ARTARMON TRACTION SUB	SWR-A	ATS1-MSB601	BUS 1	MCB613	ARTARMON TRACTION SUB	SWR-B	ATS2-MSB602	BUS 2	MCB621	240mm² Cu	3C	6.35/11	80 mm	1850 mm	1110 mm	2	150 mm	OKAY
ATS1-M0013-C2	ARTARMON TRACTION SUB	SWR-A	ATS1-MSB601	BUS 1	MCB613	ARTARMON TRACTION SUB	SWR-B	ATS2-MSB602	BUS 2	MCB621	240mm² Cu	3C	6.35/11	80 mm	1850 mm	1110 mm	2	150 mm	OKAY
ATS2-M0015-C1	ARTARMON TRACTION SUB	SWR-B	ATS2-MSB602	BUS 2	MCB624	TUNNEL DOWNTRACK	CH: 7600	SCN2-MVJ02-D1	HV JOINT	HV JOINT	240mm² Cu	3C	6.35/11	80 mm	1850 mm	1110 mm	2	150 mm	OKAY
ATS2-M0015-C2	ARTARMON TRACTION SUB	SWR-B	ATS2-MSB602	BUS 2	MCB624	TUNNEL DOWNTRACK	CH: 7600	SCN2-MVJ02-D2	HV JOINT	HV JOINT	240mm² Cu	3C	6.35/11	80 mm	1850 mm	1110 mm	2	150 mm	OKAY
ATS2-M0014-R1	ARTARMON TRACTION SUB	310.000	ATS2-HTX601	TX BUS 2	HTX601	ARTARMON TRACTION SUB	SWR-B	ATS2-MSB602	BUS 2	MCB622	500mm² Cu	1C	6.35/11	62 mm	1550 mm	870 mm	2	100 mm	OKAY
ATS2-M0014-W1	ARTARMON TRACTION SUB	310.000	ATS2-HTX601	TX BUS 2	HTX601	ARTARMON TRACTION SUB	SWR-B	ATS2-MSB602	BUS 2	MCB622	500mm² Cu	1C	6.35/11	62 mm	1550 mm	870 mm	2	100 mm	OKAY
ATS2-M0014-B1	ARTARMON TRACTION SUB	310.000	ATS2-HTX601	TX BUS 2	HTX601	ARTARMON TRACTION SUB	SWR-B	ATS2-MSB602	BUS 2	MCB622	500mm² Cu	1C	6.35/11	62 mm	1550 mm	870 mm	2	100 mm	OKAY
ATS2-M0014-R2	ARTARMON TRACTION SUB	310.000	ATS2-HTX601	TX BUS 2	HTX601	ARTARMON TRACTION SUB	SWR-B	ATS2-MSB602	BUS 2	MCB622	500mm² Cu	1C	6.35/11	62 mm	1550 mm	870 mm	2	100 mm	OKAY
ATS2-M0014-W2	ARTARMON TRACTION SUB	310.000	ATS2-HTX601	TX BUS 2	HTX601	ARTARMON TRACTION SUB	SWR-B	ATS2-MSB602	BUS 2	MCB622	500mm² Cu	1C	6.35/11	62 mm	1550 mm	870 mm	2	100 mm	OKAY
ATS2-M0014-B2	ARTARMON TRACTION SUB	310.000	ATS2-HTX601	TX BUS 2	HTX601	ARTARMON TRACTION SUB	SWR-B	ATS2-MSB602	BUS 2	MCB622	500mm² Cu	1C	6.35/11	62 mm	1550 mm	870 mm	2	100 mm	OKAY
DCH1-M0001-C1	NORTHERN DIVE	407A	DCH1-MSB701	BUS 1	MCB712	ARTARMON TRACTION SUB	SWR-A	ATS1-MSB601	BUS 1	MCB611	150mm² Cu	3C	6.35/11	72 mm	1700 mm	1000 mm	2	150 mm	OKAY
DCH2-M0002-C1	NORTHERN DIVE	407B	DCH2-MSB702	BUS 2	MCB722	ARTARMON TRACTION SUB	SWR-B	ATS2-MSB602	BUS 2	MCB623	150mm² Cu	3C	6.35/11	72 mm	1700 mm	1000 mm	2	150 mm	OKAY

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				SCALES				CLIENT		  The information shown on this drawing is for the purposes of the Sydney Metro Project only. No warranty is given or implied as to its suitability for any other purpose. The Service Providers accept no liability arising from the use of this drawing and the information shown thereon for any purpose other than the Sydney Metro Project. SERVICE PROVIDERS DRAWN DESIGNED DRG CHECK DESIGN CHECK APPROVED KATE MERCER ELIZABETH YUSTIRA RAUL SANTANDER MARK CAMERON MARK CAMERON 19/12/19 19/12/19 19/12/19 19/12/19 19/12/19		SYDNEY METRO CITY & SOUTHWEST ARTARMON SUBSTATION SHAFT AND PRECINCT PKG1320 ARTARMON GENERAL CIVILS CSR CONDUIT SCHEDULE STATUS: ISSUED FOR REVIEW SHEET 1 OF 1 © DRG No SMCSWLWC-SYC-ATS-CE-DWG-400301 REV. A			
A	RS	19/12/19	STAGE 1 DESIGN SUBMISSION		MC										
REV.	BY	DATE	DESCRIPTION		APPD.										
A1 Original	Co-ordinate System: MGA Zone 56		Height Datum: A.H.D.		This sheet may be prepared using colour and may be incomplete if copied		NOTE: Do not scale from this drawing.		ALT. DRG No.						

GENERAL NOTES :

1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND OTHER CONSULTANTS' DRAWINGS, THE SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT.
2. ANY DISCREPANCY ON THE DRAWINGS OR BETWEEN THE DRAWINGS AND/OR THE SPECIFICATION AND/OR THE SPECIFIED SAA STANDARD SHALL BE REFERRED TO THE SUPERINTENDENT AND A WRITTEN INSTRUCTION RECEIVED PRIOR TO PROCEEDING WITH THE WORK. DURING TENDERING THE TENDER SHALL ASSUME THE LARGER/GREATER CRITERIA IN TERMS OF COST IN THE ABSENCE OF OTHER INSTRUCTIONS.
3. THE DOCUMENTED DESIGN CONSTITUTES THE MAIN STRUCTURAL FRAMING BUT DOES NOT INCLUDE A FULL SCOPE OF SECONDARY STEEL TO SUPPORT FACADE CLADDING, HANDRAILS, INTERNAL PARTITION WALLS, ETC.
4. THESE DRAWINGS SHOW TYPICAL CONNECTION DETAILS ONLY. THE SHOP DRAFTER IS REQUIRED TO DEVELOP ALL CONNECTION DETAILS NOT SPECIFICALLY SHOWN. THE CONTRACTOR IS REQUIRED TO PRICE FOR ALL ASSOCIATED ENGINEERING DESIGN AND DETAILING FOR CONNECTIONS NOT SPECIFICALLY SHOWN.
5. THE STRUCTURAL DRAWINGS DO NOT SHOW ALL DETAILS OF FIXTURES, INSERTS, SLEEVES, OPENINGS, ETC. REQUIRED BY THE VARIOUS TRADES. ALL SUCH DETAILS, INCLUDING OPENINGS FOR CONSTRUCTION PURPOSES, MUST BE APPROVED BY THE SUPERINTENDENT BEFORE PROCEEDING WITH CONSTRUCTION.
6. WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE RELEVANT CURRENT AUSTRALIAN STANDARDS INCLUDING ALL AMENDMENTS, AND THE REQUIREMENTS OF THE LOCAL STATUTORY AUTHORITIES, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
7. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE. ALL LEVELS ARE IN METRES UNLESS NOTED OTHERWISE.
8. ALL DIMENSIONS RELEVANT TO SETTING OUT AND OFF-SITE WORK SHALL BE VERIFIED BY THE CONTRACTOR BEFORE CONSTRUCTION OR FABRICATION IS COMMENCED. THE ENGINEER'S DRAWINGS SHALL NOT BE SCALED.
9. AURECONS ENGAGEMENT IS TO PROVIDE DESIGN WITHIN OUR AREA OF EXPERTISE AND AS SUCH THE DOCUMENTED DESIGN IS FOR THE PERMANENT CONDITION SUITABLE FOR THE DOCUMENTED INTENDED OCCUPANCY USE ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE STRUCTURE AND ANY ADJACENT STRUCTURES IN A SAFE AND STABLE CONDITION AT ALL TIMES DURING CONSTRUCTION. THE CONTRACTOR IS TO DEVELOP A DETAILED SAFE WORK METHOD STATEMENT OUTLINING THE CONSTRUCTION SEQUENCE AND METHODOLOGY. THE CONTRACTOR IS TO ENGAGE A QUALIFIED AND SUITABLY EXPERIENCED ERECTION ENGINEER TO REVIEW THE CONSTRUCTION METHODOLOGY AND PROVIDE DESIGN OF TEMPORARY WORKS (SUCH AS PROPPING AND TEMPORARY BRACING) TO SUIT THE CONSTRUCTION SEQUENCE AND METHODOLOGY, CHOSEN BY THE BUILDER.
10. THE APPROVAL OF A SUBSTITUTION SHALL BE SOUGHT FROM THE SUPERINTENDENT BUT IT IS NOT AN AUTHORISATION FOR A VARIATION. ANY CLAIM FOR A VARIATION MUST BE SUBMITTED TO THE SUPERINTENDENT BEFORE THE WORK COMMENCES.
11. ALL PROPS AND FORMWORK FOR FLOOR BEAMS AND SLABS SHALL BE REMOVED BEFORE CONSTRUCTION OF ANY MASONRY WALLS OR PARTITIONS ON THE FLOOR.
12. ALL NON-LOADBEARING WALLS SHALL BE KEPT 30mm CLEAR OF THE UNDERSIDE OF SLABS AND BEAMS UNLESS NOTED OTHERWISE.
13. THE SUBSTATION BUILDING STRUCTURE HAS BEEN DESIGNED FOR A 100 YEAR DESIGN LIFE IN ACCORDANCE WITH AS5100 AND AS4100.
14. THE STRUCTURAL WORK ON THESE DRAWINGS HAS BEEN DESIGNED FOR THE FOLLOWING LOADS:

a) SUPERIMPOSED DEAD AND LIVE LOAD

LEVEL	REFERENCE DRAWING
BASEMENT LEVEL	TBC
GROUND FLOOR LEVEL	TBC
FIRST FLOOR LEVEL	SMCSWLWC-SYC-SAS-CE-DWG-400375
UPPER ROOF LEVEL	TBC

b) WIND LOADING

WIND LOADING - REFER WIND LOADING REPORT			
REGION:	A2		
TERRAIN CATEGORY:	AS CALCULATED BY DIRECTION		
IMPORTANCE LEVEL:	4.0		
REFERENCE PROBABILITY OF EXCEEDANCE:	1/2500		
WIND SPEED:	48 m/s		

GENERAL NOTES CONTINUED :

c) EARTHQUAKE LOAD

EARTHQUAKE DESIGN CATEGORY:	
SITE HAZARD FACTOR:	0.08
SITE SUB SOIL CLASS:	TBC BY GEOTECHNICAL ENGINEER
μ	2
S _b	0.77

FOUNDATION NOTES :

1. FOOTINGS SHALL BE LOCATED CENTRALLY UNDER COLUMNS/WALLS UNLESS NOTED OTHERWISE ON THE STRUCTURAL DRAWINGS.
2. THE SAFE BEARING CAPACITY OF THE GROUND IS TO BE PROVIDED BY THE GEOTECHNICAL ENGINEER. THE CONTRACTOR IS TO ALLOW FOR THE ENGAGEMENT OF A GEOTECHNICAL ENGINEER TO VERIFY THE FOUNDING MATERIAL. REFER TO RFI 77 SURVEY FOR EXTERNAL ROADS AND GEOTECHNICAL INFORMATION.
3. OVER-EXCAVATION WITHIN THE INFLUENCE ZONE DOWN FROM BASE OF FOOTINGS OR ANY RETAINING WALL IS NOT ALLOWED WITHOUT THE PRIOR APPROVAL OF THE EXCAVATION SEQUENCE BY THE SUPERINTENDENT. REFER TO THE GEOTECHNICAL REPORT FOR DETAILS.

CONCRETE NOTES :

1. ALL WORKSMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF AS3600 INCLUDING AMENDMENTS, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
2. BEAM DEPTHS ARE WRITTEN FIRST AND INCLUDE SLAB THICKNESS. BEAMS AND SLABS ARE TO BE POURED TOGETHER UNLESS NOTED OTHERWISE.
3. SIZES OF CONCRETE ELEMENTS DO NOT INCLUDE THICKNESS OF APPLIED FINISHES.
4. HOLES, CHASES OR EMBEDMENT OF PIPES OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS SHALL NOT BE MADE IN CONCRETE MEMBERS WITHOUT PRIOR APPROVAL OF THE SUPERINTENDENT.
5. CONSTRUCTION JOINTS SHALL BE PROPERLY FORMED AND USED ONLY WHERE SHOWN ON THE DRAWINGS OR SPECIFICALLY APPROVED BY THE SUPERINTENDENT.
6. ALL EXPOSED CONCRETE CORNERS TO HAVE 15mm CHAMFER U.N.O.
7. CAMBER TO SUSPENDED SLABS SHALL BE POSITIVE UPWARD CAMBER OF 3mm PER 1000mm SPAN UNLESS NOTED OTHERWISE. BEAMS SHALL BE CAMBERED AS SHOWN ON DRAWINGS.
8. DENOTES UPWARD CAMBER OF (X)mm AT MIDSPAN OF SLAB BAND OR BEAM.
9. FORMWORK AND BACK PROPPING SHALL BE DESIGNED, CONSTRUCTED AND STRIPPED IN ACCORDANCE WITH AS3610. REFER TO ARCHITECTURAL DRAWINGS AND THE SPECIFICATION FOR CLASSES OF SURFACE FINISH.
10. CONCRETE COMPONENTS AND QUALITY UNLESS SHOWN OTHERWISE SHALL BE AS FOLLOWS:

ELEMENT	f _c (MPa)	SPECIAL REQUIREMENTS
SUSPENDED FLOORS	40	-
BASEMENT FLOOR	40	SHRINKAGE STRAIN 650 MICROSTRAIN
BASEMENT RETAINING WALLS	40	SHRINKAGE STRAIN 650 MICROSTRAIN
COLUMNS	40	-
WALLS	40	-
BEAMS	40	-

11. MAXIMUM AGGREGATE SIZE SHALL BE 20mm UNO.

12. ALL CEMENT IS TO BE "GP" GENERAL PURPOSE PORTLAND CEMENT OR "GB" GENERAL PURPOSE BLENDED CEMENT OR TYPE "SR" SULPHATE-RESISTING CEMENT AS REQUIRED COMPLYING WITH AS3972 UNLESS NOTED OTHERWISE ON THE DRAWINGS. EXTRA RAPID HARDENING SUPERSULPHATED AND HIGH ALUMINA CEMENTS AND CEMENTS CONTAINING CHLORIDE SHALL NOT BE USED. THE USE OF FLY ASH AND/OR SILICA FUME AS A CEMENT SUBSTITUTE, OTHER THAN THAT PROPORTION ALLOWED AS PART OF THE "GB" CEMENT CONTENT WILL ONLY BE PERMITTED AS PART OF A DESIGNED CONCRETE MIX WHICH HAS BEEN APPROVED IN WRITING BY THE SUPERINTENDENT.

CONCRETE NOTES CONTINUED :

13. (D) DENOTES SPECIAL DURABLE CONCRETE WHERE THE ELEMENT HAS AT LEAST ONE FACE EXPOSED TO THE WEATHER OR POSSIBLE CORROSIVE ATTACK. THIS CONCRETE REQUIRES A SPECIAL TOLERANCE FOR THE COVERS OF - 0mm + 10mm. SPECIAL PRECAUTIONS ARE REQUIRED TO IMPROVE THE LONG TERM PERFORMANCE OF THESE FACES OF CONCRETE. IN PARTICULAR, NO METAL INSERTS, METAL BAR CHAIRS OR METAL FORM SPACERS OF ANY KIND ARE TO BE PLACED IN THE COVER ZONES WITHOUT THE EXPRESS PERMISSION OF THE SUPERINTENDENT. TAKE SPECIAL CARE TO AVOID SCRAP TIE WIRE OR OTHER MATERIAL BEING PRESENT. REFER DRAWINGS FOR LOCATIONS.

14. CONCRETE SLUMP TO BE A MAXIMUM OF 80mm UNLESS NOTED OTHERWISE ON THE DRAWINGS.
15. FREE DROPPING OF CONCRETE FROM A HEIGHT GREATER THAN 1000mm IS NOT PERMITTED.
16. SURFACES RECEIVING GROUT SHALL BE LEFT ROUGH AND FREE OF LAITANCE.
17. CONCRETE MUST BE CURED BY AN APPROVED METHOD IN ACCORDANCE WITH THE SPECIFICATION FOR SEVEN DAYS AFTER POURING.

18. REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY AND NOT NECESSARILY SHOWN IN TRUE PROJECTION OR SCALE.

19. REINFORCEMENT SYMBOLS:
N - NORMAL DUCTILITY CLASS HOT ROLLED DEFORMED BARS OR MESH TO AS/NZS 4671 WITH f_{sy}=500 MPa.
R - NORMAL DUCTILITY CLASS 250N PLAIN ROUND BAR TO AS/NZS 4671 WITH f_{sy}=250 MPa.
L - LOW DUCTILITY CLASS 500L REINFORCING MESH OR BAR TO AS/NZS 4671 WITH f_{sy}=500 MPa. LOW DUCTILITY CLASS L REINFORCEMENT IS NOT TO BE USED OTHER THAN WHERE SHOWN ON DRAWINGS. THE NUMBER FOLLOWING THE BAR SYMBOL IS THE NORMAL BAR DIAMETER IN MILLIMETRES.

20. PULL OUT BARS OR OTHER BARS WHICH ARE SHOWN ON THE DRAWING TO BE RE-BENT ON SITE SHALL BE MADE FROM QUENCHED AND SELF TEMPERED STEEL. THE BARS SHALL BE POSITIONED WITH THE INITIAL BEND CLEAR OF THE CONCRETE FACE.

21. SITE BENDING OF REINFORCEMENT BARS SHALL BE DONE WITHOUT HEATING USING A PROPPER BAR RE-BENDING TOOL. THE BARS SHALL BE RE-BENT AGAINST A FLAT SURFACE OR A PIN WITH A DIAMETER NOT LESS THAN THE MINIMUM PIN SIZE PRESCRIBED IN AS 3600 - 2016. BARS SHOULD BE RE-BENT ONCE ONLY.

22. MINIMUM COVER (mm) TO ALL REINFORCEMENT EXCEPT F41 MESH UNLESS OTHERWISE SHOWN SHALL BE AS FOLLOWS

ELEMENT	FORMED & NOT EXPOSED TO WEATHER	FORMED & EXPOSED TO GROUND WATER & WEATHER	NOT FORMED, CAST AGAINST GROUND ETC.
COLUMNS & PEDESTALS	30	45	45
BEAMS	30	45	45
BAND BEAMS	30	45	45
FOOTINGS	30	45	45
SLABS	30	45	45
INSITU WALLS	30	45	45

23. SPLICES IN REINFORCEMENT SHALL BE MADE IN THE POSITIONS SHOWN OR AS OTHERWISE APPROVED BY THE SUPERINTENDENT. MINIMUM LAP FOR ALL FABRICS SHALL BE THE SPACING OF TWO TRANSVERSE WIRES PLUS 25mm. GRADE 500N BARS SHALL BE LAPPED IN ACCORDANCE WITH THE STANDARD LAP LENGTH TABLE IF NOT STATED OTHERWISE ON THE DRAWINGS.

24. WELDING OF REINFORCEMENT SHALL NOT BE PERMITTED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.

25. ALL REINFORCEMENT SHALL BE SECURELY SUPPORTED IN ITS CORRECT POSITION DURING CONCRETING BY APPROVED BAR CHAIRS, SPACERS OR SUPPORT BARS AT 1000mm MAXIMUM CENTRES. THE CHAIR MATERIAL SHALL SUIT THE EXPOSURE CONDITIONS.

26. 2N12 DIAGONAL CORNER BARS 1200mm LONG ARE REQUIRED AT ALL RE-ENTRANT CORNERS OF OPENINGS IN SLABS AND WALLS.

27. REINFORCEMENT LENGTHS INDICATED ARE IN MILLIMETRES AND ARE PLAN LENGTH ONLY. TURN DOWNS AND CRANKS ARE NOT INCLUDED IN THE DIMENSION.

28. BARS SHOWN STAGGERED ON PLAN SHALL BE PLACED ALTERNATELY.

29. BARS SHALL BE EVENLY DISTRIBUTED OVER THE WIDTH OF THE STRIP INDICATED ON THE DRAWINGS UNLESS NOTED OTHERWISE.

30. ALL EMBEDMENTS SHALL BE HOT DIP GALVANIZED.

CONCRETE NOTES CONTINUED :

31. CONCRETE SHALL BE SEPARATED FROM SUPPORTING MASONRY BY TWO LAYERS OF MALTHOID (OR AN APPROVED EQUIVALENT). VERTICAL FACES OF CONCRETE SHALL BE KEPT FREE OF ADJOINING SURFACES BY 10mm THICKNESS OF ABLEFLEX (OR AN APPROVED EQUIVALENT) UNLESS NOTED OTHERWISE ON THE DRAWINGS. ALL NON-LOADBEARING WALLS SHALL BE KEPT CLEAR OF THE UNDERSIDE OF SLABS AND BEAMS BY 30mm UNLESS NOTED OTHERWISE ON THE DRAWINGS.

32. MASONRY WALLS OR PARTITIONS MUST NOT BE BUILT ON CONCRETE SLABS OR BEAMS UNTIL SUPPORTING FORMWORK HAS BEEN REMOVED.

33. REFER TO ARCHITECT'S DRAWINGS FOR DIMENSIONS AND FINISHED FLOOR LEVELS.

34. FOR LOCATION AND PROFILE OF KERBS/UPSTANDS NOT SHOWN ON PLAN, REFER TO THE ARCHITECTURAL DRAWINGS.

25. REINFORCEMENT NOTATION
- N12-300

SPACING (mm)

BAR DIAMETER (mm)

TYPE OF BAR

3N28

BAR DIAMETER (mm)

TYPE OF BAR

NUMBER OF BARS

26. SPLICES IN REINFORCEMENT SHALL BE MADE ONLY IN POSITIONS SHOWN ON THE STRUCTURAL DRAWINGS OR IN POSITIONS OTHERWISE APPROVED IN WRITING BY THE SUPERINTENDENT. LAPS SHALL BE IN ACCORDANCE WITH AS 3600 AND NOT LESS THAN THE DEVELOPMENT LENGTH FOR EACH BAR.

- SPLICES IN MESH: THE OUTMOST TRANSVERSE WIRES SHALL BE OVERLAPPED BY AT THE LEAST THE SPACING OF THE TRANSVERSE WIRES PLUS 50mm.

- MINIMUM COMPRESSION/ TENSION DEVELOPMENT LENGTH/ SPLICES FOR BARS SHALL BE AS FOLLOWS, UNLESS NOTED OTHERWISE:

TENSION DEVELOPMENT/LAP LENGTH SCHEDULE (mm)						
BAR SIZE:	LESS THAN 300mm CONCRETE BELOW BAR OR A VERTICAL BAR			MORE THAN 300mm CONCRETE BELOW BAR		
	CONCRETE GRADE: ≥40MPa	CONCRETE GRADE: 50MPa	CONCRETE GRADE: ≥65MPa	CONCRETE GRADE: ≥40MPa	CONCRETE GRADE: 50MPa	CONCRETE GRADE: ≥65MPa
N12	500	500	500	600	550	500
N16	670	650	650	870	770	670
N20	900	800	800	1150	1050	900
N24	1100	1000	1000	1450	1300	1150
N28	1350	1200	1150	1750	1600	1400
N32	1600	1450	1300	2100	1850	1650
N36	1900	1700	1500	2450	2200	1900
N40	2200	1950	1700	2800	2500	2200

NOTE: THE LENGTHS ARE BASED ON THE MINIMUM COVER TO THE BAR OF 20mm

27. MINIMUM COMPRESSION/ TENSION DEVELOPMENT LENGTH/ SPLICES FOR BARS SHALL BE AS FOLLOWS, UNLESS NOTED OTHERWISE:

COLUMN DEVELOPMENT/LAP LENGTH SCHEDULE (mm)			
BAR SIZE:	CONCRETE GRADE: ≥40MPa	CONCRETE GRADE: 50MPa	CONCRETE GRADE: ≥65MPa
N12	480	480	480
N16	640	640	640
N20	800	800	800
N24	960	960	960
N28	1200	1120	1120
N32	1470	1320	1280
N36	1770	1600	1450
N40	2100	1900	1650

28. TO LIMIT THE POTENTIAL FOR EARLY AGE CRACKING, THE MAXIMUM DIFFERENTIAL TEMPERATURE ACROSS THE SECTION IN ALL CONCRETE MEMBERS MUST NOT EXCEED 28°C DURING THE SETTING & CURING PROCESS. THE CONTRACTOR SHALL PREPARE A REPORT THAT DEMONSTRATES HOW THIS REQUIREMENT IS ACHIEVED.

29. ALL REINFORCEMENT STEEL SHALL BE ACRS CERTIFIED.

30. CONCRETE FINISHES FOR FORMED SURFACES MUST BE CLASS 2C (EXPOSED SURFACES) AND CLASS 3 FOR ALL PERMANENTLY HIDDEN SURFACES IN ACCORDANCE WITH AS 3610.1.

CONCRETE NOTES CONTINUED :

31. CONCRETE USED IN ALL CIVIL AND STRUCTURAL WORKS MUST MEET THE FOLLOWING REQUIREMENTS:
* THE MAXIMUM CEMENTITIOUS CONTENT FOR CONCRETE WITH A DESIGN CHARACTERISTIC COMPRESSIVE STRENGTH OF UP TO AND INCLUDING 20 MPa MUST BE 280KG PER CUBIC METRE OF CONCRETE.
* THE MAXIMUM CEMENTITIOUS CONTENT FOR CONCRETE WITH A DESIGN CHARACTERISTIC COMPRESSIVE STRENGTH OF UP TO AND INCLUDING 25 MPa MUST BE 310KG PER CUBIC METRE OF CONCRETE.
* THE MAXIMUM CEMENTITIOUS CONTENT FOR CONCRETE WITH A DESIGN CHARACTERISTIC COMPRESSIVE STRENGTH OF UP TO AND INCLUDING 32 MPa MUST BE 360KG PER CUBIC METRE OF CONCRETE.
* THE MAXIMUM CEMENTITIOUS CONTENT FOR CONCRETE WITH A DESIGN CHARACTERISTIC COMPRESSIVE STRENGTH BETWEEN AND INCLUDING 40 MPa TO 65 MPa MUST BE 450KG PER CUBIC METRE OF CONCRETE.
* THE MAXIMUM CEMENTITIOUS CONTENT FOR CONCRETE WITH A DESIGN CHARACTERISTIC COMPRESSIVE STRENGTH GREATER THAN 65 MPa MUST BE 500KG PER CUBIC METRE OF CONCRETE.

32. THE CEMENT CONTENT IN ALL CONCRETE USED IN THE CIVIL AND STRUCTURAL WORKS MUST CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG, IN COMPLIANCE WITH THE FOLLOWING REQUIREMENTS:
* FOR CONCRETE ELEMENTS THICKER THAN 500 MM AND WHERE THE DESIGN WATER/CEMENTITIOUS RATIO IS LESS THAN 0.40, THE CEMENTITIOUS CONTENT MUST CONTAIN AT LEAST 50% FLY ASH OR 70% SLAG;
* FOR CONCRETE ELEMENTS LESS THAN OR EQUAL TO 500 MM IN THICKNESS, THE CEMENTITIOUS CONTENT MUST CONTAIN AT LEAST 25% FLY ASH OR 50% SLAG; AND

33. CONCRETE ELEMENTS THAT HAVE A FLY ASH CONTENT WHICH IS GREATER THAN OR EQUAL TO 50% OF THE TOTAL CEMENTITIOUS CONTENT AND/OR A SLAG CONTENT WHICH IS GREATER THAN OR EQUAL TO 70% OF THE TOTAL CEMENTITIOUS CONTENT MUST RECEIVE A MINIMUM OF 7 DAYS OF CONTINUOUS MOIST CURING AFTER CASTING.

34. FOR WATER USED IN ONSITE AND OFFSITE CONCRETE BATCHING PLANTS WHICH SUPPLY THE LW CONTRACTOR'S ACTIVITIES:
* THE LW CONTRACTOR MUST ENSURE THAT 80% OF OFFSITE AND ONSITE BATCHING PLANT CONCRETE PRODUCTION OPERATION WATER IS RECYCLED AND INCORPORATED INTO CONCRETE PRODUCTION; AND
* SUSPENDED SOLIDS CONTENT OF RECYCLED CONCRETE PRODUCTION WATER MUST BE CONTROLLED SUCH THAT THE WATER DENSITY IS LESS THAN 1.01 G/ML AND THE SUSPENDED SOLIDS CONTENT DOES NOT EXCEED 15,000 PPM.

FORMWORK NOTES :

1. FORMWORK SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH AS3610 EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
2. PRIOR TO PLACEMENT OF CONCRETE, THE CONTRACTOR SHALL HAVE THE FORMWORK INSPECTED BY THE FORMWORK DESIGN ENGINEER AND SUPPLY THE SUPERINTENDENT WITH A WRITTEN CERTIFICATION THAT THE FORMWORK COMPLIES WITH THE REQUIREMENTS AS SET OUT IN CLAUSE 5.4.1.7 OF AS3610.
3. THE CLASS AND COLOUR OF THE CONCRETE SURFACE FINISH SHALL BE AS SPECIFIED ON THE ARCHITECTURAL DRAWINGS AND/OR THE SPECIFICATION. APPROVAL OF THE CONCRETE MIX DOES NOT ABSOLVE THE CONTRACTOR OF THE NEED TO COMPLY WITH THE REQUIRED CONCRETE COLOUR REQUIREMENTS.
4. EITHER BACKPROPPING OR AN UNDISTURBED SUPPORT SYSTEM OF FORMWORK IS TO BE ADOPTED. A RESHORING SYSTEM IS NOT TO BE USED.
5. THE FOLLOWING REQUIREMENTS SHALL BE INCORPORATED INTO THE FORMWORK DESIGN AND/OR ALLOWED FOR BY THE FORMWORK SUB CONTRACTOR AS APPROPRIATE:
a) MINIMUM FORMWORK STRIPPING TIMES ARE TO BE AS FOLLOWS:
i) VERTICAL SURFACES MAY BE STRIPPED OF FORMWORK WHEN THE MINIMUM MEAN COMPRESSIVE STRENGTH OF CONCRETE f_{cm} HAS REACHED 5.0 MPa. IF THE STRENGTH CANNOT BE ACCURATELY ASSESSED VIA THE USE OF TEST CYLINDERS STORED ON SITE AND CURED IN A SIMILAR MANNER TO THE PERMANENT STRUCTURE THEN THE MINIMUM FORMWORK STRIPPING TIME IS TO BE 2 DAYS PROVIDED THE AVERAGE AMBIENT TEMPERATURE OVER THAT PERIOD IS BETWEEN 12 AND 20 DEGREES CELSIUS.
ii) SOFFITS OF BEAMS AND SLABS MAY BE STRIPPED OF FORMWORK AND BACKPROPPED WHEN THE MINIMUM MEAN COMPRESSIVE STRENGTH OF CONCRETE f_{cm} HAS REACHED 22 MPa. IF THE STRENGTH CANNOT BE ACCURATELY ASSESSED VIA THE USE OF TEST CYLINDERS STORED ON SITE AND CURED IN A SIMILAR MANNER TO THE PERMANENT STRUCTURE THEN THE MINIMUM FORMWORK STRIPPING TIME IS TO BE 6 DAYS PROVIDED THE AVERAGE AMBIENT TEMPERATURE OVER THAT PERIOD IS BETWEEN 12 AND 20 DEGREES CELSIUS.
iii) REMOVAL OF FORMWORK SUPPORT (PROPS) TO BEAM AND SLAB SOFFITS MAY BE UNDERTAKEN WHEN THE MINIMUM MEAN COMPRESSIVE STRENGTH OF THE CONCRETE f_{cm} HAS REACHED 28 MPa. IF THE STRENGTH CANNOT BE ACCURATELY ASSESSED VIA THE USE OF TEST CYLINDERS STORED ON SITE AND CURED IN A SIMILAR MANNER TO THE PERMANENT STRUCTURE THEN THE MINIMUM FORMWORK STRIPPING TIME IS TO BE 18 DAYS PROVIDED THE AVERAGE AMBIENT TEMPERATURE OVER THAT PERIOD IS BETWEEN 12 AND 20 DEGREES CELSIUS.

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SYDNEY METRO CITY & SOUTHWEST

ARTARMON SUBSTATION SHAFT AND PRECINCT
PKG1320 ARTARMON SUBSTATION GENERAL CIVILS
STRUCTURAL GENERAL NOTES

STATUS:ISSUED FOR REVIEW SHEET 1 OF 2 ©
DRG No. SMCSWLWC-SYC-ATS-CE-DWG- 400350 REV. A

100mm AT FULL SIZE Plot Date & Time 18-Dec-19 11:25:00 AM

A	GS	19/12/19	STAGE 1 DESIGN SUBMISSION	AB	
REV.	BY	DATE	DESCRIPTION	APPD.	
A1	Original	Co-ordinate System: MGA Zone 56	Height Datum: A.H.D.	This sheet may be prepared using colour and may be incomplete if copied	NOTE: Do not scale from this drawing. ALT. DRG No.

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RAUL SANTANDER

NICK FARRELL

ALLAN BLACKMAN

19/12/19

19/12/19

19/12/19

19/12/19

19/12/19

100mm AT FULL SIZE Plot Date & Time 18-Dec-19 11:25:02 AM

FORMWORK NOTES CONTINUED :

- b) THE FORMWORK DESIGN SHALL ALLOW FOR 4 kPa OF STACKED MATERIALS ON ANY AREA OF THE FLOOR SYSTEM. ALL OTHER FORMWORK DESIGN LOADS SHALL BE SPECIFIED IN SECTION 4.4 OF AS3610.
- c) THE FLOOR SYSTEM IS TO ATTAIN A MINIMUM MEAN COMPRESSIVE STRENGTH OF CONCRETE f_{cm} OF 15 MPa PRIOR TO STACKING OF MATERIALS ON THAT LEVEL OF THE PERMANENT STRUCTURE.
- d) A MINIMUM OF THREE LEVELS OF FORMWORK &/OR BACKPROP SUPPORTS ARE REQUIRED BASED UPON A 6 DAY CYCLE TIME AND PROVIDED THE AVERAGE AMBIENT TEMPERATURE OVER THAT PERIOD IS BETWEEN 12 AND 20 DEGREES CELSIUS.
- e) HORIZONTAL LOADS ON FORMWORK ARE TO BE RESISTED BY THE FORMWORK BRACING. STRUTTING OF THE FORMWORK FROM THE PERMANENT STRUCTURE TO RESIST HORIZONTAL LOADS IS NOT PERMITTED.
- f) POST-TENSIONING OF THE BEAMS MAY CAUSE CONTRACTION OF THE CONCRETE HENCE THE FORMWORK SHALL BE DESIGNED WITH ADEQUATE PROVISION TO ALLOW FOR ADJUSTMENT AND REMOVAL OF THE FORMS. POST-TENSIONING MAY ALSO CAUSE LIFTING OF THE FLOOR SYSTEM HENCE THE FORMWORK SHALL BE DESIGNED TO ALLOW FOR READJUSTMENT OF PROPS.
- g) REFER TO THE DRAWINGS FOR LOCATIONS OF CONSTRUCTION JOINTS.
- h) THE SEQUENCE OF CONCRETE PLACEMENT FOR THE WORKS IS TO BE SPECIFIED BY THE CONTRACTOR UNLESS NOTED OTHERWISE ON THE DRAWINGS.
- i) PROPPING OF COMPOSITE CONSTRUCTION IS TO BE AS SPECIFIED ON THE DRAWINGS.
- j) DESIGN LOADS FOR THE PERMANENT STRUCTURES ARE NOTED ON THE DRAWINGS.
- k) DETAILS OF THE REQUIREMENTS OF PERMANENT FORMWORK SHALL BE AS SPECIFIED IN THE CONTRACT DOCUMENTS.

STRUCTURAL STEELWORK NOTES :

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS 4100, AS/NZ 4600, AS 5131, AS/NZS 1554 AND AS/NZS HB62 EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
2. UNLESS NOTED OTHERWISE, ALL STEEL SHALL BE:
GRADE 300 FOR PLATES
GRADE 350 FOR RHS/SHS
GRADE 250 FOR CHS
GRADE 450 FOR PURLINS/GIRTS
REFER FABRICATED MEMBER DETAILS ON DRAWING TO LATER DETAIL FOR PLATE GRADE
3. COMMERCIAL GRADE BOLTS SHALL CONFORM TO AS/NZS 1111 AND AS4100. HIGH STRENGTH STRUCTURAL BOLTS SHALL CONFORM TO AS/NZ 1252 AND AS4100.
4. ALL DETAILS, GAUGE LINES, ETC, WHERE NOT SPECIFICALLY SHOWN ARE TO BE IN ACCORDANCE WITH AISC DESIGN CAPACITY TABLES FOR STRUCTURAL STEEL AND AISC STANDARDISED STRUCTURAL CONNECTIONS.
5. BEFORE FABRICATION IS COMMENCED THE CONTRACTOR SHALL SUBMIT COPIES OF THE SHOP DRAWINGS TO THE SUPERINTENDENT FOR REVIEW. REVIEW DOES NOT INCLUDE CHECKING OF DIMENSIONS. 10 WORKING DAYS SHALL BE REQUIRED FOR THE REVIEW.
6. BOLT DESIGNATION:
4.6/S REFERS TO COMMERCIAL BOLTS OF STRENGTH GRADE 4.6 TO AS1111 TIGHTENED TO A SNUG TIGHT CONDITION.
8.8/S REFERS TO HIGH STRENGTH STRUCTURAL BOLTS OF GRADE 8.8 TO AS1252 TIGHTENED TO A SNUG TIGHT CONDITION.
8.8/TB REFERS TO HIGH STRENGTH STRUCTURAL BOLTS OF GRADE 8.8 TO AS1252 FULLY TENSIONED TO AS4100 AS A BEARING JOINT (SOME SLIP ALLOWED).
8.8/TF REFERS TO HIGH STRENGTH STRUCTURAL BOLTS OF GRADE 8.8 TO AS1252 FULLY TENSIONED TO AS4100 AS A FRICTION JOINT.
7. ALL BOLTS, NUTS AND WASHERS SHALL BE HOT DIP GALVANISED UNO.
8. UNLESS SHOWN OTHERWISE ON THE DRAWINGS, ALL CONNECTIONS SHALL BE IN ACCORDANCE WITH THE FOLLOWING MINIMUM REQUIREMENTS:
a) ALL WELDS SHALL BE 6mm CONTINUOUS FILLET WELDS ALL AROUND.
b) ALL BOLTS SHALL BE M20 8.8/S, WITH A MINIMUM OF 2 BOLTS PER CONNECTION. PURLIN BOLTS TO BE M12 8.8/S WITH A MINIMUM OF 2 BOLTS PER PURLIN END.
c) ALL GUSSET AND CLEAT PLATES SHALL BE 10mm THICK.
d) ALL CAP PLATES SHALL BE 12mm THICK.
e) ALL BASE PLATES SHALL BE 20mm THICK.
9. CONTACT SURFACES OF TF CONNECTIONS SHALL BE LEFT UNPAINTED AND FREE OF SCALE UNLESS OTHERWISE SPECIFIED (INORGANIC ZINC SILICATE PAINT IS ACCEPTABLE IN 8.8/TF JOINTS).
10. LOAD INDICATING WASHERS SHALL BE USED TO VERIFY TIGHTENING OF BOLTS IN TF AND TB CONNECTIONS. ALTERNATIVE BOLT TENSIONING METHODS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. TORQUE WRENCHES SHALL NOT BE USED. A HARDENED WASHER SHALL BE USED UNDER THE BOLT HEAD OR NUT, WHICHEVER IS ROTATED. THE RE-USE OF FULLY TENSIONED BOLTS IS PROHIBITED.
11. COLUMNS AND MULLIONS SHALL HAVE THEIR BASE PLATES FULLY GROUTED IN ACCORDANCE WITH THE SPECIFICATIONS AFTER PLUMBING AND LEVELLING ON NEOPRENE PACKERS.
12. SUBSTITUTIONS FOR STEEL SECTIONS SHOWN ON DRAWINGS SHALL NOT BE MADE WITHOUT THE WRITTEN APPROVAL OF THE SUPERINTENDENT.
13. CONCRETE ENCASED STEELWORK SHALL HAVE A MINIMUM OF 50mm OF CONCRETE ENCASEMENT REINFORCED WITH W5 WIRE WRAPPING AT 150 CRS. OR FGW41 FABRIC UNLESS NOTED OTHERWISE.

STRUCTURAL STEELWORK NOTES CONTINUED :

14. ALL STEELWORK BELOW GROUND OR FINISHED SURFACE LEVEL IS TO BE ENCASED IN 75mm MIN. CONCRETE ALL AROUND.
15. THE ENDS OF ALL TUBULAR MEMBERS ARE TO BE SEALED WITH NOMINAL 5mm THICKNESS PLATES AND CONTINUOUS FILLET WELDED UNLESS NOTED OTHERWISE
16. ALL HOT DIP GALVANISED MEMBERS SHALL BE PROVIDED WITH VENT AND DRAINAGE HOLES IN ACCORDANCE WITH THE GALVANISER'S RECOMMENDATIONS AND TO THE ACCEPTANCE OF THE SUPERINTENDENT. ALL GALVANISING OF STRUCTURAL STEELWORK SHALL BE TO AS/NZS 4680. THE CONTINUOUS AVERAGE ZINC COATING MASS SHALL BE 600g/m² (550g/m² MINIMUM).
17. 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 LOCALISED DISTORTION OF THE MEMBERS.
18. THE CONTRACTOR SHALL PROVIDE AND LEAVE IN PLACE, UNTIL PERMANENT BRACING ELEMENTS ARE CONSTRUCTED, SUCH TEMPORARY BRACING AS IS NECESSARY TO STABILISE THE STRUCTURE DURING ERECTION.
19. THE PURLIN AND GIRT DESIGN HAS BEEN BASED ON LYSAGHT PURLINS. ALTERNATIVE PURLINS OF EQUAL OR GREATER LOAD CAPACITY MAY BE SUBSTITUTED ONLY WITH THE WRITTEN APPROVAL FROM THE SUPERINTENDENT.
20. PURLIN AND GIRT BOLTS AND BRIDGING SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S DETAILS UNLESS SHOWN OTHERWISE.
21. TRIMMING MEMBERS FOR MECHANICAL/HYDRAULIC PENETRATIONS ARE NOT NECESSARILY SHOWN.
22. TRIMMING MEMBERS FOR VALLEYS, FREE EDGES, RIDGES, ETC. ARE NOT NECESSARILY SHOWN, BUT SHALL BE PROVIDED AT NO ADDITIONAL COST TO ALL EDGES OF SHEETING AT AN ANGLE OF OTHER THAN 90 DEGREES TO THE PURLIN/GIRTS. REFER TO PURLIN MANUFACTURER FOR DETAILS.
23. THE CONTRACTOR SHALL PROVIDE ALL CLEATS AND DRILL ALL HOLES NECESSARY FOR FIXING STEEL, TIMBER AND OTHER ELEMENTS TO STEEL WHETHER OR NOT DETAILED ON THE STRUCTURAL DRAWINGS.
24. THE FABRICATION AND ERECTION OF THE STRUCTURAL STEELWORK SHALL BE SUPERVISED BY QUALIFIED PERSONNEL EXPERIENCED IN SUCH SUPERVISION TO ENSURE THAT ALL REQUIREMENTS OF OH&S AND THE DESIGN ARE MET. DETAILS OF ERECTION SEQUENCE SHALL BE SUBMITTED TO THE SUPERINTENDENT FOR REVIEW PRIOR TO COMMENCEMENT OF ERECTION. THE APPROVED ERECTION SEQUENCE SHALL NOT BE VARIED DURING THE ERECTION PROCESS WITHOUT THE APPROVAL OF THE SUPERINTENDENT.
25. CAMBERS:
ALL RAFTERS AND BEAMS OVER 6000mm IN LENGTH SHALL BE CAMBERED 5mm UPWARDS FOR EVERY 2000mm OF LENGTH UNLESS NOTED OTHERWISE ON THE DRAWINGS. ALL BEAMS AND RAFTERS SHALL BE FABRICATED AND ERECTED WITH NATURAL CAMBER UP. REFER TO DRAWINGS FOR OTHER CAMBER REQUIREMENTS.
26. ALL MEMBERS SHALL BE SUPPLIED IN SINGLE LENGTHS. SPLICES SHALL ONLY BE PERMITTED IN LOCATIONS SHOWN ON THE STRUCTURAL DRAWINGS.
27. ALL STEELWORK THAT IS TO BE PAINTED SHALL BE BLAST CLEANED TO AS SPECIFIED IN AS1627.4. ALL STEELWORK THAT IS TO BE CLASS 2.5 HOT DIPPED GALVANISED SHALL BE PICKLED AS SPECIFIED IN AS1627.5.
28. CEMENTITIOUS GROUT UNDER BASEPLATES SHALL BE FLOWABLE CONSISTENCY OF MIN. STRENGTH 40 MPA. UNO.
29. UNO ALL STEELWORK TO BE HOT DIPPED GALVANISED TO AS/NZS4680 AND AS/NZS2313

LOAD BEARING WALL NOTES :

1. THE CENTRE LINE OF EACH WALL SHALL BE CONCENTRIC OVER ITS FULL HEIGHT UNLESS OTHERWISE NOTED. REFER TO DRAWINGS FOR WALL THICKNESS AND DETAILS.
2. DETAILS OF ALL OPENINGS IN WALLS NOT SHOWN ON STRUCTURAL DRAWINGS SHALL BE SUBMITTED TO THE SUPERINTENDENT FOR APPROVAL PRIOR TO CONSTRUCTION.
3. LIFT TRIMMER BEAMS ARE NOT TO BE POCKETED INTO CONCRETE WALLS. USE END PLATES OR MASONRY ANCHORS OR ALTERNATIVELY USE CAST-IN INSERTS TO MANUFACTURER'S SPECIFICATION.
4. CARE SHOULD BE TAKEN IN PLACING CONCRETE IN WALLS TO ENSURE THAT THE CONCRETE IS PROPERLY PLACED AND COMPACTED.
5. WALLS ARE TO HAVE HORIZONTAL CONSTRUCTION JOINTS AT EACH FLOOR UNLESS OTHERWISE SHOWN.
6. AT ALL OPENINGS IN CONCRETE WALLS, PROVIDE TRIMMER BARS AS SHOWN IN THE TYPICAL WALL PENETRATION DETAIL.

WELDING NOTES :

1. ALL WELDS SHALL BE CATEGORY SP IN ACCORDANCE WITH AS1554 UNLESS NOTED OTHERWISE.

WELDS SHALL CONFORM TO AS/NZS 1554 AND WELDING ELECTRODES SHALL BE EITHER TO AS/NZS 1553, AS 1858, AS 2203 OR AS 2717 AS APPROPRIATE.

2. BEFORE COMMENCING FABRICATION SUBMIT DETAILS OF PROPOSED WELDING PROCEDURES USING THE FORM IN APPENDIX E OF AS1554.1.
3. DO NOT COMMENCE FABRICATION UNTIL WELDING PROCEDURES HAVE BEEN ACCEPTED.
4. OTHER THAN SITE WELDS, IF ANY, SHOWN ON THE SHOP DRAWINGS, DO NOT WELD ON SITE WITHOUT PRIOR APPROVAL FROM THE SUPERINTENDENT. WHEREVER POSSIBLE, LOCATE SITE WELDS IN POSITIONS FOR DOWN HAND WELDING.

5. ALL BUTT WELDS SHALL BE FULL STRENGTH COMPLETE PENETRATION WELDS. ALL ELECTRODES SHALL BE CLASS E49XX WITH NOMINAL TENSILE STRENGTH OF WELD METAL f_w = 480 mPa. THE EXTENT OF NON-DESTRUCTIVE WELD EXAMINATION SHALL BE AS NOTED BELOW (UNLESS NOTED OTHERWISE) RADIOGRAPHIC OR ULTRASONIC EXAMINATION SHALL BE TO AS/NZS 1554.1, AS 2177.1 AND AS 2207 AS APPROPRIATE.

TYPE OF WELD AND CATEGORY	EXAMINATION METHOD	EXTENT (% OF TOTAL LENGTH OF WELD TYPE)
FILLET WELDS (GP + SP)	VISUAL INSPECTION	100
BUTT WELDS (GP)	VISUAL INSPECTION	100
BUTT WELDS (SP)	VISUAL INSPECTION	100
BUTT WELDS (SP)	RADIOGRAPHIC OR ULTRASONIC	10

6. ALL BUTT WELDS, EXCEPT WHEN PRODUCED WITH THE AID OF BACKING MATERIAL, SHALL HAVE THE ROOT OR INITIAL LAYER GOUGED OR CHIPPED OUT ON THE BACK SIDE BEFORE WELDING IS STARTED FROM THAT SIDE. BUTT WELDS MADE WITH THE USE OF A BACKING STRIP SHALL HAVE THE WELD METAL FUSED WITH THE BACKING STRIP. ENDS OF BUTTS SHALL HAVE THE START AND STOP ZONES REMOVED BY THE USE OF RUN ON AND RUN OFF PLATES. SUCH PLATES SHALL BE REMOVED AFTER USE.

7. WELDING SHALL BE CARRIED OUT UNDER THE IMMEDIATE AND CONTINUOUS SUPERVISION OF A SUPERVISOR EMPLOYED BY THE FABRICATOR. THIS PERSON SHALL HAVE QUALIFICATIONS AS DESCRIBED IN AS1554 SECTION 4.11 AND THESE QUALIFICATIONS SHALL BE SUBMITTED TO THE SUPERINTENDENT ON REQUEST.

8. WELDING SHALL BE PERFORMED ONLY BY WELDERS WITH QUALIFICATIONS AS DESCRIBED IN AS1554 SECTION 4.11.

9. THE WELD EXAMINATION SHALL BE PERFORMED BY AN INDEPENDENT TESTING AUTHORITY. THE TEST REPORTS SHALL BE SUBMITTED TO THE SUPERINTENDENT.

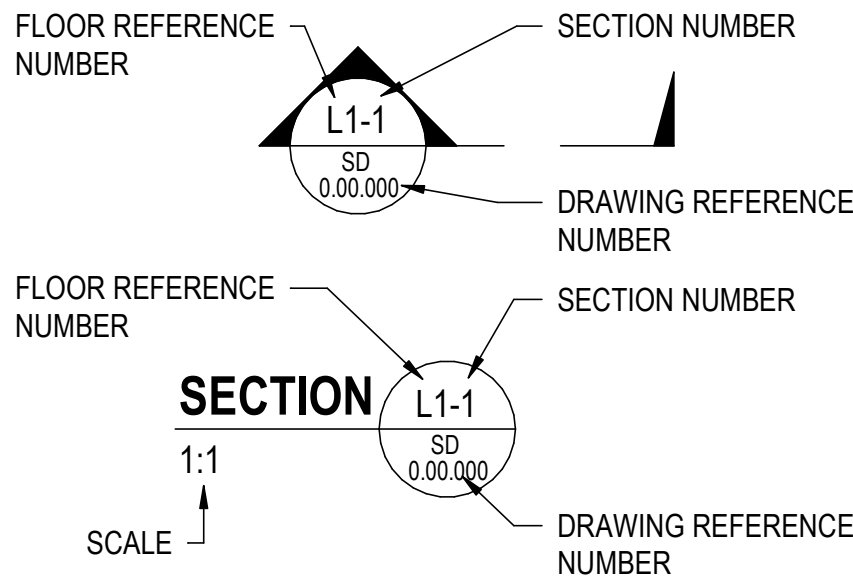
10. AFTER REPAIRING A FAULTY WELD REVEALED BY NON -DESTRUCTIVE EXAMINATION, REPEAT THE SPECIFIED EXAMINATION AND FURNISH THE TESTING AUTHORITY'S REPORT TO THE SUPERINTENDENT.

11. WHERE DAMAGED BY SITE WELDING ALL GALVANIZED AND PROTECTIVE PAINT COATINGS ARE TO BE REINSTATED IN ACCORDANCE WITH THE STRUCTURAL SPECIFICATIONS.

ABBREVIATIONS :

		UNITS	
&	AND	m ²	CUBIC METRE
ALT	ALTERNATING BARS	kg	KILOGRAM
APPROX.	APPROXIMATE	km	KILOMETRE
@	AT	kN	KILONEWTON
AS	AUSTRALIAN STANDARD	kPa	KILOPASCAL
C/C	CENTRE TO CENTRE	MPa	MEGAPASCAL
C/S	COURSES (BRICKWORK)	m	METRE
B	BOTTOM	mm	MILLIMETRE
BTM	BOTTOM	N	NEWTON
CI	CAST IRON	Pa	PASCAL
CRS	CENTRES	km ²	SQUARE
CL	CENTRE LINE		KILOMETRE
COL	COLUMN	m ²	SQUARE METRE
CJ	CONSTRUCTION JOINT	mm ²	SQUARE
CONT	CONTINUOUS		MILLIMETRE
CFW	CONTINUOUS FILLET WELD	kg/m ²	SQUARE PER
DIA	DIAMETER		SQUARE METRE
DJ	DOWEL JOINT		
DN	DIAMETER NOMINAL		
DPM	DAMP PROOF MEMBRANE		
DRG	DRAWING		
EW	EACH WAY		
EF	EACH FACE		
FF	FAR FACE		
FSBW	FULL STRENGTH BUTT WELD		
FW	FILLET WELD		
FFL	FINISH FLOOR LEVEL		
FL	FLAT		
FLG	FLANGE		
GL	GROUND LINE		
HORIZ	HORIZONTAL		
ID	INTERNAL DIAMETER		
IPBW	INCOMPLETE PENETRATION BUTT WELD		
KJ	KEYED JOINT		
LONG	LONGITUDINAL		
LL	LOWER LAYER OF REINFORCEMENT		
LV	LENGTH VARIES		
MAX	MAXIMUM		
MC	MASS CONCRETE		
MJ	MOVEMENT JOINT		
MS	MILD STEEL		
MIN	MINIMUM		
NF	NEAR FACE		
NTS	NOT TO SCALE		
No.	NUMBER		
NSOE	NOT SHOWN ON ELEVATION		
NSOP	NOT SHOWN ON PLAN		
OPP	OPPOSITE		
OD	OUTSIDE DIAMETER		
OA	OVERALL		
PL	PLATE		
PPBW	PARTIAL PENETRATION BUTT WELD		
RL	REDUCED LEVEL		
RC	REINFORCED CONCRETE		
REINF	REINFORCEMENT		
SCJ	SAW CUT JOINT		
SQ	SQUARE		
SIM	SIMILAR		
STAG	STAGGERED BARS		
STD	STANDARD		
SSL	STRUCTURAL SLAB LEVEL		
T	TOP		
THK	THICK		
TYP	TYPICAL		
UL	UPPER LAYER OF REINFORCEMENT		
U/S	UNDERSIDE		
UNO	UNLESS NOTED OTHERWISE		
VERT	VERTICAL		

STANDARD NOTATION LEGEND :



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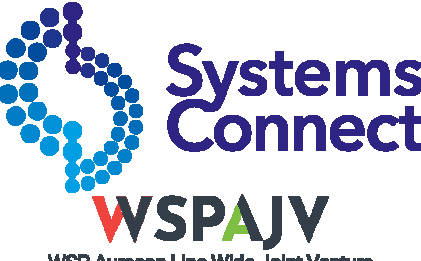
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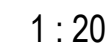
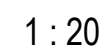


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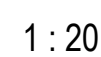
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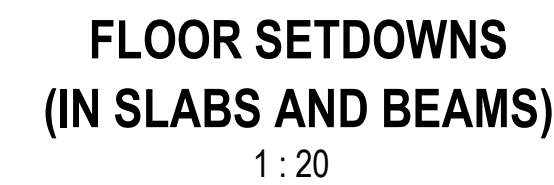
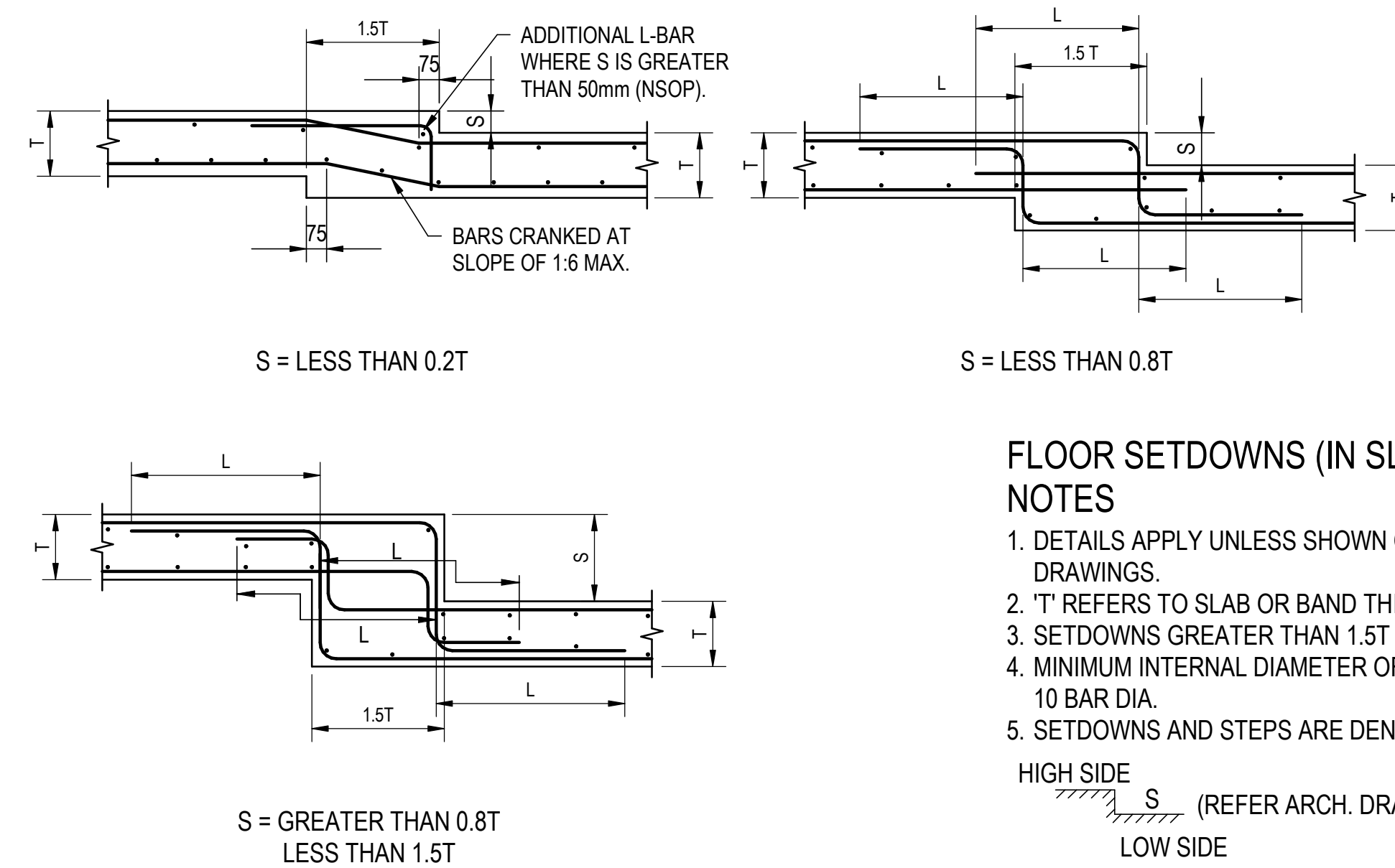
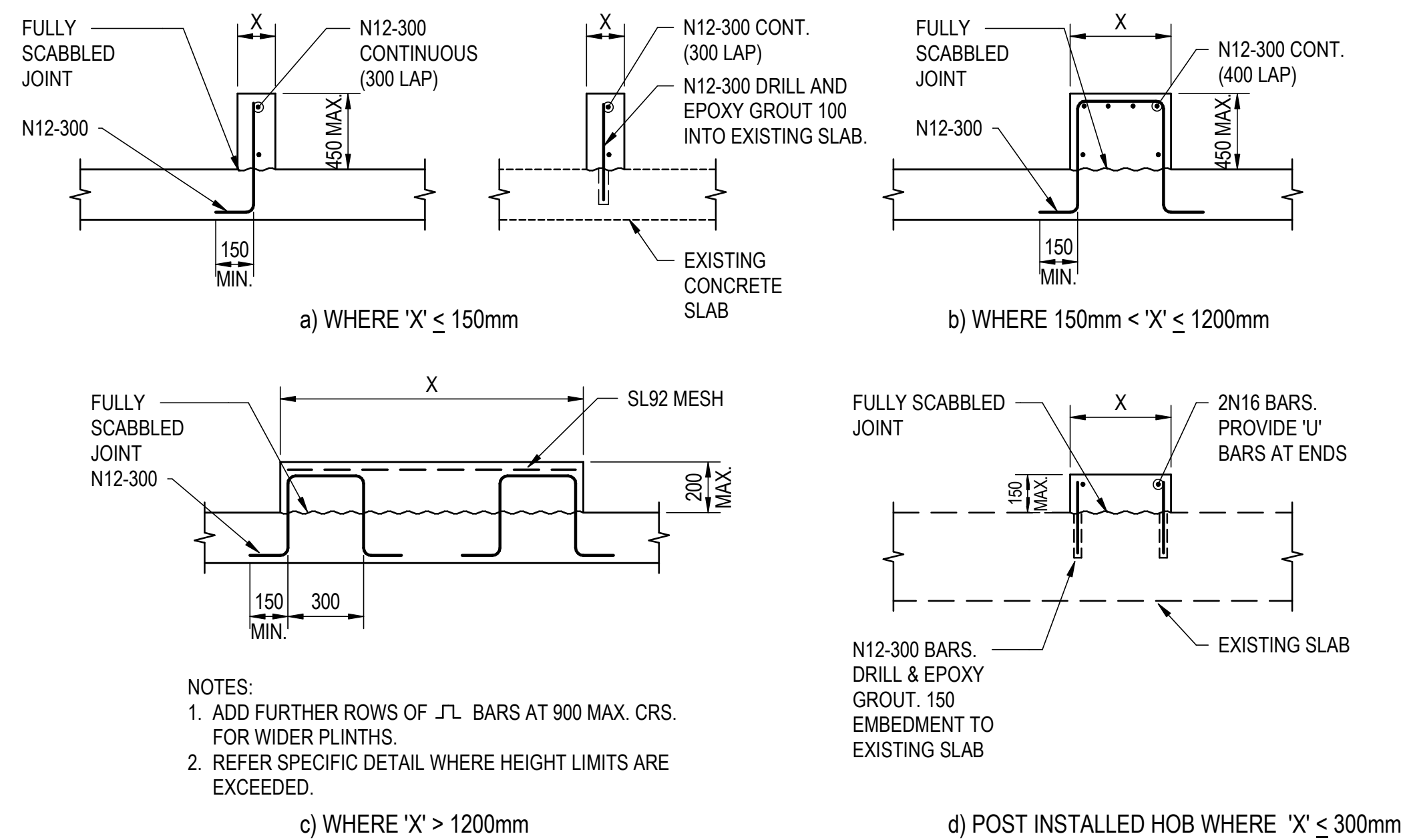
DRAWN	___ LIAM MEISINGER	___ 19/12/19
DESIGNED	___ GARY SCANLON	___ 19/12/19
DRG CHECK	___ RAUL SANTANDER	___ 19/12/19
DESIGN CHECK/NICK FARREL	___	___ 19/12/19
APPROVED	___ ALLAN BLACKMAN	___ 19/12/19



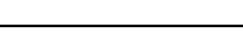
1. LOCATION OF JOINT TO BE TO THE APPROVAL OF THE SUPERINTENDENT.
2. REFER ALSO TO GENERAL NOTES.

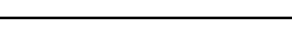


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						 SCALE 1:20	
A	GS	19/12/19	STAGE 1 DESIGN SUBMISSION			AB	
REV.	BY	DATE	DESCRIPTION			APPD.	
A1 Original			Co-ordinate System: MGA Zone 56	Height Datum: A.H.D.	This sheet may be prepared using colour and may be incomplete if copied	NOTE: Do not scale from this drawing. ALT. DRG No.	





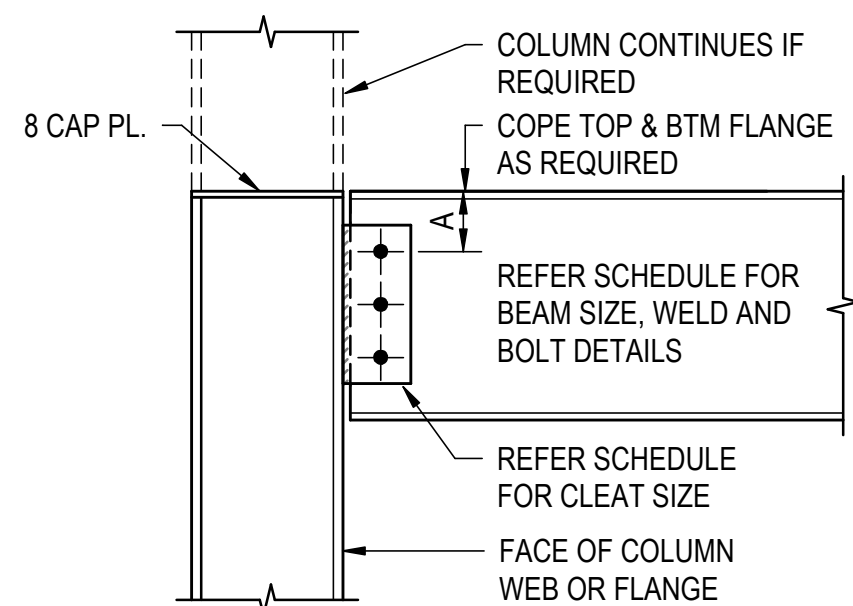


SYDNEY METRO CITY & SOUTHWEST

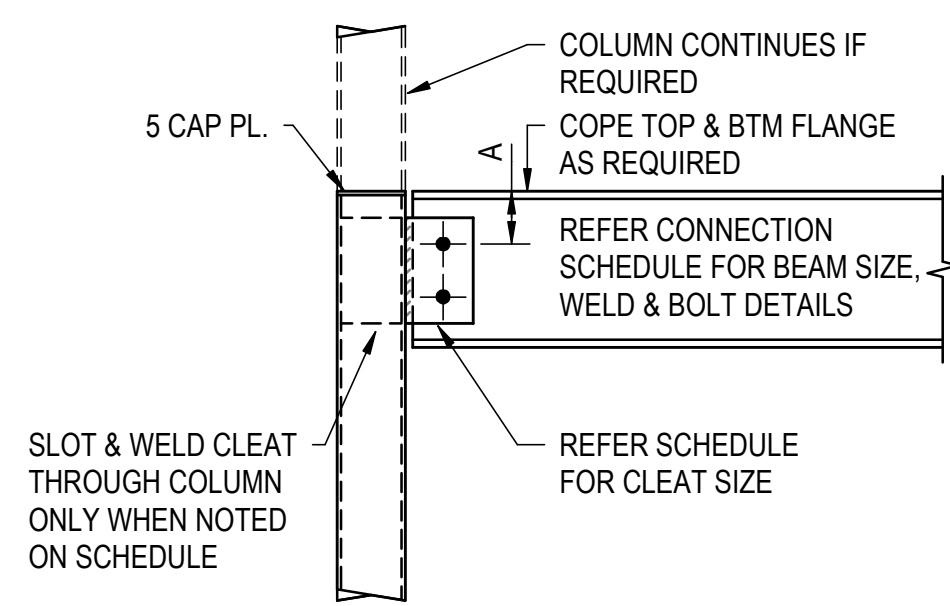
ARTARMON SUBSTATION SHAFT AND PRECINCT
PKG1320 ARTARMON SUBSTATION GENERAL CIVILS
GENERAL CONCRETE DETAILS

STATUS:ISSUED FOR REVIEW		SHEET 2 OF 2	©
DRG No. SMCSWLWC-SYC-ATS-CE-DWG- 400356		REV.	A

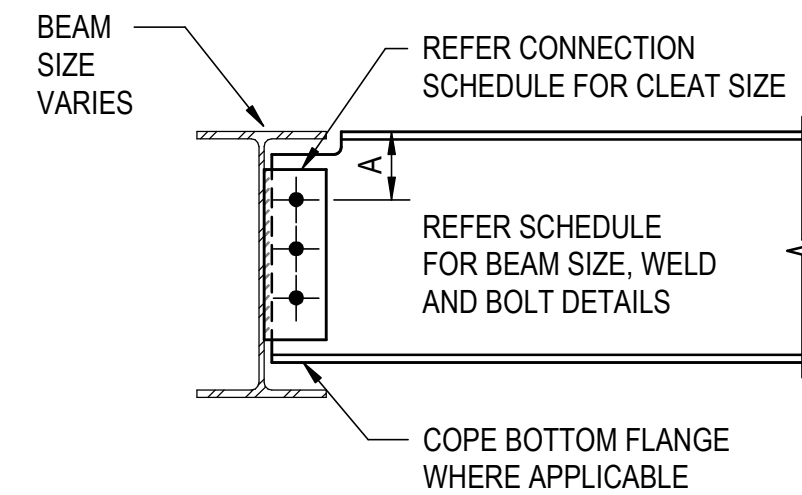
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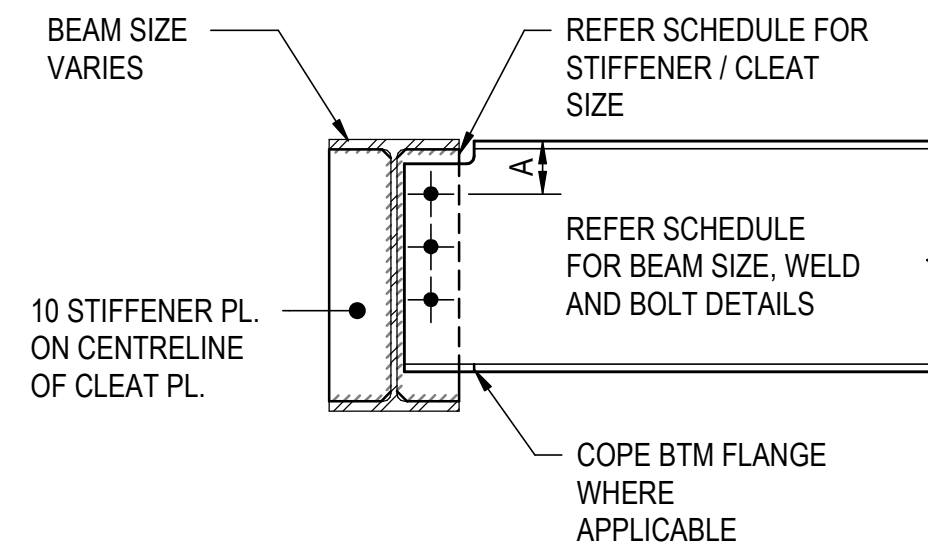
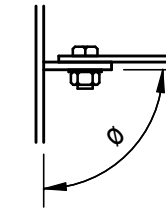
UB/UC COLUMN (FLANGE)
CONNECTION CN1A



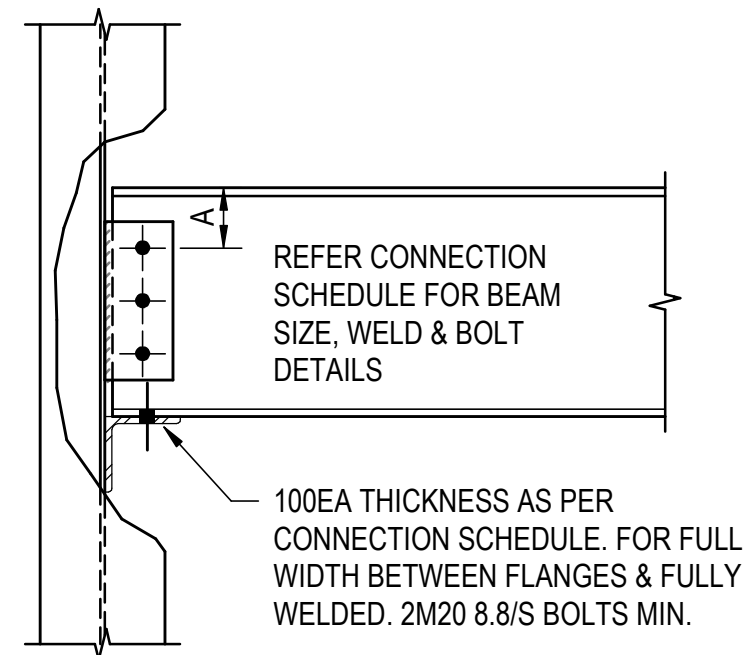
CHS/RHS/SHS COLUMN
CONNECTION CN1B



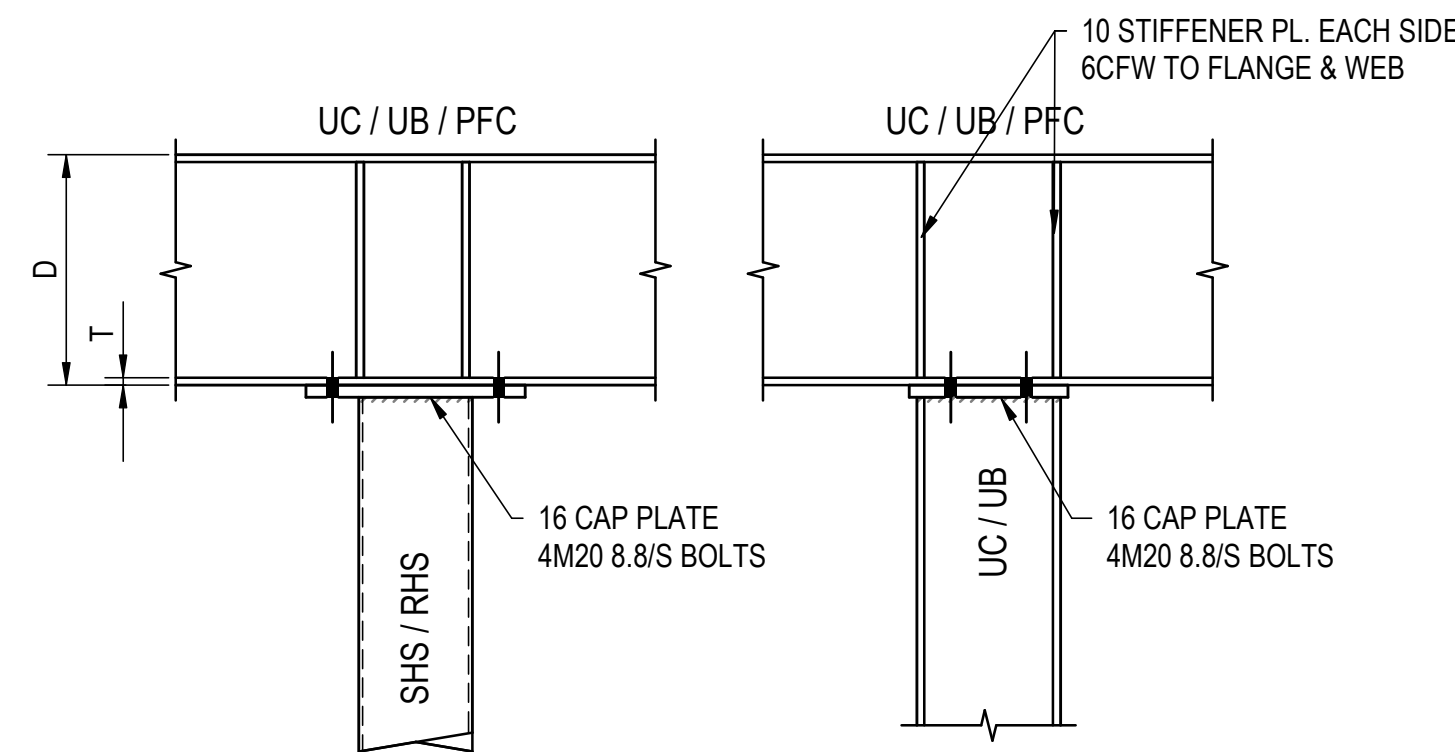
WEB SIDE PLATE CLEAT
CONNECTION CN2A



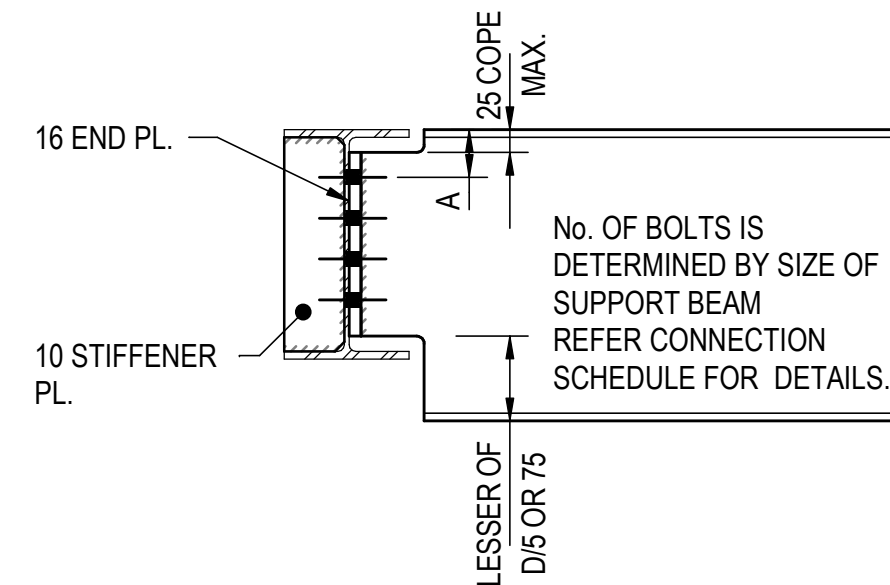
CONNECTION CN3
BEAM TO STIFFENED BEAM
1 : 10



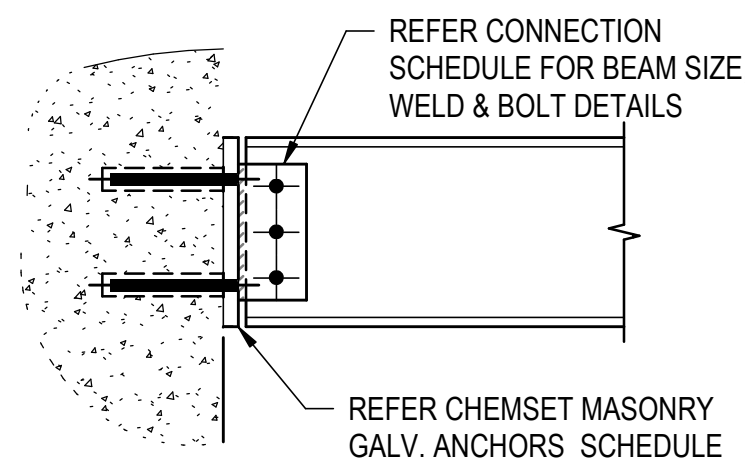
UB/UC COLUMN (WEB)
CONNECTION CN1C
TYPICAL BEAM TO COLUMN DETAILS
1 : 10



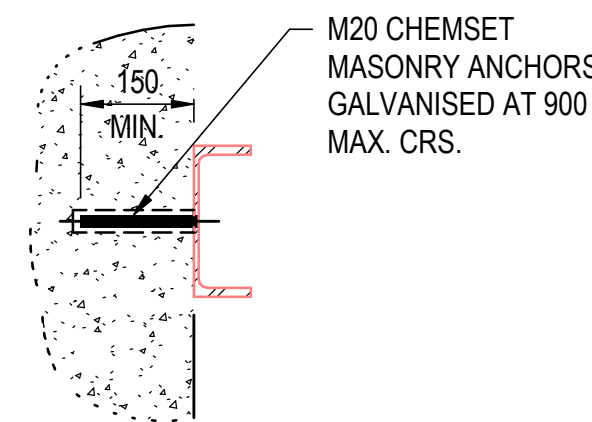
TYPICAL POST TO STEEL BEAM
CONNECTION DETAIL
CONNECTION CN14



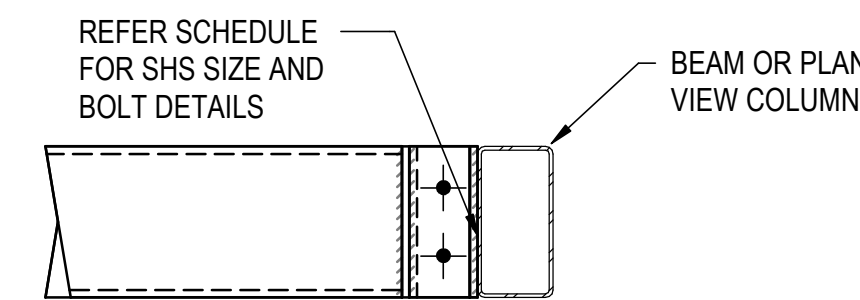
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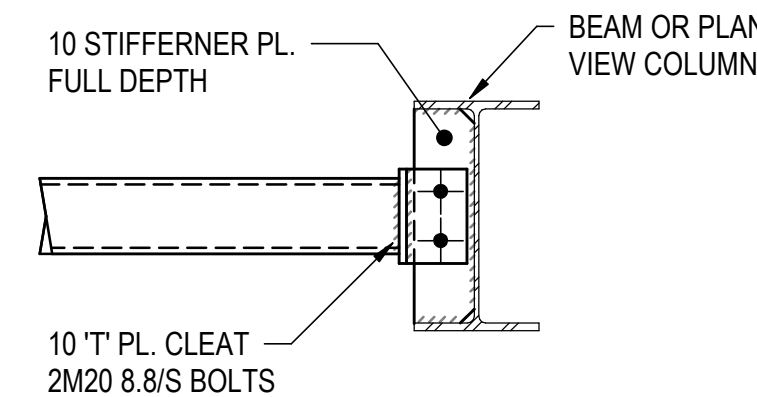
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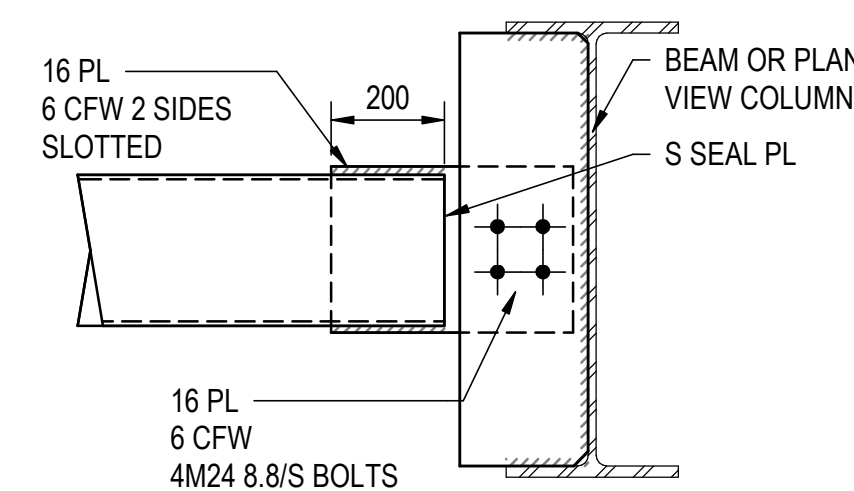
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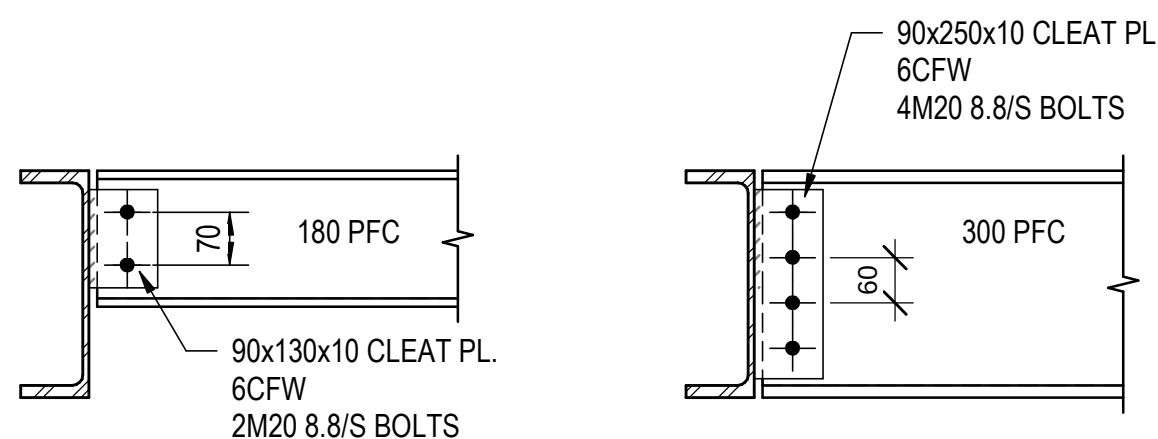
CLEAT PLATES FOR CHS/RHS



FOR TUBE SECTIONS UNDER 125mm



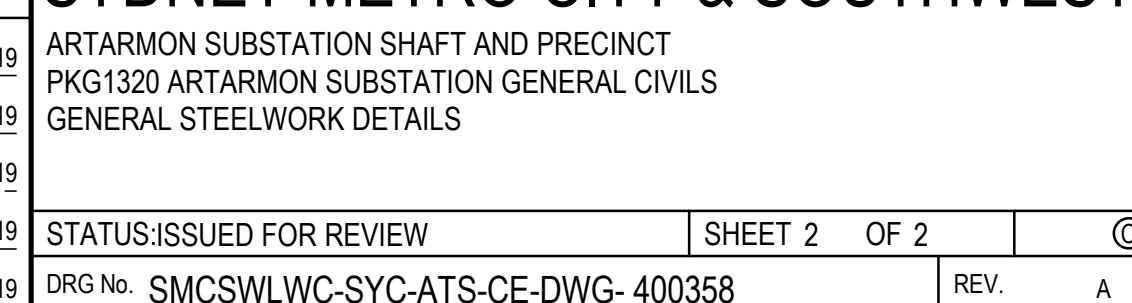
FOR TUBE SECTIONS 125mm OR GREATER
CONNECTION CN6

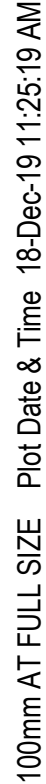


TYPICAL PFC CONNECTION DETAILS

GENERAL NOTES :

1. DO NOT SCALE DRAWINGS. WRITTEN DIMENSIONS GOVERN.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
3. THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL RELEVANT CONTRACTS, SPECIFICATIONS, REPORTS AND DRAWINGS.
4. FOR STRUCTURAL NOTES, REFER TO DRAWING SERIES 400350 AND 400351.





REV.

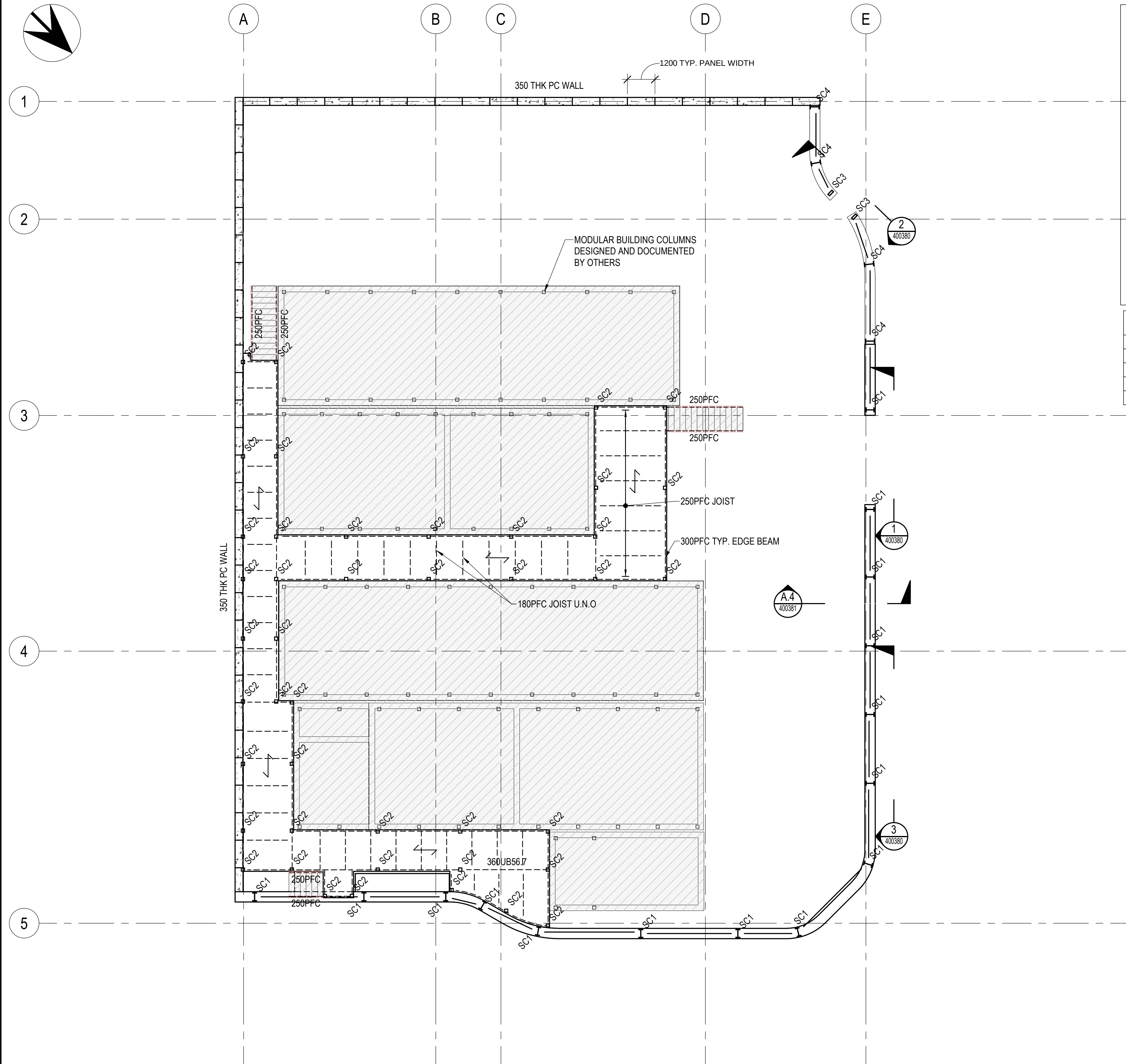
SYDNEY METRO CITY & SOUTHWEST

ARTARMON SUBSTATION SHAFT AND PRECINCT
 PKG1320 ARTARMON SUBSTATION GENERAL CIVILS
 BASEMENT LEVEL CONCRETE PROFILE PLAN

STATUS: ISSUED FOR REVIEW	SHEET 1 OF 1	©
DRG No. SMCSWLWC-SYC-ATS-CE-DWG- 400360	REV.	A

DRAWN	LIAM MEISINGER	19/12/19
DESIGNED	GARY SCANLON	19/12/19
DRG CHECK	RAUL SANTANDER	19/12/19
DESIGN CHECK	NICK FARRELL	19/12/19
APPROVED	ALLAN BLACKMAN	19/12/19

100mm AT FULL SIZE Plot Date & Time 18-Dec-19 11:25:23 AM



FIRST FLOOR PLAN
1 : 100

DESIGN ASSUMPTIONS / INFORMATION OUTSTANDING:

1. THE INTENT OF THIS DRAFT 30% ISSUE IS TO FACILITATE BUILDER AND CLIENT REVIEW OF ABOVE GROUND STRUCTURES. DOCUMENTS ARE NOT SUFFICIENT FOR PRICING.
2. AT THE TIME OF ISSUED THERE ARE NO KNOWN LATENT SITE CONDITIONS.
3. A GEOTECHNICAL INVESTIGATION AND REPORT IS YET TO BE COMPLETED. THE GROUND LEVEL SLAB AND FOUNDATIONS ARE ASSUMED TO BE FOUNDED ON ADEQUATE STRENGTH ROCK, WITH A MINIMUM ALLOWABLE BEARING PRESSURE OF 800 kPa. THE CIVIL AND STRUCTURAL DESIGN DESIGN MAY CHANGE, AND WILL BE UPDATED AND FINALISED ONCE THE SITE SPECIFIC GEOTECHNICAL PARAMETERS ARE CONFIRMED.
4. THE LEVELS AND DETAILS OF THE EXITSING BUILDINGS AND EXISTING FOUNDATIONS ADJACENT TO THE SITE ARE UNKNOWN PENDING SITE AND EXISTING BUILDING SURVEY. IT IS ASSUMED THAT THE ADJACENT EXISTING FOOTINGS ARE FOUNDED ON ROCK, AND THAT THE NEW FOUNDATIONS AND SLAB ON GROUND DO NOT UNDERMINE THE ADJACENT FOOTINGS. IF THIS IS NOT THE CASE, ADDITIONAL MEASURES WILL BE REQUIRED TO ENSURE THAT THE ADJACENT EXISTING BUILDINGS ARE NOT UNDERMINED OR DAMAGED, SUCH AS SHEET PILING OR CONTIGUOUS PILE SHORING WALLS. ALTERNATIVELY THE ARCHITECTURAL GROUND FLOOR AND LEVEL 1 LEVELS MAY NEED TO BE RAISED.
5. LOADS OF PLANT AND EQUIPMENT INCLUDING TRANSFORMERS, REACTORS AND HARMONIC FILTERS, AND LOADS ACTING ON THE FOUNDATIONS FROM THE MODULAR BUILDINGS ARE YET TO BE CONFIRMED.

STRUCTURAL COLUMN SCHEDULE	
MARK	SIZE
SC1	360UB50.7
SC2	150x150x9.0SHS
SC3	250x100x5.0 RHS
SC4	410UB59.7

GENERAL NOTES :

1. DO NOT SCALE DRAWINGS. WRITTEN DIMENSIONS GOVERN.
2. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.
3. THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL RELEVANT CONTRACTS, SPECIFICATIONS, REPORTS AND DRAWINGS.
4. FOR STRUCTURAL NOTES, REFER TO DRAWING SERIES 400350 AND 400351.
5. FOR GENERAL NOTES REFER DWG No SMCSWLWG-SYS-SAS-CE-DWG-400350 AND 400351
6. FOR CONCRETE DETAILS REFER DWG No SMCSWLWG-SYS-SAS-ST-DWG-400355 AND 400356
7. FOR COLUMN AND WALL DETAILS REFER DWG No SMCSWLWG-SYS-SAS-CE-DWG-400357 AND 400358 RESPECTIVELY.
8. FOR CONCRETE SECTIONS REFER DWG No SMCSWLWG-SYS-SAS-ST-DWG-400380 AND 400381.
9. ALL SLABS TO BE 250 THICK (UNO).
10. ALL STAIRS TO HAVE 200 THROAT THICKNESS (UNO)
11. CONCRETE STRENGTHS
 - REINFORCED CONCRETE SLABS 40 MPa
 - REINFORCED CONCRETE WALLS 40 MPa

LEGEND:

- 200 DENOTES SLAB THICKNESS
- STEP DENOTES STEP IN SLAB LEVEL
- ⊠ DENOTES EXTENT OF PENETRATION IN SLAB
- □ DENOTES LOAD BEARING CONCRETE COLUMN/PILE UNDER
- ■ DENOTES LOAD BEARING CONCRETE COLUMN/PILE OVER
- DENOTES LOAD BEARING CONCRETE WALL UNDER
- DENOTES LOAD BEARING CONCRETE WALL UNDER AND OVER
- ▨ DENOTES LOAD BEARING BLOCKWORK
- ▩ DENOTES INFERRED EXTENT OF BEDROCK OR FILL
- ◀▶ DENOTES STEEL MOMENT CONNECTION
- ± DENOTES STEEL SHEAR SPLICE
- * DENOTES VERTICAL ELEMENT STARTING ON THIS LEVEL
- ↱ DENOTES WEB FORGE GRATING A455MPG
- ▨ DENOTES STRUCTURES BY OTHERS
- DENOTES ELECTRICAL EQUIPMENT
- ▨ DENOTES POUR STRIP

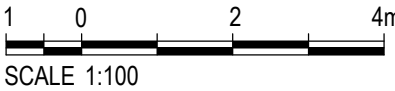
NOT FOR CONSTRUCTION

SYDNEY METRO CITY & SOUTHWEST

ARTARMON SUBSTATION SHAFT AND PRECINCT
PKG1320 ARTARMON SUBSTATION GENERAL CIVILS
FIRST FLOOR CONCRETE PROFILE PLAN

STATUS:ISSUED FOR REVIEW SHEET 1 OF 1 ©
DRG No. SMCSWLWC-SYC-ATS-CE-DWG- 400370 REV. A

REV.	BY	DATE	DESCRIPTION	APPD.
A1	Original			



Co-ordinate System: MGA Zone 56 Height Datum: A.H.D. This sheet may be prepared using colour and may be incomplete if copied

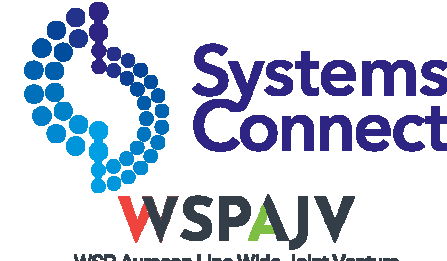
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CLIENT

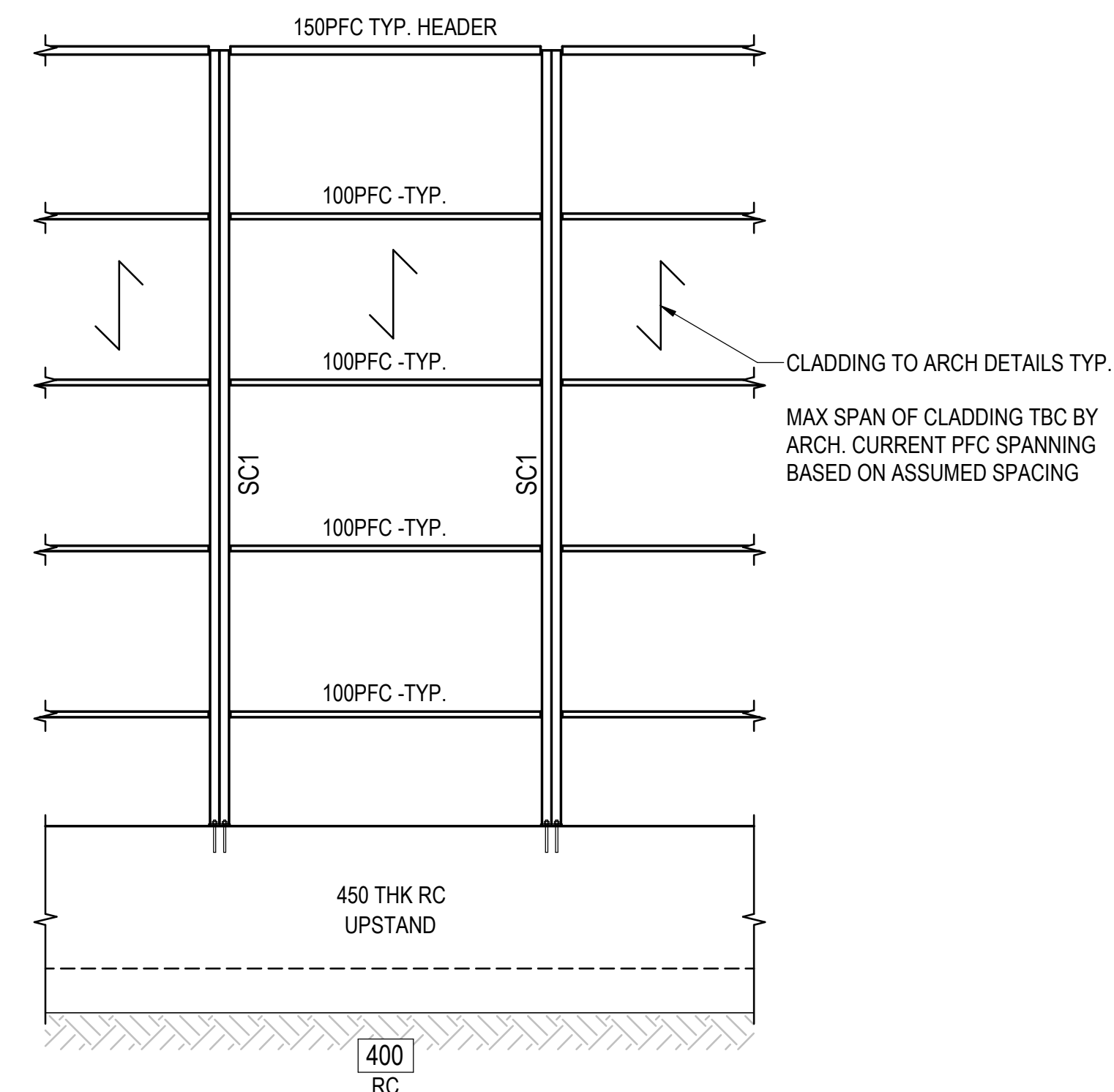
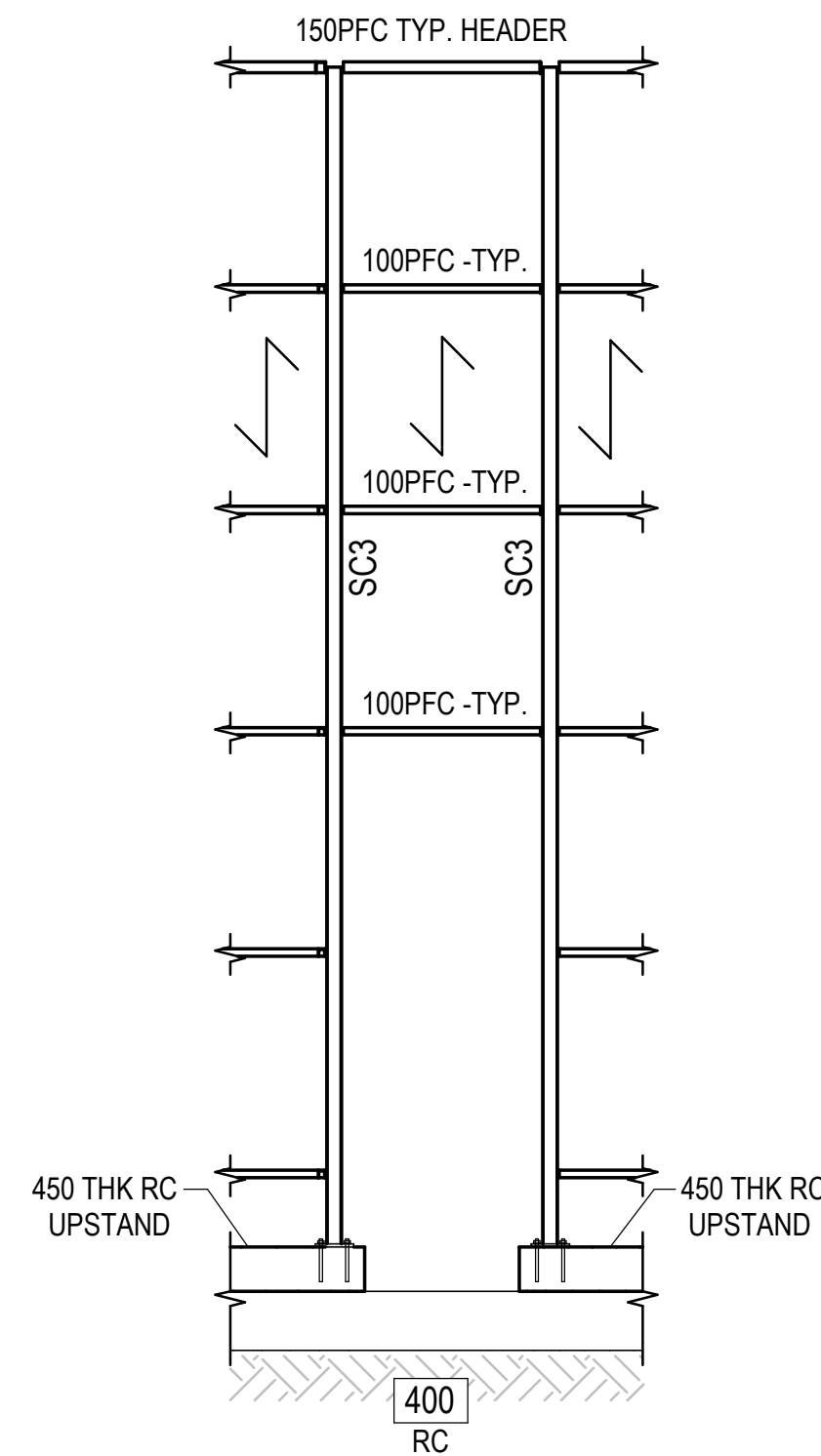
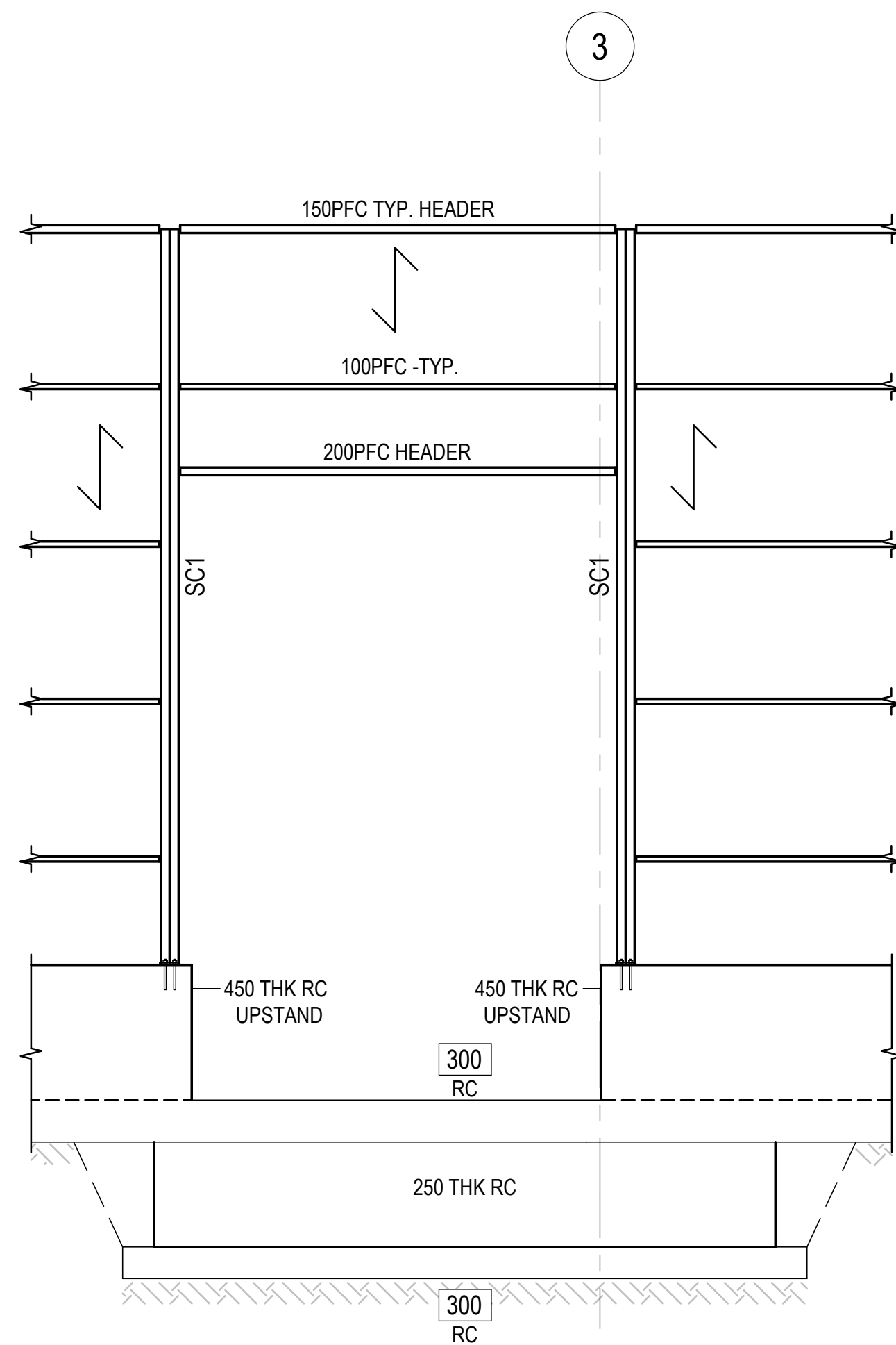


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SERVICE PROVIDERS



DRAWN _ _ _ LIAM MEISINGER _ _ _ 19/12/19
DESIGNED _ _ _ GARY SCANLON _ _ _ 19/12/19
DRG CHECK _ _ _ RAUL SANTANDER _ _ _ 19/12/19
DESIGN CHECKNICK FARRELL _ _ _ 19/12/19
APPROVED _ _ _ ALLAN BLACKMAN _ _ _ 19/12/19



- GENERAL NOTES :

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5. FOR GENERAL NOTES REFER DWG No SMCSWLWG-SYS-SAS-CE-DWG-400350 AND 400351.
6. FOR STRUCTURAL STEEL DETAILS REFER DWG No SMCSWLWG-SYS-SAS-CE-DWG-400381 AND 400382.
7. FOR STRUCTURAL STEEL FRAMING PLANS REFER DWG No SMCSWLWG-SYS-SAS-CE-DWG-400370.
8. STEEL GRADES
 - RHS/SHS GRADE 350 UNO
 - CHS GRADE 250 UNO
 - PURLIN/GIRTS GRADE 450 UNO
 - PLATES GRADE 300 UNO

VEHICLE DOOR ELEVATION

SCALE 1 : 50

PEDESTRIAN DOOR ELEVATION

SCALE 1 : 50

TYPICAL BAY ELEVATION

SCALE 1 : 50

DESIGN ASSUMPTIONS / INFORMATION OUTSTANDING:

1. THE INTENT OF THIS DRAFT 30% ISSUE IS TO FACILITATE BUILDER AND CLIENT REVIEW OF ABOVE GROUND STRUCTURES. DOCUMENTS ARE NOT SUFFICIENT FOR PRICING.
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NOT FOR CONSTRUCTION

SYDNEY METRO CITY & SOUTHWEST

ARTARMON SUBSTATION SHAFT AND PRECINCT
PKG1320 ARTARMON SUBSTATION GENERAL CIVILS
SECTIONS AND DETAILS

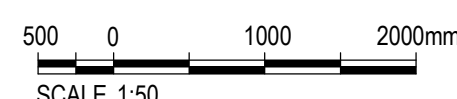
19	STATUS:ISSUED FOR REVIEW
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SHEET 1 OF 2

©

19 DRG No. SMCSWLWC-SYC-ATS-CE-DWG- 400380

REV. A

[illegible]

SCALE 1:50

CLIENT



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SERVICE PROVIDERS



DRAWN	LIAM MEISINGER	19/12/2017
DESIGNED	GARY SCANLON	19/12/2017
DRG CHECK	RAUL SANTANDER	19/12/2017
DESIGN CHECK	NICK FARRELL	19/12/2017
APPROVED	ALLAN BLACKMAN	19/12/2017

NOTE: Do not scale from this drawing.

ALT. DRG No.	
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1. THE INTENT OF THIS DRAFT 30% ISSUE IS TO FACILITATE BUILDER AND CLIENT REVIEW ABOVE GROUND STRUCTURES. DOCUMENTS ARE NOT SUFFICIENT FOR PRICING.
2. AT THE TIME OF ISSUED THERE ARE NO KNOWN LATENT SITE CONDITIONS.
3. A GEOTECHNICAL INVESTIGATION AND REPORT IS YET TO BE COMPLETED. THE GROUND LEVEL SLAB AND FOUNDATIONS ARE ASSUMED TO BE FOUNDED ON ADEQUATE STRENGTH ROCK, WITH A MINIMUM ALLOWABLE BEARING PRESSURE OF 800 kPa. THE CIVIL AND STRUCTURAL DESIGN DESIGN MAY CHANGE, AND WILL BE UPDATED AND FINALISED ONCE THE SITE SPECIFIC GEOTECHNICAL PARAMETERS ARE CONFIRMED.
4. THE LEVELS AND DETAILS OF THE EXISTING BUILDINGS AND EXISTING FOUNDATIONS ADJACENT TO THE SITE ARE UNKNOWN PENDING SITE AND EXISTING BUILDING SURVEY. IT IS ASSUMED THAT THE ADJACENT EXISTING FOOTINGS ARE FOUNDED ON ROCK, AND THAT THE NEW FOUNDATIONS AND SLAB ON GROUND DO NOT UNDERMINE THE ADJACENT FOOTINGS. IF THIS IS NOT THE CASE, ADDITIONAL MEASURES WILL BE REQUIRED TO ENSURE THAT THE ADJACENT EXISTING BUILDINGS ARE NOT UNDERMINED OR DAMAGED SUCH AS SHEET PILING OR CONTIGUOUS PILE SHORING WALLS. ALTERNATIVELY THE ARCHITECTURAL GROUND FLOOR AND LEVEL 1 LEVELS MAY NEED TO BE RAISED.
5. LOADS OF PLANT AND EQUIPMENT INCLUDING TRANSFORMERS, REACTORS AND HARMONIC FILTERS, AND LOADS ACTING ON THE FOUNDATIONS FROM THE MODULAR BUILDINGS ARE YET TO BE CONFIRMED.

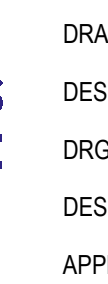
1. DO NOT SCALE DRAWINGS. WRITTEN DIMENSIONS GOVERN.
2. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.
3. THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL RELEVANT CONTRACTS, SPECIFICATIONS, REPORTS AND DRAWINGS.
4. FOR STRUCTURAL NOTES, REFER TO DRAWING SERIES 400350 AND 400351.
5. FOR GENERAL NOTES REFER DWG No SMCSWLWG-SYS-SAS-CE-DWG-400350 AND 400351.
6. FOR STRUCTURAL STEEL DETAILS REFER DWG No SMCSWLWG-SYS-SAS-CE-DWG-400381 AND 400382.
7. FOR STRUCTURAL STEEL FRAMING PLANS REFER DWG No SMCSWLWG-SYS-SAS-CE-DWG-400370.
8. STEEL GRADES
 - RHS/SHS GRADE 350 UNO
 - CHS GRADE 250 UNO
 - PURLIN/GIRTS GRADE 450 UNO
 - PLATES GRADE 300 UNO

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SERVICE PROVIDERS



19	ARTA
19	PKG
19	SEC
19	STAT
19	DRG

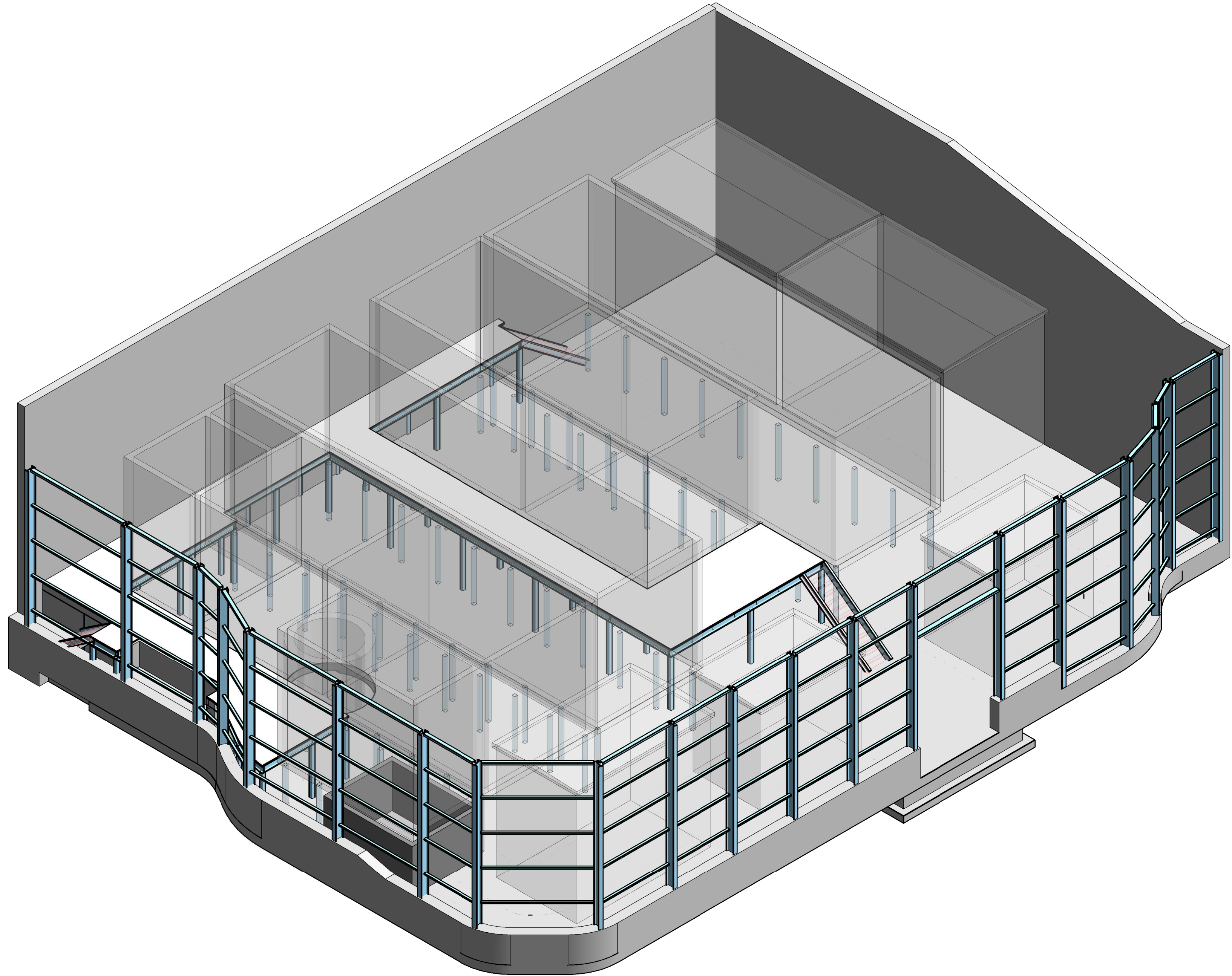
SHEET 2
11

SHEET 2 OF 2

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CYDNEY METRO CITY & SOUTH

100mm AT FULL SIZE Plot Date & Time 18-Dec-19 11:25:15 AM



ISOMETRIC VIEW

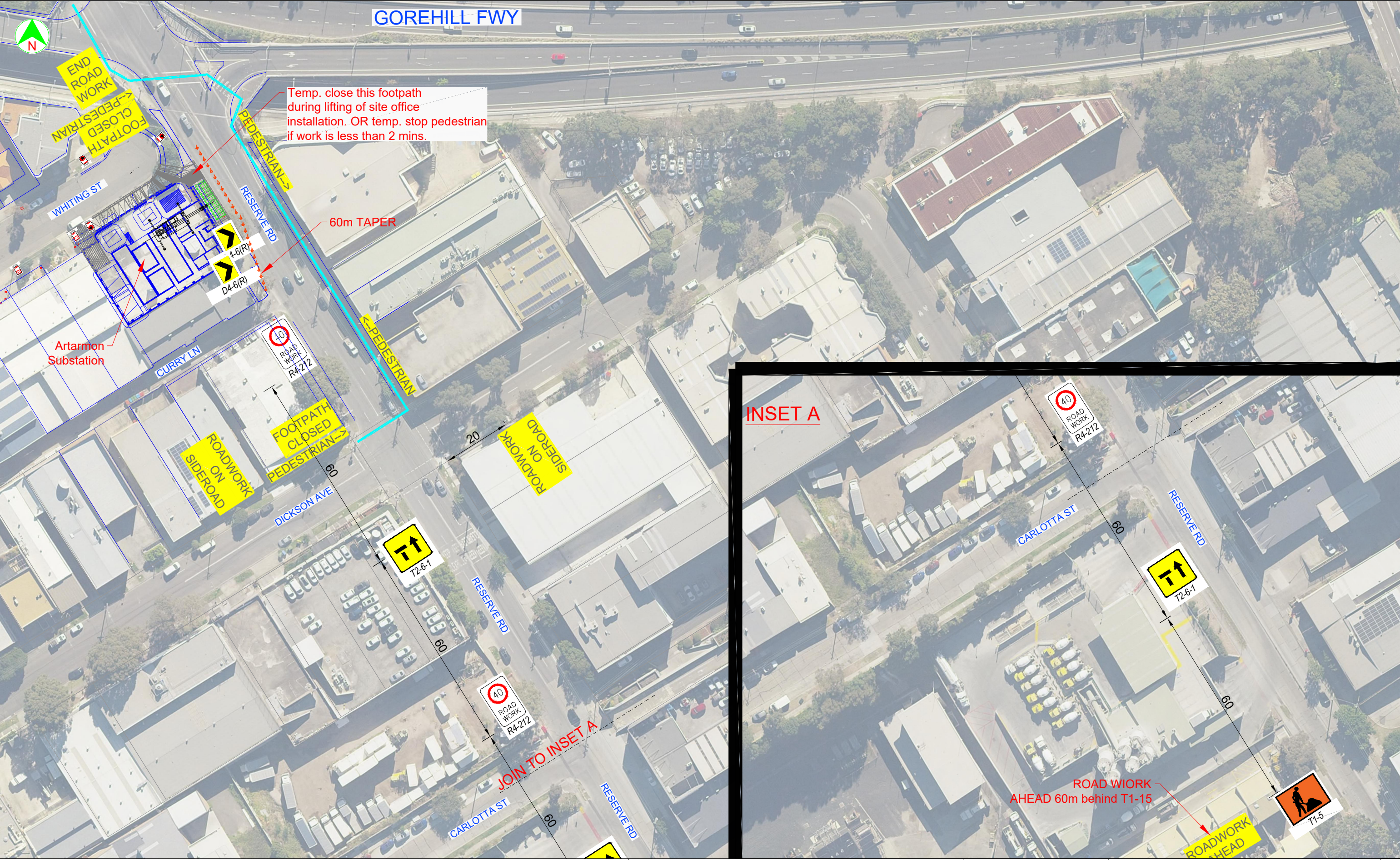
- GENERAL NOTES :**
- 1. DO NOT SCALE DRAWINGS. WRITTEN DIMENSIONS GOVERN.
 - 2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
 - 3. THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL RELEVANT CONTRACTS, SPECIFICATIONS, REPORTS AND DRAWINGS.
 - 4. FOR STRUCTURAL NOTES, REFER TO DRAWING SERIES 400350 AND 400351.

NOT FOR CONSTRUCTION

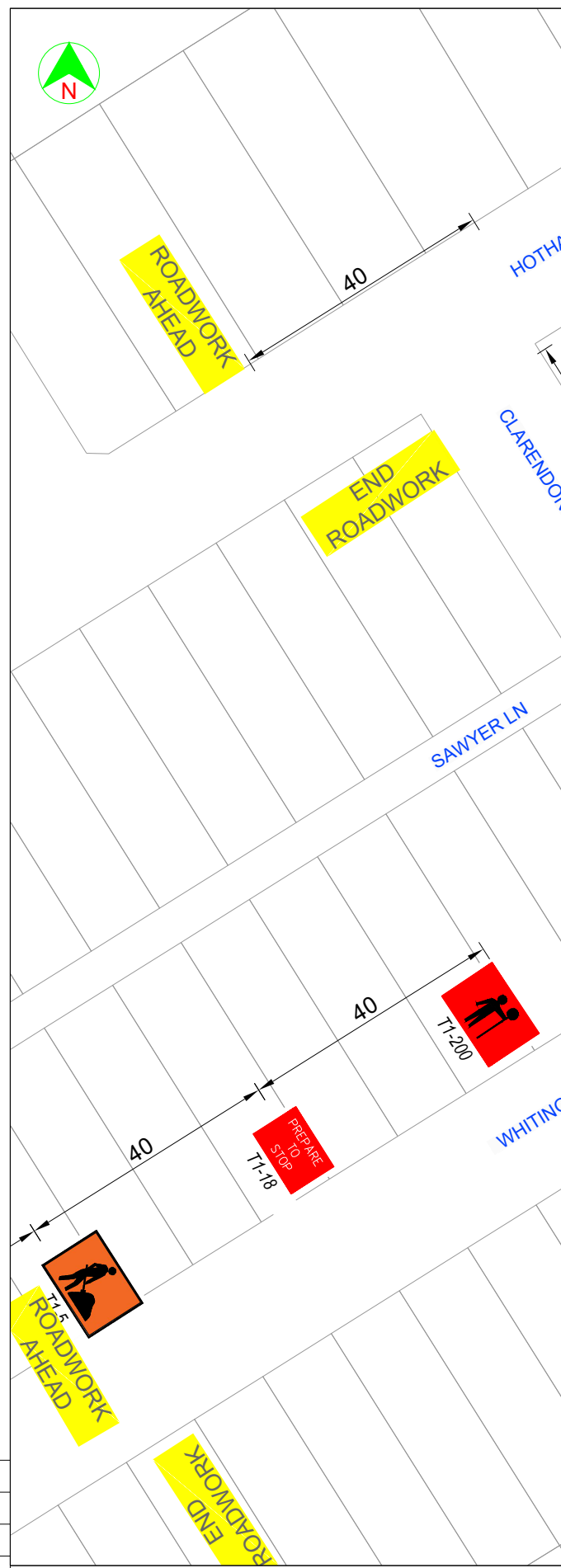
						CLIENT		NSW GOVERNMENT	
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Appendix B. Existing Signposting plan – Whiting Street

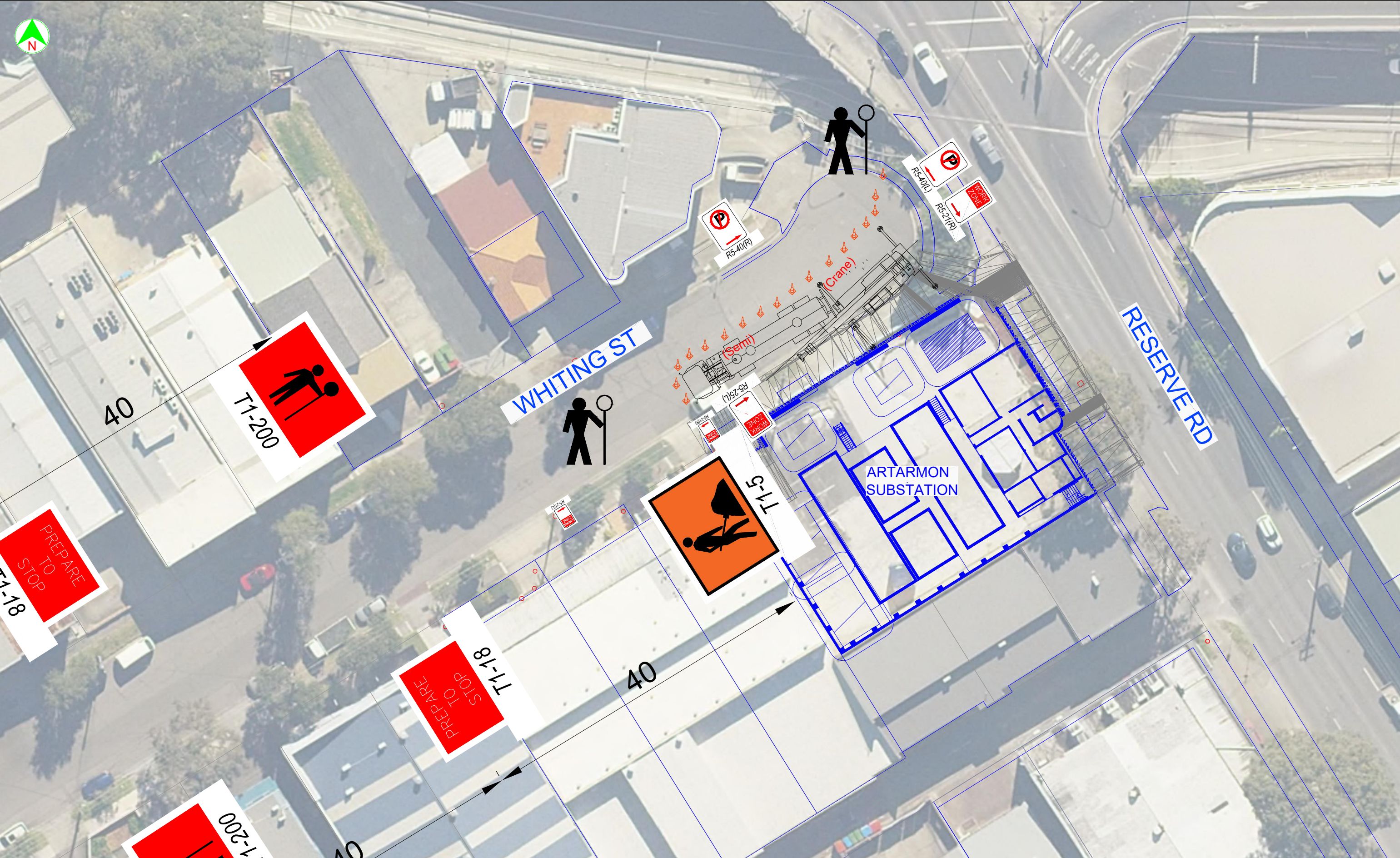
Appendix C. TCPs, Construction routes, Vehicle Movements



LEGEND				REVISION DESC. REV DATE APPROVAL				NOTES				PLOT DATE / TIME				CLIENT				A3			
Temp. pedestrian diversion during lifting.								DRAWINGS / DESIGN PREPARED BY				TITLE								Reserve Road Lane 1 WB Closure - During the installation of hoarding and site office. (IF REQUIRED)			
Work area								Mong Sim PWZTMP Card # 0037361001				DRAWN M.SIM 16/1/20								SC TCP 1001			
								SCALE 1:1000				DRG CHECK M.SIM 16/1/20								ISSUE STATUS			
								CO-ORDINATE SYSTEM MGA ZONE 56				DESIGN								SHEET No.			
								HEIGHT DATUM AHD				DESIGN CHECK								1 of 1			
												TRAFFIC MNGR								FOR INFORMATION			
																Systems Connect				1			



										NOTES	PLOT DATE / TIME			PLOT BY M SIM			CLIENT	4 way stop slow at Clarendon St - Whiting St intersection (non-signalised) for 19m semi to enter Whiting St and local traffic control at end of Whiting St.			A3			
LEGEND						REVISION DESC.	REV	DATE	APPROVAL	SCALES ON A3 SIZE DRAWING		DRAWINGS / DESIGN PREPARED BY		TITLE	NAME	DATE								
Notes: 1. As trucks near approach to the intersection, traffic controller to stop all traffic at the intersection. 2. Trucks nose-in into Whiting St (southwest of the intersection), realign and reverse into Whiting St (northeast of the intersection). 3. Once truck has reversed into Whiting St, release traffic on hold. Escort truck to location. 4. Manage local traffic at end of Whiting St.												SCALE 1:1000 10 0 10 20 AT A3		Mong Sim PWZTMP Card # 0037361001		DRAWN	M.SIM	16/1/20	PREPARED FOR Systems Connect	SC TCP 1000		ISSUE STATUS FOR INFORMATION	SHEET No. 1 of 2	ISSUE 1
																DRG CHECK	M.SIM	16/1/20						
																DESIGN								
																DESIGN CHECK								
																TRAFFIC MNGR								
										CO-ORDINATE SYSTEM MGA ZONE 56		HEIGHT DATUM AHD												



LEGEND										REVISION DESC.	REV	DATE	APPROVAL	SCALES ON A3 SIZE DRAWING		NOTES	PLOT DATE / TIME			PLOT BY M SIM		CLIENT		4 way stop slow at Clarendon St - Whiting St intersection (non-signalised) for 19m semi to enter Whiting St and local traffic control at end of Whiting St. - DETAIL A			A3		
														N.T.S.		DRAWINGS / DESIGN PREPARED BY		TITLE	NAME	DATE									
																Mong Sim		DRAWN	M.SIM	16/1/20									
																PWZTMP Card # 0037361001		DRG CHECK	M.SIM	16/1/20									
																		DESIGN											
																		DESIGN CHECK											
																		TRAFFIC MNGR											



							NOTES	PLOT DATE / TIME			PLOT BY M SIM	CLIENT		Heavy Vehicle Routes to Artarmon Substation work site at Whiting St.			A3									
LEGEND						REVISION DESC.	REV	DATE	APPROVAL	SCALES ON A3 SIZE DRAWING								DRAWINGS / DESIGN PREPARED BY			TITLE	NAME	DATE			
Heavy Vehicle Routes																		DRAWN			M.SIM	28/11/19				
																		DRG CHECK			M.SIM	28/11/19				
												DESIGN														
												DESIGN CHECK					PREPARED FOR		Systems Connect			ISSUE STATUS FOR INFORMATION			SHEET No. 1 of 1	ISSUE 0
												TRAFFIC MNGR														
						CO-ORDINATE SYSTEM MGA ZONE 56		HEIGHT DATUM AHD																		



					NOTES		PLOT DATE / TIME		PLOT BY M SIM		CLIENT		Checks for vehicle turning ability at the end of Whiting St during concrete pour scenario			A3
LEGEND					DRAWINGS / DESIGN PREPARED BY		TITLE	NAME	DATE							
REVISION DESC. REV DATE APPROVAL SCALE 1:1000  AT A3 CO-ORDINATE SYSTEM MGA ZONE 56 HEIGHT DATUM AHD							DRAWN	M.SIM	16/1/20							
							DRG CHECK	M.SIM	16/1/20							
							DESIGN			PREPARED FOR Systems Connect		SHEET				
							DESIGN CHECK									
							TRAFFIC MNGR									
												ISSUE STATUS			SHEET No.	ISSUE
												FOR INFORMATION			1 of 1	1

Appendix D. Copy of correspondence (insert as required)



General Correspondence

Reference No.: LWW-GEN-SCLWW-002866
Project Title: Sydney Metro Linewide Works

Date: 27 February 2020, 07:33:43 AM +11:00 **Response required by:**
To: Melanie Bowden, Systems Connect
CC: Patrick Giblin, Systems Connect
Mong Sim, Systems Connect
From: Mathew Billings, Systems Connect
Subject: **FW: SMCSW3LWC - Construction Traffic Management Plan - Northern Corridor Upgrade - approval**

Mel.
FYI (as per previous outlook)
Mathew Billings
Environment Manager - Systems Connect
Sydney Metro City & Southwest Line-wide Works
M 0428781599 E Mathew.Billings@sclww.com.au

Discipline: Traffic Management **Work Package:**
Originator's
Reference No.: **Location:**

Function: DC-Document Control
File Location: DC52-Support

----- Original Message -----



General Correspondence

Reference No.: LWW-GEN-SCLWW-002864
Project Title: Sydney Metro Linewide Works

Date: 26 February 2020, 07:04:28 PM +11:00 Response required by:

To: Mong Sim, Systems Connect
Paul Ryan, Systems Connect
Mathew Johnston, Systems Connect
Helena Orel, Systems Connect
Mathew Billings, Systems Connect

CC: Jill Downing, Systems Connect

From: Kirimaru Friscan, Systems Connect

Subject: SMCSW3LWC - Construction Traffic Management Plan - Northern Corridor Upgrade - approval

This mail item is received via EMAIL from Quac Minh LA on 2020-02-26 03:46:10 PM +11:00 and processed by Kirimaru Friscan of Systems Connect on 2020-02-26 7:01:27 PM +11:00.

From: Quac Minh LA<system@teambinder.com>
Sent: Wednesday, 26 February 2020 03:46:11 PM
To:
Cc: Transmittal SM OpenAccess<nwrl.informationmanagement@transport.nsw.gov.au>, LWC Systems Connect Transfer<LWW@tbupload.com>
Subject: SMCSW3LWC - Construction Traffic Management Plan - Northern Corridor Upgrade - approval

 Could not load the

LWC General Correspondence

Reference No: SMCSWLWC-RMS-LWC-GEN-000015
Project Title: Sydney Metro City & Southwest - LWC, TSOM
Contract No: LWC - Line Wide Contracts
Sub Contract: -
Orig Ref No:
DLM:

Date: 26 February 2020, 03:46 PM Response required by:

From: Quac Minh LA (Roads and Maritime Services)

To: Susan Dai (Systems Connect)

Cc: Chris Berg (Sydney Metro) ; Ken Hind (Sydney Metro) ; JOSE ARGUETADOMINGUEZ (Sydney Metro) ; Phil Brogan (Sydney Metro) ; Nathan Hoffmeister (Sydney Metro) ;

Deepak Shahani (Sydney Metro) ; Errol Pather (Sydney Metro) ; Jake Coles (Sydney Coordination Office) ; Carl Mella (Roads and Maritime Services) ; Hayden Wright (Sydney Metro) ; Transmittal SM OpenAccess (Sydney Metro) ; Mathew Billings (Systems Connect) ; Mark Marriott (Sydney Metro) ; Jill Downing (Systems Connect) ; Kirimaru Friscan (Systems Connect) ; LWC Systems Connect Transfer (Systems Connect) ; Paul Ryan (Systems Connect) ; Helena Orel (Systems Connect) ; Mathew Johnston (Systems Connect) ; Mong Sim (Systems Connect) ; Scott Brown (Systems Connect)

Subject: SMCSW3LWC - Construction Traffic Management Plan - Northern Corridor Upgrade - approval

Hi Susan,

With reference to your transmittal SMCSWLWC-SYC-TX-001696 dated 07/02/20.

In accordance with Schedule C1 Appendix A.9 Section 2.1 (c) and 2.2 (c) of the Principal's General Specifications G10 - Traffic and Transport Management and Minister's Condition of Approval E82 for the Sydney Metro City & South West, Transport for NSW - Greater Sydney - Planning and Programs, and the Sydney Coordination Office approve the Sydney Metro City & South West Traffic Management Plan - Line Wide Works - Northern Corridor Upgrade (SMCSWLWC-SYC-NCW-TF-PLN-002507.C.RVW.C.01) for the Sydney Metro City & South East project subject to the following requirements:

- obtaining Road Occupancy Licenses (RoLs) from the Transport Management Centre as required;
- a Road Safety Audit being undertaken and addressing any safety issues identified within the Road Safety Audit review for this CTMP, in advance of any works commencing and;
- addressing any issues raised by Council, STA, Taxi Council, residents/businesses or Emergency Services in the CTMP approval process;
- addressing the requirements arising as an outcome of the Local Traffic Committee meeting;
- promptly addressing any SCO and/or TMC and/or TfNSW issue that eventuates during the works

regards,
Minh

Design Series:

Discipline:

Design Lots:

Location:

Discipline: Traffic Management
Originator's
Reference No.:

Work Package:
Location:

Function:DC-Document Control
File Location:DC52-Support

Artarmon Substation
TMP Comments - up to Rev B. Submit as Rev C

No.	DATE	COMPANY	RAISED BY	REVIEW DOC. NO.*	DOCUMENT REF*	DEED REF*	COMMENTS / RESPONSE	COMMENT CATEGORY*	CLOSED OUT	RESPONSE	
1	17/12/2019	RMS	Minh La		GEN 000009		TCPs should have drawing numbers so we can refer to the specifically	TCP are added with document number on the new revision.			rev A
2	17/12/2019	RMS	Minh La		GEN 000009		TCPs should show spacing/distances between signs	TCP updated with sign spacings.			rev A
3	17/12/2019	RMS	Minh La		GEN 000009		TCPs should show 'End Roadwork' signage once beyond roadworks areas	End Roadwork (T2-16) added pairing with Roadwork Ahead (T1-1).			rev A
4	17/12/2019	RMS	Minh La		GEN 000009		TCPs should show the position of Traffic Controllers	TCP updated with TC's position.			rev A
5	18/12/2019	Willoughby	Gordon F		email 18/12/19		Overview.It appears that the works are essentially similar to a building and accordingly should be managed in a similar manner. It appears that the CTMP does not adequately cover the vehicle access and street parking/ use in Whiting Street. Additional measures such as a Construction/ Works Zone is considered necessary to support the construction of the building. It is considered essential that these issues are resolved/ agreed prior to the approval of the CTMP.	SC supports the proposal/option to convert existing No Parking to Work Zone. Details of the area is detailed on the meeting on 9 Jan. Relevant permit application will be submitted in due course at the appropriate timing.			rev A
6	18/12/2019	Willoughby	Gordon F		email 18/12/19		Part B Section 3. The use of Whiting Street for the construction of the building is unclear. The description of the use indicates a high potential for significant 'temporary' use of the street frontage i.e. concrete pump, crane and deliveries. The design of the cul-de-sac needs to be developed and approved that permits the operation of the cul-de-sac with the construction activities to support safe and efficient traffic flow, particularly of heavy vehicles.	Details of the cul de sac usage during construction is detailed and an agreement in principle is reached from the previous meeting on 9 Jan 2020. Permit to be submitted at later stages at the right timing.			rev A
7	18/12/2019	Willoughby	Gordon F		email 18/12/19		Section 3 and 4 (4.2). A timed construction / work zone along the site frontage, separate from the area for the movement/ turning area required for the cul-de-sac operation, is required for the on-going use of the kerb space, rather than working within a full time No Parking zone. There is a Construction / Work Zone permit application and fee associated with the provision of a works zone. The administration and payment will need to be provided prior to the start of work on-site. The use of the existing loading zone along Whiting Street for construction of the building is not favoured or agreed. The loading zone is provided for the businesses along Whiting Street. A separate timed construction / work zone is the mechanism to manage short term construction vehicle parking for the construction of the building.	Timed construction zone may lead to the impression that the area is changing to a parking area. Proposal to have At All Times added below the Work Zone sign is agreed by WC in principle from meeting on 9 Jan 2020. Work area does not encroach into exiting Loading Zone.			rev A

8	18/12/2019	Willoughby	Gordon F		email 18/12/19		Part B - Section 4.7. TCPs will be required for long and wide loads and vehicles such as semi trailers to ensure the safety of all road users. It is expected that these vehicles will be required to undertake complex movements into and out of Whiting Street that need careful management.	TCP was available for the heavy vehicles movement on previous CTMP.			rev A
9	10/01/2020	SM	Chris B		LWW-TRN-SCLWW-002064		Entire document: A) apply global comments as per CEMP and sub plan review, eg revision date, abbreviationsetc... to ensure consistent use of format, spelling etc B) do a spell and grammar check C) add table numbers and names	The CTMP template has been used multiple times and ranges of adjustments have been made to further refine it since. The refinement is continuous and any suggestions to improve is taken on board. Expectation for whole document to match the global CEMP format [or layout] is not possible. CTMP does not need to have certain details unlike the CEMP. The content in the CTMP is satisfactory to address what it is required to address in relation to traffic management. It does content element of comms, environment etc but not into levels of details in which each elements has its own management plan to be referred to. Revision tracker, Table numbers are existing on the CTMP.			rev A
10	10/01/2020	SM	Chris B		LWW-TRN-SCLWW-002064		1.2. Section 1.2: ...to Bankstown?	Noted.			rev A
11	10/01/2020	SM	Chris B		LWW-TRN-SCLWW-002064		Figure 2. Figure 2: map is not clear, there is no legend. the site should be clearly marked	Purpose of Figure 2 is only to link and provide visual mapping of the Artarmon substation to common landmarks. Details of the Artarmon substation site are available in Appendix B and C.			rev A
12	10/01/2020	SM	Chris B		LWW-TRN-SCLWW-002064		Section3. Section 3: would be helpful to include a map clearly showing the work area, including Clarendon Street	Work area was shown on the Appendix C.			rev A
13	10/01/2020	SM	Chris B		LWW-TRN-SCLWW-002064		Section6. Section 6: clarify meaning of 'periods of change' and 'all available media'; add table number/name	Periods of change refers to when there is a changed of traffic conditions (implementation of a detour, lane closue ec). All available media in this case refers to LiveTraffic website, existing permanent and temporary VMS, radio and/or TV broadcast - any media that could provide instant messages.			rev A
14	10/01/2020	SM	Chris B		LWW-TRN-SCLWW-002064		Section 6. Section 8: add contact details?	Section 6 primary contact details is all from Section 5. Section 8 is the person on duty (shift) at the time of the incident which can't have specific names.			rev A
15	14/01/2020	SCO	S Brown	SMCSWLWC-SYC-ATS-TF-PLN-002690	Part B Section 4.4		The CTMP does not refer to the needs of other businesses in Whiting Street, including the number of vehicle movements per day and the demand for on-street parking. This information will highlight the impact that the traffic management will have on background traffic, namely the reversing of semi trailers.	Semis delivering components for the Artarmon substation is unlikely to interfere/impact with the businesses traffic at Whiting Street as the business operators are not going to utilise another semi sized vehicle as the daily delivery method as no semi could ever turnaround at Whiting Street. It is anticipated only rigid trucks (<12m) that are going to be possible to be driven to Whiting Street on a daily basis. This interaction is manageable as Whiting Street is quite wide. Truck driving (driver) professionals are expected to give way to the semi and the reversing of the semi is only for a short timeframe. In addition, traffic controllers are escorting the semis. Semis coming for the substation is circa. 1-2 deliveries per day towards the end of project duration. (Refer to Figure 6 for estimated numbers). Site construction vehicles are not programmed to park along Whiting Street. Site vehicles should be able to be contained within the introduced 35m long Work Zone section.			rev A
16	14/01/2020	SCO	S Brown	SMCSWLWC-SYC-ATS-TF-PLN-002690	Part B Section 3		When will the the final location for the site office be known?	Details (size, temp. support, access details) of the office is still in being finalised - outside of CTMP. Once establishment plan is available, SC will provide for information. Expect circa mid March to early April for the site office establishment.			rev A

17	14/01/2020	SCO	S Brown	SMCSWLWC-SYC-ATS-TF-PLN-002690	Part B Section 3		Apart from the proposed installation of the site office and hoarding, will the footpath on Reserve Rd be impacted/reduced in size?	Footing of the structure will slightly reduced the overall existing width but not the useable (concrete path) width. Footpath net usable width is still retained.			rev A
18	14/01/2020	SCO	S Brown	SMCSWLWC-SYC-ATS-TF-PLN-002690	Part B Section 3		There is little detail as to how vehicles will access the site, what size vehicles can access the site and the timeframe at which they will be physically able to access the site	Footing of the structure will slightly reduced the overall existing width. Footpath net usable (concreted section) width is still retained.			rev A
19	14/01/2020	SCO	S Brown	SMCSWLWC-SYC-ATS-TF-PLN-002690	Part B Section 3 & Appendix C		It is proposed that the existing Loading Zone can be utilised as part of this project, however it is assumed that this is currently utilised by other businesses in the street. Further consultation would be required with Council and other businesses to confirm use of this space.	Any encroachment into the existing Loading Zone is short term. It is not expected the encroachment will become an issue to the extend that other businesses could not be utilising the loading zone area. Existing Loading Zone could be left as is.			rev A
20	14/01/2020	SCO	S Brown	SMCSWLWC-SYC-ATS-TF-PLN-002690	Part B Section 4.2 & Appendix C		If the "No Parking" area within the cul-de-sac is to be used for concrete pumps and other deliveries, how will background vehicles be able to navigate the reduced turning circle. It is assumed that traffic controllers will be on site to facilitate these turns, however little detail is provided.	During concrete pumping activities, a crew of traffic controllers will be available to assist vehicle to turn around as required. Not all vehicles will need to travel till the end of Whiting Street to where the work zone is during concrete pumping. Most of the vehicles are expected to have entered the driveways prior or have turned around before the end of Whiting Street.			rev A
21	14/01/2020	SCO	S Brown	SMCSWLWC-SYC-ATS-TF-PLN-002690	Appendix C		The locations of Traffic Controllers should be shown in more detail. It appears there is no Traffic Controller situated on Clarendon St, north of Whiting St	TCPs updated similar to comments # 9.			rev A
22	14/01/2020	SCO	S Brown	SMCSWLWC-SYC-ATS-TF-PLN-002690	Appendix C		The locations of Traffic Controllers should be shown in more detail. It appears there is no Traffic Controller situated on Clarendon St, north of Whiting St	TCPs updated similar to comments # 9.			rev A
23	4/02/2020	SM	K Hind	SMCSWLWC-SYC-ATS-TF-PLN-002690 Rev : B	Figure 6		The delivery volumes shown grey and dark orange are not included in the legend. What do these volumes refer to?	These were the 1 movement each for the compound mobilisation and demobilisation. The legend was hidden due to the chart size margin. Figure 6 is revised with the missing legend. Movement include a mobile crane and a flatbed truck to carry the site office.			rev B
24	4/02/2020	SM	K Hind	SMCSWLWC-SYC-ATS-TF-PLN-002690 Rev : B	Section 5		Sydney Metro contacts: Should be Phil Brogan / Ken Hind	(Phil B and Ken H was already on the list from previous rev). No action required.			rev B
25	4/02/2020	SM	K Hind	SMCSWLWC-SYC-ATS-TF-PLN-002690 Rev : B	Section 5		How will traffic control operate in Whiting Street while semi-trailer is reversing, with regard to access for vehicles entering and exiting businesses along the street, between Clarendon St and the site?	Once semi has reversed into Whiting Street, traffic controller will escort the semi with their vehicles. Driveway traffic is expected to stop and check for any incoming vehicles before proceeding into the road and giveaway to any incoming vehicles (in this case the semi as it is reversing). The escorting lead vehicles provides visual warning for any driveway traffic. Advanced warning signs are also prepositioned along Whiting Street if an intermittent stop slow traffic control is required.			rev B
26	18/02/2019	RMS	S Brown	SMCSWLWC-SYC-ATS-TF-PLN-002690 Rev : B	-		(no additional comments)	(nil)			rev B
27	18/02/2019	SCO	C Mella	SMCSWLWC-SYC-ATS-TF-PLN-002690 Rev : B	-		(no additional comments)	(nil)			rev B