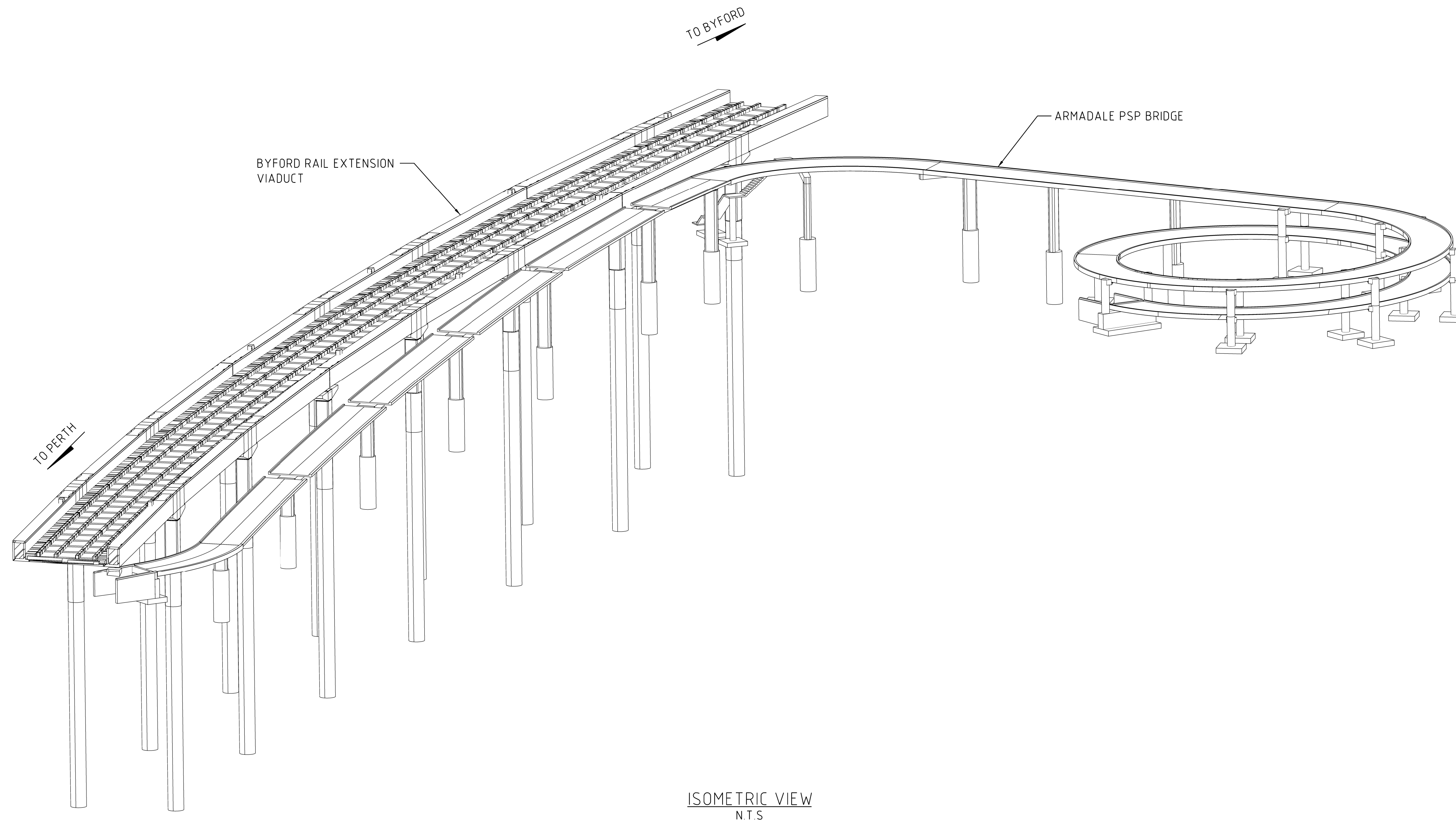


BYFORD RAIL EXTENSION
 ARMADALE PSP BRIDGE
 BR. 9557



LOCALITY PLAN
 N.T.S

ISSUED FOR DA

DETAILED DESIGN

B A No.	ISSUED FOR IDD - PTA REVIEW ISSUED FOR RD - PTA REVIEW	M.R. 15-12-2023 M.R. 29-09-2023	METADATA GROUND SURVEY STANDARD: 67-08-43 DATE OF CAPTURE: 24-02-2021 MAPPING SURVEY STANDARD: 67-08-44 DATE OF CAPTURE: 24-02-2021 MAIN ROADS PROJECT ZONE: PCG2020 HEIGHT DATUM: AHD71	 CONSULTANT DRAWING NUMBER R30-MET-DWG-ST-470-00001	DRAWN: D. SCAMONI DESIGNED: J. IP VERIFIED: T. LOPIDO DIRECTOR: M. RATHBONE	 METRO AND SOUTHERN REGIONS DIRECTORATE METROPOLITAN REGION WATERLOO CRESCENT Telephone 138 138 EAST PERTH 6004 Fax	CLIENT FILE No. RECOMMENDED APPROVED	BYFORD RAIL EXTENSION PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 COVER SHEET AND LOCALITY PLAN LOCAL AUTHORITY: CITY OF ARMADALE, SHIRE OF SERPENTINE - JARRAHDALE MRWA DRAWING NUMBER
	AMENDMENTS							

SCALE: N.T.S
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DRAWING No.	METCONNEX DRAWING No.	REVISION	DRAWING TITLE
	R30-MET-DWG-ST-470-00001	B	PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 COVER SHEET AND LOCALITY PLAN
	R30-MET-DWG-ST-470-00002	B	PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 DRAWING INDEX - SHEET 1
	R30-MET-DWG-ST-470-00003	B	PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 GENERAL NOTES - SHEET 1
	R30-MET-DWG-ST-470-00004	B	PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 GENERAL NOTES - SHEET 2
	R30-MET-DWG-ST-470-00008	B	PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 GENERAL ARRANGEMENT PLAN & ELEVATION
	R30-MET-DWG-ST-470-00015	B	PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 GENERAL ARRANGEMENT SECTIONS - SHEET 1
	R30-MET-DWG-ST-470-00016	B	PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 GENERAL ARRANGEMENT SECTIONS - SHEET 2
	R30-MET-DWG-ST-470-00017	A	PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 GENERAL ARRANGEMENT SECTIONS - SHEET 3
	R30-MET-DWG-ST-470-00021	A	PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 NORTH APPROACH CONSTRUCTION SEQUENCE - SHEET 1
	R30-MET-DWG-ST-470-00022	A	PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 NORTH APPROACH CONSTRUCTION SEQUENCE - SHEET 2
	R30-MET-DWG-ST-470-00031	A	PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 PILE & FOUNDATION LAYOUT PLAN - SHEET 1
	R30-MET-DWG-ST-470-00032	A	PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 PILE & FOUNDATION LAYOUT PLAN - SHEET 2
	R30-MET-DWG-ST-470-00037	A	PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 BORED PILE DETAILS & SCHEDULE
	R30-MET-DWG-ST-470-00040	A	PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 BORED PILE DETAILS
	R30-MET-DWG-ST-470-00051	A	PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 NORTH ABUTMENT CONCRETE DETAILS - SHEET 1
	R30-MET-DWG-ST-470-00055	A	PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 SOUTH ABUTMENT CONCRETE DETAILS - SHEET 1
	R30-MET-DWG-ST-470-00091	A	PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 PAD FOOTING CONCRETE DETAILS - SHEET 1
	R30-MET-DWG-ST-470-00092	A	PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 PAD FOOTING CONCRETE DETAILS - SHEET 2
	R30-MET-DWG-ST-470-00141	A	PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 PRECAST BEAM LAYOUT PLAN
	R30-MET-DWG-ST-470-00142	A	PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 PRECAST BEAM CONCRETE DETAILS - SHEET 1
	R30-MET-DWG-ST-470-00143	A	PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 PRECAST BEAM CONCRETE DETAILS - SHEET 2
	R30-MET-DWG-ST-470-00144	A	PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 PRECAST BEAM CONCRETE DETAILS - SHEET 3
	R30-MET-DWG-ST-470-00145	A	PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 PRECAST BEAM CONCRETE DETAILS - SHEET 4
	R30-MET-DWG-ST-470-00147	A	PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 PRECAST BEAM CONCRETE DETAILS - SHEET 6
	R30-MET-DWG-ST-470-00161	A	PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 PRECAST BEAM REINFORCEMENT DETAILS - SHEET 1
	R30-MET-DWG-ST-470-00162	A	PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 PRECAST BEAM REINFORCEMENT DETAILS - SHEET 2
	R30-MET-DWG-ST-470-00163	A	PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 PRECAST BEAM REINFORCEMENT DETAILS - SHEET 3
	R30-MET-DWG-ST-470-00164	A	PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 PRECAST BEAM REINFORCEMENT DETAILS - SHEET 4
	R30-MET-DWG-ST-470-00165	A	PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 PRECAST BEAM REINFORCEMENT DETAILS - SHEET 5
	R30-MET-DWG-ST-470-00401	A	PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 STAIR CONCRETE DETAILS

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DETAILED DESIGN

<p>B ISSUED FOR IDD - PTA REVIEW A ISSUED FOR RD - PTA REVIEW</p>	<p>M.R. 15-12-2023 M.R. 29-09-2023</p>	<p style="text-align: center;">METADATA</p> <p>GROUND SURVEY STANDARD: 67-08-43 DATE OF CAPTURE: 24-02-2021 MAPPING SURVEY STANDARD: 67-08-44 DATE OF CAPTURE: 24-02-2021 MAIN ROADS PROJECT ZONE: PCG2020 HEIGHT DATUM: AHD71</p>	<p style="font-size: small; text-align: center;">CONSULTANT DRAWING NUMBER R30-MET-DWG-ST-470-00002</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="font-size: x-small;">DRAWN</td><td>D. SCAMONI</td></tr> <tr><td style="font-size: x-small;">DESIGNED</td><td>J. IP</td></tr> <tr><td style="font-size: x-small;">VERIFIED</td><td>T. LOPIDO</td></tr> <tr><td style="font-size: x-small;">DIRECTOR</td><td>M. RATHBONE</td></tr> </table>	DRAWN	D. SCAMONI	DESIGNED	J. IP	VERIFIED	T. LOPIDO	DIRECTOR	M. RATHBONE	<p style="font-size: x-small; text-align: center;">METRO AND SOUTHERN REGIONS DIRECTORATE METROPOLITAN REGION WATERLOO CRESCENT EAST PERTH 6004 Telephone 138 138 Fax</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="font-size: x-small;">CLIENT FILE No.</td><td></td></tr> <tr><td style="font-size: x-small;">RECOMMENDED</td><td></td></tr> <tr><td style="font-size: x-small;">APPROVED</td><td></td></tr> </table>	CLIENT FILE No.		RECOMMENDED		APPROVED		<p style="text-align: center;">BYFORD RAIL EXTENSION</p> <p style="text-align: center;">PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 DRAWING INDEX - SHEET 1</p> <p style="font-size: x-small; text-align: center;">LOCAL AUTHORITY CITY OF ARMADALE, SHIRE OF SERPENTINE - JARRAHDALE MRWA DRAWING NUMBER</p>
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<p style="border: 1px solid black; padding: 2px; display: inline-block;">AMENDMENTS</p>																					

SCALES N.T.S. A-1

GENERAL:

- ALL DIMENSIONS ARE IN MILLIMETRES (mm) AND ALL LEVELS ARE IN METRES (m) U.N.O.
- REDUCED LEVELS ARE RELATED TO AUSTRALIAN HEIGHT DATUM (A.H.D.).
- CO-ORDINATES ARE PCG2020
- STRUCTURAL DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE SPECIFICATION DOCUMENTS.
- DIMENSIONS ON DRAWINGS ARE EXCLUSIVE OF FINISHES.
- DIMENSIONS MUST NOT BE DETERMINED BY SCALING FROM THE DRAWINGS.
- ALL RL'S ARE TO BE FINISHED CONCRETE LEVELS U.N.O.
- ONLY DRAWINGS APPROVED FOR CONSTRUCTION ARE TO BE USED.
- REPORT ANY DISCREPANCIES BETWEEN THE GENERAL NOTES, SPECIFICATION, DRAWINGS AND OBTAIN A DIRECTION FROM THE CONSTRUCTION DIRECTOR OR DELEGATED AUTHORITY.
- ALL DIMENSIONS RELEVANT TO SETTING OUT AND OFF-SITE FABRICATION SHALL BE CONFIRMED AND VERIFIED PRIOR TO COMMENCING WORKS. REPORT ANY DISCREPANCIES AND OBTAIN A DIRECTION FROM THE ENGINEER OR DELEGATED AUTHORITY.
- ALL EXISTING SERVICE LOCATIONS SHALL BE VERIFIED ON SITE.
- PROPRIETARY ITEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.
- NOMINATION OF PROPRIETARY ITEMS DOES NOT INDICATE EXCLUSIVE PREFERENCE BUT INDICATES THE REQUIRED PROPERTIES OF EACH ITEM. SIMILAR ALTERNATIVES HAVING THE REQUIRED PROPERTIES SHALL BE SUBMITTED FOR THE ENGINEER'S APPROVAL. PROPRIETARY ITEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS AND RECOMMENDATIONS.

FOUNDATION PREPARATION:

- REFER TO GEOTECHNICAL FACTUAL REPORT No. TBC
- SOIL PREPARATION FOR FOUNDATIONS SHALL COMPLY WITH PROJECT SPECIFICATION '801 -EXCAVATION & BACKFILL FOR STRUCTURES'.
- PRIOR TO COMMENCING EXCAVATION FOR FOUNDATIONS, A SURVEY OF THE EXISTING GROUND LEVELS SHALL BE CARRIED OUT AND COMPARED WITH THE LEVELS INDICATED ON THE DRAWINGS. ANY DISCREPANCY SHALL BE REPORTED TO THE ENGINEER FOR ASSESSMENT PRIOR TO PROCEEDING WITH THE WORK.
- REMOVE ANY TOPSOIL CONTAINING GRASS ROOTS OR OTHER ORGANIC MATERIAL, RUBBLE, DEBRIS, OR OTHER UNSUITABLE MATERIAL BELOW THE PROPOSED FOUNDATIONS.
- FOOTINGS HAVE BEEN DESIGNED FOR A SAFE WORKING BEARING PRESSURE AS NOTED IN DESIGN INFORMATION SUMMARY IN UNDISTURBED NATURAL SOIL. CARE SHALL BE TAKEN TO AVOID DISTURBING THE MATERIAL BELOW FOUNDATION LEVEL.
- THE BOTTOM OF THE FOUNDATION EXCAVATION SHALL BE COMPACTED TO 96% OF MAXIMUM MODIFIED DRY DENSITY. THE GEOTECHNICAL ENGINEER MAY REQUIRE OVER-EXCAVATION WHERE LOOSE SAND OR FILL IS ENCOUNTERED. UNSUITABLE MATERIAL IN THE FORM OF UNCONTROLLED FILL, LOOSE SOIL OR ORGANIC MATERIAL ENCOUNTERED DURING EXCAVATION SHALL BE REMOVED AND REPLACED WITH COMPACTED SELECTED FILL THAT COMPLIES WITH THE PROJECT SPECIFICATION '801 -EXCAVATION & BACKFILL FOR STRUCTURES'.
- COMPACTION CAN BE TESTED USING A STANDARD PERTH FALLING WEIGHT PENETROMETER IN ACCORDANCE WITH AS1289 CLAUSE 6.3.3. THE PENETROMETER SHALL BE CALIBRATED TO THE SOIL BEING TESTED AT EACH SITE BY USING A LABORATORY REGISTERED WITH THE NATIONAL ASSOCIATION OF TESTING AUTHORITIES TO CARRY OUT THE PENETROMETER CALIBRATION TESTS.
- REMOVE ANY SOFT SOIL AND REPLACE WITH COMPACTED GRANULAR FILL. FILL TO BE PLACED IN LAYERS OF MAXIMUM 300mm THICKNESS AND COMPACTED BY VIBRATING PLATE OR VIBRATING ROLLER TO ACHIEVE THE COMPACTION REQUIRED.
- WHERE EXCAVATION FOR FOUNDATIONS IS AT OR BELOW GROUND WATER LEVEL. THE EXCAVATIONS SHALL BE DEWATERED BY PUMPING OR WELL POINT DEWATERING IN ACCORDANCE WITH PROJECT SPECIFICATION '801 -EXCAVATION & BACKFILL FOR STRUCTURES'.
- IMMEDIATELY AFTER THE FOUNDATION BEARING SURFACE HAS BEEN TRIMMED, COMPACTED AND APPROVED, IT SHALL BE COVERED WITH A 50mm LAYER OF BLINDING CONCRETE.
- KEEP EXCAVATIONS FREE OF WATER AND CONSTRUCT FOOTINGS AND BACKFILL AS SOON AS PRACTICABLE AFTER EXCAVATION AND BLINDING.
- ENSURE EXCAVATIONS ARE STABLE AND PROTECT SURROUNDING INFRASTRUCTURE AND SERVICES FROM ADVERSE EFFECTS OF GROUND WORKS. PROVIDE TEMPORARY RETENTION WORKS AS REQUIRED.
- USE SUITABLE CONSTRUCTION TECHNIQUES AND EQUIPMENT FOR BACKFILLING ADJACENT TO STRUCTURES TO PREVENT OVERSTRESSING AND DAMAGE. BACKFILL AGAINST RETAINING WALLS ONLY AFTER THE SPECIFIED CONCRETE STRENGTH HAS BEEN ATTAINED.

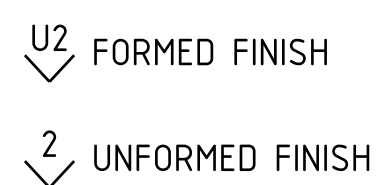
CONCRETE:

- ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS5100 AND AS DESCRIBED IN PROJECT SPECIFICATION '820 - CONCRETE FOR STRUCTURES', EXCEPT AS OTHERWISE SHOWN ON THE DRAWINGS.
- CONCRETE TESTING SHALL BE UNDERTAKEN IN ACCORDANCE WITH PROJECT SPECIFICATION '201 - QUALITY SYSTEMS'.

- EXPOSURE CLASSIFICATION FOR ALL ELEMENTS IS IN ACCORDANCE WITH AS5100-2017. MINIMUM EXPOSURE CLASSIFICATION TO BE B1 IN ACCORDANCE WITH DURABILITY REPORT R30-BRE-RPT-QA-520-000014.
- CONCRETE GRADE AND MINIMUM COVER TO ALL REINFORCEMENT FOR VARIOUS ELEMENTS SHALL BE AS FOLLOWS U.N.O.:

ELEMENT	EXPOSURE CLASSIFICATION	CONCRETE GRADE	COVER	COMMENTS
SUBSTRUCTURE				
PRECAST PIERS	B1	S40	35	-
BORED PILES	B2	S40	90	CAST AGAINST GROUND
PAD FOOTINGS	B1	S40	75	CAST AGAINST GROUND
INSITU PIERS	B1	S40	45	-
ABUTMENT	B1	S40	45	-
SUPERSTRUCTURE				
PRECAST TEE ROFF BEAM (EXPOSED SURFACES)	B1	S65	30	-
PRECAST TEE ROFF BEAM (ELSEWHERE)	A	S65	25	-
PRECAST RC SLAB	B1	S50	40	-
CAST INSITU DECK EXPOSED SURFACES	B1	S40	45	-

- COVER FOR CONCRETE CAST ON GROUND SHALL BE ASSESSED AS FOLLOWS:
 - FOR CONCRETE CAST AGAINST DAMP PROOF MEMBRANE, COVER SHALL BE INCREASED BY 10mm.
 - FOR CONCRETE CAST AGAINST GROUND, COVER SHALL BE INCREASED BY 30mm.
- ADDITIONAL COVER FOR CONCRETE CAST AGAINST GROUND SHALL BE ACHIEVED BY INCREASING THE OVERALL SIZE OF THE ELEMENT AND NOT BY ADJUSTING THE POSITION OF THE REINFORCEMENT WITHIN THE ELEMENT. ADDITIONAL REINFORCEMENT MAY BE REQUIRED IF COVER IS GREATER THAN 100mm. FOR ALL OTHER ELEMENTS SUBMIT TO THE ENGINEER FOR APPROVAL.
- THE SPECIFIED CONCRETE COVERS ARE THE MINIMUM CLEAR COVER TO REINFORCEMENT. TOLERANCE ON STATED MINIMUM COVER +10mm, -0mm U.N.O.
- SERVICES CONDUITS AND PIPES SHALL BE LOCATED IN THE CENTRE OF ELEMENTS WITH 30mm MINIMUM CLEARANCE TO REINFORCEMENT CONDUITS AND PIPES SHALL NOT BE PLACED WITHIN THE CONCRETE COVER ZONE TOLERANCE ON COVER IS +10mm, -0mm UNLESS NOTED OTHERWISE.
- FORMWORK SHALL COMPLY WITH BRE PROJECT SPECIFICATION 821.
- FOR FORMWORK STRIPPING TIME, REFER TO BRE PROJECT SPECIFICATION 821.
- ALL CONCRETE SHALL BE ADEQUATELY VIBRATED USING IMMERSION TYPE VIBRATIONS U.N.O.
- PRECAST ELEMENTS SHALL BE FABRICATED USING RIGID FORMWORK AND INTENSE COMPACTION.
- ALL CAST IN STEEL FITTINGS SHALL BE HOT DIP GALVANISED U.N.O. - ENSURE ISOLATION FROM NON-GALVANISED REINFORCEMENT BY PLASTIC BARRIER OR PVC TAPE THAT IS SUFFICIENT TO PERMANENTLY ISOLATE FITTINGS FROM REINFORCEMENT U.N.O.
- TEMPLATES SHALL BE USED TO ACCURATELY LOCATE AND HOLD IN POSITION ALL CAST-IN ITEMS DURING THE PLACEMENT OF CONCRETE.
- ALL FORMED CONCRETE FINISHES SHALL BE CLASS 2 (U.N.O.) AND ALL UNFORMED CONCRETE FINISHES SHALL BE U2 (U.N.O.) IN ACCORDANCE WITH AS3610 AND THE PROJECT SPECIFICATIONS.
- ABBREVIATIONS USED:



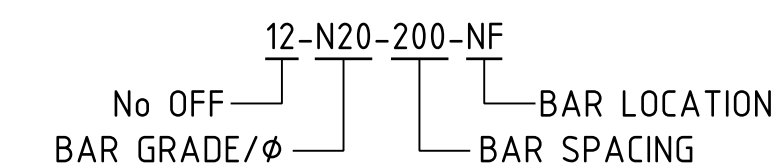
- ALL EXPOSED CONCRETE EDGES AND EDGES TO CRACK CONTROL JOINTS TO HAVE 20mm x 20mm CHAMFERS U.N.O.
- CONCRETE CURING OF EXPOSED CONCRETE SURFACES SHALL COMMENCE AS SOON AS SURFACE FINISHING OPERATIONS ARE COMPLETED WHEN THE CONCRETE HAS HARDENED SUFFICIENTLY TO PREVENT DAMAGE.
- METHODS OF CONCRETE CURING SHALL COMPLY THE PROJECT SPECIFICATIONS.
- CONSTRUCTION JOINTS (CJ) SHALL BE PROPERLY FORMED WHERE DETAILED ON THE DRAWINGS. DO NOT CONSTRUCT UNSPECIFIED CONSTRUCTION JOINTS WITHOUT OBTAINING PRIOR APPROVAL FROM THE ENGINEER.

REINFORCEMENT:

- ALL REINFORCEMENT SHALL CONFORM TO D500N IN ACCORDANCE WITH AS/NZS 4671.
- LAPS ARE GENERALLY SHOWN DIAGRAMMATICALLY THUS IN GENERAL LAPPING BARS SHOULD NOT BE CRANKED UNLESS IT IS NECESSARY TO FIT STEEL INTO PLACE, ACHIEVE GOOD CONCRETE COMPACTION AND MAINTAIN THE CORRECT BAR POSITION AND COVER. OBTAIN APPROVAL FROM THE ENGINEER BEFORE CRANKING BARS.
- UNLESS NOTED OTHERWISE ON THE DRAWINGS, LAP LENGTHS SHALL BE AS SHOWN IN TABLE BELOW:

BAR DIAMETER (D)	LAP LENGTH	
	(HORIZONTAL BARS WITH > 300mm OF CONCRETE CAST BELOW THE BARS)	LAP LENGTH (ALL OTHER BARS)
10mm - 24mm	60 D	45 D
28mm - 32mm	65 D	50 D
36mm - 40mm	70 D	55 D

- WHERE MORE THAN HALF OF THE BARS ARE LAPPED AT ANY ONE LOCATION, THE MINIMUM LAP LENGTHS SHALL BE INCREASED BY 25% IN ACCORDANCE WITH AS5100.5 CLAUSE 13.2.2.
- LAP LENGTHS OF UNEQUAL BARS MAY BE BASED ON THE REQUIREMENTS FOR THE SMALLER BAR DIAMETER.
- ALL STANDARD HOOKS AND COGS NOTED ON THE DRAWINGS SHALL BE TO THE REQUIREMENTS OF AS5100.5 U.N.O.
- REINFORCEMENT SHALL NOT BE BENT, CUT, WELDED OR HEAT TREATED ON SITE UNLESS INDICATED ON THE DRAWINGS AND THEN ONLY IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
- SUPPORT ALL REINFORCEMENT ADEQUATELY AND ACCURATELY TO ENSURE CORRECT BAR POSITIONING DURING CONSTRUCTION AND POURING OF CONCRETE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND NOTES ON THE DRAWINGS.
- CLEAN REINFORCEMENT PRIOR TO PLACING CONCRETE.
- REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY AND NOT NECESSARILY SHOWN IN TRUE PROJECTION.
- REINFORCEMENT INDICATED ON DRAWINGS AS FOLLOWS:



- BAR LOCATION ABBREVIATION:
 - EF EACH FACE
 - NF NEAR FACE
 - FF FAR FACE
 - EW EACH WAY
 - ES EQUALLY SPACED
 - LV LENGTH VARIES
 - T TOP
 - B BOTTOM
 - UNO UNLESS NOTED OTHERWISE
 - ABR ALTERNATE BAR REVERSED
 - DENOTES NEAR FACE AND TOP REINFORCEMENT
 - DENOTES FAR FACE AND BOTTOM REINFORCEMENT
- REINFORCEMENT SHALL BE LOCALLY DISPLACED WHERE NECESSARY TO CLEAR STEEL DOWELS, ANCHOR BOLTS, DRAINAGE PIPES, FORMED HOLES AND RECESSES (WITHOUT DISPLACING IN TO THE COVER ZONE).
- WHERE HELICAL REINFORCEMENT IS SHOWN, THE HELIX SHALL BE ANCHORED AT ITS ENDS BY TWO COMPLETE TURNS OF THE HELIX AT 50mm PITCH. WHERE LAPS ARE REQUIRED, THEY SHALL BE 2 TURNS OF THE HELIX.
- WHERE REINFORCEMENT LAPS ARE REQUIRED BUT NOT SHOWN, STOCK LENGTHS AND STAGGERED LAPS SHALL BE PROVIDED.

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PRECAST CONCRETE ELEMENTS:

- ALL PRECAST CONCRETE ELEMENTS SHALL BE MANUFACTURED, HANDLED AND ERECTED IN ACCORDANCE WITH REQUIREMENTS OF THE PROJECT MRWA SPECIFICATION 828, AS 5100:2017, AS 3850.1:2015 AND ANY ADDITIONAL REQUIREMENTS OF THE SWTC. REFER TO AS 3850.2:2015 AND THE CONCRETE INSTITUTE AUSTRALIA PUBLICATION "PRECAST CONCRETE HANDBOOK" (2009) FOR ADDITIONAL GUIDANCE.
- MANUFACTURE (SHOP) DRAWINGS FOR ALL PRECAST ELEMENTS SHALL BE PREPARED BY THE PRECAST CONTRACTOR FOR APPROVAL BY THE DESIGN ENGINEER PRIOR TO THE COMMENCEMENT OF MANUFACTURING.
- ERECTION DESIGN (DESIGN FOR ALL HANDLING AND ERECTION FORCES, PRIOR TO INCORPORATION INTO THE FINAL STRUCTURE) FOR ALL PRECAST CONCRETE ELEMENTS IS THE RESPONSIBILITY OF THE PRECAST CONTRACTOR. THE PRECAST CONTRACTOR SHALL ENSURE THAT NO CRACKING OR DAMAGE OF THE UNITS OCCURS DURING DEMOULDING, STORAGE, TRANSPORT, LIFTING, HANDLING OR ERECTION.
- MANUFACTURE (SHOP) DRAWINGS SHALL INCLUDE THE LOCATIONS OF ALL TEMPORARY SUPPORTS, AND LIFTING AND PROPPING POINTS AND INSERTS. A QUALIFIED STRUCTURAL ENGINEER SHALL CHECK AND CERTIFY THAT LIFTING INSERT LOCATIONS AND HANDLING PROCEDURES ARE APPROPRIATE FOR THE CONCRETE STRENGTH AT THE TIME OF HANDLING.
- MANUFACTURING TOLERANCES FOR PRECAST ELEMENTS SHALL BE IN ACCORDANCE WITH TABLE 2.5 OF AS 3850.2:2015.
- PRECAST ELEMENTS SHALL BE ADEQUATELY LEVELLED, ALIGNED AND PLUMBED PRIOR TO PERMANENT INCORPORATION INTO THE STRUCTURE. MAXIMUM TOLERANCES TO ERECTED ELEMENTS IS: VARIATION FROM VERTICAL OR SPECIFIED BATTER OF THE LESSER OF 1300 OR +/- 5mm IN FULL HEIGHT
MISPLACEMENT OR ECCENTRICITY OF ELEMENTS CENTRELINE +/- 5mm
VARIATION FROM SPECIFIED LEVEL OF SURFACES +/- 5mm
DEVIATION FROM NOMINAL GAP BETWEEN ADJACENT PRECAST ELEMENTS +10mm, -5mm
HORIZONTAL DEVIATION (BOW) +5mm OVER 3m
OUT OF ALIGNMENT OF ADJACENT VISIBLE NEAR VERTICAL FACES 3mm STEP MAX
DEVIATION IN THE CONTINUITY OF FEATURE GROOVES AND RELIEF BETWEEN ADJACENT PRECAST ELEMENT IS 5mm
- ALL CAST-IN INSERTS AND TIE HOLES SHALL BE FILLED AND PATCHED AFTER FINAL USE IN ACCORDANCE WITH A PROCEDURE APPROVED BY THE DURABILITY CONSULTANT.
- ALL CAST-IN INSERTS SHALL BE HOT DIPPED GALVANISED.
- FOR PRESTRESSING NOTES REFER TO RELEVANT DRAWINGS.

ANTI GRAFFITI COATING:

- ANTI GRAFFITI COATING TO BE APPLIED IN ACCORDANCE WITH PROJECT SPECIFICATION '908 - ANTI GRAFFITI'.
- THE FOLLOWING SURFACES SHALL BE TREATED WITH A NON-SACRIFICIAL ANTI GRAFFITI COATING:
 - ABUTMENTS AND WING WALLS - FULL EXPOSED HEIGHT, EXTEND 300mm BELOW FINISHED GROUND LEVEL.
 - SUPERSTRUCTURE - ANY PART WHICH IS WITHIN 3000mm OF THE FINISHED GROUND LEVEL.
- ANTI GRAFFITI COATINGS ON SMOOTH CONCRETE FINISHES SHALL BE NON-SACRIFICIAL COATINGS AND SHALL BE COLOURED AS PER THE PROJECT SPECIFICATIONS. WHERE ADDITIONAL PAINT SYSTEM IS TO BE APPLIED, IT SHALL BE COMPATIBLE WITH THE ANTI GRAFFITI COATING.
- 'AS CONSTRUCTED' DRAWINGS SHALL SHOW THE EXTENT OF ANTI GRAFFITI COATING.

STRUCTURAL STEELWORK:

- ALL STEELWORK, FABRICATION AND ERECTION SHALL COMPLY WITH AS 5100.6, AS/NZS 5131, AS 4100, AS/NZS 1554 AND PROJECT SPECIFICATION '830 - STRUCTURAL STEELWORK'.
- STEEL SHALL BE THE FOLLOWING GRADE UNLESS INDICATED OTHERWISE:
 - WELDED BEAMS - GRADE 300 TO AS/NZS 3679.2
 - HOT ROLLED SECTIONS - GRADE 300 TO AS/NZS 3679.1
 - HOT ROLLED PLATE - GRADE 300 TO AS/NZS 3678
 - HOLLOW SECTIONS - GRADE L0 TO AS/NZS 1163
 - STEEL FLAT (MERCHANT BAR) - GRADE 300 TO AS/NZS 3679.1
- STEEL MEMBERS SHALL BE MADE FROM WHOLE LENGTHS, BUTT WELDS SHALL NOT BE USED
- ALL WELDS SHALL BE CATEGORY SP (SPECIAL PURPOSE) AS DEFINED IN AS/NZS 1554.1.
- ALL WELDING PROCEDURES AND END PREPARATIONS SHALL BE IN ACCORDANCE WITH AS/NZS 1554.1 AND ANY ADDITIONAL REQUIREMENTS NOTED IN THE SPECIFICATION.
- NOMINAL STRENGTH OF WELD METAL SHALL BE 490MPa IN ACCORDANCE WITH AS/NZS 1554.1.

- WELDS TO BE 6mm CONTINUOUS FILLET WELDS UNLESS NOTED OTHERWISE. BUTT WELDS ARE TO BE COMPLETE PENETRATION BUTT WELDS AS DEFINED IN AS/NZS 1554.
- FREE ALL MEMBERS FROM TWISTS AND DISTORTIONS BEFORE AND AFTER WELDING.
- ALL BOLTS SHALL BE M20 (GRADE 8.8/S) UNLESS NOTED OTHERWISE.
- ALL BOLTS SHALL BE SUPPLIED WITH NUTS AND WASHERS. HIGH STRENGTH GRADE 8.8/S BOLTS, NUTS AND WASHERS SHALL COMPLY WITH AS/NZS 1252. COMMERCIAL GRADE 4.6/S BOLTS, NUTS AND WASHERS SHALL COMPLY WITH AS 1110 & AS 1112.
- UNLESS NOTED OTHERWISE ON THE DRAWINGS ALL BOLTS, NUTS AND WASHERS SHALL BE HOT DIP GALVANISED. TAP NUTS OVERSIZE TO SUIT GALVANISED THREAD AND OIL FOR PROTECTION. INSTALL WASHERS UNDER BOLTS HEAD AND NUT.
- DRILL HOLES FULL SIZE OR REAM TO FULL SIZE AFTER SUB-DRILLING OR SUB-PUNCHING. SUB-DRILLED OR SUB-PUNCHED HOLES TO BE A MINIMUM OF 3mm UNDERSIZE. FLAME CUTTING OF HOLES IS NOT PERMITTED.
- SLOTTED HOLES TO BE 2.5 x BOLT DIAMETER LONG UNO. BOLTS TO BE SET CENTRAL IN SLOT. USE OVERSIZED WASHERS AT SLOTTED HOLES.
- AFTER FABRICATION ALL STEELWORK (EXCEPT STAINLESS STEEL) SHALL BE HOT DIPPED GALVANISED UNO IN ACCORDANCE WITH THE MRWA SPECIFICATION 835 AND THE FOLLOWING NOTES:
 - BOLTS, NUTS AND WASHERS IN ACCORDANCE WITH AS 1214, DRILLED AND TAPPED TO SUIT GALVANISING. AFTER GALVANISING ALL THREAD COMPONENTS SHALL BE ABLE TO BE ASSEMBLED BY HAND. MINIMUM GALVANISING THICKNESS SHALL BE 40µm
 - ALL OTHER STEELWORK IN ACCORDANCE WITH AS/NZ 4680.
- AIR RELEASE HOLES REQUIRED FOR GALVANISING SHALL BE CONCEALED AND SEALED AGAINST THE INGRESS OF WATER WITH SILICON RUBBER JOINT SEALER - "PARCHEM 66" OR SIMILAR APPROVED.
- DAMAGED GALVANISING SHALL BE REPAIRED IN ACCORDANCE WITH PROJECT SPECIFICATION 835.
- PREPARE SHOP DRAWINGS AND SUBMIT TO PROJECTS DESIGN MANAGER FOR GENERAL COMPLIANCE WITH DESIGN.

DESIGN INFORMATION SUMMARY:

- THE PEDESTRIAN BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE FOLLOWING:
 - DESIGN STANDARD: AS 5100-2017
 - DEAD LOADS: AS PER CODE
 - PEDESTRIAN LOADS = 4KPa FOR LOADED AREA > 100m²
= 5KPa FOR LOCAL EFFECTS
 - MAINTENANCE LOAD = M-TRUCK
- SUPERIMPOSED DEAD LOADS:
 - PEDESTRIAN BALUSTRADE/HANDRAIL = 1kN/m
 - PROTECTION SCREEN = 3kN/m
- WIND LOADING:
 - SERVICEABILITY WIND SPEED V20 = 37m/s
 - ULTIMATE WIND SPEED V2000 = 48m/s
- EARTHQUAKE LOADS:
 - PROBABILITY OF EXCEEDANCE = 1/1000
 - ACCELERATION COEFFICIENT, a = 0.09
 - SITE SUB-SOIL CLASS = Class Ce
 - PROBABILITY FACTOR, kp = 1.3
 - DESIGN CATEGORY = BEDC-3
- THERMAL:
 - CONSTRUCTION TEMPERATURE = 20 DEGREES
 - TEMPERATURE RISE = +29 DEGREES
 - TEMPERATURE FALL = -17 DEGREES
 - DIFFERENTIAL TEMPERATURE = BRIDGE TYPE 2 FIGURE 18.3 AS 5100.2
- ROAD COLLISION LOADS ON PIER:
 - 500KN IN ACCORDANCE WITH AS 5100.2:2017, CLAUSE 11.2 IMPACT
 - LOADING: AS PER AS 5100.2-2017
- DIFFERENTIAL SETTLEMENT ALLOWANCE = 20mm BETWEEN ADJACENT SUBSTRUCTURES.
- FOOTING APPLIED BEARING PRESSURES (BASED ON MEYERHOF DISTRIBUTION):

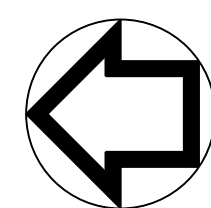
ABUTMENT No. 1	SLS: XXXXmm	ULS: XXXXmm
PIERS 1-9 (AVERAGE)	SLS: XXXXmm	ULS: XXXXmm
PIERS 10-19 (AVERAGE)	SLS: XXXXmm	ULS: XXXXmm
ABUTMENT No. 2	SLS: XXXXmm	ULS: XXXXmm
- AN EXPERIENCED GEOTECHNICAL ENGINEER SHALL INSPECT AND VERIFY BEARING CAPACITY OF FOUNDATIONS PRIOR TO FOOTING CONSTRUCTION.

DETAILED DESIGN

ISSUED FOR DA

B A	ISSUED FOR IDD - PTA REVIEW	M.R. 15-12-2023		METADATA	DRAWN D. SCAMONI			CLIENT FILE No.	BYFORD RAIL EXTENSION PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 GENERAL NOTES - SHEET 2
	ISSUED FOR RD - PTA REVIEW	M.R. 29-09-2023		GROUND SURVEY STANDARD: 67-08-43	DESIGNED J. IP			RECOMMENDED	
No.	DESCRIPTION	APPROVED & DATE	DATE OF CAPTURE: 24-02-2021	MAPPING SURVEY STANDARD: 67-08-44	VERIFIED T. LOPIDO	METRO AND SOUTHERN REGIONS DIRECTORATE METROPOLITAN REGION WATERLOO CRESCENT Telephone 138 138 EAST PERTH 6004 Fax	APPROVED	LOCAL AUTHORITY CITY OF ARMADALE, SHIRE OF SERPENTINE - JARRAHDALE	
AMENDMENTS			DATE OF CAPTURE: 24-02-2021	MAIN ROADS PROJECT ZONE: PCG2020	DIRECTOR M. RATHBONE		MRWA DRAWING NUMBER		
			HEIGHT DATUM: AHD71	CONSULTANT DRAWING NUMBER R30-MET-DWG-ST-470-00004					A 1

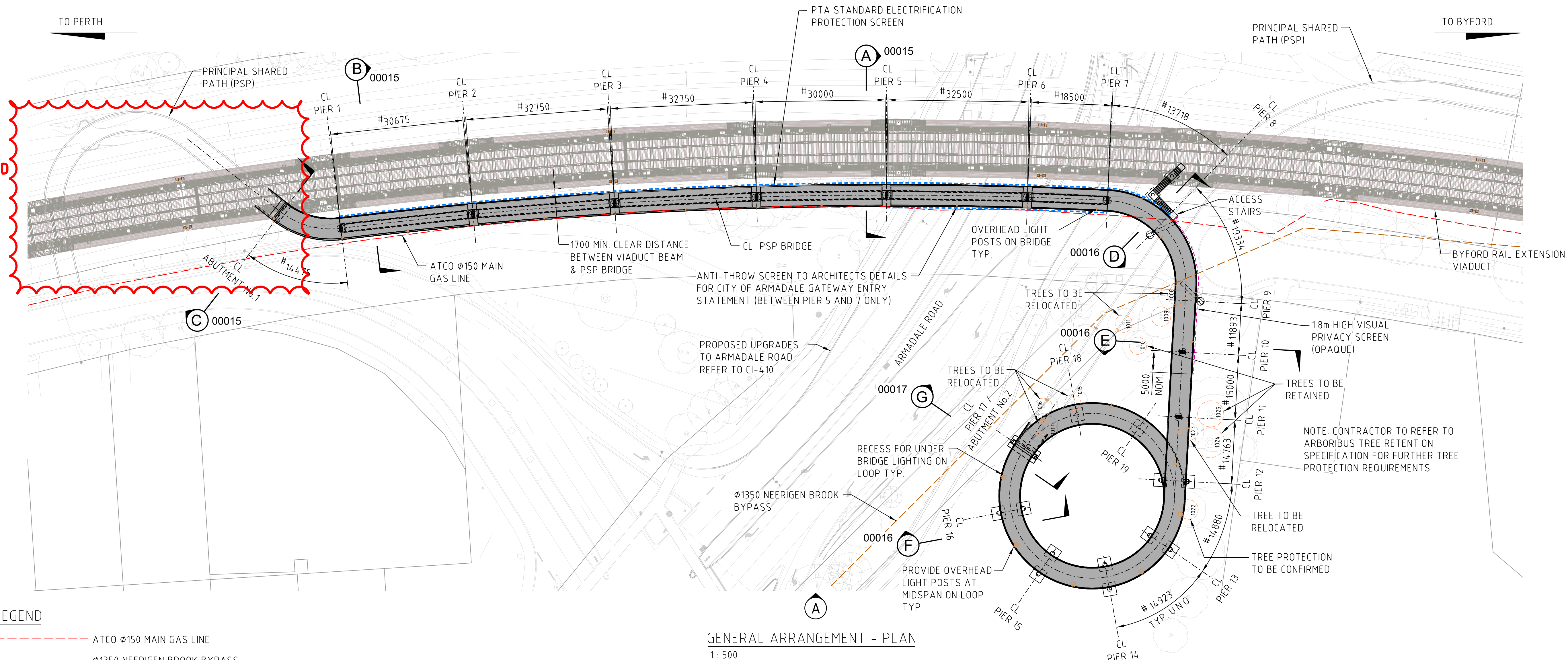
SCALES N.T.S



TO PERTH

TO BYFORD

HOLD



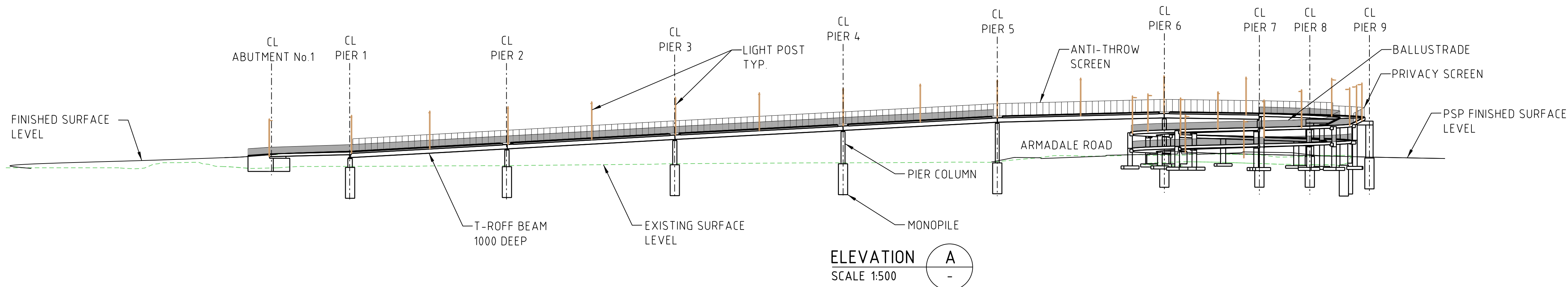
GENERAL ARRANGEMENT - PLAN

1:500

#DENOTES DIMENSIONS TAKEN AT CENTRELINE OF BRIDGE

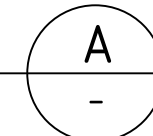
LEGEND

- ATCO ϕ 150 MAIN GAS LINE
- ϕ 1350 NEERIGEN BROOK BYPASS
- 2.4m HIGH ANTI-CLIMB SCREEN
- 18m HIGH VISUAL PRIVACY SCREEN (OPAQUE)
- TREE STRUCTURAL ROOT ZONE



ELEVATION

SCALE 1:500



DETAILED DESIGN

ISSUED FOR DA

B ISSUED FOR IDD - PTA REVIEW		M.R. 15-12-2023	
A ISSUED FOR RD - PTA REVIEW		M.R. 29-09-2023	
No.	DESCRIPTION	APPROVED & DATE	
	AMENDMENTS		

METADATA	
GROUND SURVEY STANDARD:	67-08-43
DATE OF CAPTURE:	24-02-2021
MAPPING SURVEY STANDARD:	67-08-44
DATE OF CAPTURE:	24-02-2021
MAIN ROADS PROJECT ZONE:	PCG2020
HEIGHT DATUM:	AHD71



DRAWN	M. DROBNAK
DESIGNED	J. IP
VERIFIED	T. LOPIDO
DIRECTOR	M. RATHBONE

WESTERN AUSTRALIA

METRO AND SOUTHERN REGIONS DIRECTORATE

METROPOLITAN REGION

WATERLOO CRESCENT
Telephone 138 138

EAST PERTH 6004
Fax

CLIENT FILE No.	
RECOMMENDED	
APPROVED	

BYFORD RAIL EXTENSION

PRINCIPAL SHARED PATH

OVER ARMADALE ROAD BRIDGE NO. 9557

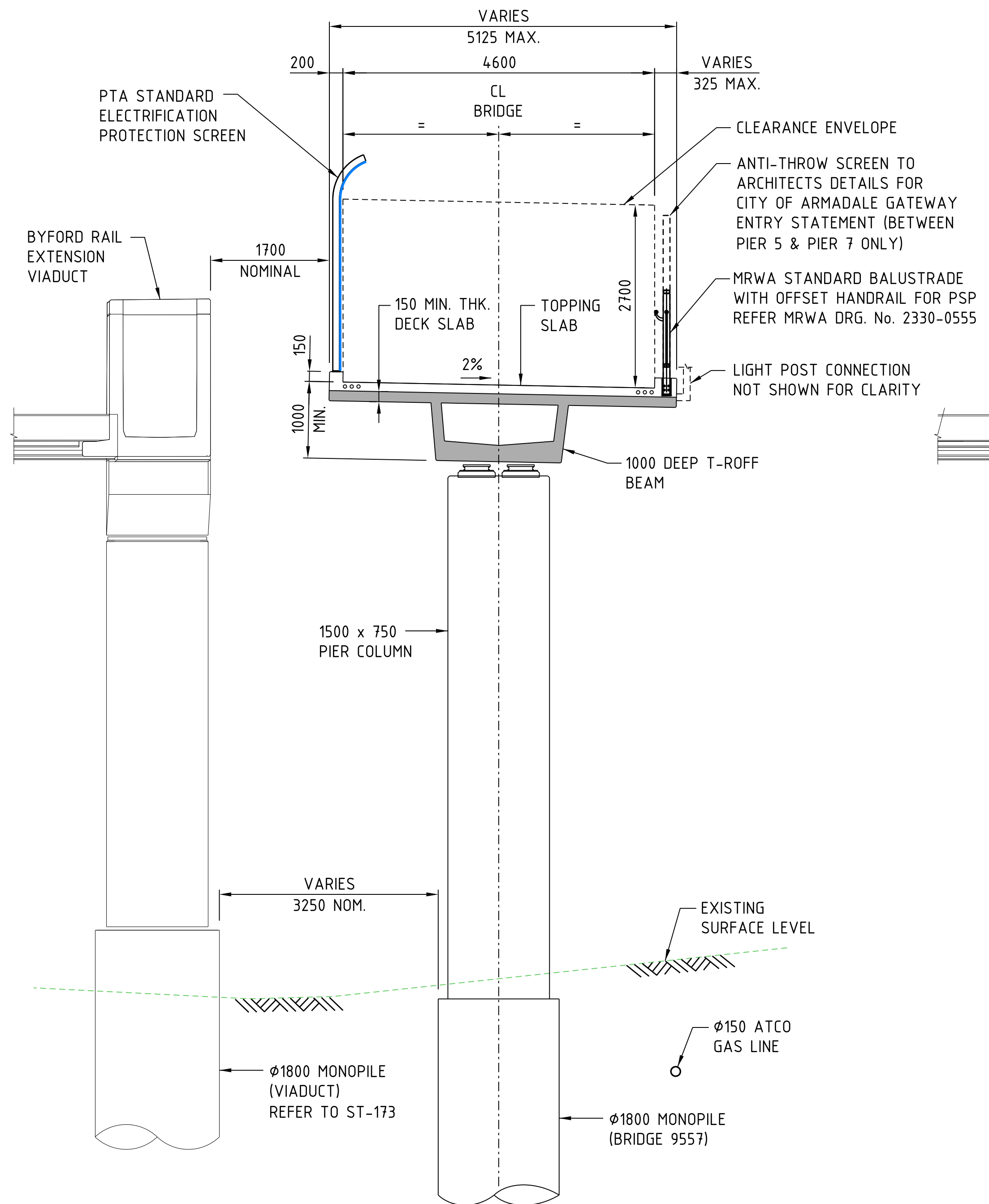
GENERAL ARRANGEMENT PLAN & ELEVATION

LOCAL AUTHORITY CITY OF ARMADALE, SHIRE OF SERPENTINE - JARRHADALE

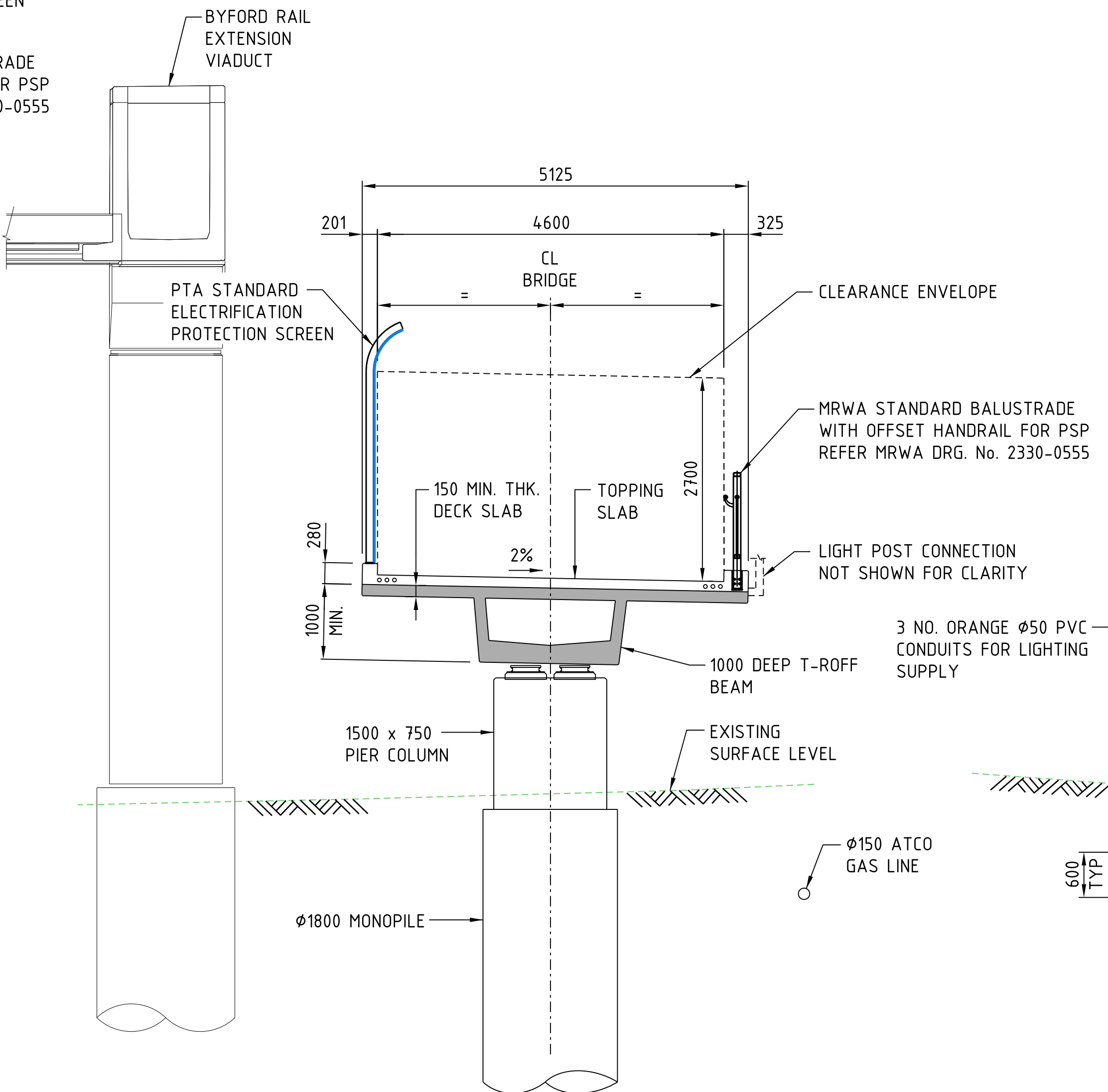
MRWA DRAWING NUMBER

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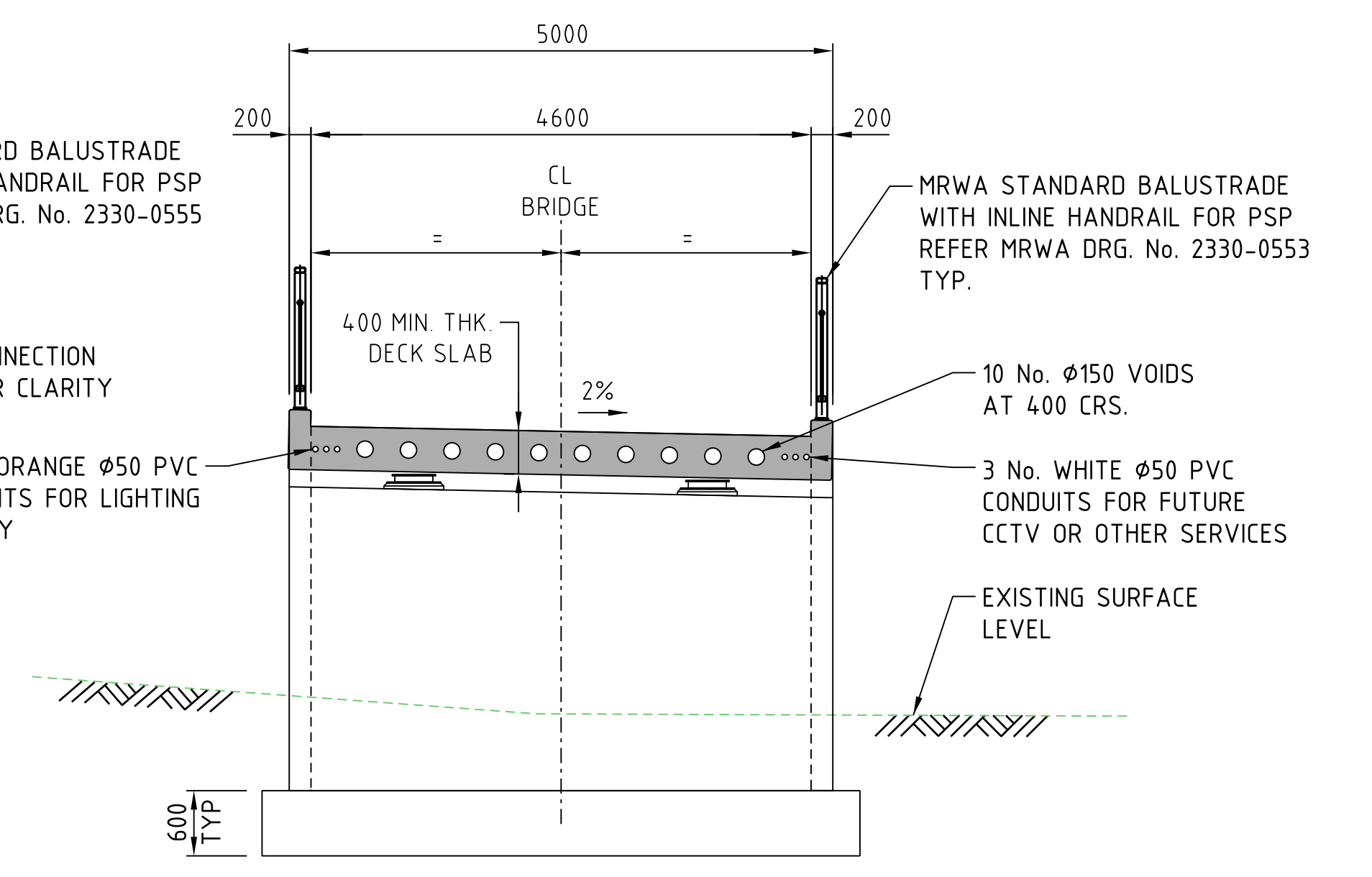
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SECTION A
SCALE 1:50 ST-470-00008



SECTION B
SCALE 1:50 ST-470-00008



SECTION C
SCALE 1:50 ST-470-00008

DETAILED DESIGN

ISSUED FOR DA

No.	DESCRIPTION	APPROVED & DATE
B	ISSUED FOR IDD - PTA REVIEW	M.R. 15-12-2023
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AMENDMENTS		

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MAIN ROADS PROJECT ZONE:	PCG2020
HEIGHT DATUM:	AHD71

CONSULTANT DRAWING NUMBER R30-MET-DWG-ST-470-00015

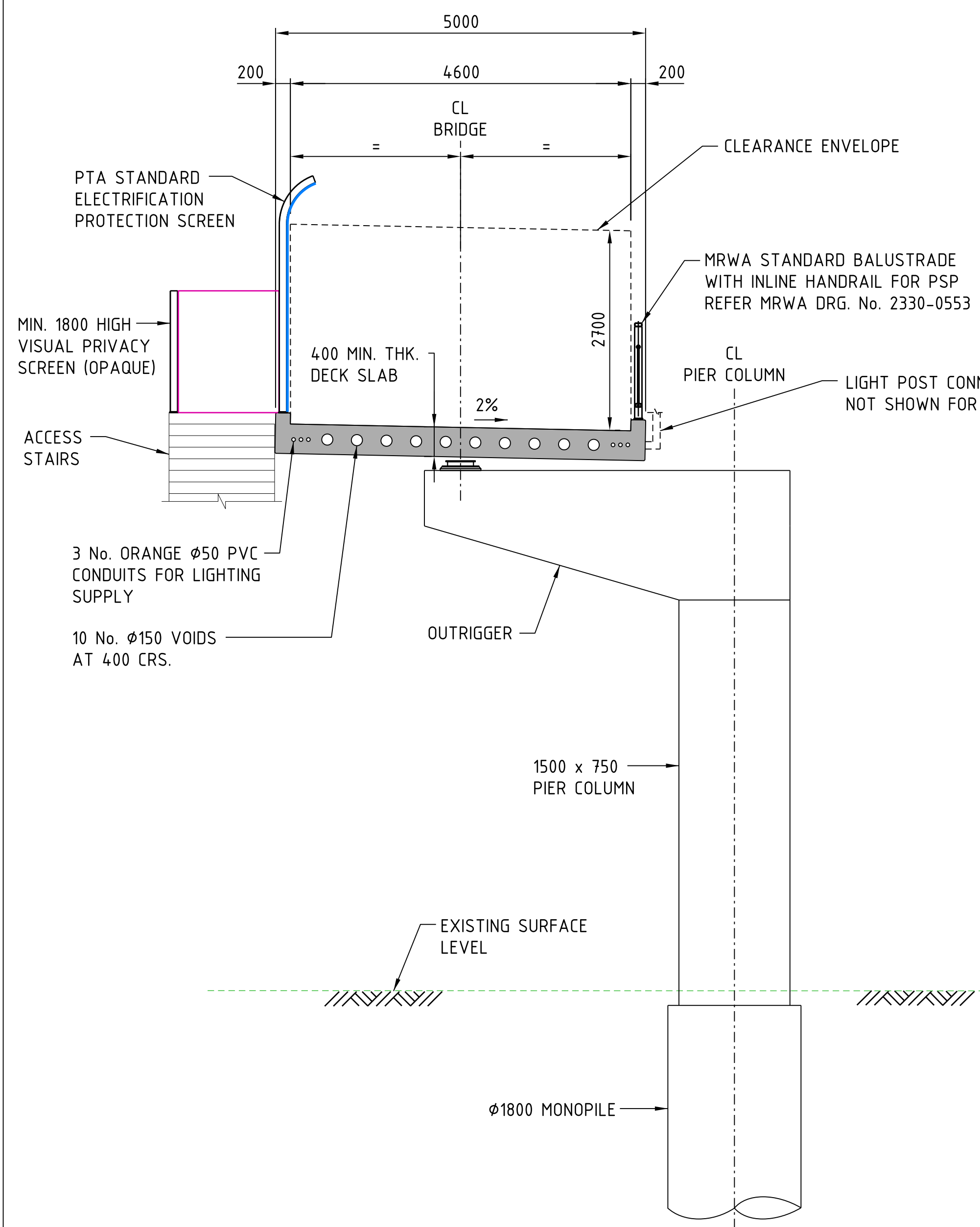
DRAWN	M. DROBNAK
DESIGNED	J. IP
VERIFIED	T. LOPIDO
DIRECTOR	M. RATHBONE

METRO AND SOUTHERN REGIONS DIRECTORATE
METROPOLITAN REGION
WATERLOO CRESCENT
Telephone 138 138
EAST PERTH 6004
Fax

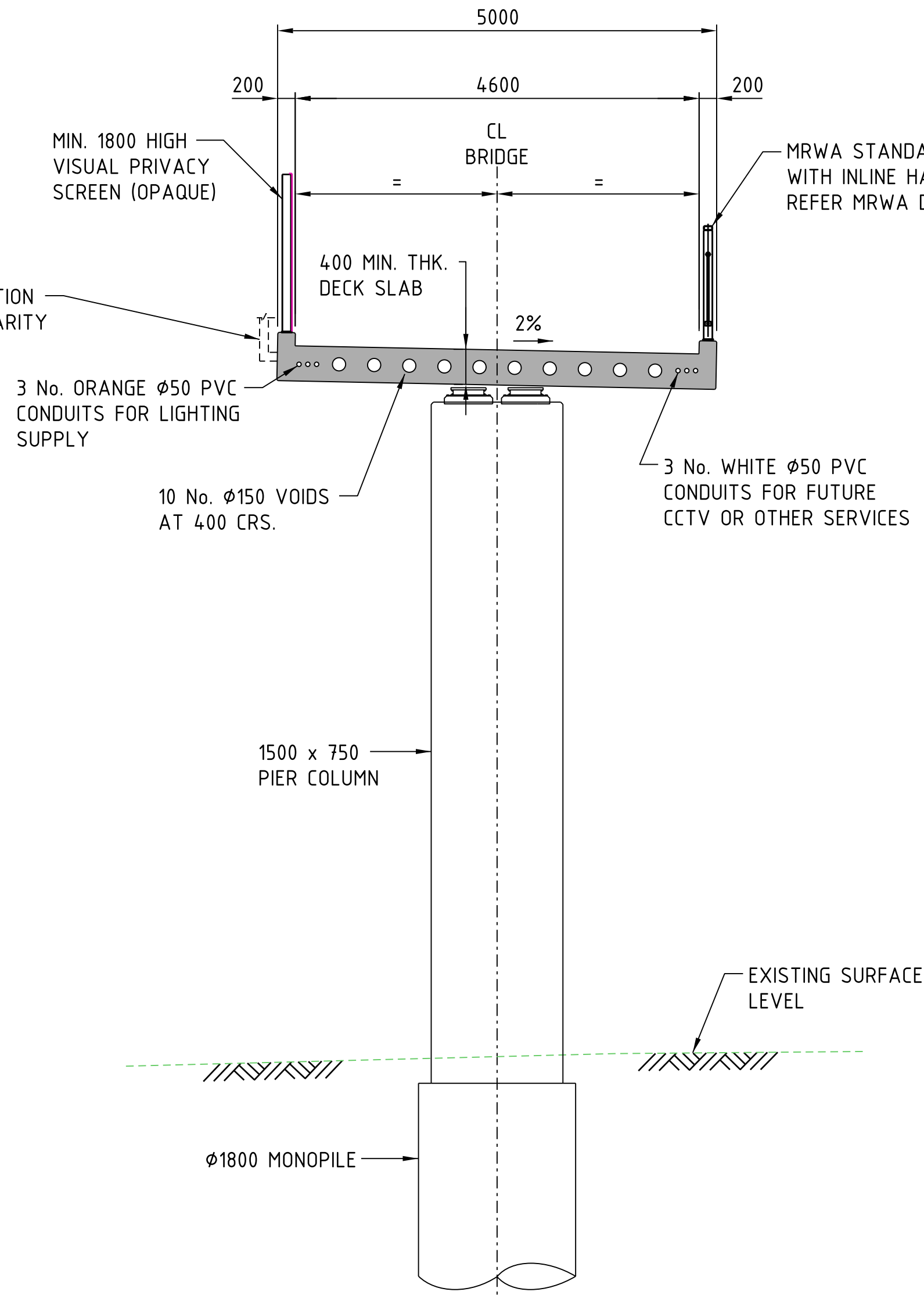
CLIENT FILE No.	
RECOMMENDED	
APPROVED	

BYFORD RAIL EXTENSION
PRINCIPAL SHARED PATH
OVER ARMADALE ROAD BRIDGE NO. 9557
GENERAL ARRANGEMENT SECTIONS - SHEET 1
LOCAL AUTHORITY CITY OF ARMADALE, SHIRE OF SERPENTINE - JARRAHDALE
MRWA DRAWING NUMBER

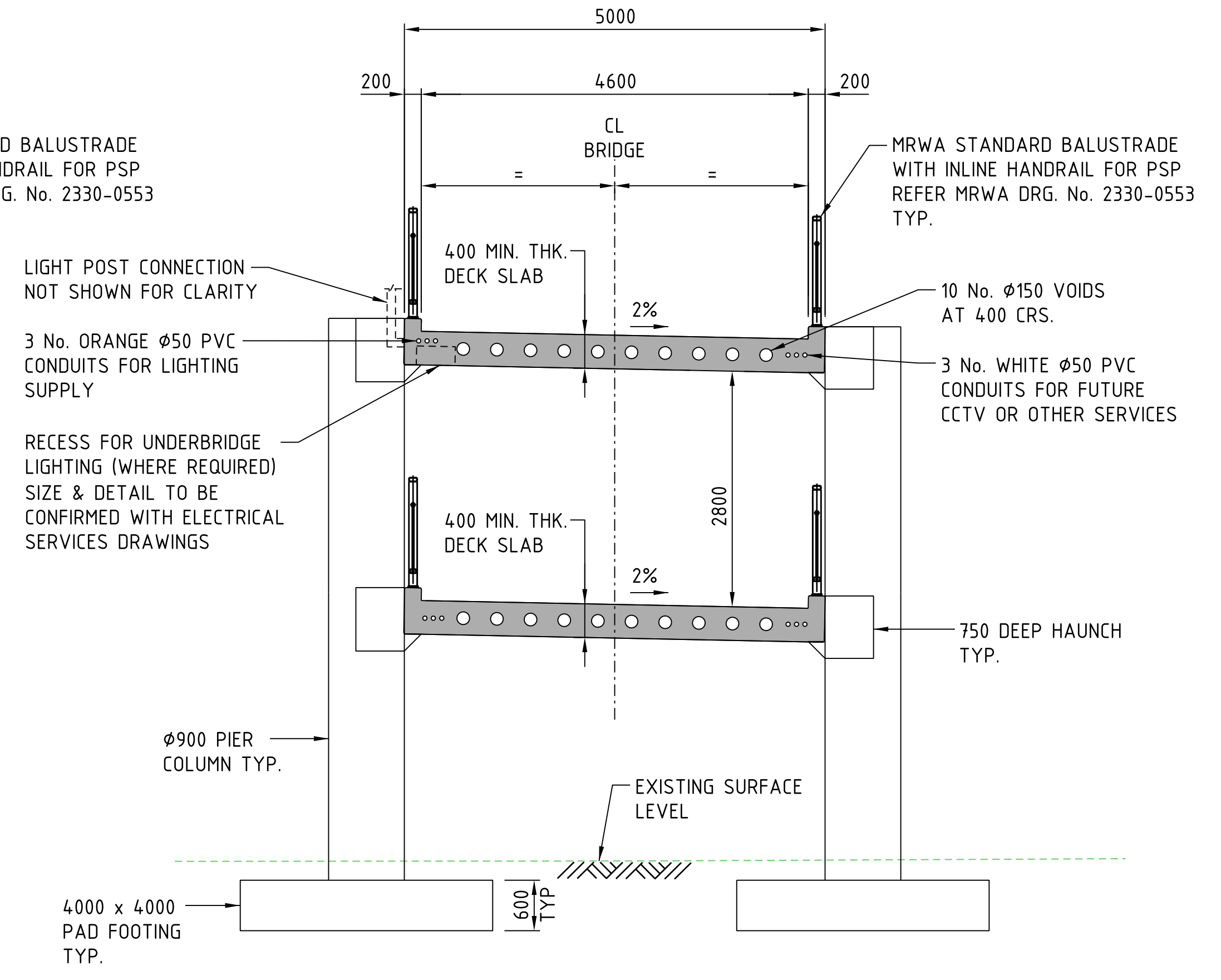
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A 1



SECTION D
SCALE 1:50 ST-470-00008



SECTION E
SCALE 1:50 ST-470-00008



SECTION F
SCALE 1:50 ST-470-00008

ISSUED FOR DA

DETAILED DESIGN

No.	DESCRIPTION	APPROVED & DATE
B	ISSUED FOR IDD - PTA REVIEW	M.R. 15-12-2023
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AMENDMENTS		

METADATA	
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MAPPING SURVEY STANDARD:	67-08-44
DATE OF CAPTURE:	24-02-2021
MAIN ROADS PROJECT ZONE:	PCG2020
HEIGHT DATUM:	AHD71

CONSULTANT DRAWING NUMBER R30-MET-DWG-ST-470-00016

DRAWN	M. DROBNAK
DESIGNED	J. IP
VERIFIED	T. LOPIDO
DIRECTOR	M. RATHBONE

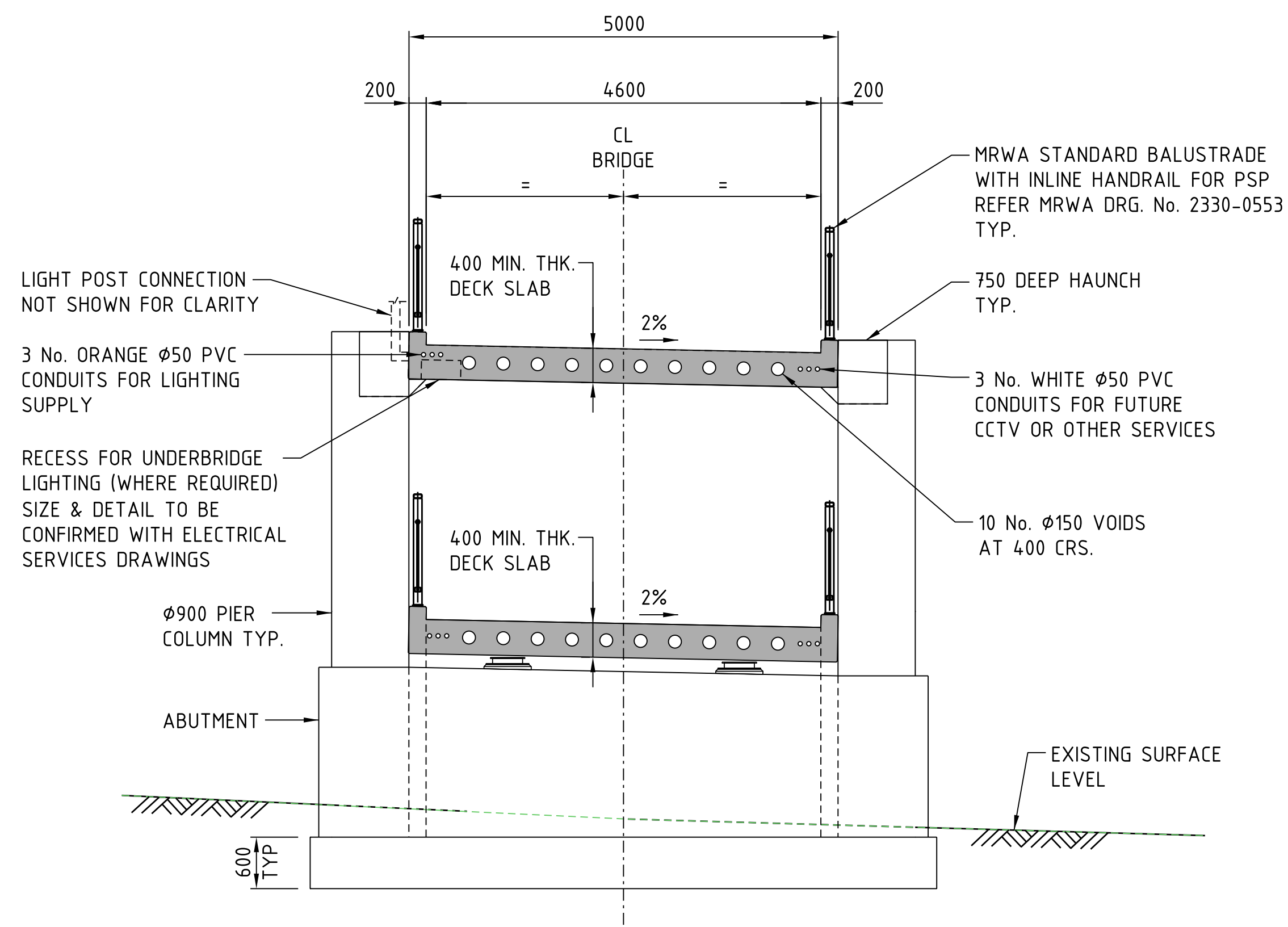
METRO AND SOUTHERN REGIONS DIRECTORATE
METROPOLITAN REGION
WATERLOO CRESCENT EAST PERTH 6004
Telephone 138 138 Fax

CLIENT FILE No.	
RECOMMENDED	
APPROVED	

BYFORD RAIL EXTENSION
PRINCIPAL SHARED PATH
OVER ARMADALE ROAD BRIDGE NO. 9557
GENERAL ARRANGEMENT SECTIONS - SHEET 2

LOCAL AUTHORITY CITY OF ARMADALE, SHIRE OF SERPENTINE - JARRAHDALE
MRWA DRAWING NUMBER

SCALES 1:50 0 0.5m 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5
 A 1



SECTION G
SCALE 1:50 ST 470-00008

ISSUED FOR DA

DETAILED DESIGN

METADATA	
GROUND SURVEY STANDARD:	67-08-43
DATE OF CAPTURE:	24-02-2021
MAPPING SURVEY STANDARD:	67-08-44
DATE OF CAPTURE:	24-02-2021
MAIN ROADS PROJECT ZONE:	PCG2020
HEIGHT DATUM:	AHD71

AMENDMENTS	
No.	DESCRIPTION

CONSULTANT DRAWING NUMBER R30-MET-DWG-ST-470-00017

DRAWN	M. DROBNAK
DESIGNED	J. IP
VERIFIED	T. LOPIDO
DIRECTOR	M. RATHBONE

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CLIENT FILE No.	
RECOMMENDED	
APPROVED	

BYFORD RAIL EXTENSION
PRINCIPAL SHARED PATH
OVER ARMADALE ROAD BRIDGE NO. 9557
GENERAL ARRANGEMENT SECTIONS - SHEET 3

LOCAL AUTHORITY CITY OF ARMADALE, SHIRE OF SERPENTINE - JARRAHDALE
MRWA DRAWING NUMBER

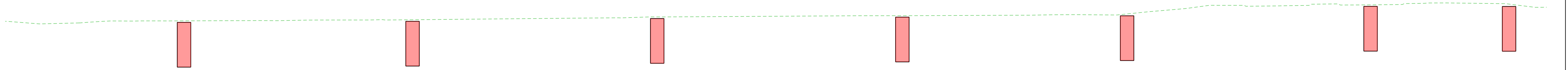
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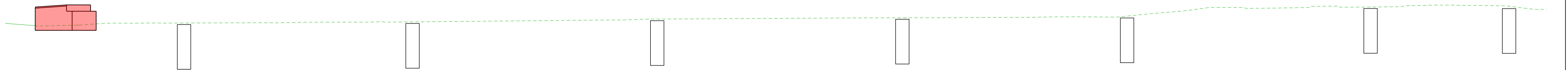
NORTH APPROACH
 ABUTMENT No. 1 TO PIER 7
 CONSTRUCTION SEQUENCE

SCALE: N.T.S

STAGE 1
 1.1 INSTALL PILES



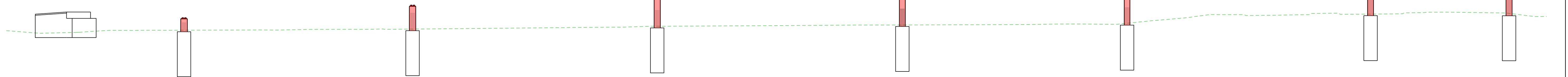
STAGE 2
 2.1 CONSTRUCT ABUTMENT No. 1



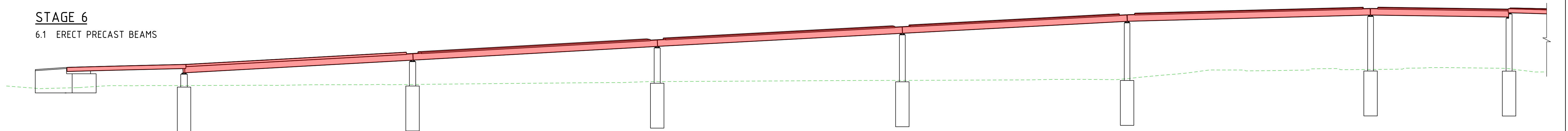
STAGE 3
 3.1 ERECT PRECAST COLUMNS

STAGE 4
 4.1 GROUT COLUMN STARTER BARS

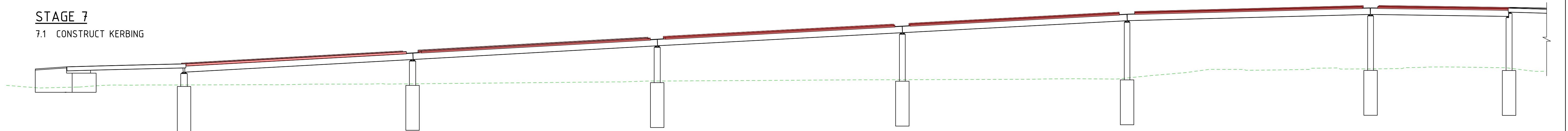
STAGE 5
 5.1 INSTALL BEARINGS



STAGE 6
 6.1 ERECT PRECAST BEAMS



STAGE 7
 7.1 CONSTRUCT KERBING



ISSUED FOR DA

DETAILED DESIGN

A ISSUED FOR IDD - PTA REVIEW		M.R. 15-12-2023
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METADATA	
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MAIN ROADS PROJECT ZONE:	PCG2020
HEIGHT DATUM:	AHD71



MetCONIX

CONSULTANT DRAWING NUMBER R30-MET-DWG-ST-470-00021

DRAWN	D. SCAMONI
DESIGNED	J. IP
VERIFIED	T. LOPIDO
DIRECTOR	M. RATHBONE



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METRO AND SOUTHERN REGIONS DIRECTORATE
 METROPOLITAN REGION

WATERLOO CRESCENT
 Telephone 138 138

EAST PERTH 6004
 Fax

CLIENT FILE No.	
RECOMMENDED	
APPROVED	

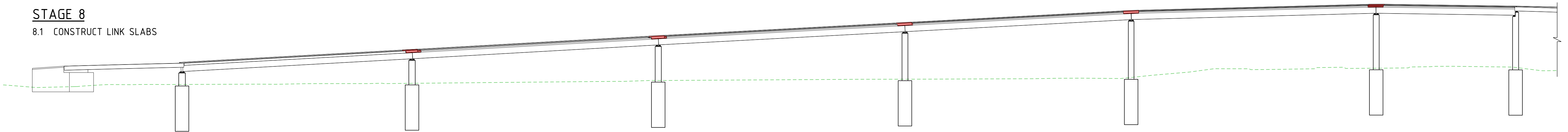
BYFORD RAIL EXTENSION

PRINCIPAL SHARED PATH
 OVER ARMADALE ROAD BRIDGE NO. 9557
 NORTH APPROACH CONSTRUCTION SEQUENCE - SHEET 1

LOCAL AUTHORITY CITY OF ARMADALE, SHIRE OF SERPENTINE - JARRAHDALE
 MRWA DRAWING NUMBER

SCALES
 A 1
 N.T.S

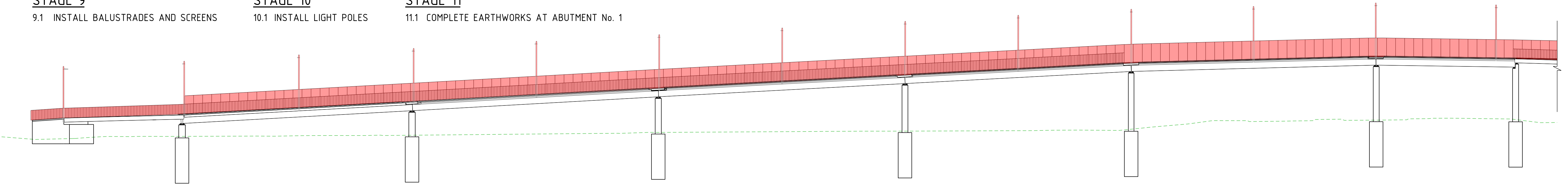
STAGE 8
8.1 CONSTRUCT LINK SLABS



STAGE 9
9.1 INSTALL BALUSTRADES AND SCREENS

STAGE 10
10.1 INSTALL LIGHT POLES

STAGE 11
11.1 COMPLETE EARTHWORKS AT ABUTMENT No. 1

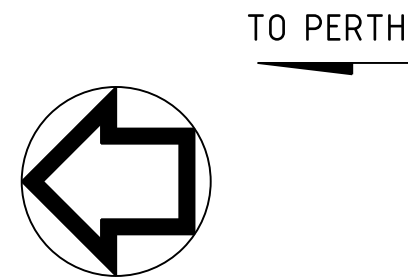


ISSUED FOR DA

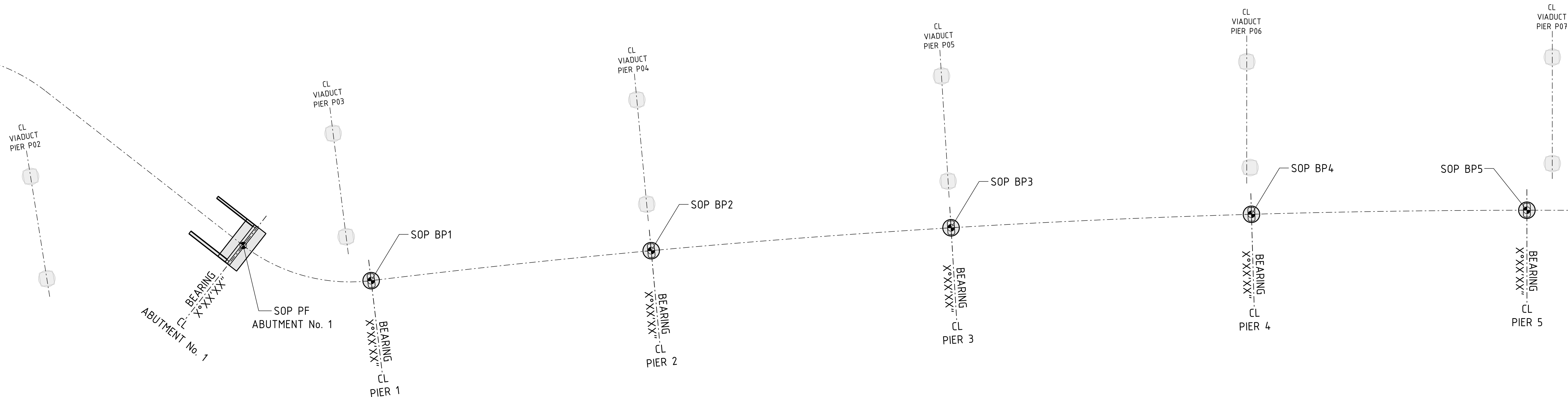
DETAILED DESIGN

<p>AMENDMENTS</p> <table border="1"> <thead> <tr> <th>No.</th> <th>DESCRIPTION</th> <th>APPROVED & DATE</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>ISSUED FOR IDD - PTA REVIEW</td> <td>M.R. 15-12-2023</td> </tr> </tbody> </table>		No.	DESCRIPTION	APPROVED & DATE	A	ISSUED FOR IDD - PTA REVIEW	M.R. 15-12-2023	<p>METADATA</p> <p>GROUND SURVEY STANDARD: 67-08-43 DATE OF CAPTURE: 24-02-2021 MAPPING SURVEY STANDARD: 67-08-44 DATE OF CAPTURE: 24-02-2021 MAIN ROADS PROJECT ZONE: PCG2020 HEIGHT DATUM: AHD71</p>	 <p>CONSULTANT DRAWING NUMBER R30-MET-DWG-ST-470-00022</p>	<table border="1"> <tr> <td>DRAWN</td> <td>D. SCAMONI</td> </tr> <tr> <td>DESIGNED</td> <td>J. IP</td> </tr> <tr> <td>VERIFIED</td> <td>T. LOPIDO</td> </tr> <tr> <td>DIRECTOR</td> <td>M. RATHBONE</td> </tr> </table>	DRAWN	D. SCAMONI	DESIGNED	J. IP	VERIFIED	T. LOPIDO	DIRECTOR	M. RATHBONE	 <p>METRO AND SOUTHERN REGIONS DIRECTORATE METROPOLITAN REGION WATERLOO CRESCENT EAST PERTH 6004 Telephone 138 138 Fax</p>	<table border="1"> <tr> <td>CLIENT FILE No.</td> <td></td> </tr> <tr> <td>RECOMMENDED</td> <td></td> </tr> <tr> <td>APPROVED</td> <td></td> </tr> </table>	CLIENT FILE No.		RECOMMENDED		APPROVED		<p>BYFORD RAIL EXTENSION PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 NORTH APPROACH CONSTRUCTION SEQUENCE - SHEET 2</p> <p>LOCAL AUTHORITY CITY OF ARMADALE, SHIRE OF SERPENTINE - JARRAHDALE MRWA DRAWING NUMBER</p>
No.	DESCRIPTION	APPROVED & DATE																									
A	ISSUED FOR IDD - PTA REVIEW	M.R. 15-12-2023																									
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CLIENT FILE No.																											
RECOMMENDED																											
APPROVED																											

SCALES
A-1
N.T.S



TO BYFORD



FOUNDATIONS LAYOUT PART PLAN
SCALE 1:250

FOR CONTINUATION REFER
DRG. R30-MET-DWG-ST-470-00032

NOTES:

- FOR GENERAL NOTES REFER TO DRG. ST-470-00003 & ST-470-00004

ISSUED FOR DA

DETAILED DESIGN

SCALES 1:250 0 2.5m 5 7.5 10 12.5 15 17.5 20 22.5 25 27.5 30 32.5 35 37.5
A 1

No.	DESCRIPTION	APPROVED & DATE
A	ISSUED FOR IDD - PTA REVIEW	M.R. 15-12-2023
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METADATA	
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HEIGHT DATUM:	AHD71



MetCONIX

CONSULTANT DRAWING NUMBER R30-MET-DWG-ST-470-00031

DRAWN	D. SCAMONI
DESIGNED	J. IP
VERIFIED	T. LOPIDO
DIRECTOR	M. RATHBONE



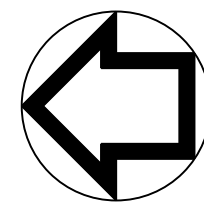
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WESTERN AUSTRALIA

METRO AND SOUTHERN REGIONS DIRECTORATE
METROPOLITAN REGION

WATERLOO CRESCENT EAST PERTH 6004
Telephone 138 138 Fax

CLIENT FILE No.	
RECOMMENDED	
APPROVED	

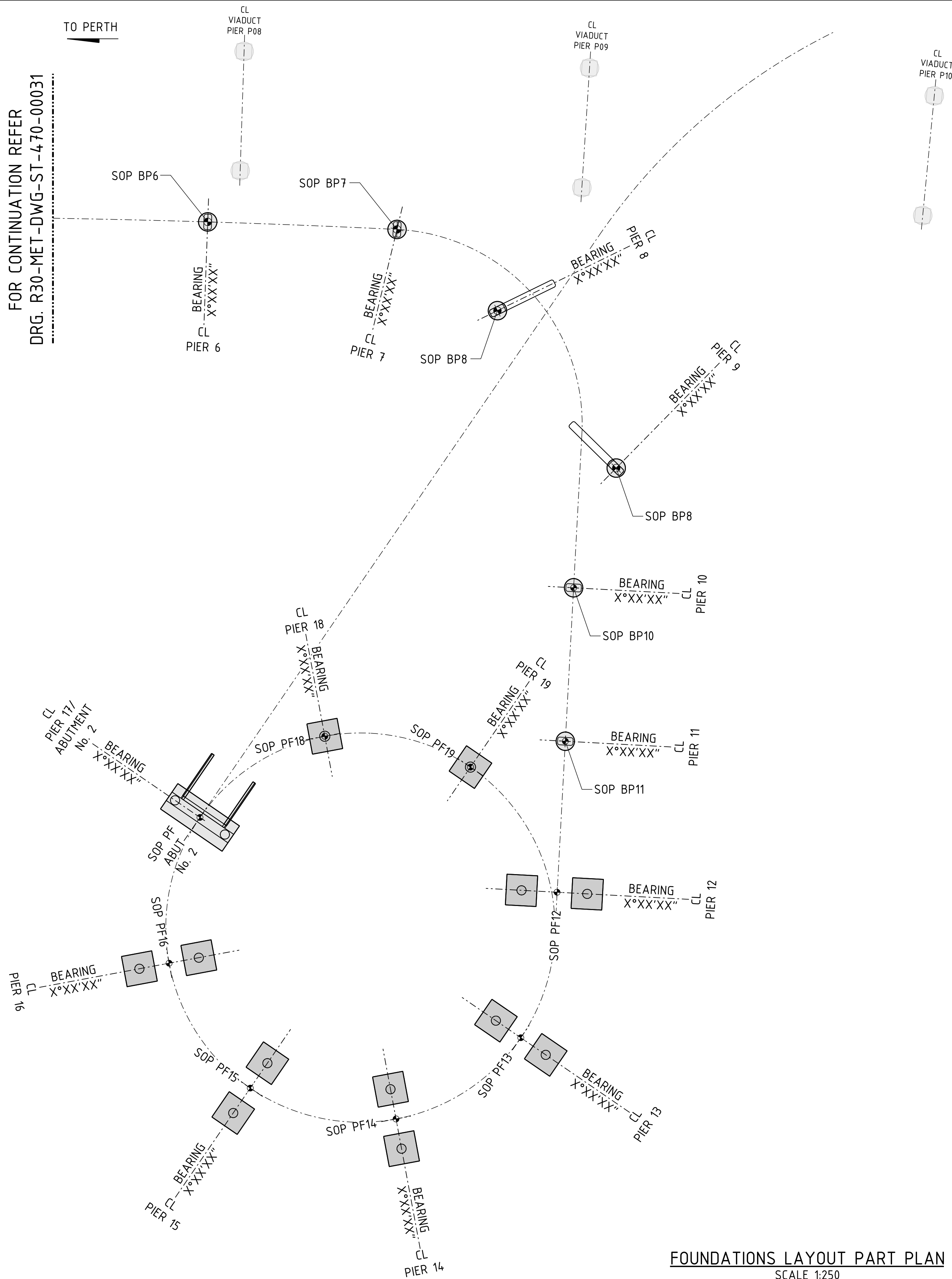
BYFORD RAIL EXTENSION	
PRINCIPAL SHARED PATH	
OVER ARMADALE ROAD BRIDGE NO. 9557	
PILE & FOUNDATION LAYOUT PLAN - SHEET 1	
LOCAL AUTHORITY	CITY OF ARMADALE, SHIRE OF SERPENTINE - JARRAHDALE
MRWA DRAWING NUMBER	



FOR CONTINUATION REFER
DRG. R30-MET-DWG-ST-470-00031

TO PERTH

TO BYFORD



PAD FOOTING SET OUT SCHEDULE					
PIER No.	SOP No.	EASTING (m)	NORTHING (m)	PAD FOOTING TYPE	PIER COLUMN TYPE
P12	SOP PF12	XXXXXX.XX	XXXXXX.XX	PF1	PC2
P13	SOP PF13			PF1	PC2
P14	SOP PF14			PF1	PC2
P15	SOP PF15			PF1	PC2
P16	SOP PF16			PF1	PC2
P17/ ABUTMENT No.2	SOP ABUT No. 2				PC2
P18	SOP PF18			PF2	PC3
P19	SOP PF19			PF2	PC3

FOUNDATIONS LAYOUT PART PLAN
SCALE 1:250

NOTES:

- FOR GENERAL NOTES REFER TO DRG. ST-470-00003 & ST-470-00004

DETAILED DESIGN

ISSUED FOR DA

AMENDMENTS	
No.	DESCRIPTION
A	ISSUED FOR IDD - PTA REVIEW

METADATA	
GROUND SURVEY STANDARD:	67-08-43
DATE OF CAPTURE:	24-02-2021
MAPPING SURVEY STANDARD:	67-08-44
DATE OF CAPTURE:	24-02-2021
MAIN ROADS PROJECT ZONE:	PCG2020
HEIGHT DATUM:	AHD71

CONSULTANT DRAWING NUMBER R30-MET-DWG-ST-470-00032

DRAWN	D. SCAMONI
DESIGNED	J. IP
VERIFIED	T. LOPIDO
DIRECTOR	M. RATHBONE

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Telephone 138 138 Fax

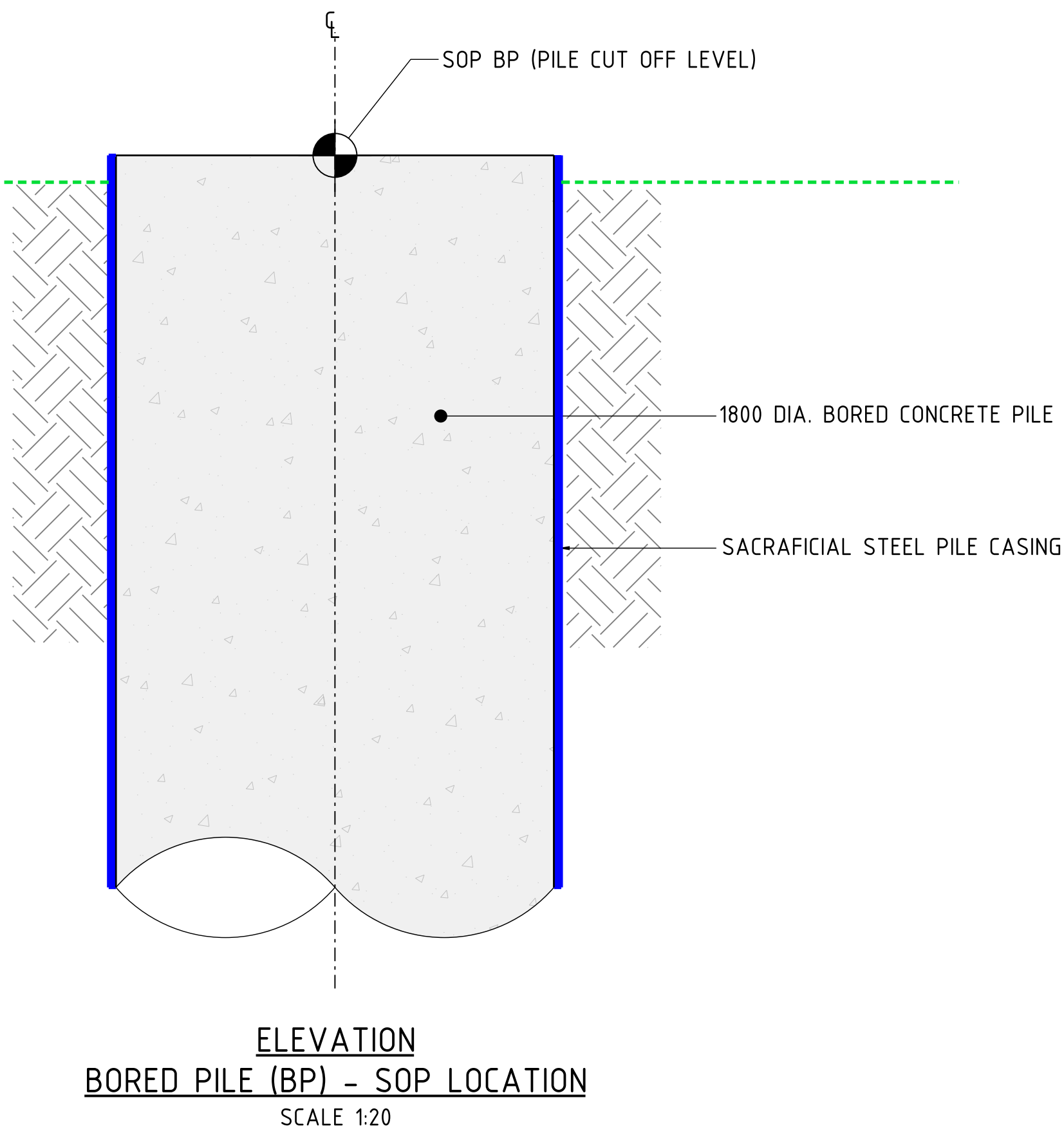
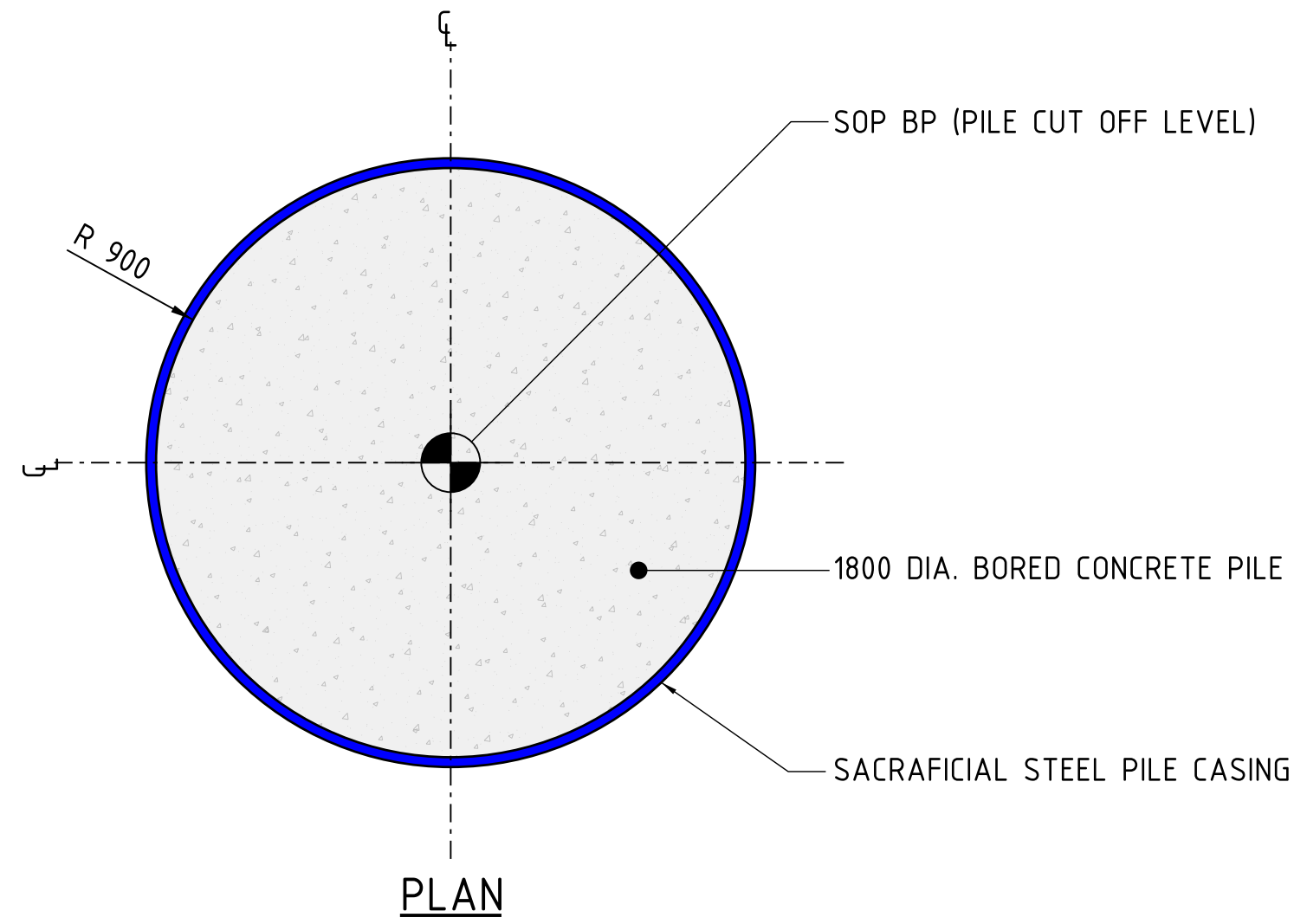
CLIENT FILE No.	
RECOMMENDED	
APPROVED	

BYFORD RAIL EXTENSION
PRINCIPAL SHARED PATH
OVER ARMADALE ROAD BRIDGE NO. 9557
PILE & FOUNDATION LAYOUT PLAN - SHEET 2

LOCAL AUTHORITY CITY OF ARMADALE, SHIRE OF SERPENTINE - JARRAHDALE
MRWA DRAWING NUMBER

SCALES 1:250 0 2.5m 5 7.5 10 12.5 15 17.5 20 22.5 25 27.5 30 32.5 35 37.5

A 1



BORED PILE SET OUT SCHEDULE										
PIER No.	BORED PILE MARK	SOP No.	EASTING (m)	NORTHING (m)	PILE CUT OFF LEVEL RL (m)	PILE TOE LEVEL RL (m)	PILE LENGTH (m)	MAXIMUM PILE DESIGN ACTION (COMPRESSION) Ed (kN)	STEEL CASING LENGTH (m)	PIER COLUMN TYPE
PIER 1	BP1	SOP BP1	XXXXXX.XX	XXXXXX.XX	-	-	-	-	-	TYPE C1
PIER 2	BP2	SOP BP2	XXXXXX.XX	XXXXXX.XX	-	-	-	-	-	
PIER 3	BP3	SOP BP3	XXXXXX.XX	XXXXXX.XX	-	-	-	-	-	
PIER 4	BP4	SOP BP4	XXXXXX.XX	XXXXXX.XX	-	-	-	-	-	
PIER 5	BP5	SOP BP5	XXXXXX.XX	XXXXXX.XX	-	-	-	-	-	
PIER 6	BP6	SOP BP6	XXXXXX.XX	XXXXXX.XX	-	-	-	-	-	
PIER 7	BP7	SOP BP7	XXXXXX.XX	XXXXXX.XX	-	-	-	-	-	
PIER 8	BP8	SOP BP8	XXXXXX.XX	XXXXXX.XX	-	-	-	-	-	
PIER 9	BP9	SOP BP9	XXXXXX.XX	XXXXXX.XX	-	-	-	-	-	
PIER 10	BP10	SOP BP10	XXXXXX.XX	XXXXXX.XX	-	-	-	-	-	
PIER 11	BP11	SOP BP11	XXXXXX.XX	XXXXXX.XX	-	-	-	-	-	

- NOTES:**
- FOR GENERAL NOTES REFER ST-470-00003 AND ST-470-00004.
 - DRAWING TO BE READ IN CONJUNCTION WITH DRGS. ST-470-00031, 00032 & 00040.

DETAILED DESIGN

ISSUED FOR DA

METADATA	
GROUND SURVEY STANDARD:	67-08-43
DATE OF CAPTURE:	24-02-2021
MAPPING SURVEY STANDARD:	67-08-43
DATE OF CAPTURE:	24-02-2021
MAIN ROADS PROJECT ZONE:	PCG2020
HEIGHT DATUM:	AHD71

ISSUED FOR DA	M.R. 15-12-2023
No.	DESCRIPTION
AMENDMENTS	

MetCONIX

CONSULTANT DRAWING NUMBER R30-MET-DWG-ST-470-00037

DRAWN	D. SCAMONI
DESIGNED	J. IP
VERIFIED	T. LOPIDO
DIRECTOR	M. RATHBONE

mainroads
WESTERN AUSTRALIA

METRO AND SOUTHERN REGIONS DIRECTORATE
METROPOLITAN REGION

WATERLOO CRESCENT
Telephone 138 138

EAST PERTH 6004
Fax

CLIENT FILE No.	
RECOMMENDED	
APPROVED	

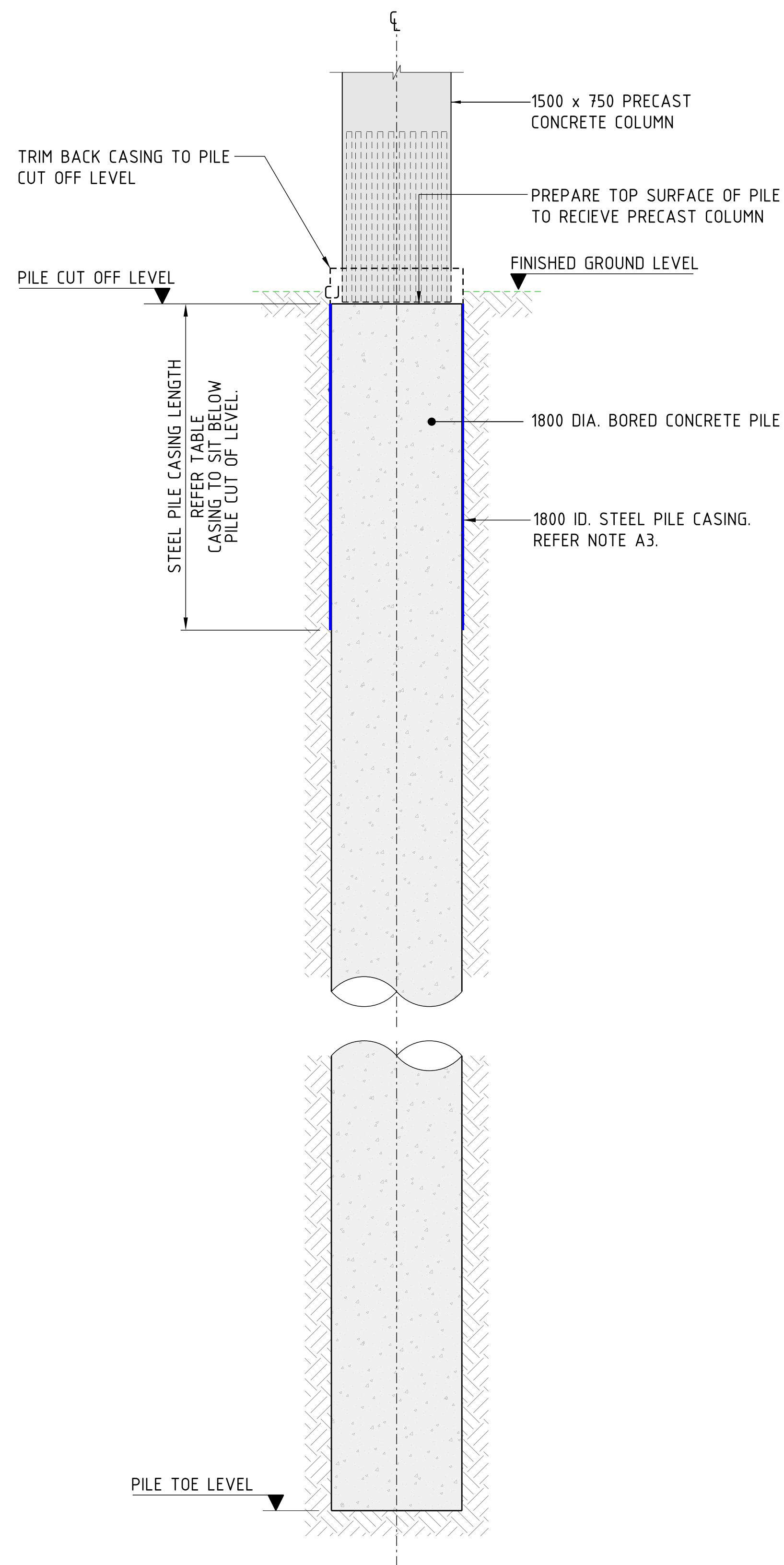
BYFORD RAIL EXTENSION

PRINCIPAL SHARED PATH
OVER ARMADALE ROAD BRIDGE NO. 9557
BORED PILE DETAILS & SCHEDULE

LOCAL AUTHORITY CITY OF ARMADALE, SHIRE OF SERPENTINE - JARRAHDAL
MRWA DRAWING NUMBER

SCALE 1:20 0 0.2m 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.2 2.4 2.6 2.8 3.0

A
1



TYPICAL SECTION THROUGH BORED CONCRETE PILE
SCALE 1:50

NOTES:

A. GENERAL

- A1. FOR GENERAL NOTES REFER ST-470-00003 AND ST-470-00004.
- A2. FOR PILE LAYOUT REFER DRGS ST-470-00031 AND ST-470-00032 .
- A3. PILING SHALL BE UNDERTAKEN IN ACCORDANCE WITH PROJECT SPECIFICATION R30-MET-SPC-ST-000-00812. PILE CASINGS SHALL BE INSTALLED TO REQUIRED CASING TOE LEVELS. DO NOT AUGER PILES PRIOR TO INSTALLATION OF CASING. WHERE THE REQUIRED CASING LEVELS CANNOT BE ACHIEVED, DETAILS SHALL BE PROVIDED TO THE GEOTECHNICAL ENGINEER FOR GEOTECHNICAL ASSESSMENT AND APPROVAL.
- A4. THE BOREHOLE SHALL BE FILLED WITH DRILLING FLUID TO A MINIMUM OF 2m ABOVE GROUNDWATER LEVEL TO SUFFICIENTLY STABILISE THE BOREHOLE.
- A5. CASING INSTALLATION RECORDS SHALL BE RECORDED FOR ALL PILES AND MADE AVAILABLE TO THE SUPERINTENDENT DURING AND ON COMPLETION OF PILE INSTALLATION.
- A6. THE REQUIRED DESIGN ULTIMATE GEOTECHNICAL STRENGTH (Rd,ug) IS NOT LESS THAN Ed/φg
- A7. φg IS THE REQUIRED GEOTECHNICAL STRENGTH REDUCTION FACTOR WHICH IS ASSUMED BY THE DESIGN. REFER TO THE SPECIFICATION FOR PILE INSTALLATION. PILES HAVE BEEN DESIGNED USING A STRENGTH REDUCTION FACTOR φg = 0.66.
- A8. REFER TO THE SPECIFICATION FOR PILE TOLERANCE REQUIREMENTS.
- A9. LOW STRAIN INTEGRITY TESTING SHALL BE UNDERTAKEN ON ALL PILES. INTEGRITY TESTING USING EITHER THERMAL INTEGRITY PROFILING OR SONIC LOGGING SHALL BE CARRIED OUT ON TWO PILES.

IB. INSTALLATION

- B1. PROFESSIONALLY QUALIFIED INDEPENDENT GEOTECHNICAL ENGINEER ENGAGED BY THE CONTRACTOR TO LOG DRILLING RETURNS DURING PILE INSTALLATION.
- B2. IT IS THE CONTRACTORS RESPONSIBILITY TO ENSURE ADEQUATE CONCRETE QUALITY UP TO PILE CUT-OFF LEVEL. ANY RECTIFICATION WORKS IN RELATION TO NON-COMPLIANCE OF CONCRETE SHALL BE ENTIRELY BORNE BY THE CONTRACTOR.

C. ASSUMED CONSTRUCTION SEQUENCE

- C1. INSTALL 1800 INTERNAL DIAMETER STEEL PILE CASING.
- C2. BORE DOWN TO PILE TOE LEVEL. DRILLING SUPPORT FLUID SHALL BE PROVIDED FOR ALL PILE BORING BELOW CASING TOE LEVEL. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING STABILITY OF PILE SHAFT DURING PILE BORING.
- C3. PILING WILL BE OBSERVED BY A QUALIFIED GEOTECHNICAL ENGINEER ENGAGED ON THE PROJECT TO CONFIRM THAT PILING IS CARRIED OUT IN ACCORDANCE WITH SPECIFICATION R30-MET-SPC-ST-000-00812 AND THAT THE GROUND CONDITIONS ENCOUNTERED ARE CONSISTENT WITH THOSE ASSUMED FOR THE PILE DESIGN.
- C4. INSTALL REINFORCEMENT CAGE.
- C5. PLACE CONCRETE BY SOLID TREMIE. MEASURES SHALL BE TAKEN TO REDUCE THE RISK OF SEGREGATION. CONCRETE TO BE OVERPOURED TO ENSURE SOUND CONCRETE IS PROVIDED AT CUT OFF LEVEL AND BELOW.
- C6. PILE CONCRETE AND CASING TO BE TRIMMED DOWN TO PILE CUT OFF LEVEL.
- C7. CONDUCT PILE TESTING AS PER PROJECT SPECIFICATION R30-MET-SPC-ST-000-00812.

DETAILED DESIGN

ISSUED FOR DA

METADATA	
GROUND SURVEY STANDARD:	67-08-43
DATE OF CAPTURE:	24-02-2021
MAPPING SURVEY STANDARD:	67-08-43
DATE OF CAPTURE:	24-02-2021
MAIN ROADS PROJECT ZONE:	PCG2020
HEIGHT DATUM:	AHD71

METADATA	
GROUND SURVEY STANDARD:	67-08-43
DATE OF CAPTURE:	24-02-2021
MAPPING SURVEY STANDARD:	67-08-43
DATE OF CAPTURE:	24-02-2021
MAIN ROADS PROJECT ZONE:	PCG2020
HEIGHT DATUM:	AHD71

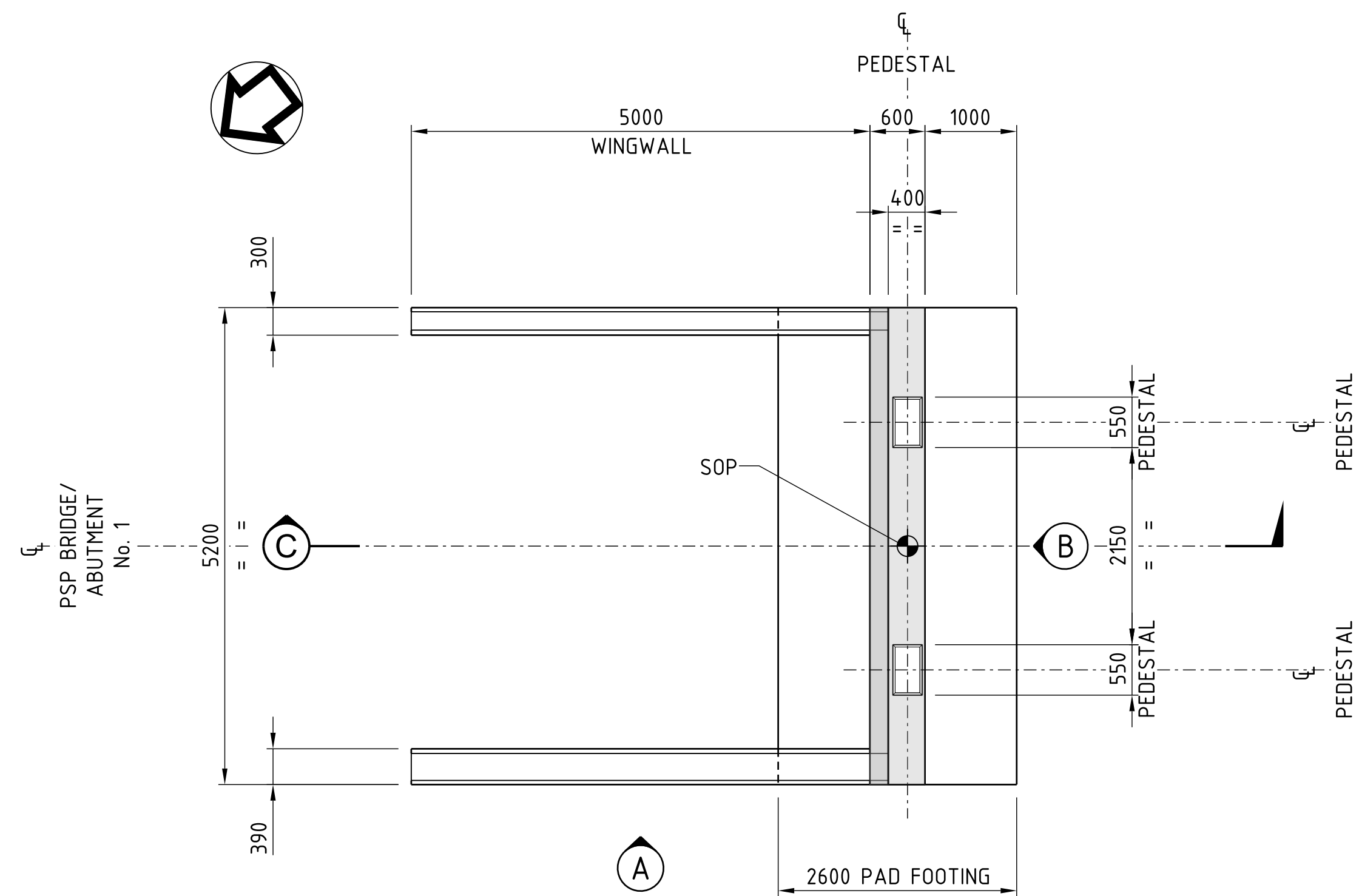
DRAWN	D. SCAMONI
DESIGNED	J. IP
VERIFIED	T. LOPIDO
DIRECTOR	M. RATHBONE

CLIENT FILE No.	
RECOMMENDED	
APPROVED	

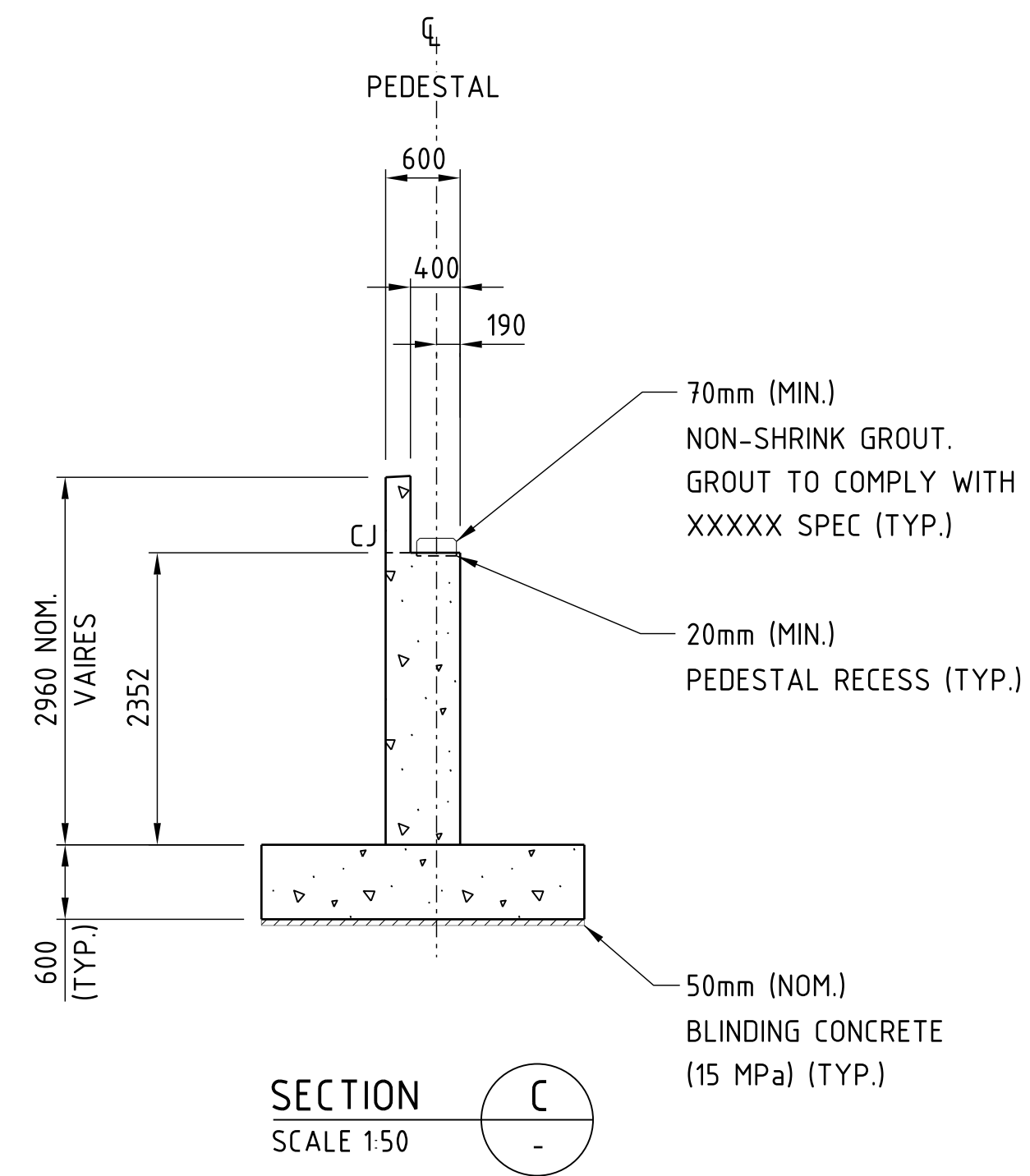
BYFORD RAIL EXTENSION	
PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 BORED PILE DETAILS	
LOCAL AUTHORITY	CITY OF ARMADALE, SHIRE OF SERPENTINE - JARRAHDALE
MRWA DRAWING NUMBER	

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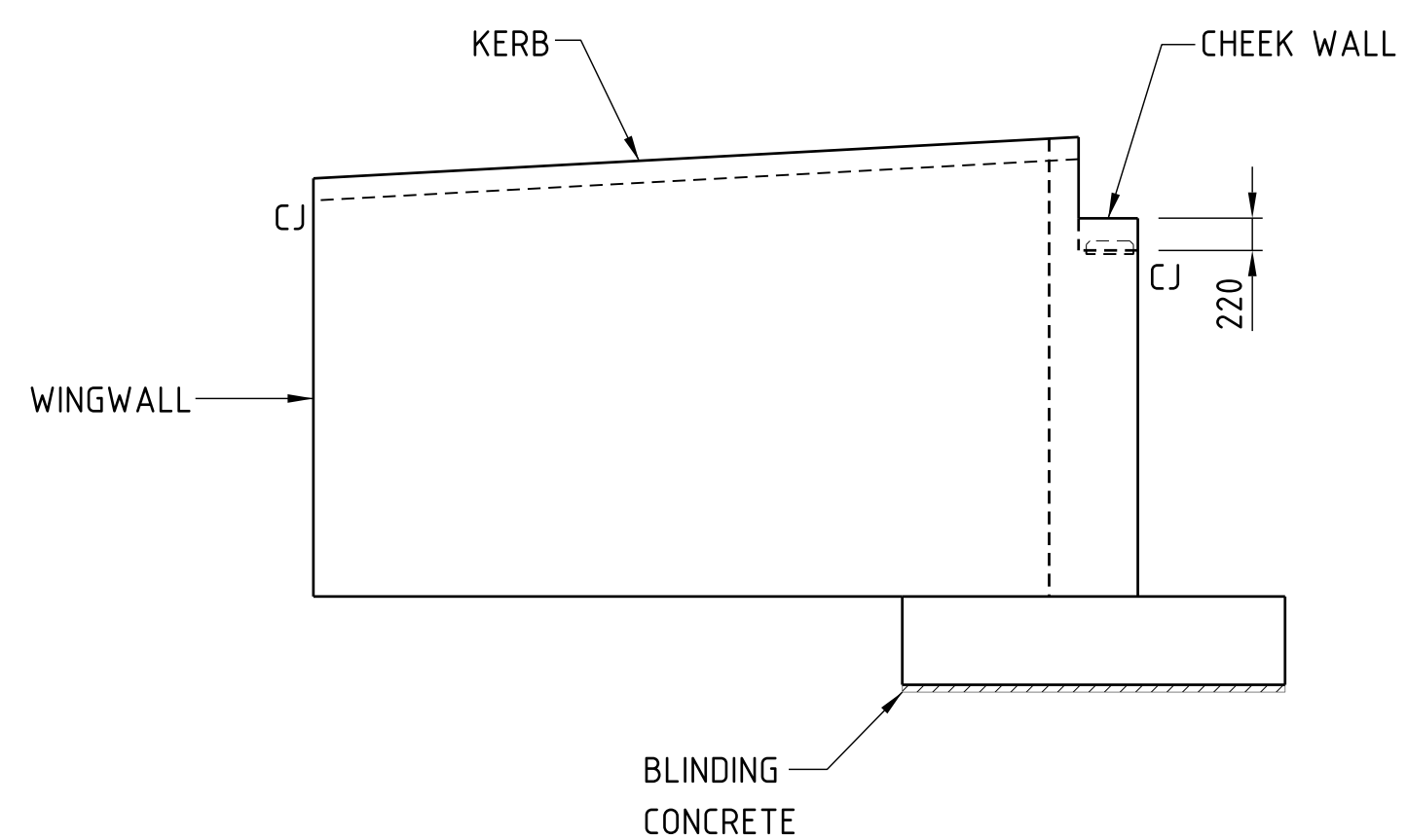
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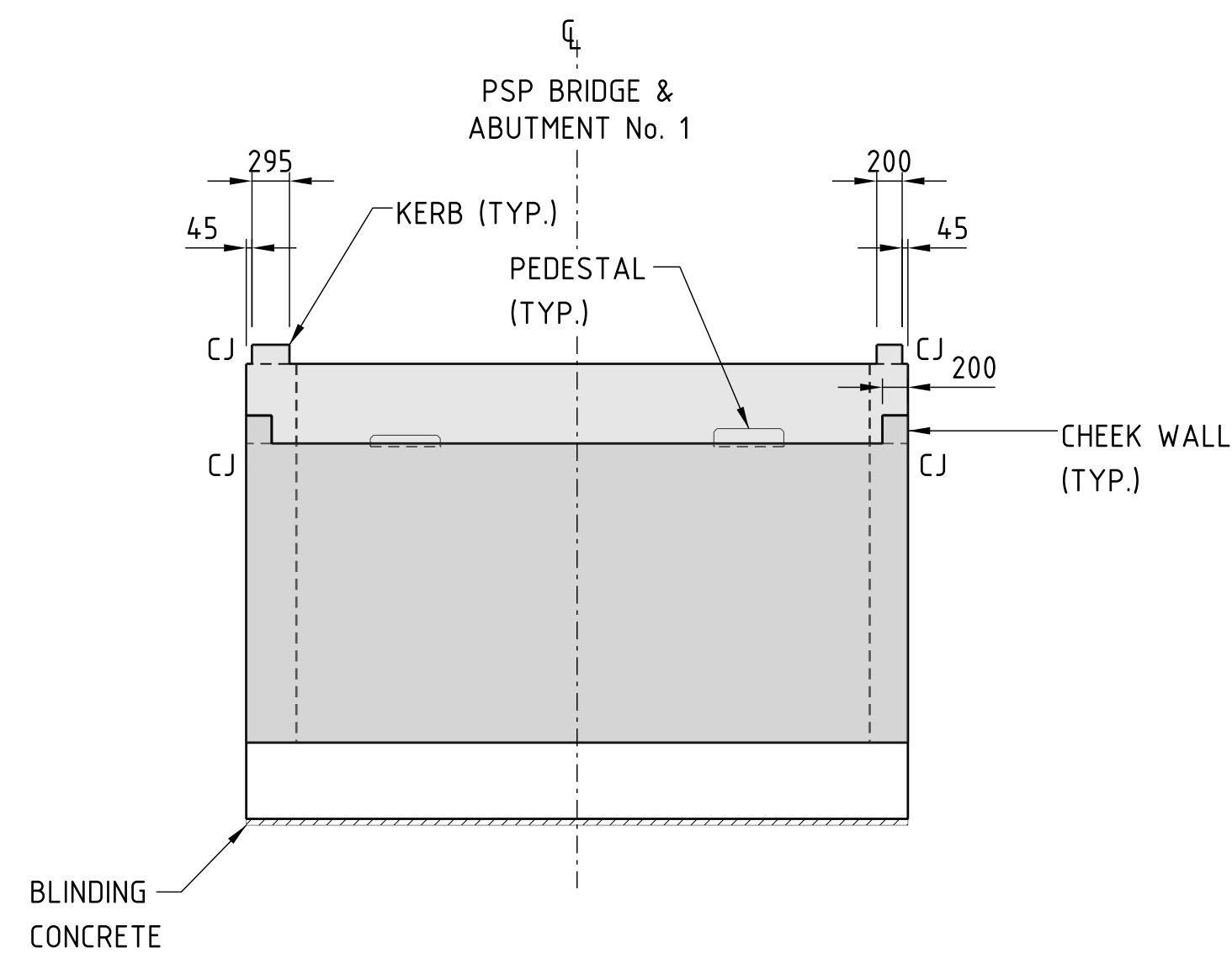
ABUTMENT No. 1 - PLAN
SCALE 1:50



SECTION C -
SCALE 1:50



VIEW A -
SCALE 1:50



VIEW B -
SCALE 1:50

ISSUED FOR DA

DETAIL DESIGN

AMENDMENTS	
No.	DESCRIPTION
A	ISSUED FOR IDD - PTA REVIEW

METADATA	
GROUND SURVEY STANDARD:	67-08-43
DATE OF CAPTURE:	24-02-2021
MAPPING SURVEY STANDARD:	67-08-44
DATE OF CAPTURE:	24-02-2021
MAIN ROADS PROJECT ZONE:	PCG2020
HEIGHT DATUM:	AHD71

CONSULTANT DRAWING NUMBER R30-MET-DWG-ST-470-00051

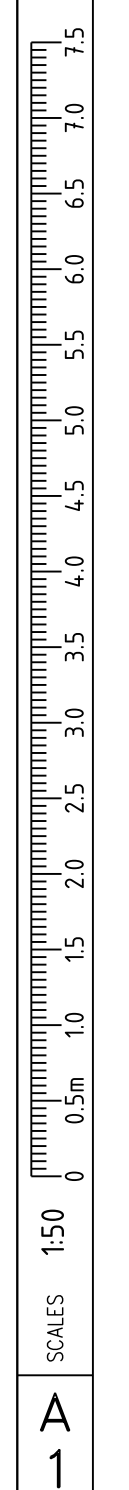
DRAWN	D. SCAMONI
DESIGNED	J. IP
VERIFIED	T. LOPIDO
DIRECTOR	M. RATHBONE

METRO AND SOUTHERN REGIONS DIRECTORATE
METROPOLITAN REGION
WATERLOO CRESCENT
Telephone 138 138
EAST PERTH 6004
Fax

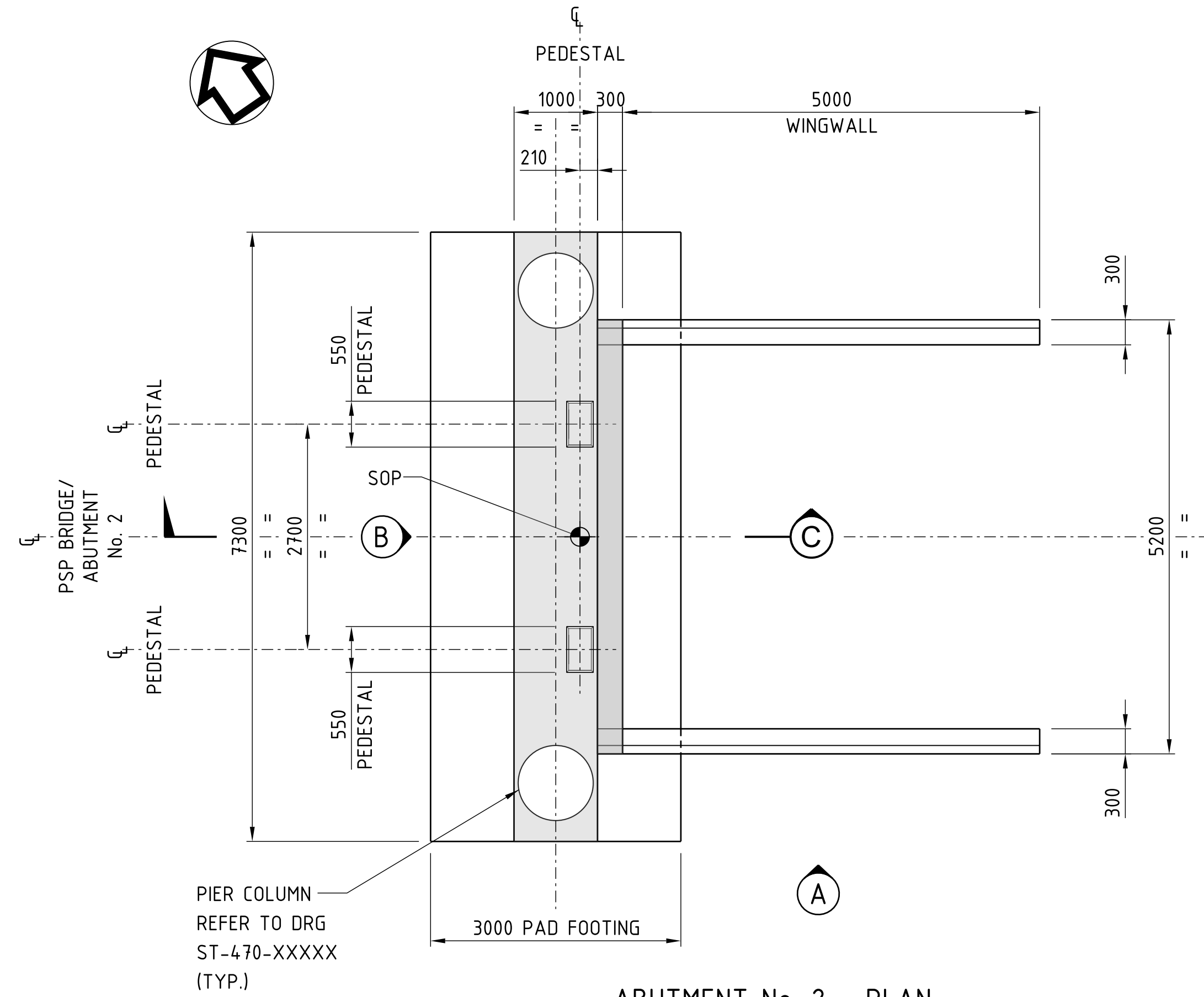
CLIENT FILE No.	
RECOMMENDED	
APPROVED	

BYFORD RAIL EXTENSION
PRINCIPAL SHARED PATH
OVER ARMADALE ROAD BRIDGE NO. 9557
ABUTMENT NO. 1 CONCRETE DETAILS - SHEET 1

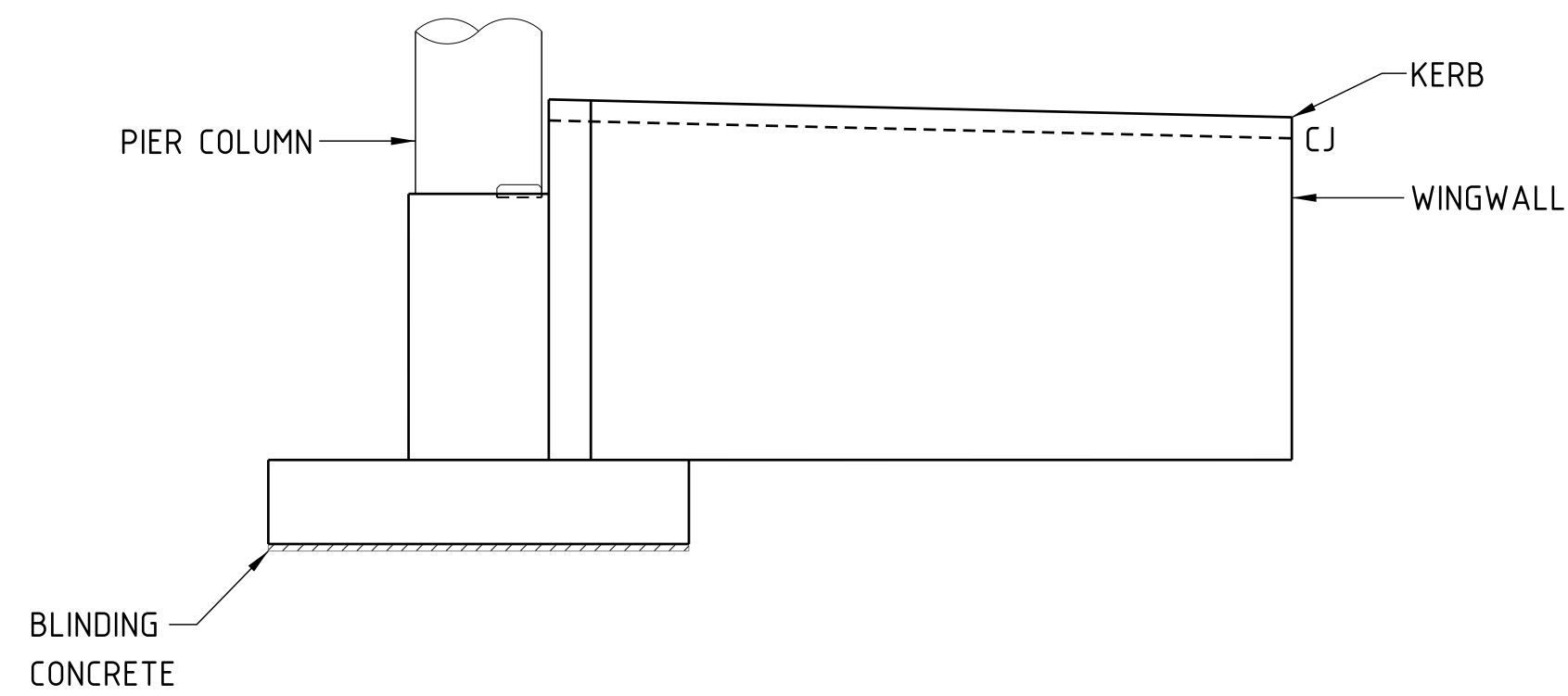
LOCAL AUTHORITY CITY OF ARMADALE, SHIRE OF SERPENTINE - JARRAHDALE
MRWA DRAWING NUMBER



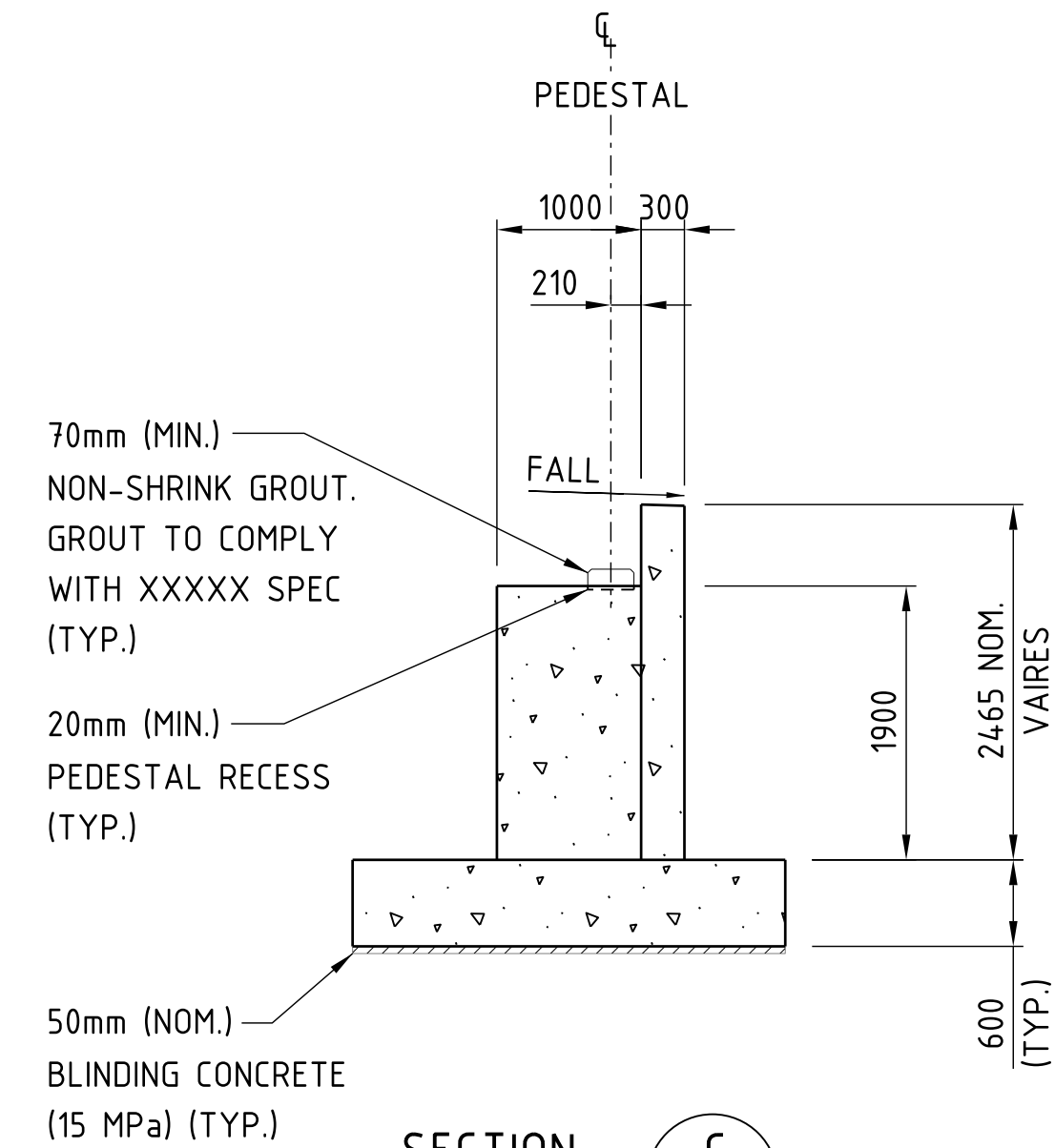
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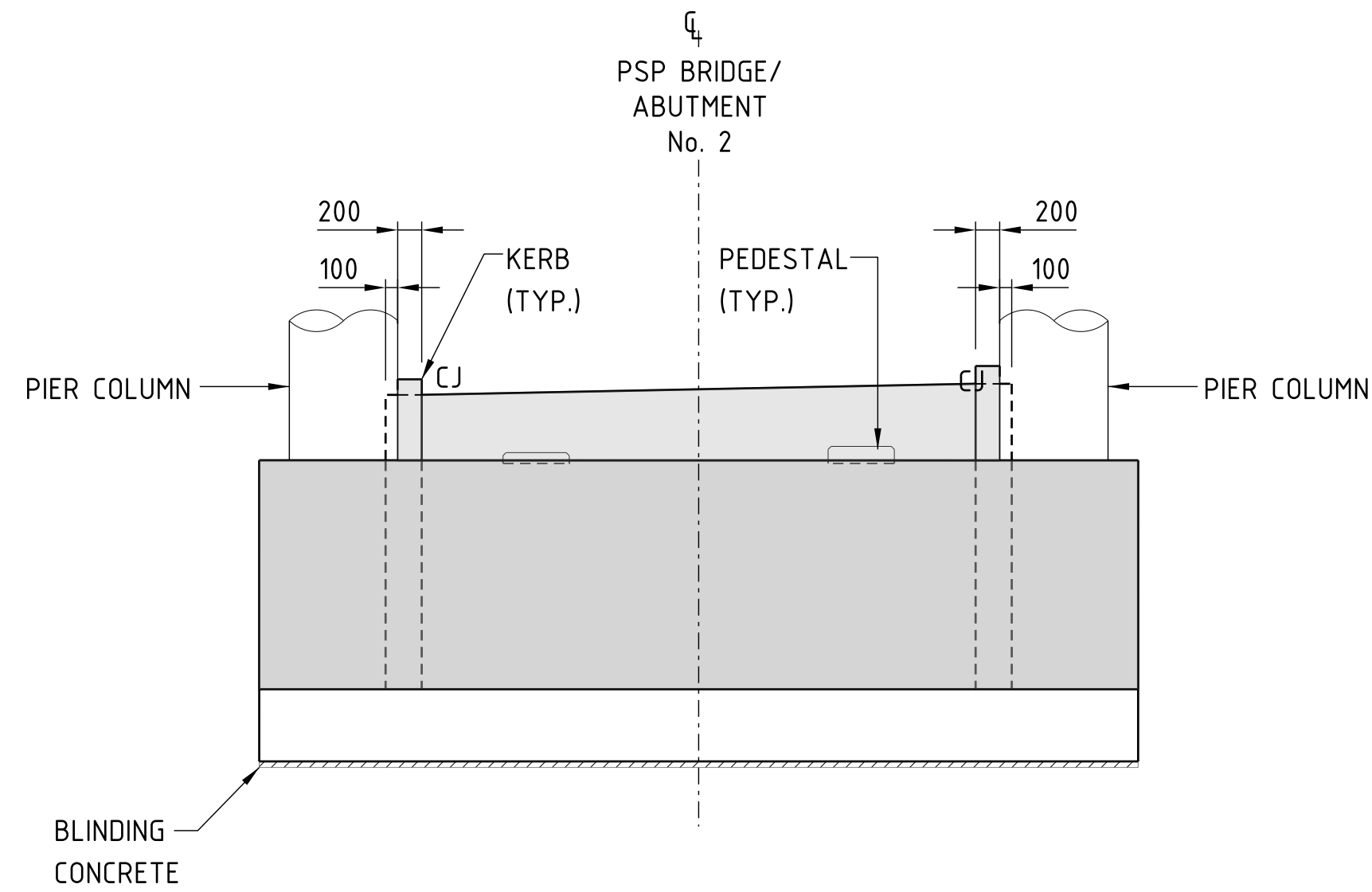
ABUTMENT No. 2 - PLAN
SCALE 1:50



VIEW A
SCALE 1:50



SECTION C
SCALE 1:50



VIEW B
SCALE 1:50

ISSUED FOR DA

DETAILED DESIGN

No.	DESCRIPTION	APPROVED & DATE
A	ISSUED FOR IDD - PTA REVIEW	M.R. 15-12-2023
AMENDMENTS		

METADATA	
GROUND SURVEY STANDARD:	67-08-43
DATE OF CAPTURE:	24-02-2021
MAPPING SURVEY STANDARD:	67-08-44
DATE OF CAPTURE:	24-02-2021
MAIN ROADS PROJECT ZONE:	PCG2020
HEIGHT DATUM:	AHD71

CONSULTANT DRAWING NUMBER R30-MET-DWG-ST-470-00055

DRAWN	D. SCAMONI
DESIGNED	J. IP
VERIFIED	T. LOPIDO
DIRECTOR	M. RATHBONE

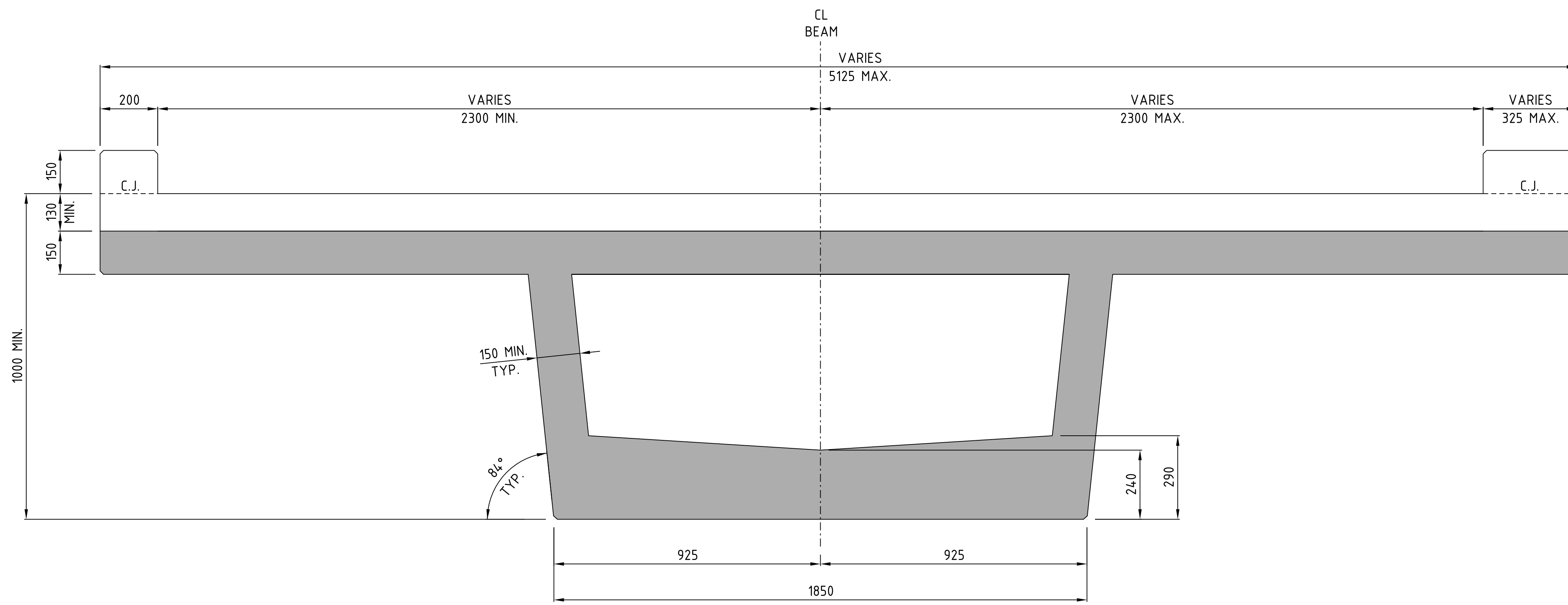
METRO AND SOUTHERN REGIONS DIRECTORATE
METROPOLITAN REGION
WATERLOO CRESCENT
EAST PERTH 6004
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CLIENT FILE No.	
RECOMMENDED	
APPROVED	

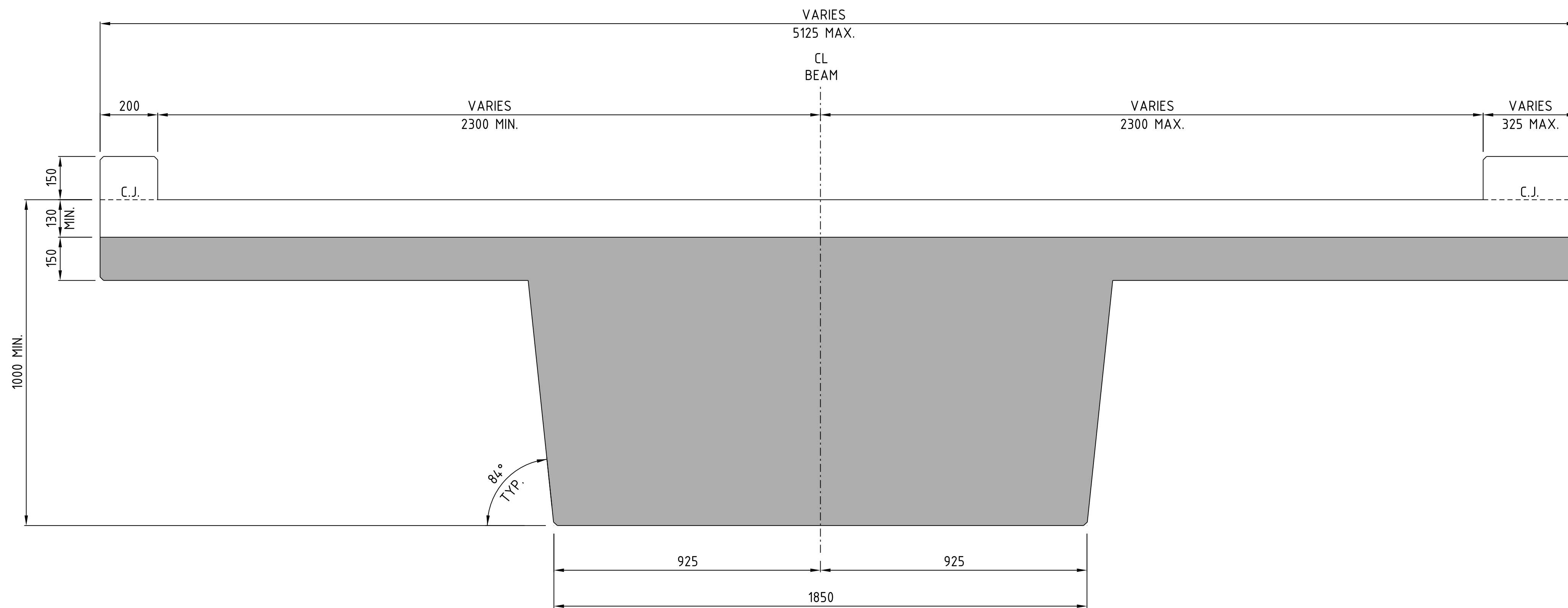
BYFORD RAIL EXTENSION	
PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 ABUTMENT NO. 2 CONCRETE DETAILS - SHEET 1	
LOCAL AUTHORITY	CITY OF ARMADALE, SHIRE OF SERPENTINE - JARRAHDALE
MRWA DRAWING NUMBER	

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A 1



SECTION A
SCALE 1:10
ST-470-00142, 00143 & 00144




SECTION B
SCALE 1:10
ST-470-00142, 00143 & 00144

ISSUED FOR DA

DETAILED DESIGN

A ISSUED FOR IDD - PTA REVIEW		M.R. 15-12-2023
No.	DESCRIPTION	APPROVED & DATE
AMENDMENTS		


METADATA	
GROUND SURVEY STANDARD:	67-08-43
DATE OF CAPTURE:	24-02-2021
MAPPING SURVEY STANDARD:	67-08-44
DATE OF CAPTURE:	24-02-2021
MAIN ROADS PROJECT ZONE:	PCG2020
HEIGHT DATUM:	AHD71



MetCONIX

CONSULTANT DRAWING NUMBER R30-MET-DWG-ST-470-00145

DRAWN	M. DROBNAK
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METRO AND SOUTHERN REGIONS DIRECTORATE
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WATERLOO CRESCENT EAST PERTH 6004
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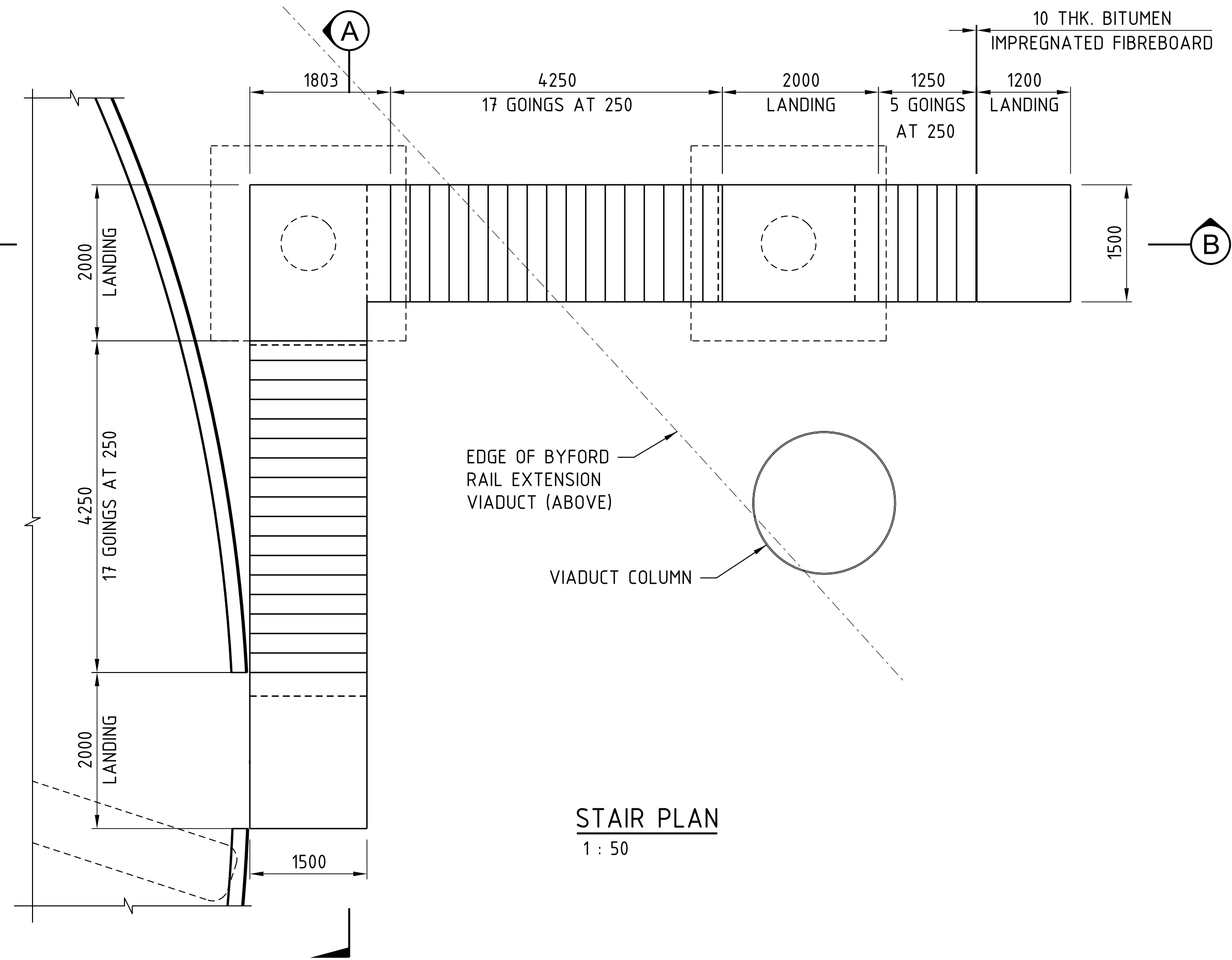
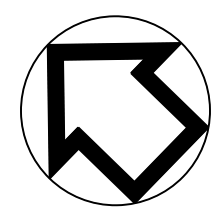
CLIENT FILE No.	
RECOMMENDED	
APPROVED	

BYFORD RAIL EXTENSION

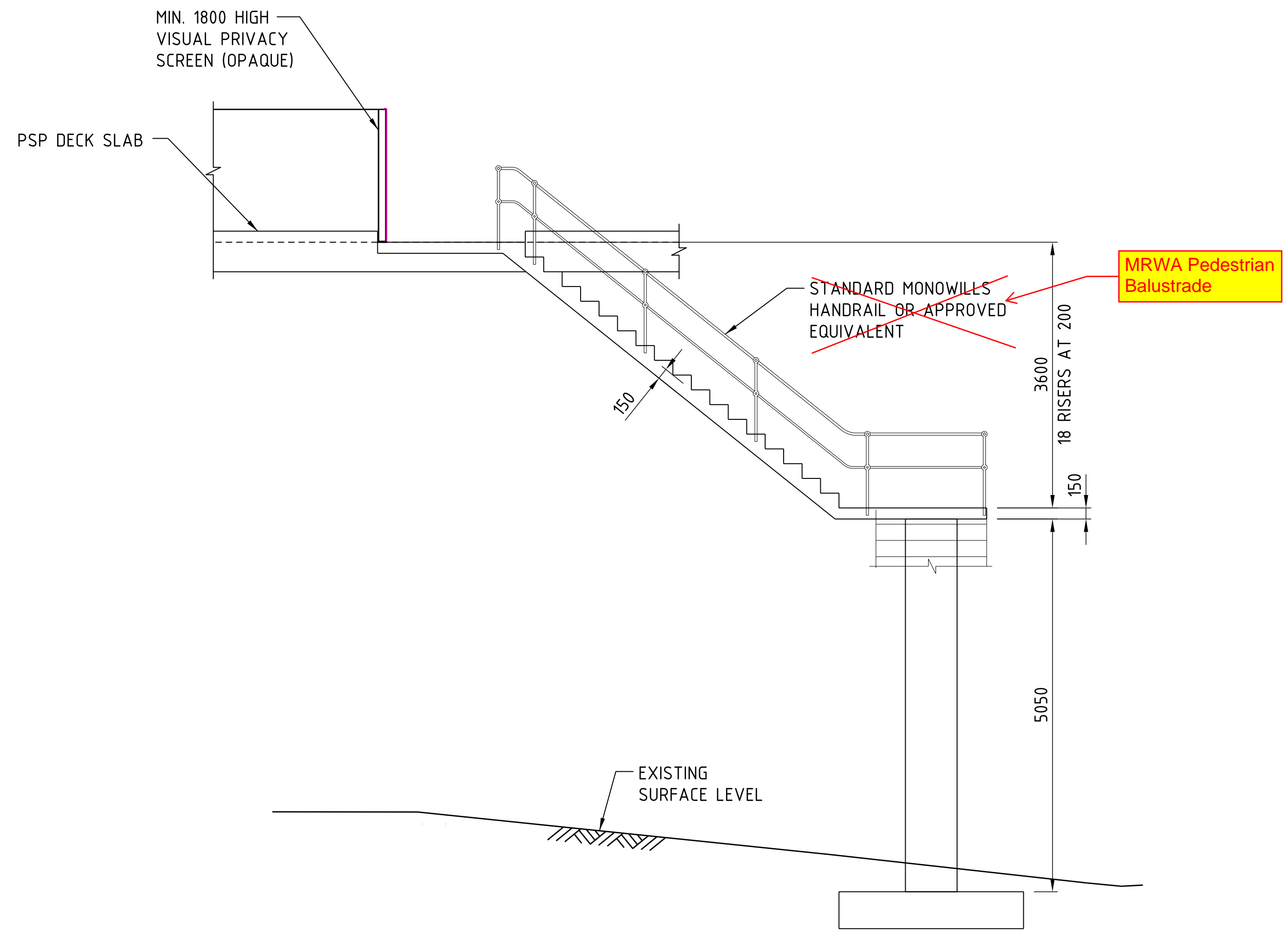
PRINCIPAL SHARED PATH
OVER ARMADALE ROAD BRIDGE NO. 9557
PRECAST BEAM CONCRETE DETAILS - SHEET 4

LOCAL AUTHORITY CITY OF ARMADALE, SHIRE OF SERPENTINE - JARRAHDALE
MRWA DRAWING NUMBER

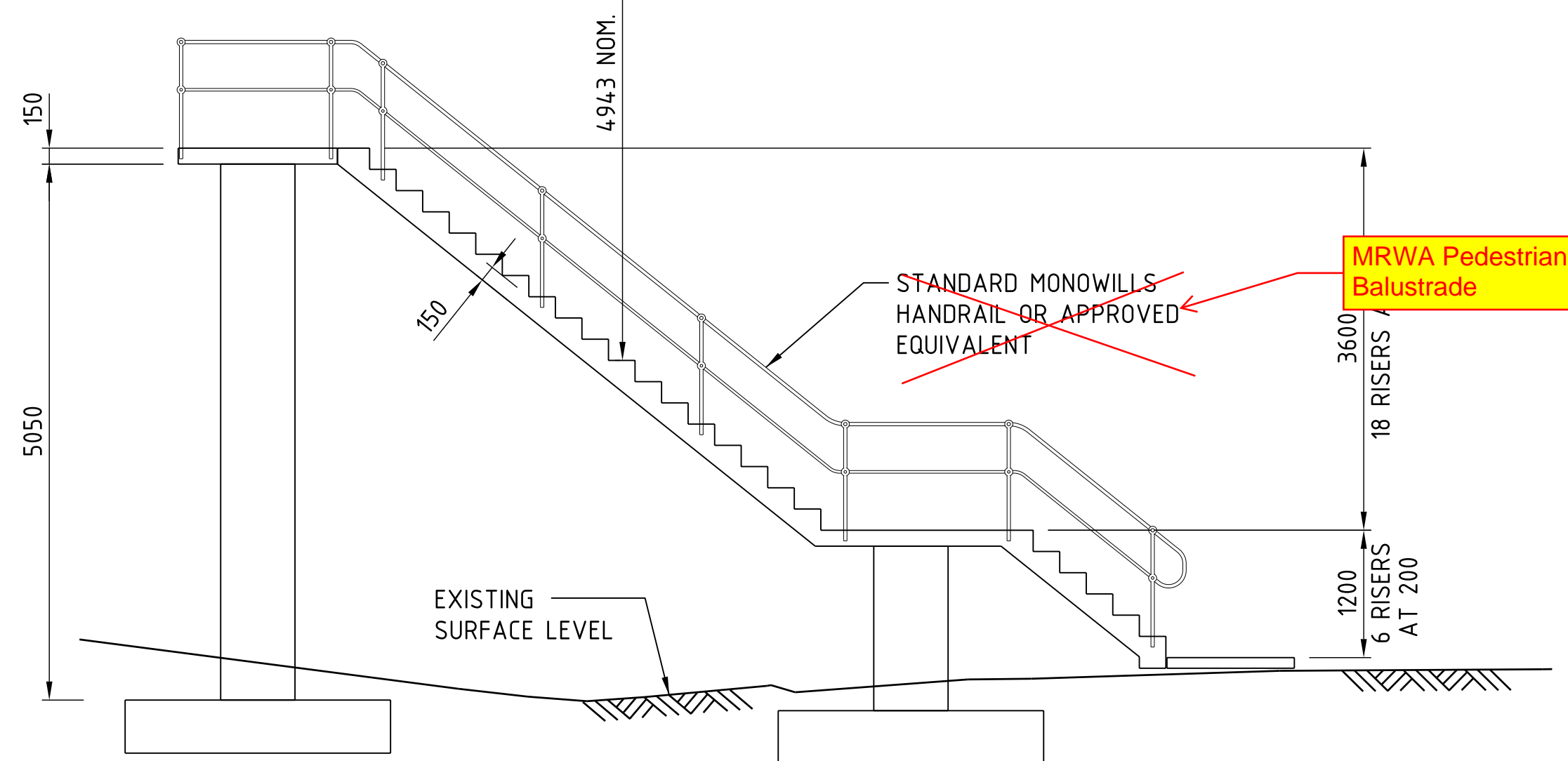
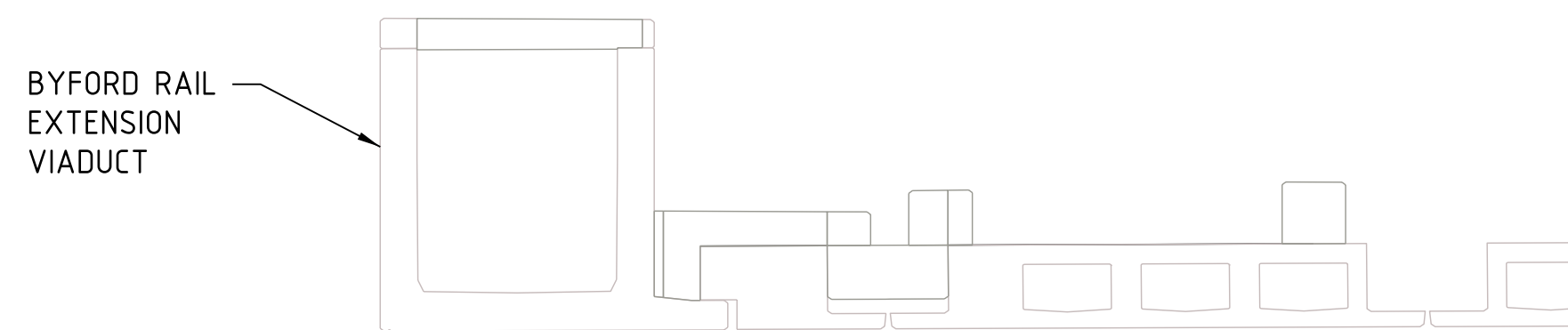
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 A 1



STAIR PLAN
1: 50



SECTION A
SCALE 1:50
HANDRAILS NOT SHOWN FOR CLARITY



SECTION B
SCALE 1:50
HANDRAILS NOT SHOWN FOR CLARITY

ISSUED FOR DA

DETAILED DESIGN

METADATA	
GROUND SURVEY STANDARD:	67-08-43
DATE OF CAPTURE:	24-02-2021
MAPPING SURVEY STANDARD:	67-08-44
DATE OF CAPTURE:	24-02-2021
MAIN ROADS PROJECT ZONE:	PCG2020
HEIGHT DATUM:	AHD71

METADATA	
GROUND SURVEY STANDARD:	67-08-43
DATE OF CAPTURE:	24-02-2021
MAPPING SURVEY STANDARD:	67-08-44
DATE OF CAPTURE:	24-02-2021
MAIN ROADS PROJECT ZONE:	PCG2020
HEIGHT DATUM:	AHD71

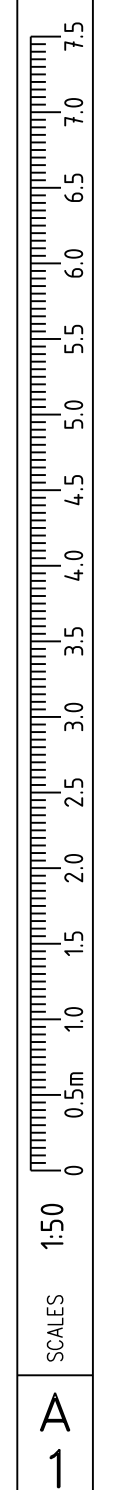
CONSULTANT DRAWING NUMBER R30-MET-DWG-ST-470-00401

DRAWN	M. DROBNAK
DESIGNED	S. JAMALI
VERIFIED	T. LOPIDO
DIRECTOR	M. RATHBONE

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METROPOLITAN REGION
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CLIENT FILE No.	
RECOMMENDED	
APPROVED	

BYFORD RAIL EXTENSION	
PRINCIPAL SHARED PATH OVER ARMADALE ROAD BRIDGE NO. 9557 STAIR CONCRETE DETAILS	
LOCAL AUTHORITY	CITY OF ARMADALE, SHIRE OF SERPENTINE - JARRAHDALE
MRWA DRAWING NUMBER	



A 1