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Certified By:

VLINE - MIDLAND HIGHWAY BRIDGE

PROJECT No. MPM23P-04-28

SUPERSTRUCTURE REMEDIATION OF SDMBGO-BR-124714

MPM ID : 7750

SUNBURY TO BENDIGO - 124.714 km

← TO MELBOURNE

TO CASTLEMAINE →



LOCALITY PLAN
1:1000



CONCEPT DESIGN

3:57:10 PM

11/07/2024

Revised By	In Serv	Rev.	Date	Description	Designed	Checked	Ind. Review	Approved
ACS		A	12/07/2024	ISSUED FOR CONCEPT DESIGN	R PALLOT	D GRIFFITHS	D HUGGETT	R PALLOT

Consultant



Member of the Surlana Jurong Group

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**CIVIL STRUCTURAL
CASTLEMAINE**

SDMBGO-BR-124714 - MIDLAND HIGHWAY BRIDGE
SUPERSTRUCTURE REMEDIATION
COVER SHEET AND LOCALITY PLAN

Up Location East. North. ID#	Down Location East. North. ID#	Datum MGA Z54
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Project Drawing Number CME-C0049		Rev. A
		Drawn By D ALCABAZA Designed By R PALLOT
File Name CME-C0049.dgn Sheet No. 01 of 01		Checked By D GRIFFITHS Ind. Review D HUGGETT
NOT FOR CONSTRUCTION		Approved R PALLOT Approval Date
Scale 1:1000	Sheet Size A3	Drawing Number CME_C0049 Revision A

DRAWING LIST

CIVIL STRUCTURAL DRAWINGS

DRAWING No.	DESCRIPTION
CME_C0049	COVER SHEET AND LOCALITY PLAN
CME_C0050	DRAWING LIST
CME_C0051	GENERAL NOTES - SHEET 1
CME_C0052	GENERAL NOTES - SHEET 2
CME_C0054	CONCRETE LINING - SHEET 1
CME_C0055	CONCRETE LINING - SHEET 2
CME_C0057	WATERPROOFING - SHEET 1
CME_C0058	WATERPROOFING - SHEET 2

ASSOCIATED REPORTS

REPORT No.	TITLE
30043502-REP-0001	30043502 - VLINE - MIDLAND HIGHWAY BRIDGE - DESIGN REPORT

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CONCEPT DESIGN

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CIVIL STRUCTURAL CASTLEMAINE		
SDMGO-BR-124714 - MIDLAND HIGHWAY BRIDGE SUPERSTRUCTURE REMEDIATION DRAWING LIST		
Up Location East. North. ID#	Down Location East. North. ID#	Datum MGA Z54

Project Drawing Number CME-C0050		Rev. A
		Drawn By D ALCABAZA
		Designed By R PALLOT
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Scale N.T.S. Sheet Size A3		Approved R PALLOT
Drawing Number CME_C0050		Approval Date
Revision A		

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GENERAL NOTES

- G1. THE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ENGINEERING DRAWINGS, THE CONTRACT SPECIFICATION, AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE WORK. ANY DISCREPANCY SHALL BE REPORTED TO THE DESIGNER BEFORE PROCEEDING WITH THE WORK.
- G2. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH RELEVANT AUSTRALIAN STANDARDS, V/LINE STANDARDS AND DTP STANDARDS SPECIFICATION SECTIONS FOR BRIDGEWORKS.
- G3. UNLESS NOTED OTHERWISE:
- ALL DIMENSIONS ARE IN MILLIMETRES
- G4. ALL DIMENSIONS RELEVANT TO SETTING OUT AND OFF-SITE WORK SHALL BE CONFIRMED AND VERIFIED BY THE CONTRACTOR BEFORE CONSTRUCTION AND FABRICATION IS COMMENCED. THE CONTRACTOR SHALL REPORT ANY DISCREPANCIES. THE DRAWINGS SHALL NOT BE SCALED.
- G5. THE STRUCTURAL DRAWINGS DO NOT SHOW ALL DETAILS OF FIXTURES, INSERTS, SLEEVES, OPENINGS, ETC. REQUIRED BY THE VARIOUS TRADES. ALL SUCH DETAILS, INCLUDING RECESSES AND CHASES, MUST BE APPROVED BY THE ENGINEER BEFORE PROCEEDING WITH CONSTRUCTION.
- G6. DURING CONSTRUCTION THE STRUCTURES SHALL BE MAINTAINED IN A SAFE AND STABLE CONDITION AT ALL TIMES AND NO PART SHALL BE OVERSTRESSED.
- G7. ALL PROPRIETARY PRODUCTS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS AND RECOMMENDATIONS. ALTERNATIVE PRODUCTS HAVING EQUIVALENT FUNCTIONS OR PERFORMANCE MAY BE SUBMITTED FOR APPROVAL.
- G8. ALL DIMENSIONS SHOWN ON THE DRAWINGS ARE REQUIRED DIMENSIONS OF THE INSTALLED ITEM.
- G9. THESE DRAWINGS DO NOT DETAIL TEMPORARY WORKS.
- G10. IF ABBREVIATIONS OTHER THAN THOSE IN ACCORDANCE WITH AS 1100.501 ARE USED AND THEIR MEANING IS NOT EXPLICITLY SHOWN ON DRAWINGS, REFER TO THE DESIGNER FOR CLARIFICATION PRIOR TO PROCEEDING.

DESIGN REQUIREMENTS

GENERAL:

- D01. CONCRETE LINING WORKS ARE TO INHIBIT BRICKS FROM FALLING ONTO THE ROAD BELOW AND NOT FOR THE PRIMARY INTENT TO STRENGTHEN THE LOAD CARRYING CAPACITY OF THE ARCH ITSELF. FOR FURTHER DETAILS REFER "30043502 - VLINE - MIDLAND HIGHWAY BRIDGE - DESIGN REPORT".
- D02. BRIDGE HAS BEEN ASSESSED AGAINST THE FOLLOWING DESIGN LOADING REQUIREMENTS:
 - DESIGN CRITERIA NIST-2616
 - DESIGN RAILWAY TRAFFIC LOADS: 230LA BY VLINE
 - MULTIPLE TRACKS:
 - FULL DEPTH CONCRETE SLEEPER
 - 60 kg RAIL (94 lbs RAIL MIDDLE-TRACK)
 - DESIGN SPEED 160 KM/HR

DESIGN LIFE:

- D03. 100 YEARS FOR REINFORCED CONCRETE ELEMENTS

CONCEPT DESIGN

TEMPORARY WORKS

- TW1. THESE DRAWINGS DO NOT DETAIL TEMPORARY WORKS. CONSTRUCTION METHODS AND TEMPORARY WORKS ARE THE RESPONSIBILITY OF THE CONTRACTOR. TEMPORARY WORKS THAT INTERFACE WITH PERMANENT STRESS CONDITION OF THE PERMANENT WORKS SHALL BE REVIEWED AND APPROVED BY THE ENGINEER.
- TW2. THE DESIGN CERTIFICATION AND PERFORMANCE OF THE FORMWORK AND FALSEWORK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE CARRIED OUT IN ACCORDANCE WITH THE CONTRACT SPECIFICATION, AS 3610, VICROADS STANDARD SPECIFICATION SECTION 613 AND 614, PROOF ENGINEERING REQUIREMENTS AND OTHER RELEVANT CODES.
- TW3. THE CONTRACTOR IS RESPONSIBLE FOR THE CONSTRUCTION PROCEDURE AND ALL LOADS APPLIED DURING CONSTRUCTION AND MUST MAINTAIN THE STRUCTURE IN A STABLE CONDITION DURING CONSTRUCTION AND PROVIDE TEMPORARY BRACING AND/OR SUPPORT AS REQUIRED. ENSURE NO PART IS OVERSTRESSED.
- TW4. DO NOT PLACE OR STORE BUILDING MATERIALS ON STRUCTURAL MEMBERS WITHOUT ENGINEER'S APPROVAL. THE CONTRACTOR SHALL PROVIDE CALCULATIONS TO JUSTIFY THE ADEQUACY OF THE STRUCTURE TO SAFELY WITHSTAND THE INTENDED IMPOSED LOADS AND/OR CONSTRUCTION PROCEDURE.

CONCRETE

- C1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS 5100-2017, AS 3600-2018 AND THE CONTRACT SPECIFICATION.
- C2. CONCRETE SHALL BE FROM AN APPROVED SOURCE AND SHALL COMPLY WITH THE REQUIREMENTS OF THE FOLLOWING STANDARDS:

AS 3600	CONCRETE STRUCTURES
AS 5100.5	BRIDGE DESIGN PART 5 CONCRETE
AS 3972	PORTLAND CEMENT
AS 1379	READY-MIXED CONCRETE
AS 2758.1	CONCRETE AGGREGATES
- C3. MANUFACTURE AND DELIVERY OF CONCRETE SHALL COMPLY WITH THE REQUIREMENTS OF THE CONTRACT SPECIFICATION AND VICROADS STANDARD SPECIFICATION.
- C4. CONCRETE SHALL BE SPECIAL CLASS PERFORMANCE CONCRETE AS SPECIFIED IN THE CONTRACT SPECIFICATION. CONCRETE GRADE AND MINIMUM COVER TO REINFORCEMENT SHALL BE AS NOTED BELOW U.N.O. ON THE DRAWINGS:

ELEMENT	CONCRETE GRADE	CHARACTERISTIC COMPRESSIVE STRENGTH AT 28 DAYS (MPa)	EXPOSURE CLASSIFICATION	MINIMUM CONCRETE COVER TO REINFORCEMENT (mm)	
				CAST AGAINST MASONRY	EXPOSED FACE
SHOTCRETE CONCRETE LINING	VR 400/40	40	B1	45	45

- A. PRECAST DENOTES RIGID FORMWORK AND INTENSE COMPACTION
 - B. CAST AGAINST FORMS DENOTES TIMBER AND CONCRETE FORMS WITH STANDARD COMPACTION
 - C. COVER IS THE CLEAR DISTANCE BETWEEN ANY REINFORCING (INCLUDING FITMENTS) AND THE FACE OF THE STRUCTURAL ELEMENT.
 - D. FOR ALL EXTERNAL SURFACES, PROVIDE APPROVED BAR CHAIRS. NAILED TIE STEEL SYSTEM SHALL NOT BE USED TO TIE THE FORMS.
 - E. THE COVERS SHALL BE MAINTAINED USING APPROVED BAR CHAIRS AT MAX 800 mm CENTRES U.N.O. IN SLABS BAR CHAIRS SHALL BE AT 800x800 mm MAXIMUM CENTRES. BAR CHAIRS SHALL BE PROVIDED ALONG THE EDGES OF ALL CONSTRUCTION JOINTS.
 - F. EXTERNAL ELEMENTS ARE THOSE EXPOSED TO WEATHER, RAIN AND WATER PENETRATION
 - G. COVER REQUIREMENTS ARE BASED ON EFFECTIVE, CONTINUOUS AND UNINTERRUPTED CURING AS PER AS 5100.5 CLAUSE 4.4.2.1. WHERE CURING COMPOUNDS ARE USED, THE COVER SHALL BE INCREASED BY 5 mm FOR EXPOSURE CLASSIFICATIONS A AND B1, AND 10 mm FOR OTHER CLASSIFICATIONS.
- C5. ALL CEMENT SHALL BE "GP" GENERAL PURPOSE OR "GB" GENERAL PURPOSE BLENDED CEMENT OR "SR" SULPHATE RESISTANT CEMENT, AS REQUIRED AND SHALL COMPLY WITH AS 3972.

- C6. CONCRETE TEMPERATURE AT TIME OF PLACEMENT SHALL NOT BE LESS THAN 10°C OR GREATER THAN 32°C.
- C7. CONCRETE SHALL BE CURED CONTINUOUSLY FOR A MINIMUM PERIOD OF TIME AS NOTED BELOW:
- 7 DAYS FOR ALL ELEMENTS
- C8. FORMWORK SHALL BE REMOVED NOT EARLIER THAN AS NOTED BELOW:
 - THE ELEMENT LEFT UNSUPPORTED HAS SUFFICIENT STRENGTH TO SUPPORT ITS OWN WEIGHT AND ANY SUPERIMPOSED LOADS DUE TO CONCURRENT OR SUBSEQUENT CONSTRUCTION WORKS.
 - THE ELEMENT HAS REACHED A COMPRESSIVE STRENGTH NOT LESS THAN 65% OF DESIGNED COMPRESSIVE STRENGTH
 - 4 DAYS WHERE THE AVERAGE AMBIENT TEMPERATURE IS GREATER THAN 20°C
 - 6 DAYS WHERE THE AVERAGE AMBIENT TEMPERATURE IS BETWEEN 12°C AND 20°C
 - 8 DAYS WHERE THE AVERAGE AMBIENT TEMPERATURE IS BETWEEN 5°C AND 12°C
- C9. PLACEMENT, COMPACTION, CONSTRUCTION JOINTS, AND CURING OF CONCRETE SHALL COMPLY WITH THE REQUIREMENTS OF THE CONTRACT SPECIFICATION.
- C10. THE FINISHED CONCRETE SHALL BE A DENSE HOMOGENEOUS MASS, COMPLETELY FILLING THE FORMWORK. THOROUGHLY EMBEDDING THE REINFORCEMENT AND FREE OF AIR POCKETS. ALL CONCRETE INCLUDING SLABS ON GROUND AND FOOTINGS SHALL BE COMPACTED WITH MECHANICAL VIBRATORS.
- C11. EXTERNAL FORMWORK MAY NEED TO BE RETIGHTENED AFTER COMPACTION AND BEFORE REUSE. THE INITIAL DISCHARGE FROM THE CONCRETE PUMP SHALL NOT BE USED UNTIL A CONSISTENT WORKABLE APPROVED MIX, IN ACCORDANCE WITH THE CONTRACT SPECIFICATION, IS DISCHARGED.
- C12. THE CONTRACTOR IS TO SEEK APPROVAL IN WRITING IF ANY ADMIXTURES ARE TO BE USED IN THE CONCRETE MIX. CALCIUM CHLORIDE IS NOT PERMITTED UNDER ANY CIRCUMSTANCES.
- C13. DO NOT PLACE CONDUITS, PIPES AND THE LIKE WITHIN THE CONCRETE COVER ZONE. 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 UNLESS DETAILED ON THE STRUCTURAL DRAWINGS.
- C14. NO HOLES, CHASES OR EMBEDMENT OF PIPES AND CONDUITS OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE MADE IN CONCRETE MEMBERS WITHOUT PRIOR APPROVAL OF THE ENGINEER.
- C15. CONSTRUCTION JOINTS SHALL BE LOCATED AND DETAILED AS SHOWN ON THE DRAWINGS OR SHALL BE LOCATED AND FORMED TO THE APPROVAL OF THE ENGINEER AND IN ACCORDANCE WITH THE CONTRACT SPECIFICATION. CONCRETE AGAINST WHICH NEW CONCRETE IS TO BE PLACED SHALL BE INTENTIONALLY ROUGHENED IN ACCORDANCE WITH THE CONTRACT SPECIFICATION TO EXPOSE THE COARSE AGGREGATE TO ENSURE A SATISFACTORY BOND BETWEEN ADJACENT CONCRETE SURFACES U.N.O. ALL CONCRETE SURFACES SHALL BE CLEAN AND FREE OF LAITANCE. THOROUGHLY MOISTEN THE ROUGHENED SURFACE IMMEDIATELY PRIOR TO PLACING CONCRETE. NO CONSTRUCTION JOINT SHOWN ON DRAWINGS SHALL BE OMITTED WITHOUT APPROVAL.
- C16. THE MINIMUM STRENGTH OF CONCRETE LOAD-RESISTING ELEMENTS SHALL BE PROVEN PRIOR TO THEIR LOADING BY CONCRETE CYLINDER TESTING. CONCRETE LOAD-RESISTING ELEMENTS SHALL ACHIEVE THE MORE STRINGENT MINIMUM STRENGTH REQUIREMENTS OF THE DRAWINGS AND THE CONTRACT SPECIFICATION.

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**CIVIL STRUCTURAL
CASTLEMAINE**

SDMBGO-BR-124714 - MIDLAND HIGHWAY BRIDGE
SUPERSTRUCTURE REMEDIATION
GENERAL NOTES - SHEET 1

Up Location East North ID#	Down Location East North ID#	Datum MGA Z54
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Project Drawing Number CME-C0051		Rev. A
		Drawn By D ALCABAZA Designed By R PALLOT
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File Name CME-C0051.dgn	Sheet No. 01 of 01	Drawing Number CME_C0051
NOT FOR CONSTRUCTION		Revision A
Scale N.T.S.	Sheet Size A3	

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- C17. ALL CAST-IN FERRULES AND MASONRY ANCHORS TO BE PASSIVATED ZINC COATED. ALL GALVANISED COMPONENTS TO BE CAST INTO CONCRETE MUST BE PASSIVATED.
- C18. CURING OF CONCRETE SHALL COMMENCE IMMEDIATELY AFTER FINISHING OPERATIONS HAVE BEEN COMPLETED. THE CONCRETE SHALL BE CURED IN ACCORDANCE WITH THE CONTRACT SPECIFICATION.
- C19. CONCRETE SIZES DO NOT INCLUDE THICKNESS OF APPLIED FINISHES.
- C20. ALL CONCRETE EDGES HAVING A CONTAINED ANGLE LESS THAN 120° SHALL BE PROVIDED WITH 20 mm FILLETS OR CHAMFERS AS APPROPRIATE U.N.O. THE EDGES OF BEARING PEDESTALS SHALL HAVE 10 mm CHAMFERS. MAINTAIN COVER TO REINFORCEMENT AT THESE DETAILS.
- C21. SPOIL GENERATED ON SITE SHALL BE MINIMISED.

STEEL REINFORCEMENT

- R1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CONTRACT SPECIFICATION AND AS 5100-2017 UNLESS OTHERWISE APPROVED BY THE SUPERINTENDENT.
- R2. REINFORCEMENT SHOWN ON THE DRAWINGS IS REPRESENTED DIAGRAMMATICALLY AND NOT NECESSARILY SHOWN IN TRUE PROJECTION. FOR CLARITY, BAR LOCATIONS MAY BE EXAGGERATED.
- R3. REINFORCEMENT SYMBOLS :
 - N GRADE 500 DEFORMED REINFORCING BARS, DUCTILITY CLASS N TO AS 4671.
 - R GRADE 250 PLAIN REINFORCING BARS TO AS 4671.
 - W HARD DRAWN STEEL REINFORCING WIRE, GRADE 500 DUCTILITY CLASS L TO AS 4671.
 - TM HARD DRAWN STEEL TRENCH MESH, GRADE 500 DUCTILITY CLASS L TO AS 4671.
 - RL RECTANGULAR RIB MESH, GRADE 500 DUCTILITY CLASS L TO AS 4671.
 - SL SQUARE RIB MESH, GRADE 500 DUCTILITY CLASS L TO AS 4671.
- R4. REINFORCEMENT NOTATION AS FOLLOWS:
 - 9N16-150 T
 - THE NUMBER PROCEEDING THE BAR SYMBOL (9) IS BAR QUANTITY
 - THE NUMBER FOLLOWING THE BAR SYMBOL (16) IS THE NOMINAL BAR DIAMETER IN MILLIMETRES.
 - THE NUMBER FOLLOWING THE 'DASH' (150) IS THE SPACING IN MILLIMETRES.
 - THE LETTER FOLLOWING THE SPACING (T) IS THE LOCATION OF THE BAR IN THE ELEMENT AS FOLLOWS:

EF	EACH FACE
NF	NEAR FACE
FF	FAR FACE
EW	EACH WAY
T	TOP
B or BTM	BOTTOM
C	CENTRAL
CP	CENTRALLY PLACED
LV	LENGTH VARIES
ABR	ALTERNATE BAR REVERSED
ALT	ALTERNATING BARS
- R5. MESH NOTATION GIVES THE FOLLOWING INFORMATION IN THIS ORDER:
 - SL OR RL SYMBOL; AS REFERENCE NUMBER IF STANDARD MESH OR SPECIAL CODE IF NON-STANDARD MESH; PLACING INFORMATION. EG, RL918 TOP.
- R6. SPLICES IN REINFORCEMENT SHALL BE MADE ONLY IN THE POSITION SHOWN ON THE DRAWINGS OR AS OTHERWISE APPROVED. WHERE THE LAP LENGTH IS NOT SHOWN IT SHALL BE SUFFICIENT TO DEVELOP THE FULL STRENGTH OF THE REINFORCEMENT. BAR LAPS IN MILLIMETRES ARE TO BE AS SHOWN BELOW UNLESS NOTED OTHERWISE:

BAR SIZE	N12	N16	N20	N24	N28	N32	N36
LAP LENGTH	450	650	850	1100	1350	1600	1900

- NOTES:
- A. THE MINIMUM LAP LENGTH SHOWN SHALL BE INCREASED BY 30% FOR HORIZONTAL BARS WITH 300mm OR MORE CONCRETE CAST BELOW THE BAR.
 - B. NOT MORE THAN 50% OF THE BARS SHALL BE LAPPED AT ANY LOCATION. WHERE STAGGERED BAR SPLICES ARE NOT POSSIBLE THE MINIMUM LAP LENGTH SHALL NOT BE LESS THAN 1.25 TIMES THE STANDARD LAP LENGTH.
 - C. THE LAP LENGTH OF BUNDLED BARS SHALL BE INCREASED FROM THE VALUES SHOWN BELOW:
 - 3 BAR BUNDLE - 20%
 - 4 BAR BUNDLE - 33%
 - D. INDIVIDUAL BARS WITHIN A BUNDLE SHALL BE TERMINATED AT DIFFERENT POINTS STAGGERED BY AT LEAST 40 TIMES THE DIAMETER OF THE LARGER BAR.

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- R7. LAPPED BARS SHALL BE IN CONTACT. WHEN IT IS NOT POSSIBLE TO PROVIDE CONTACT BETWEEN LAPPED BARS THE STANDARD LAP LENGTH SHALL BE INCREASED BY THE DIMENSION BETWEEN LAPPED BARS.
- R8. LAP LENGTHS FOR UNEQUAL BAR SIZE MAY BE BASED ON THE REQUIREMENTS FOR THE SMALLER BAR DIAMETER.
- R9. REINFORCEMENT DEVELOPMENT LENGTHS SHALL EQUAL LAP LENGTHS.
- R10. MINIMUM LAPS IN MESH SHALL BE THE LARGER SPACING OF TRANSVERSE WIRES UNLESS NOTED OTHERWISE.
- R11. ALL REINFORCEMENT SHALL BE SECURELY TIED WITH WIRE TIES AND ALL TIE ENDS SHALL BE TURNED INTO THE MEMBER CLEAR OF THE COVER ZONE.
- R12. REINFORCEMENT SHALL NOT BE CUT OR BENT ON SITE.
- R13. SPACING OF REINFORCEMENT SHALL BE TAKEN AS EQUAL UNLESS NOTED OTHERWISE ON THE DRAWINGS OR VARIED BY THE CONTRACT SPECIFICATION.
- R14. ALL HOOKS BENDS AND COGS ARE STANDARD AND SHALL BE IN ACCORDANCE WITH AS 3600-2018 AND AS 5100-2017 U.N.O.
- R15. BAR CHAIRS SHALL BE SUFFICIENTLY STIFF AND ROBUST TO SUPPORT THE WEIGHT OF REINFORCEMENT CAGES WITHOUT MEASURABLE DEFORMATION. METAL BAR CHAIRS ARE PROHIBITED.
- R16. CONCRETE BAR CHAIRS SHALL COMPLY WITH EVERY REQUIREMENT APPLICABLE TO THE CONCRETE ELEMENT INTO WHICH IT IS CAST EG. CONCRETE GRADE, CHEMICAL CONTENT AND PERMITTED VPVS AND REQUIREMENTS FOR AGGREGATE AND ALL OTHER REQUIREMENTS. THE WIRES WHICH ARE CAST INTO CONCRETE BAR CHAIRS SHALL BE STAINLESS STEEL.
- R17. WELDING OF REINFORCEMENT INCLUDING TACK-WELDING FOR FIXING PURPOSES SHALL COMPLY WITH AS 3600-2018, AS 5100-2017 AND AS 1554.3-2014. WELDING IS PERMITTED ONLY WHERE SHOWN IN THE DRAWINGS OR WHERE OTHERWISE APPROVED.
- R18. MESH SHALL NOT BE LAID ON THE GROUND AND PULLED INTO POSITION THROUGH THE CONCRETE. MESH SHALL NOT BE WALKED ON.
- R19. EMBEDDED FIXTURES WITHIN COVER CONCRETE OR EXPOSED TO AIR MUST NOT BE IN CONTACT WITH REINFORCING STEEL. PROVIDE ISOLATING STRIPS BETWEEN DISSIMILAR STEELS AND TO SEPARATE EXPOSED FIXTURES. STRIP FOOTING REINFORCEMENT SHALL BE CONTINUOUS AT ALL "T" & "L" FOOTING JUNCTIONS.
- R20. REINFORCEMENT SHALL BE SOURCED FROM SUPPLIERS CERTIFIED UNDER AUSTRALIAN CERTIFICATION AUTHORITY FOR REINFORCING AND STRUCTURAL STEELS.

SHOTCRETING

- SC1. SHOTCRETE MATERIALS AND WORKS SHALL COMPLY WITH THE DTP SPECIFICATIONS - PARTICULARLY 610 AND 684.
- SC2. THE PROCEDURE, EQUIPMENT AND PERSONNEL INVOLVED IN SHOTCRETING SHALL PRODUCE AN END PRODUCT, WHICH IS DENSE, HOMOGENEOUS, WITHOUT SEGREGATION OF AGGREGATE, AND WITHOUT SLOUGHING, COLLAPSING, EXCESSIVE REBOUND OR OTHER VISIBLE IMPERFECTIONS.
- SC3. SHOTCRETE SHALL BE ABLE TO BE APPLIED IN MULTIPLE LAYERS OVERHEAD WITH EACH LAYER UP TO 150 MAX. IN THICKNESS WITH ADEQUATE ADHESION TO THE SURFACE OF THE PREVIOUS LAYERS OF SHOTCRETE WITHOUT SAGGING OR SLUMPING OF ANY LAYER.
- SC4. SHOTCRETING SHALL BE STOPPED IN SITUATIONS WHICH MAY ADVERSELY AFFECT THE END PRODUCT. FOR EXAMPLE, WATER INFLOWS WHICH COULD AFFECT SHOTCRETE ADHESION SHOULD BE TAPPED BEFORE BEING SHOTCRETED OVER.
- SC5. SHOTCRETE THAT IS SEGREGATED, LOOSE, POROUS OR OTHERWISE UNCOMPACTED SHALL BE REMOVED PRIOR TO THE APPLICATIONS OF ADDITIONAL SHOTCRETE.
- SC6. THE CONCRETE PUMP SHALL BE REGULATED TO EVENLY DELIVER THE WET MIX SHOTCRETE AT THE RATE REQUIRED FOR THE PARTICULAR SHOTCRETE APPLICATION.
- SC7. THE SHOTCRETE SHALL EMERGE FROM THE NOZZLE IN A STEADY, UNINTERRUPTED FLOW. WHERE THE FLOW BECOMES INTERMITTENT FOR ANY REASON, IT SHALL BE DIRECTED AWAY FROM THE WORK UNTIL IT BECOMES CONSTANT.
- SC8. THE DISTANCE OF MANUALLY HELD NOZZLES TO THE RECEIVING SURFACE SHALL BE FROM 0.75m TO 1.25m. THE NOZZLE SHALL BE HELD PERPENDICULAR TO THE RECEIVING SURFACE EXCEPT THAT, WHERE NECESSARY, AN ANGLE OF BETWEEN 0° TO 45° TO THE PERENDICULAR MAY BE USED.
- SC9. WHERE A LAYER OF SHOTCRETE IS TO BE COVERED BY A SUCCEEDING LAYER, THE FIRST LAYER SHALL BE SHARPLY TAPERED AT JOINTS. FEATHERING OF THE TAPERED JOINTS SHALL NOT BE PERMITTED. THE SECOND LAYER SHALL BE PLACED ON THE TAPERED SURFACE.
- SC10. CURING COMPOUNDS AND BOND BREAKING MATERIALS SHALL NOT BE APPLIED TO SURFACES THAT WILL BE COVERED BY AN ADDITIONAL LAYER OF SHOTCRETE.
- SC11. THE SHOTCRETE THICKNESS SHALL BE BUILT UP PROGRESSIVELY OVER THE FULL BRIDGE SOFFIT PROFILE STARTING FROM THE ABUTMENTS.
- SC12. THE SHOTCRETE SHALL ACHIEVE A MINIMUM CHARACTERISTIC OF CYLINDER COMPRESSIVE STRENGTH OF 12MPa AFTER 24 HOURS.

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ACS		A	12/07/2024	ISSUED FOR CONCEPT DESIGN	R PALLOT	D GRIFFITHS	D HUGGETT	R PALLOT

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CIVIL STRUCTURAL

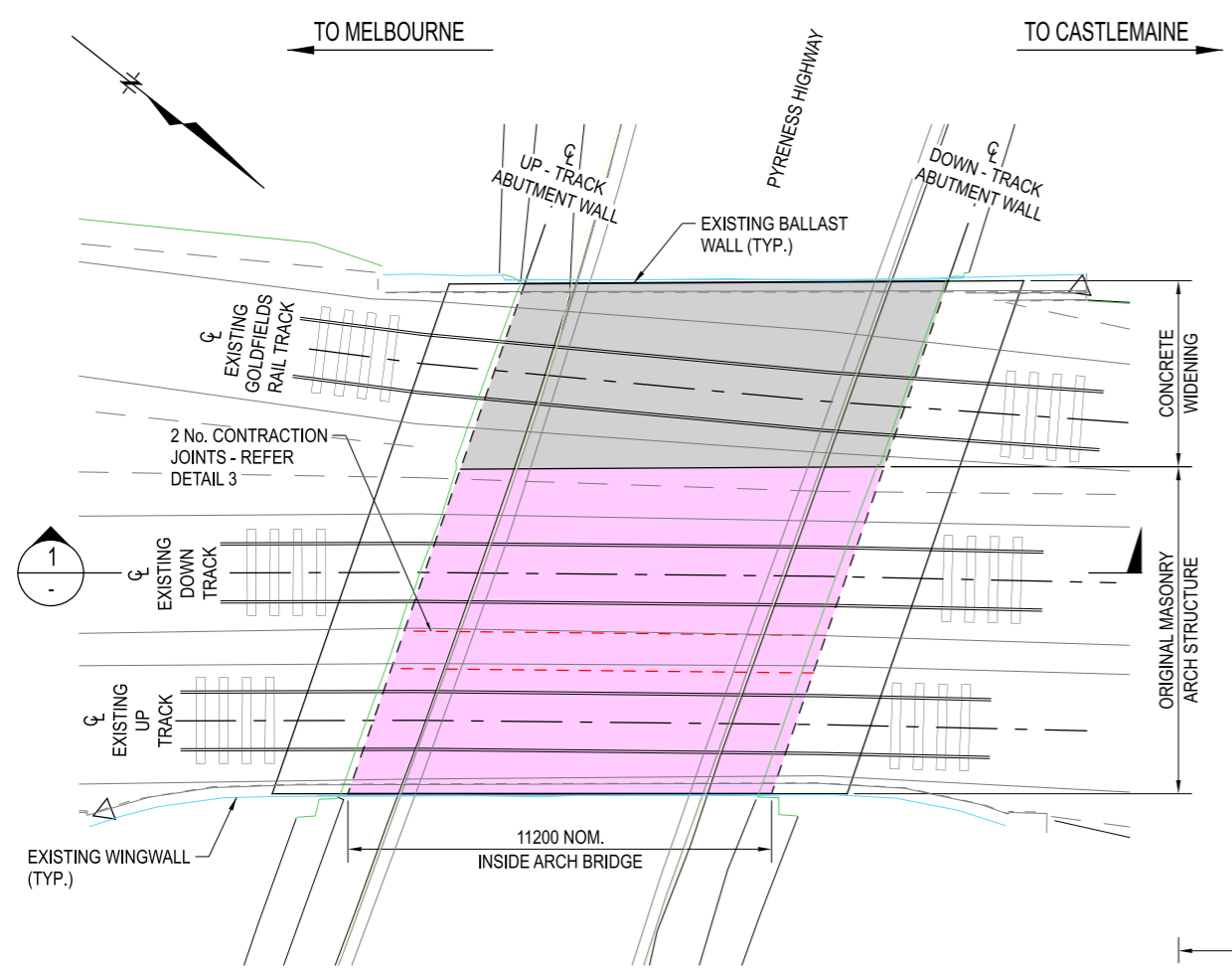
CASTLEMAINE

SDMBO-BR-124714 - MIDLAND HIGHWAY BRIDGE SUPERSTRUCTURE REMEDIATION GENERAL NOTES - SHEET 2

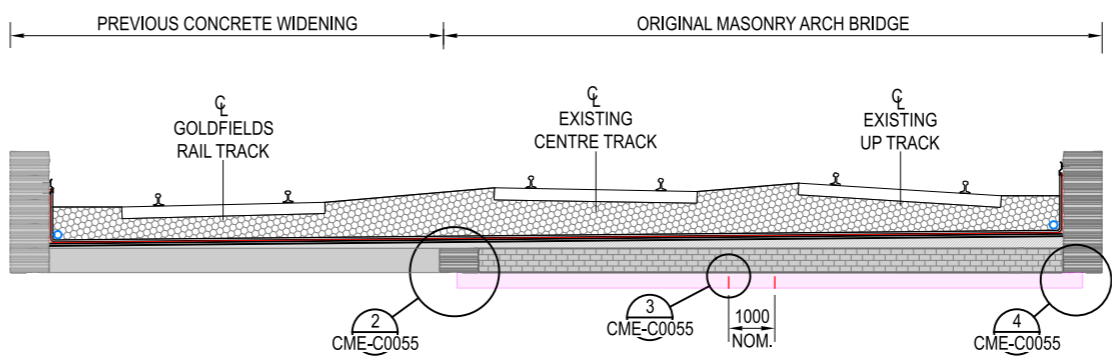
Up Location East. North. ID#	Down Location East. North. ID#	Datum MGA Z54
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Project Drawing Number CME-C0052		Rev. A
		Drawn By D ALCABAZA Designed By R PALLOT
File Name CME-C0052.dgn Sheet No. 01 of 01		Checked By D GRIFFITHS Ind. Review D HUGGETT
NOT FOR CONSTRUCTION		Approved R PALLOT Approval Date
Scale N.T.S.	Sheet Size A3	Drawing Number CME_C0052 Revision A

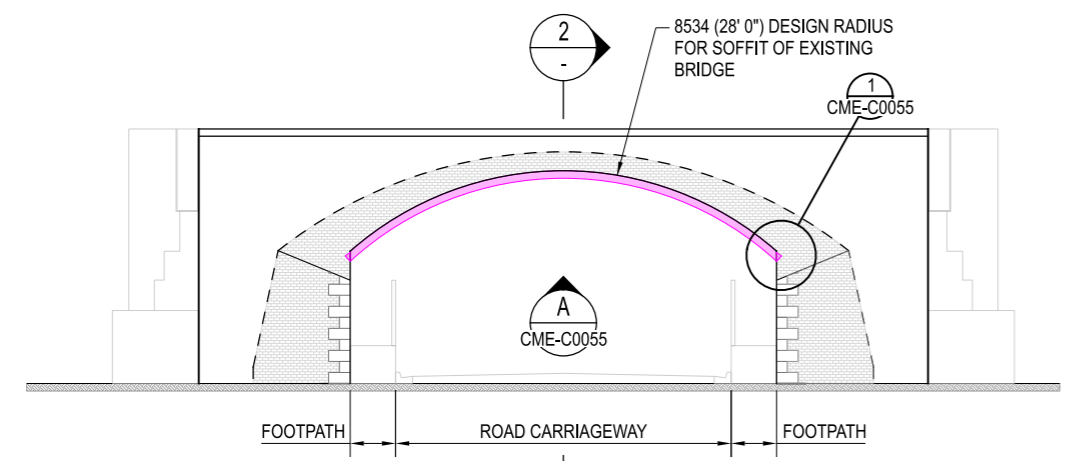
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SECTION 2
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SECTION 1
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CONCEPT DESIGN

ROAD AND RAIL TRAFFIC RESTRICTIONS

- WORKS SHALL BE UNDERTAKEN DURING RAIL OCCUPATION AND ROAD CLOSURE AS STATED.
- DURING CONSTRUCTION, RAIL TRAFFIC SHALL NOT BE PERMITTED ON THE BRIDGE UNTIL SHOTCRETE IS AT LEAST 12 HOURS OLD.
- REGARDING RAIL - AFTER COMPLETION OF SHOTCRETING THE FOLLOWING SHALL APPLY.
 - 0-7 DAYS - RAIL TRAFFIC PERMITTED AT 15 KM/HR
 - AFTER 7 DAYS - CURRENTLY PERMITTED TRAFFIC ALLOWED AT LINE SPEED.
- REGARDING ROAD-WORK
 - 0-12 HRS AFTER SHOTCRETING - NO ROAD TRAFFIC ALLOWED UNDER THE BRIDGE.
 - 12 HRS AFTER SHOTCRETING - ROAD TRAFFIC ALLOWED UNDER THE BRIDGE.

SOFFIT LINING PROCEDURE

- CLEAN OUT EXISTING WEEP HOLES IN THE BRIDGE SOFFIT AND PROVIDE EXTENSION PIECES TO SUIT THE LINING THICKNESS.
- DILL AND SET-IN PLACE ALL REQUIRED ANCHOR BARS.
- RAIL CLOSURE IS REQUIRED FROM THIS POINT.
- CLEAN THE SURFACE OF THE MASONRY AND STONWORK, REMOVING LOOSE SURFACE MORTAR AND FRACTURED BRICKWORK.
- APPLY DEBONDING WHERE REQUIRED.
- SECURELY FIX ALL REINFORCEMENT IN PLACE, TYING TO ANCHOR BARS.
- CUT THE STONE SPRINGER AT EACH ABUTMENT AS PER THE DETAIL.
- INSTALL THE CONCRETE SHOTCRETE LINING. BUILD UP LAYERS AS REQUIRED AND TROWEL FINISH SMOOTH - CLASS 2 MINIMUM AS PER AS3610.1 (2018) CONTINUOUSLY SURVEY THE SHOTCRETE THICKNESS DURING APPLICATION AND TROWELLING.
- SURVEY THE SOFFIT OF THE CONCRETE LINING TO CONFIRM THE REQUIRED VERTICAL CLEARANCE TO THE ROAD HAS BEEN ACHIEVED BEFORE OPENING UP THE ROAD TO TRAFFIC.

NOTES

- FOR DRAWING LIST REFER TO DRG No. CME-C0050.
- FOR GENERAL NOTES REFER TO DRG No. CME-C0051 AND CME-C0052.
- ALL DIMENSIONS SHALL BE CONFIRMED ON SITE BY THE CONTRACTOR PRIOR TO UNDERTAKING CONSTRUCTION.
- WORKS SHALL BE UNDERTAKEN DURING A RAIL OCCUPATION AS REQUIRED.



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ACS	A	12/07/2024	ISSUED FOR CONCEPT DESIGN	R PALLOT	D GRIFFITHS	D HUGGETT	R PALLOT	
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Consultant

Member of the Surlana Group

Franchisee / Lessee

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CIVIL STRUCTURAL
CASTLEMAINE
SDMBGO-BR-124714 - MIDLAND HIGHWAY BRIDGE
SUPERSTRUCTURE REMEDIATION
CONCRETE LINING - SHEET 1

Up Location East. North. ID#

Down Location East. North. ID#

Datum MGA Z54

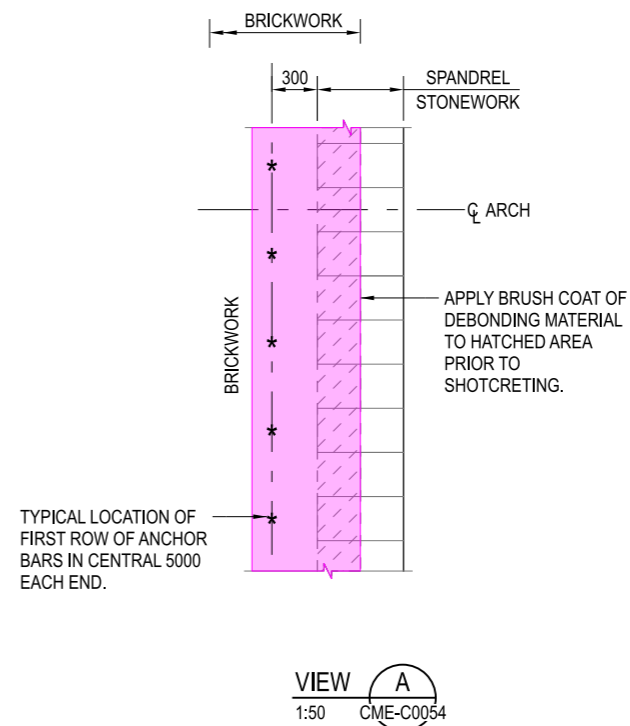
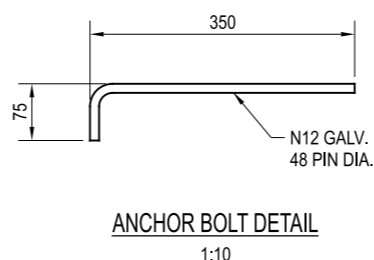
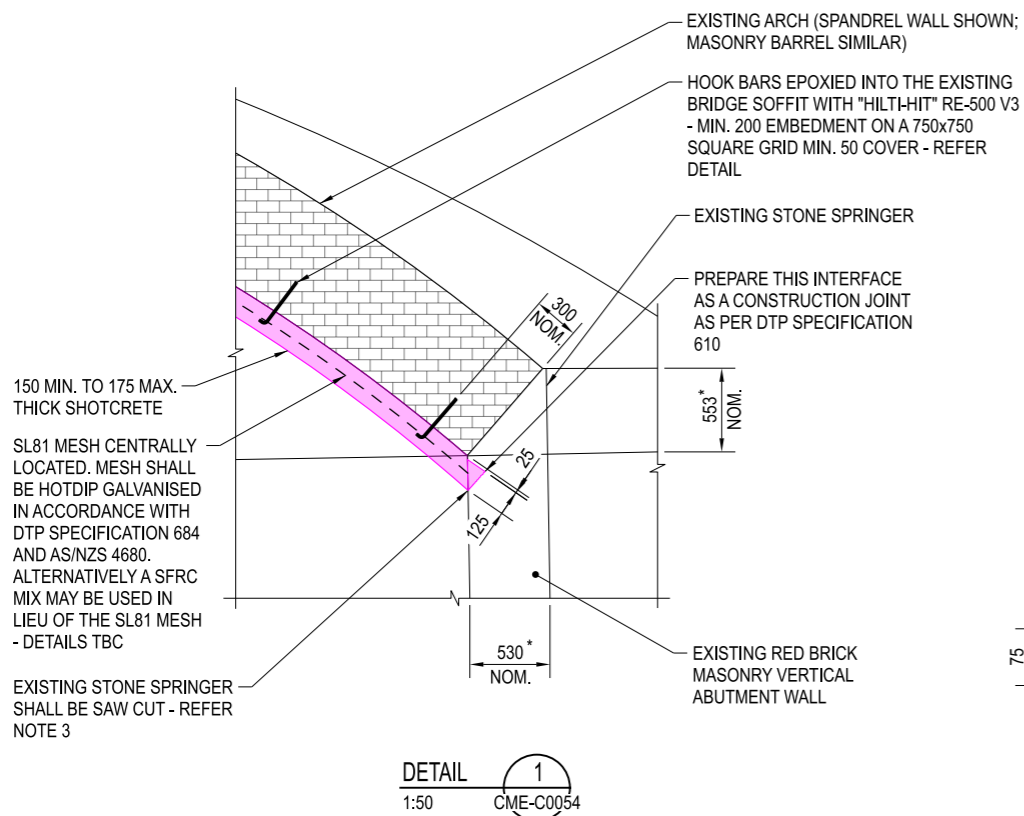
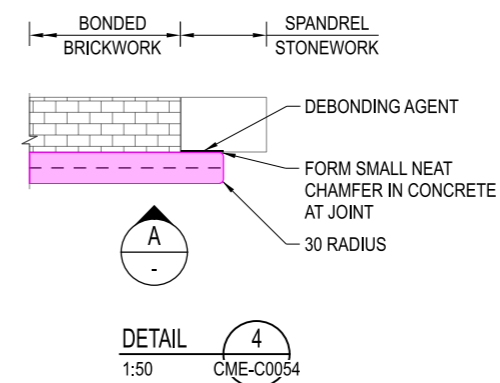
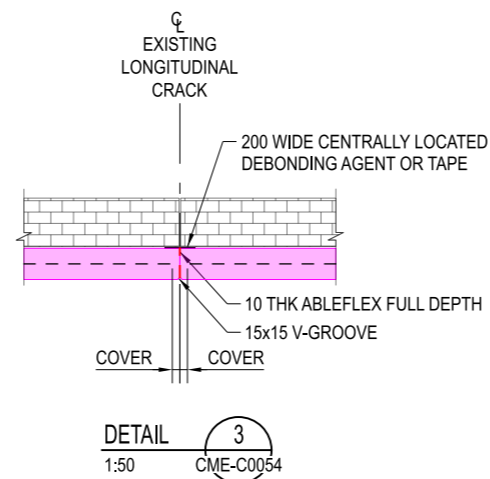
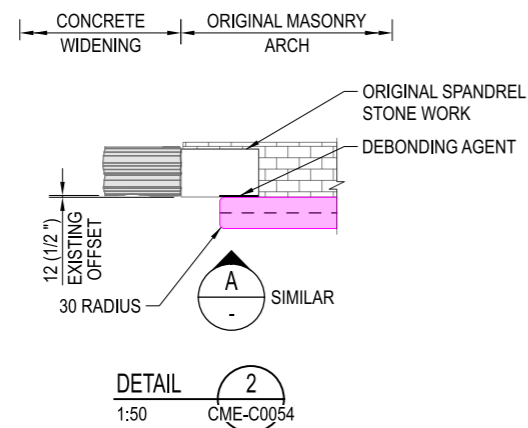
Project Drawing Number CME-C0054	Rev. A
	Drawn By D ALCABAZA Designed By R PALLOT
File Name CME-C0054.dgn Sheet No. 01 of 01	Checked By D GRIFFITHS Ind. Review D HUGGETT
Scale 1:200	Approved R PALLOT Approval Date
NOT FOR CONSTRUCTION	Drawing Number CME_C0054 Revision A
Sheet Size A3	

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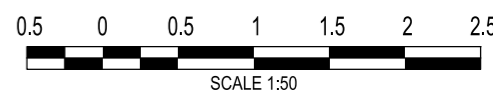
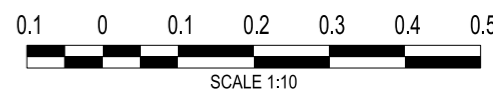
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- NOTES**
- FOR DRAWING LIST REFER TO DRG No. CME-C0050.
 - FOR GENERAL NOTES REFER TO DRG No. CME-C0051 AND CME-C0052.
 - EXISTING STONE SPRINGER SHALL BE CUT AS FOLLOWS:
 - CUTTING SHALL BE UNDERTAKEN USING A PRECISION CONCRETE SAW.
 - THE CUTTING PROCESS SHALL BE UNDERTAKEN IN MULTIPLE PASSES OF VARYING DEPTHS 20 mm APART.
 - A STOPPING MECHANISM SHALL BE USED ON THE SAW TO ENSURE NO ADDITIONAL OVER-CUT.
 - ADEQUATE SITE CONTROLS SHALL BE IMPLEMENTED BY THE BUILDER TO ENSURE THE REQUIRED GEOMETRY IS ACHIEVED WITHOUT FURTHER DAMAGE TO THE STONEWORK.
 - IF STONEWORK COMMENCES SPALLING WORKS SHALL BE STOPPED AND THE ENGINEER SHALL PROVIDE DIRECTION BEFORE RECOMMENCING CUTTING.



CONCEPT DESIGN

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CIVIL STRUCTURAL

CASTLEMAINE

SDMBGO-BR-124714 - MIDLAND HIGHWAY BRIDGE SUPERSTRUCTURE REMEDIATION CONCRETE LINING - SHEET 2

Up Location East. North. ID#

Down Location East. North. ID#

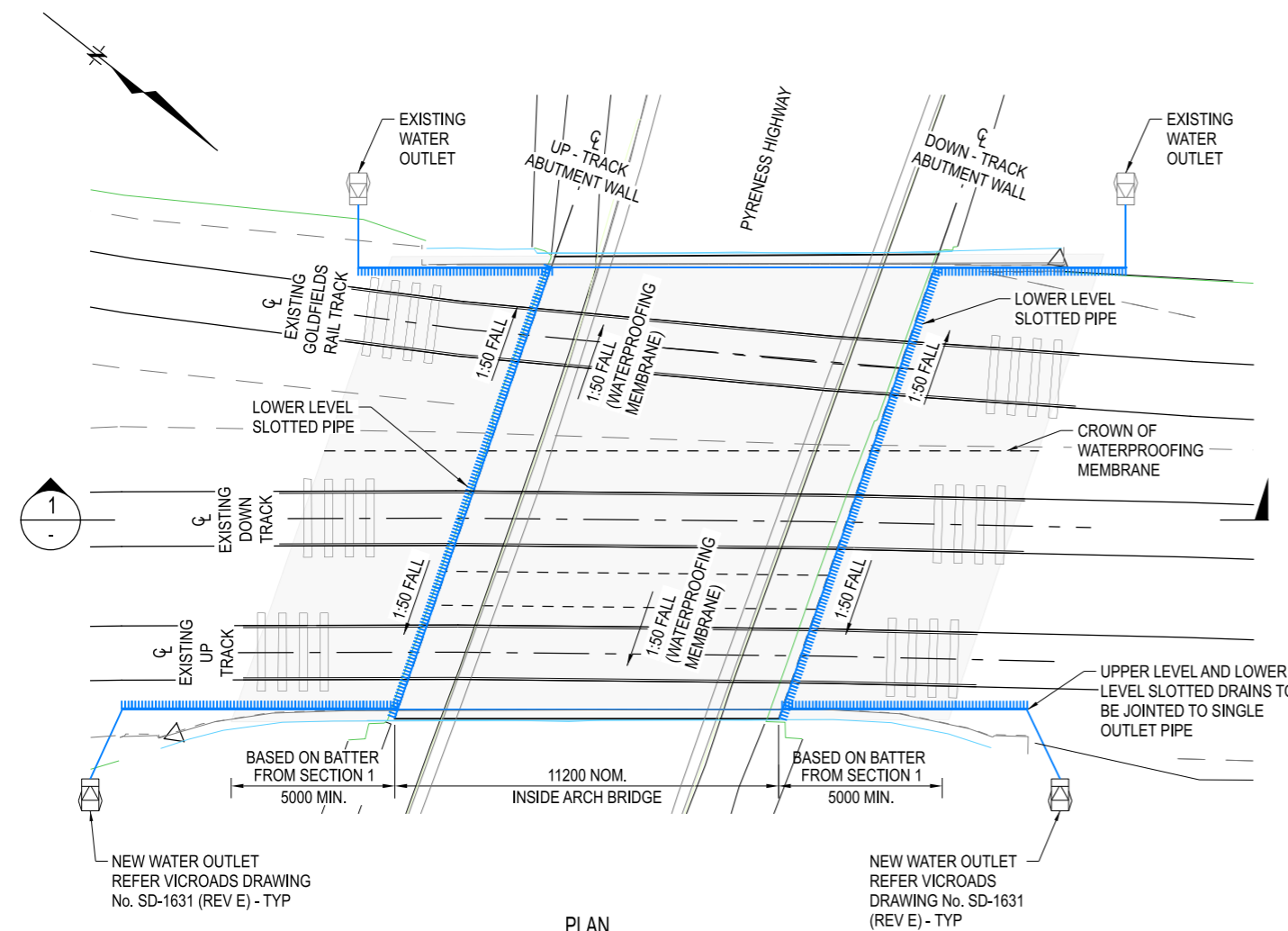
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Drawn By D ALCABAZA	Designed By R PALLOT	
Checked By D GRIFFITHS	Ind. Review D HUGGETT	
Approved R PALLOT	Approval Date	
File Name CME-C0055.dgn	Sheet No. 01 of 01	Drawing Number CME_C0055
Scale 1:200	Sheet Size A3	Revision A

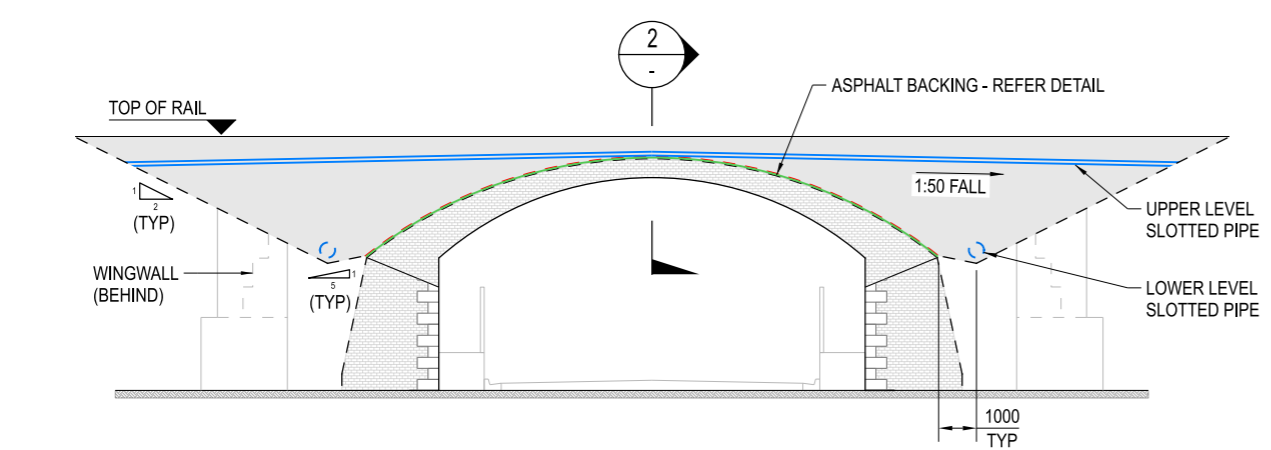
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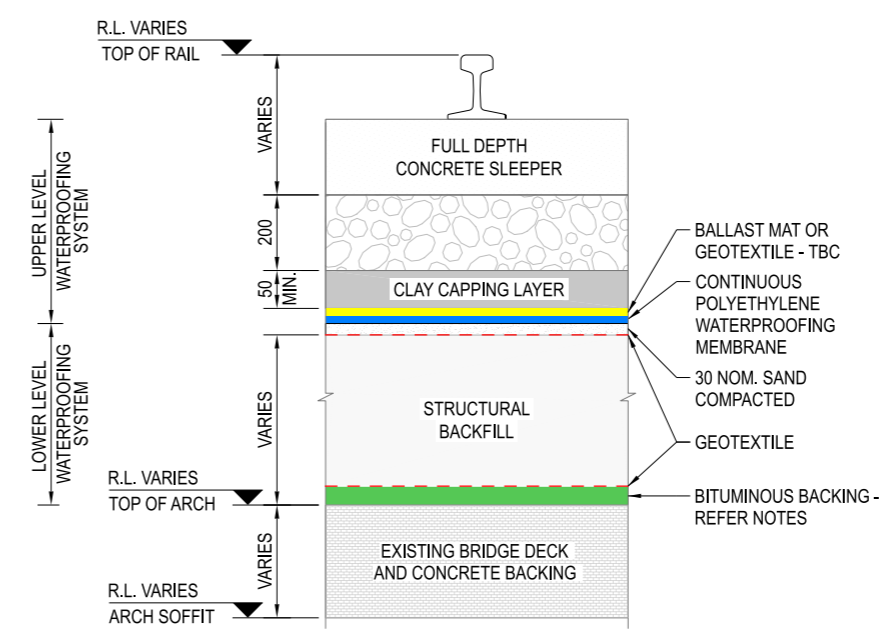
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SECTION 1
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SECTION 2
N.T.S.

BITUMINOUS LAYER PROCEDURE

1. REMOVE EXISTING FILL AND CLEAN TOP OF EXISTING ASPHALT COVERING BY BROOMING AND AIR-BLOWING.
2. APPLY A BITUMEN EMULSION SEAL OVER THE TOP OF THE ENTIRE ARCH AND BACKING STRUCTURAL ELEMENTS.
3. APPLY 40 MIN. TO 70 MAX. THICKNESS OVER THE TOP OF THE WHOLE ARCH AND CONCRETE BACKING.
4. APPLY A SPRAY COAT OF BITUMEN EMULSION OVER THE WHOLE SURFACE.
5. PROGRESS WITH THE ADDITIONAL SURFACING AND WATERPROOFING REQUIREMENTS.

WATERPROOFING NOTES

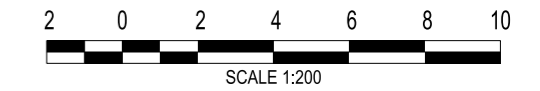
1. WATERPROOFING MEMBRANE SHALL BE INSTALLED AS ONE CONTINUOUS PIECE AND SHALL BE HOT-GUN JOINTED AS PER THE MANUFACTURER'S REQUIREMENTS.
2. SUB-BALLAST MAT SHALL BE LAID ON TOP OF THE LINER FOR THE FULL WIDTH OF THE BRIDGE AND EXTENT OF THE WATERPROOFING MEMBRANE. OVER THE BRIDGE LENGTH, INCLUDING WINGWALLS, THE BALLAST MAT SHALL EXTEND 50 mm ABOVE THE TOP OF THE BALLAST AS A MINIMUM.
3. CAUTION SHALL BE TAKEN ON SITE WHEN LAYING THE BALLAST TO ENSURE THAT THE WATERPROOFING LINING IS NOT DAMAGED AND REMAINS WATERTIGHT.
4. EXISTING DRAINAGE PIPES SHALL BE FLUSHED WITH HIGH PRESSURE WATER AND MAY BE REUSED AFTER INSPECTION, INCLUDING THE EXISTING DRAINAGE OUTLETS.
5. EXISTING DRAINAGE OUTLET LOCATIONS SHALL BE INSPECTED AND TOPPED UP WITH CRUSHED ROCK BEACHING IF REQUIRED.
6. THE SAND LAYER SHALL BE LIGHTLY COMPACTED USING HANDHELD EQUIPMENT ONLY. THE TOP OF THE SAND SHALL BE MADE SMOOTH WITH SCREED RAILS AND SURVEYED PRIOR TO LAYING THE WATERPROOFING MEMBRANE.
7. DRAINAGE PIPE SHALL BE DN100 PIPE (HDPE 80 SDR 11) WITH SLOTS TO TOP 180° OF PIPE LAID IN A DRAINAGE SOCK. PIPE SHALL BE LAID AT A MINIMUM OF 1:50 GRADE.

LEGEND

- UPPER LEVEL SLOTTED PIPE
- LOWER LEVEL SLOTTED PIPE

NOTES

1. FOR DRAWING LIST REFER TO DRG No. CME-C0050.
2. FOR GENERAL NOTES REFER TO DRG No. CME-C0051 AND CME-C0052.
3. ALL DIMENSIONS SHALL BE CONFIRMED ON SITE BY THE CONTRACTOR PRIOR TO UNDERTAKING CONSTRUCTION.
4. WORKS SHALL BE UNDERTAKEN DURING A RAIL OCCUPATION AS REQUIRED.
5. THESE DRAWINGS DO NOT CONSTITUTE THE TEMPORARY WORKS DESIGN. THE TEMPORARY STRENGTH AND STABILITY DESIGN SHALL BE UNDERTAKEN BY OTHERS AND IS THE RESPONSIBILITY OF THE CONTRACTOR.
6. FOR EXISTING FILL MATERIAL OVER THE BRIDGE - REFER "GEOTESTA" GEOTECHNICAL REPORT No. GE3908-16 FOR DETAILS AND TEST PIT LOCATIONS.



CONCEPT DESIGN

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Consultant

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CIVIL STRUCTURAL CASTLEMAINE

SDMBGO-BR-124714 - MIDLAND HIGHWAY BRIDGE SUPERSTRUCTURE REMEDIATION WATERPROOFING - SHEET 1

Up Location East. North. ID#

Down Location East. North. ID#

Datum MGA Z54

Project Drawing Number CME-C0057		Rev. A
Drawn By D ALCABAZA	Designed By R PALLOT	
Checked By D GRIFFITHS	Ind. Review D HUGGETT	
Approved R PALLOT	Approval Date	
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Scale 1:200	Sheet Size A3	Revision A