STRUCTURAL ENGINEERING

Sheet No.	Rev.	Drawing Title
S0		Title Sheet
S1	A	Construction Notes - Sheet 1
S2	A	Longitudinal Section
S3	A	Detail Sections Sheet - 1
S4	A	Detail Sections Sheet - 2

STRUCTURAL ▸ CIVIL ▸ MECHANICAL ▸ ACOUSTIC

A DIVISION OF MATRIX INDUSTRIES Pty. Ltd. ABN: 61 002 929 857

144 OXLEY ISLAND ROAD, OXLEY ISLAND NSW 2430

PH: +61 02 6553 2577 F:+61 02 6553 2585

E: info@matrixthornton.com.au W: www.matrixthornton.com.au

MATRIX THORNTON

Project

Proposed Bridge Concrete Abutments, for Mackays Steel Bridge within Lot 902 DP 878135

Client

Cann

Project No.

M22181

Sheet No.

S0

GENERAL NOTES

G1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT BUILDING CODES OF AUSTRALIA AND THE BY–LAWS AND ORDNANCES OF THE RELEVANT BUILDING AUTHORITIES AS THEY ARE RELATED SPECIFICALLY TO THE STRUCTURE, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.

G2. UNLESS NOTED OTHERWISE, ALL DIMENSIONS ARE EXPRESSED IN MILLIMETRES

G3. ENGINEER'S DRAWINGS SHALL NOT BE SCALED FOR DIMENSIONS

G4. ALL DIMENSIONS SHOWN AND/OR RELEVANT TO THE WORK SHALL BE VERIFIED BY THE BUILDER BEFORE CONSTRUCTION AND FABRICATION IS COMMENCED.

G5. THE STRUCTURAL WORKS ON THESE DRAWINGS HAVE BEEN DESIGNED FOR THE FOLLOWING LIVE LOAD

14 TONNE AXLE LOAD

WATER LOADS: STREAM VELOCITY – 7m/s.

G6. THIS DESIGN IS IN ACCORDANCE WITH THE FOLLOWING AUSTRALIAN STANDARDS AS APPLICABLE:

* AS3600–2009 CONCRETE STRUCTURES
* AS1170.1–2002 STRUCTURAL DESIGN ACTIONS
* AS1170.2–2011 STRUCTURAL DESIGN ACTIONS

G7. IT IS THE RESPONSIBILTY OF THE OWNER TO ENSURE THE WORKS ARE PROPERLY MAINTAINED.

G8. ABBREVIATIONS USED

ALT	ALTERNATIVE	HDG	HOT DIPPED GALVANIZED
BTM	BOTTOM	MAX	MAXIMUNM
CTRS	CENTRES	MIN	MINIMUM
C/S	BRICK / BLOCK COURSE	NSOP	NOT SHOWN ON PLAN
DIA	DIAMETER	NTS	NOT TO SCALE
FFL	FINISHED FLOOR LEVEL	U.N.O	UNLESS NOTED OTHERWISE
FGL	FINISHED GROUND LEVEL	U/S	UNDERSIDE

SITE CLASSIFICATOIN

SC1. AUSTRALIAN STANDARDS AS2870 ESTABLISHES PERFORMANCE FOR COMMON FOUNDATION CONDITIONS.
SITE CLASSES ARE PRESENTED AND AND AUGMENTED INTABLE BELOW.

SITE	TYPES OF SOIL	Ys VALUE	DESCRIPTION
A	Rock	0–10mm	Rock sites have no ground movement
A	Sand	0–10mm	Sand has little movement
GC	Gravel/ Cobbles	0–10mm	Gravel & Cobbles have little long term settlememt
S	Clay, Slightly Reactive	0–20mm	Slight ground movement due to moisture changes
M	Clay, Moderately Reactive	20–40mm	Moderate ground movement due to moisture changes
H1	Clay, Moderate to Highly Reactive	40–60mm	Moderate to High ground movement due to moisture changes
H2	Clay, Highly Reactive	60–75mm	High ground movement due to moisture changes
E	Clay, Extremely Reactive	75+mm	Extreme ground movement due to moisture changes
P	Problem	Varies	Sites which include soft soils, loose sands, landslip, mine subsidence, collapsing soils, erosion, fill and abnormal moisture conditions

TABLE SC1.

SITE PREPARATION AND FOUNDATION DETAILS

F1. SITE CLASSIFICATION IS CLASS 'GC' REFER TO 'TABLE SC1' FOR DETAILS FOOTINGS ARE DESIGNED FOR MAXIMUM ALLOWABLE BEARING PRESSURE OF 400 kPa.

F2. TOP SOIL CONTAINING GRASS ROOTS OR OTHER ORGANIC MATTER SHALL BE REMOVED FROM THE AREA ON WHICH THE SLAB IS TO REST

F3. THE PAD, RAFT AND STRIP FOTINGS MUST BE FOUNDED ON NATURAL GROUND, UNLESS NOTED OTHERWISE. THE BUILDER MUST OBTAIN APPROVAL OF THE FOUNDATION MATERIAL PRIOR TO PLACING STEEL AND/OR CONCRETE. THE CONSULTING ENGINEER MUST BE ADVISED IMMEDIATELY OF ANY PROBLEMS IN FOUNDATION MATERIAL.

F4. THE SITE IS TO BE BENCHED BY CUT AND FILL TO LINES, LEVELS AND GRADES SPECIFIED BY THE DESIGNER.

F5. A CUT AND FILL SITE SHALL HAVE THE FILL CONTINUE PAST THE EDGE OF THE STRUCTURE A MINIMUM OF ONE METRE, AND RETAINED, OR BATTERED BY A SLOPE OF NOT LESS THAN ONE VERTICAL TO FOUR HORIZONTAL (1: 4).

F6. FOUNDATIONS MUST BE CONSTRUCTED NO HIGHER THAN THE LEVELS SHOWN ON THE DRAWINGS.
CONCRETE BLINDING A MINIMUM OF 50mm THICK, PLACED UNDER THE SLAB.

F7. ALL FILL MATERIAL USED TO SUPPORT A SLAB SHALL BE APPROVED GRANULAR MATERIAL AND COMPACTED IN LAYERS. CARE SHALL BE TAKEN TO AVOID EXCESSIVE MOVEMENT OF GABIONS DURING COMPACTION.

F8. THE SUBGRADE SHALL BE PROOF ROLLED BY A ROLLER PRIOR TO LAYING THE BASE FILL COURSE AND ANY SOFT AREAS SHALL BE REMOVED AND REPLACED WITH COMPACTED GRANULAR FILL AS TO SATISFY THE REQUIREMENTS OF AS 2870–2011 SECTION 6.4.2.

F9. WHERE THE DEPTH OF EDGE BEAMS OR STRIP FOOTINGS IS INCREASED DURING EXCAVATION BEYOND THE VALUE SPECIFIED ON THE DRAWING, THE ENGINEER MUST BE ADVISED, AND ADDITIONAL REINFORCING STEEL MUST BE USED.
ALTERNATIVELY, CONCRETE BLINDING MAY BE USED TO MAINTAIN THE CORRECT FOOTING DEPTH, AS SHOWN IN THE BLINDING DETAILS BELOW.

F10. THE RIVER BED SHALL BE RESTORED AND COMPACTED AROUND THE GABIONS PRIOR TO FILL BEING PLACED BETWEEN GABIONS.

CONCRETE

C1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS3600 AND EXCEPT WHERE VARIED BY THE CONCRETE DOCUMENTS.CONCRETE EXPOSED CLASSIFICATION IS B1.

C2. WATER MUST NOT BE PERMITTED TO FLOW OVER THE BASE SLAB UNTIL AFTER CURING IS COMPLETE.

C3. THE LOCATION OF CONTROL JOINTS NOT SHOWN ON THE DRAWING SHALL BE SUBJECT TO THE APPROVAL OF THE CONSULTING ENGINEER.

C4. WATER IS NOT BE ADDED TO THE CONCRETE ON SITE AS TO INCREASE THE SLUMP ABOVE THAT SPECIFIED.

C5. NO ADMIXTURES SHALL BE USED IN CONCRETE UNLESS APPROVED IN WRITING ANTI–WASHOUT ADMIXTURES MAY BE USED.

C6. ALL CONCRETE IS TO BE MECHANICALLY VIBRATED IN PLACE.

C7. CURING: THE CONTRACTOR SHALL CURE THE CONCRETE FOR A MINIMUM OF 7 DAYS FROM THE TIME OF PLACEMENT BY:
* PONDING OR CONTINUOUSLY SPRINKLING, OR
* USE OF AN ABSORBABLE COVER KEPT WET, OR
* USE OF AN APPROVED CURING COMPOUND.

C8. CONCRETE GRADE F'c = 32MPa.

C9. DURABILITY CLASS B1.

C10. MINIMUM CONCRETE COVER = 50 mm

STRUCTURAL STEEL

S1. ALL BOLTS TO BE HOT DIP GALVANISED TO AS/NZS 4880 – 2006.

INSTALLING CULVERT UNITS

B1. BOX CULVERTS SHALL BE INSTALLED IN ACCORDANCE WITH CLAUSE 5.4 O AS 1597.2.

REINFORCEMENT

R1. REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY. IT IS NOT SHOWN IN TRUE PROJECTION.

R2. REINFORCEMENT SYMBOLS:

N	TEMPCORE DEFORMED BARS TO AS4671 (500N)
R	STRUCTURAL GRADE ROUND BARS TO AS4671 (250N)
SL	FABRIC TO AS467 (500N)
TM	TRENCH MESH TO AS4671 (500N)

NOTE : THE NUMBER FOLLOWING THE SYMBOL IS THE BAR DIAMETER IN MILLIMETRES

R3. – ALL TRENCH MESH MUST BE LAPPED 500MM MINIMUM (TYPICAL).
– BAR REINFORCEMENT IS TO BE TIED BENEATH THE FABRIC IF USED OR OTHERWISE BE PLACED ON CHAIRS AND LAPPED AS SHOWN IN DETAILED DRAWINGS

R4. CLEAR CONCRETE COVER TO REINFORCEMENT SHALL CONFORM TO THE FOLLOWING, UNO
FOOTINGS AND FOUNDATIONS : – 50mm
GROUND SLABS – EXPOSED : – 45mm (bottom), 40mm (top)
GROUND SLABS – NOT EXPOSED : – 65mm (bottom), 25mm (top)

R5. WHERE THE WIDTH OF AN INTERNAL OR EXTERNAL BEAM IS INCREASED BEYOND THE WIDTH SHOWN, FOR EVERY INCREASE IN WIDTH OF 100mm ONE EXTRA BAR OF BOTTOM STEEL SHALL BE PROVIDED.

R6. WELDING OF REINFORCEMENT IS NOT PERMITTED UNLESS SPECIFICALLY SHOWN ON THE DRAWING.

R7. TOP AND BOTTOM REINFORCING IN SLABS SHALL BE SUPPORTED IN THEIR CORRECT POSITIONS AT MAXIMUM CENTRES OF 800MM BOTH WAYS. DURING CONCRETING, NECESSARY PRECAUTIONS TO BE TAKEN TO AVOID THE DISPLACEMENT OF THE REINFORCING.

R8. ALL HOOKS, LAPS AND BENDS ARE TO BE IN ACCORDANCE WITH AS 3600.

R9. ALL REINFORCEMENT FABRIC SHALL COMPLY WITH AS4671 AND SHALL BE SUPPLIED AS FLAT SHEETS. SLAB FABRIC SHALL BE LAPPED BY ONE FULL PANEL OF FABRIC PLUS 25 MM, SO THAT THE TWO OUTERMOST TRANSVERSE WIRES OF ONE SHEET OVERLAP THE TWO OUTERMOST TRANSVERSE WIRES OF THE SHEET BEING LAPPED SUCH AS SHOWN BELOW.

STRUCTURAL STEEL

S1. ALL STRUCTURAL STEELWORK MUST COMPLY WITH AS 4100–1999 OR AS 4600–2005, AS APPLICABLE.

S2. MATERIALS SHALL CONFORM TO THE FOLLOWING STANDARDS:
HOT–ROLLED STRUCTURAL SECTIONS
HOLLOW STEEL SECTIONS
STEEL PLATE
– AS/NZS 3678–1996 Gr 250

S3. ACCEPTABLE MANUFACTURERS OF STRUCTURAL STEEL TO AS/NZS 3678, AS/NZS 3679 OR AS/NZS 1163 MUST HOLD A VALID CERTIFICATE OF APPROVAL, ISSUED BY THE AUSTRALIAN CERTIFICATION AUTHORITY FOR REINFORCING STEELS LTD (ACRS), OR EQUIVALENT CERTIFICATION AS MAY BE APPROVED IN ADVANCE BY THE ENGINEER.

S4. ALL STEEL WORK SHALL BE PROTECTED FROM CORROSION BY GALVANISING IN ACCORDANCE WITH AS/NZS 4680–2006.

S5. BOLTING
ALL BOLTS, NUTS AND WASHERS M16 OR LARGER SHALL COMPLY WITH AS/NZS 1252 (LATEST AMENDMENT).
FOR SIZES M12 OR SMALLER, BOLTS SHALL COMPLY WITH AS 1110.1–2000, AND NUTS SHALL COMPLY WITH AS 1112.1–2000.
UNLESS NOTED OTHERWISE, ALL BOLTED JOINTS IN WHICH ALL COMPONENTS ARE STEEL SHALL BE FIXED WITH GRADE 8.8/S BOLTS.

S6. AFTER TIGHTENING, THE EXPOSED FACES OF ALL BOLTS, NUTS AND WASHERS SHALL BE CLEANED, WIRE–BRUSHED AND PAINTED WITH A ZINC–RICH PAINT SUCH AS GALMET.

S7. ALL WELDS ARE TO BE CARRIED OUT IN ACCORDANCE WITH AS 1554, CLASS GP, UNLESS NOTED OTHERWISE, AND ARE TO BE E41 OR E48 6mm CONTINUOUS FILLET, UNLESS NOTED OTHERWISE.

S8. ALL FIELD WELDS, OR THOSE OTHERWISE CARRIED OUT AFTER GALVANISING ARE TO BE CLEANED, WIRE– BRUSHED, AND PAINTED WITH A ZINC–RICH PAINT SUCH AS GALMET.

S9. ROOFING AND WALL CLADDINGS ARE TO BE RE–INSTATED ON COMPLETION OF THE WORK. IF REQUIRED, NEW CLADDING IS TO BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

S10. FULL DETAILS OF LOADS, DEFLECTIONS AND REACTIONS MAY BE OBTAINED FROM THE CONSULTING ENGINEER.

PRELIMINARY

MATRIX THORNTON
STRUCTURAL ▸ CIVIL ▸ MECHANICAL ▸ ACOUSTIC
A DIVISION OF MATRIX INDUSTRIES Pty. Ltd. ABN: 61 002 929 857
144 OXLEY ISLAND ROAD, OXLEY ISLAND NSW 2430
PH: +61 02 6553 2577 F: +61 02 6553 2585
E: info@matrixthornton.com.au W: www.matrixthornton.com.au

ENGINEERS AUSTRALIA
Philip Thornton BE (UNSW) MIE (Aust.)
Chartered Professional Engineer
Membership No. NER 295662

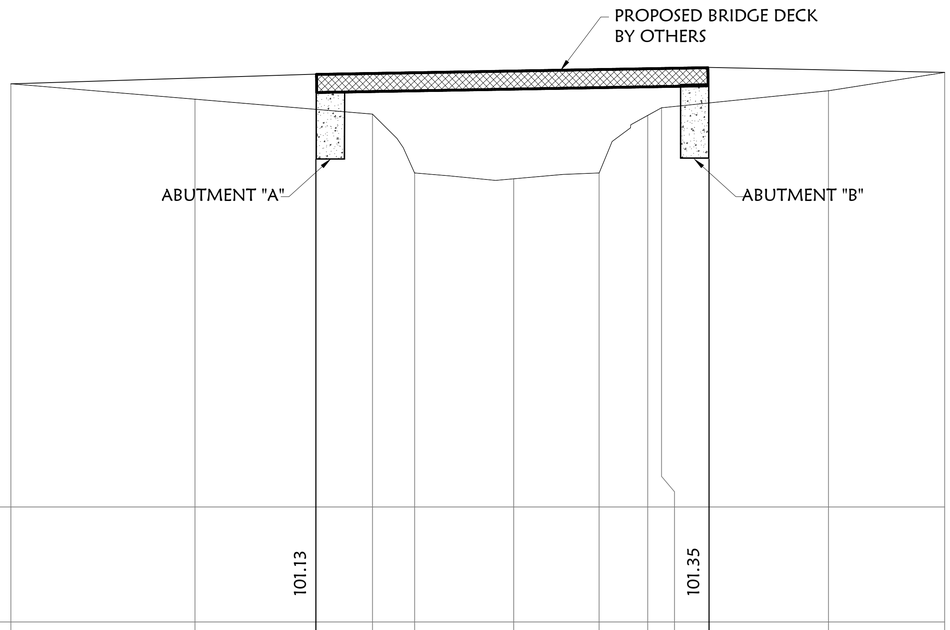
REVISION	DESCRIPTION	DATE
E		
D		
C		
B	For Construction	23.06.2022
A	TENDER ISSUE	31.05.2022

Project: Bridge of Mackays Bridge
Site Address: Lot 902 DP878135
Client: Cann

Drawing Title: Construction Notes
Sheet - 1.

Checked	Drawn	Scale	Size	Project No.
P.T.	G.R.	1:10 @ / 1:20 @	A1 / A3	M22181
Design	Date	Sheet No.	Rev	
P.T.	31.05.2022	S1	B	

M:\Matrix Consulting\22 M Reports\M22181 Cann - Calco - Bridge - Bindera\M22181 Engineering Drawings\M22181 1.6.22.dwg, 23/06/2022 3:51:00 PM, AutoCAD PDF (General Documentation).pc3



NEW BRIDGE R.L.				101.13						101.35		
DESIGN R.L.	100.8	100.3		99.8	97.9	97.7	97.9	9.8	100.0		100.6	101.2
CHAINAGE	100.00	6.01		11.80	13.18	16.41	17.20	20.79	21.24		26.69	30.48

LONGITUDINAL SECTION ON CENTRE LINE OF CROSSING

HORIZONTAL SCALE 1:100 @ A1, VERTICAL SCALE !:100

- DENOTES STEEL BRIDGE (BY OTHERS)
- DENOTES CONCRETE ABUTMENT (REFER DETAIL)
- DENOTES NATURAL GROUND

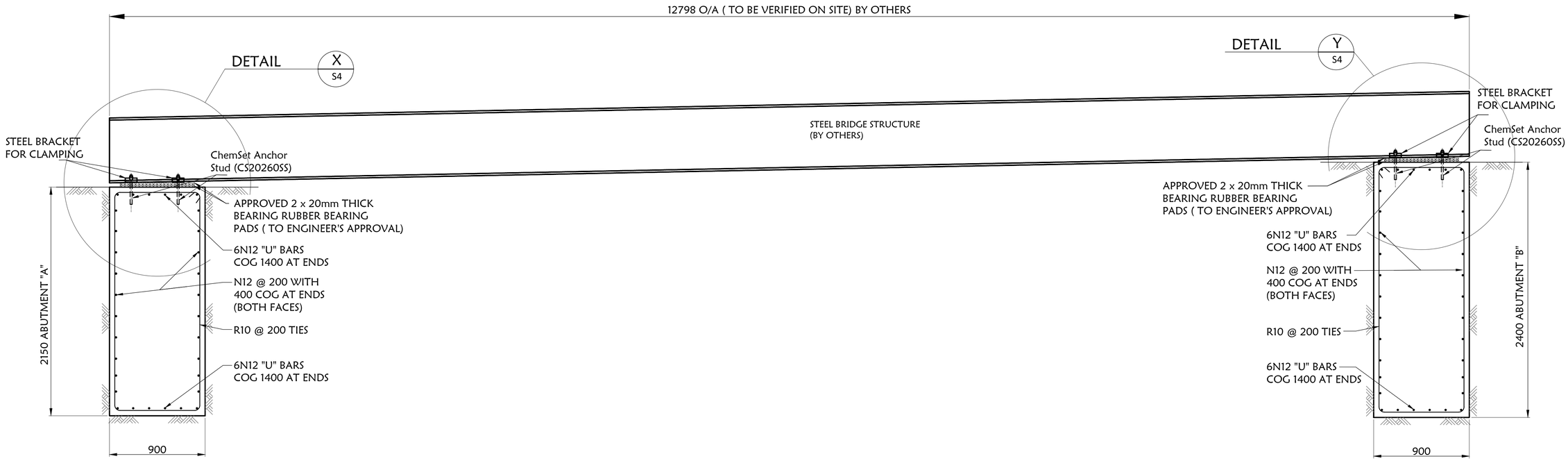
MATRIX THORNTON
STRUCTURAL ▸ CIVIL ▸ MECHANICAL ▸ ACOUSTIC
A DIVISION OF MATRIX INDUSTRIES Pty. Ltd. ABN: 61 002 929 857
144 OXLEY ISLAND ROAD. OXLEY ISLAND NSW 2430
PH: +61 02 6553 2577 F: +61 02 6553 2585
E: info@matrixthornton.com.au W: www.matrixthornton.com.au
ENGINEERS AUSTRALIA
Philip Thornton BE (UNSW) MIE (Aust.)
Chartered Professional Engineer
Membership No. NER 295662

REVISION	DESCRIPTION	DATE
E		
D		
C		
B	For Construction	23.06.2022
A	TENDER ISSUE	31.05.2022

Project: Bridge of Mackays Bridge
Site Address: Lot 902 DP878135
Client: Cann

Drawing Title: Longitudinal Section

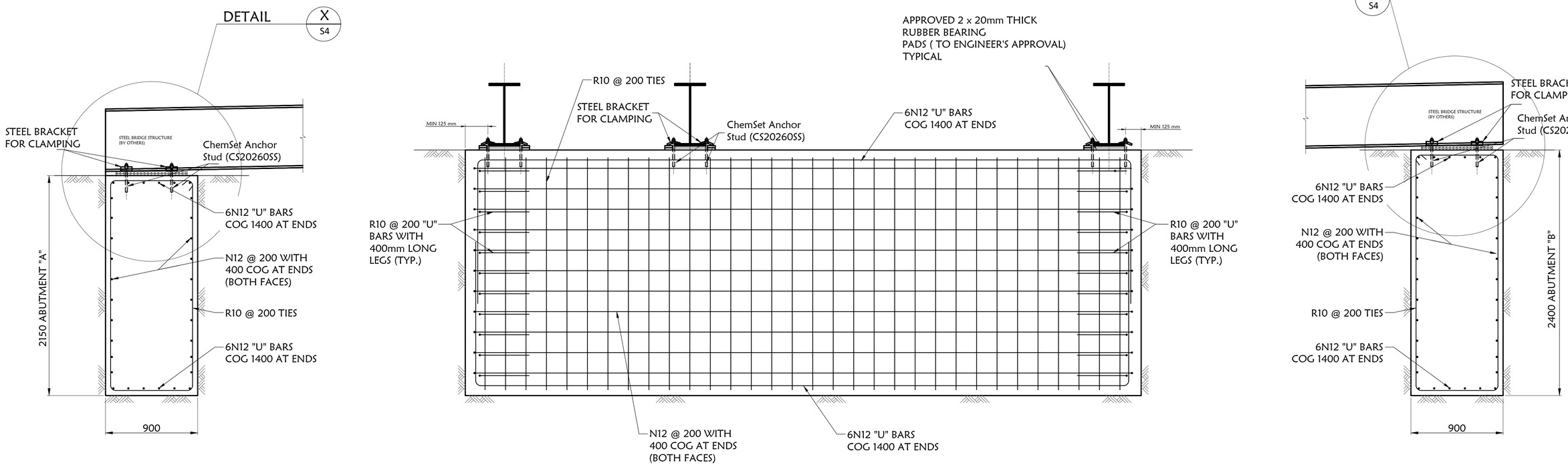
Checked	Drawn	Scale	Size	Project No.
P.T.	G.R.	1:10 @	A1	M22181
		1:20 @	A3	
Design	Date	Sheet No.	Rev	
P.T.	31.05.2022	S2	B	



ABUTMENT "A"
SCALE 1:20 @ A1

ELEVATION ON BRIDGE ABUTMENTS
SCALE 1:20 @ A1

ABUTMENT "B"
SCALE 1:20 @ A1



SECTION ABUTMENT "A"
SCALE 1:20 @ A1

ELEVATION ON ABUTMENT "A"
ELEVATION ON ABUTMENT "B" SIMILAR
SCALE 1:20 @ A1

MATRIX THORNTON
STRUCTURAL ▸ CIVIL ▸ MECHANICAL ▸ ACOUSTIC
A DIVISION OF MATRIX INDUSTRIES Pty. Ltd. ABN: 61 002 929 857
144 OXLEY ISLAND ROAD. OXLEY ISLAND NSW 2430
PH: +61 02 6553 2577 F: +61 02 6553 2585
E: info@matrixthornton.com.au W: www.matrixthornton.com.au

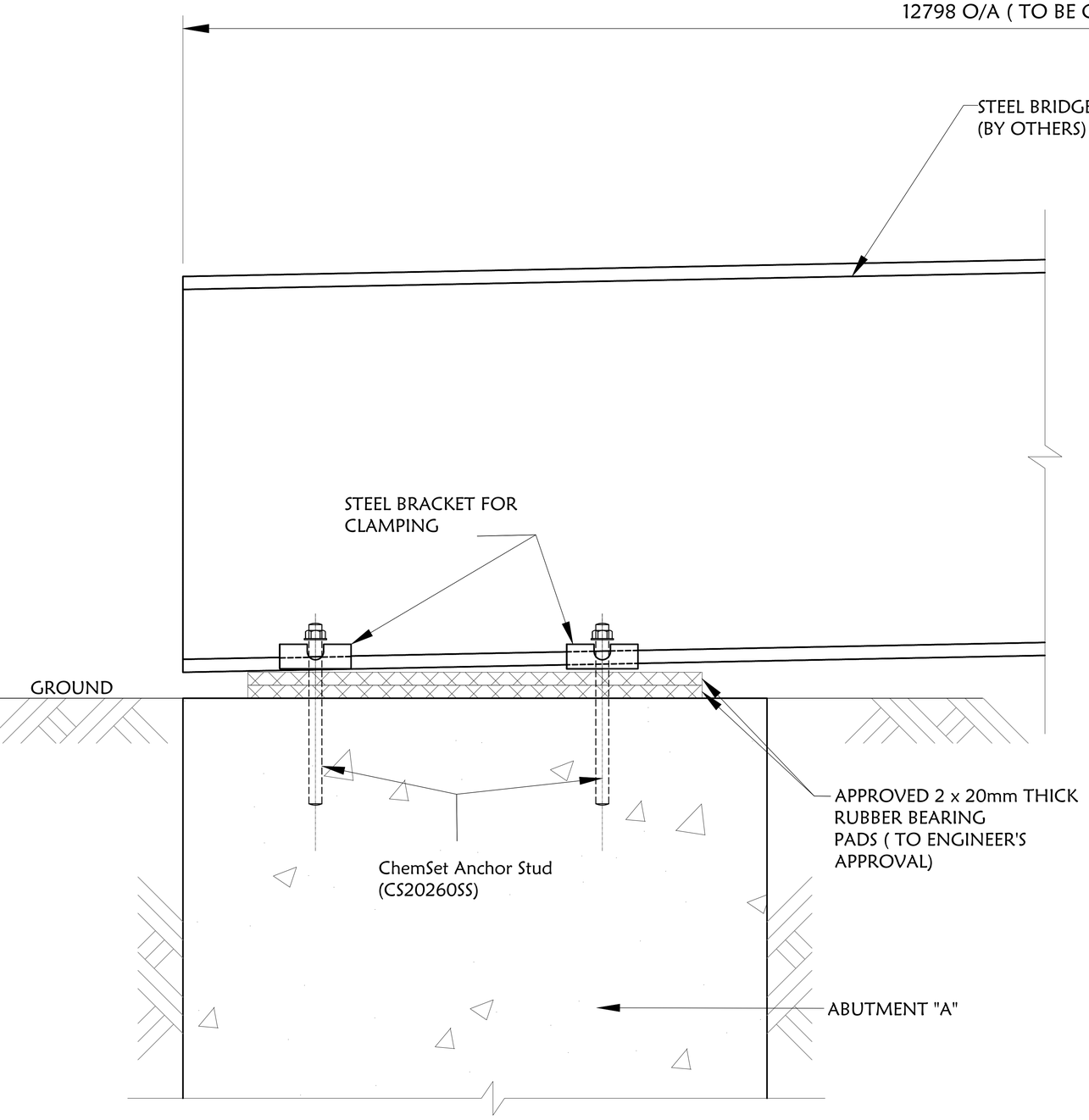
ENGINEERS AUSTRALIA
Philip Thornton BE (UNSW) MIE (Aust.)
Chartered Professional Engineer
Membership No. NER 295662

REVISION	DESCRIPTION	DATE
E		
D		
C		
B	For Construction	23.06.2022
A	TENDER ISSUE	31.05.2022

Project: Bridge of Mackays Bridge
Site Address: Lot 902 DP878135
Client: Cann

Drawing Title: Abutment Reinforcement Details
Sheet - 1.

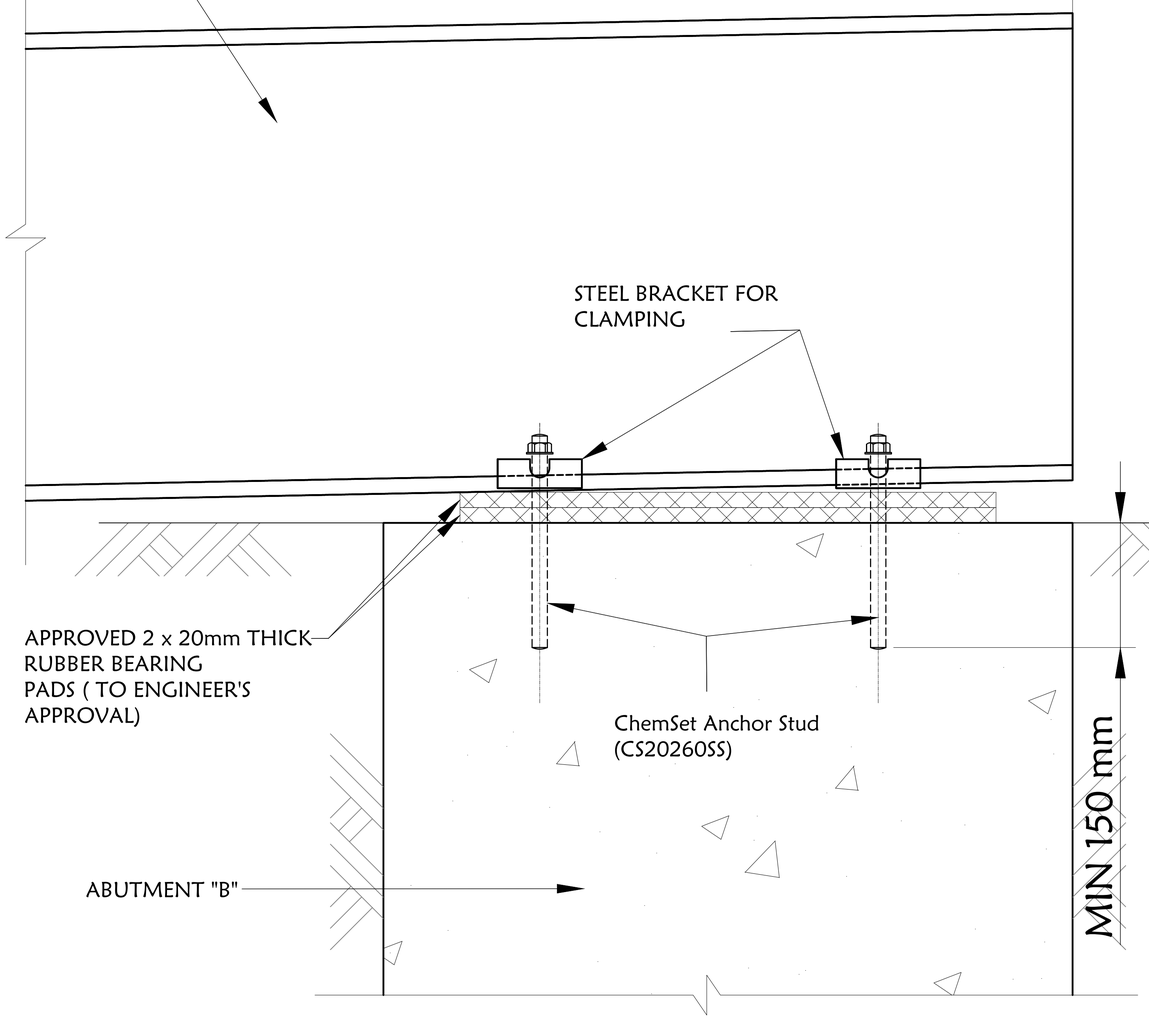
Checked	Drawn	Scale	Size	Project No.
P.T.	G.R.	1:10 @	A1	M22181
		1:20 @	A3	
Design	Date			Sheet No. / Rev
P.T.	31.05.2022			S3 / B



DETAIL X / S3

BEARING RUBBER PADS FOR ABUTMENT "A"

SCALE 1:5 @ A1



DETAIL Y / S3

BEARING RUBBER PADS FOR ABUTMENT "B"

SCALE 1:5 @ A1

MATRIX THORNTON
STRUCTURAL ▸ CIVIL ▸ MECHANICAL ▸ ACOUSTIC
A DIVISION OF MATRIX INDUSTRIES Pty. Ltd. ABN: 61 002 929 857
144 OXLEY ISLAND ROAD. OXLEY ISLAND NSW 2430
PH: +61 02 6553 2577 F: +61 02 6553 2585
E: info@matrixthornton.com.au W: www.matrixthornton.com.au

ENGINEERS AUSTRALIA
Philip Thornton BE (UNSW) MIE (Aust.)
Chartered Professional Engineer
Membership No. NER 295662

REVISION	DESCRIPTION	DATE
E		
D		
C		
B	For Construction	23.06.2022
A	TENDER ISSUE	31.05.2022

Project: Bridge of Mackays Bridge
Site Address: Lot 902 DP878135
Client: Cann

Drawing Title: Bearing Details Sheet - 2.

Checked	Drawn	Scale	Size	Project No.
P.T.	G.R.	1:5 @ 1:10 @	A1 A3	M22181
Design	Date	Sheet No.	Rev	
P.T.	31.05.2022	S4	B	