STRUCTURAL ENGINEERING

Sheet No.	Revision	Drawing Title
S0	D	Title Sheet
S1	D	Notes sheet 1
S2	D	Notes sheet 2
S3	D	Notes sheet 3
S4	D	Causeway Plan & Longitudinal Section
S5	D	Bridge Abutment Plan & Details
S6	D	Bridge Abutment Details
S7	D	Approach Ramp Details
S8	D	Road Cross Sections
S9	D	Sedimentation Plan

STRUCTURAL ▸ CIVIL ▸ MECHANICAL ▸ ACOUSTIC

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MATRIX THORNTON

Project
Causeway Replacement

Project Address
2414 Thunderbolts Way,
Tibbuc N.S.W

Client
Julianne Blain

Project No.
M23014

Sheet No.
S0

GENERAL NOTES

G1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND OTHER CONSULTANTS' DRAWINGS AND SPECIFICATIONS, AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED. IN CASE OF DISCREPANCY, PRECEDENCE IS GIVEN TO DRAWINGS, NOTES, THEN SPECIFICATION.

G2. NOT USED.

G3. THESE DRAWINGS SHALL NOT BE USED FOR COMMITTING TO MATERIALS ORDERS OR CONSTRUCTION UNTILL AUTHORIZED AND ISSUED AS "FOR CONSTRUCTION".

G4. UNLESS NOTED OTHERWISE
ALL DIMENSIONS ARE GIVEN IN MILLIMETRES
ALL CHAINAGES ARE GIVEN IN MERTRES
ALL CO-ORDINATES ARE TO MAP GRID AUSTRAILA (MGA)
ALL LEVELS ARE TO AUSTRALIAN HEIGHT DATUM (AHD)

G5. ALL DIMENSIONS RELEVANT TO SETTING OUT AND OFF-SITE WORK SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF FABRICATION AND CONSTRUCTION

G6. DO NOT OBTAIN DIMENSION BY SCALING DRAWINGS.

G7. REFER ALL DISCREPENCIES TO THE SUPERINTENDENT FOR RESOILUTION BEFORE PROCEEDING WITH THE WORK.

G8. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS, AUSTRALIAN STANDARDS (INCLUDING ALL AMMENDMENTS) AUSTRALIAN STANDARDS CODES OF PRACTICE AND THE REQUIREMENTS OF ANY OTHER RELEVANT STATUTORY AUTHORITIES, ALL THE ABOVE DOCUMENTS ARE THOSE CURRENT (AS VERIED BY CONTRACT DOCUMENTS) AT THE COMMENCEMENT OF THE CONTRACT

G9. SUPPLY RELEVANT SECTIONS OF THESE NOTES AND THE SPECIFICATION TO SUBCONTRACTORS.

G10. FULL DETAILS OF ANY VARIATION OF THE SCOPE, METHOD OF WORKS OR MATERIALS USED MUST BE SUBMITTED BY THE CONTRACTOR TO THE SUPERINTENDENT AND ENGINEER BEFORE THE WORK IS COMMENCED.

G11. THE DRAWINGS DO NOT SHOW ALL DETAILS OF FIXTURES, INSERTS, SLEEVES AND OPENINGS REQUIRED, ALL SUCH DETAILS INCLUDING RECESSES AND CHASES MUST BE APPROVED BY THE ENGINEER BEFORE THE WORK IS COMMENCED.

G12. KEEP ON SITE A COMPLETE SET OF CONTRACT DOCUMENTS (INCLUDING DRAWINGS AND SPECIFICATIONS) AND SITE INSTRUCTIONS.

PROPRIETARY ITEMS

G13. NOMINATION OF PROPRIETARY ITEMS DOES NOT INDICATE EXCLUSIVE REFERENCE BUT INDICATES REQUIRED PROPERTIES OF ITEM. SIMILAR ALTERNATIVES HAVING REQUIRED PROPERTIES MUST BE OFFERED TO THE SUPERINTENDENT & ENGINEER FOR APPROVAL.

G14. INSTALL PROPRIETARY ITEMS STRICTLY IN ACCORDANCE WITH MANUFACTURERS REQUIREMENTS AND RECOMMENDATIONS.

G15. THE APPROVAL OF A SUBSTITUTION SHALL BE SOUGHT FROM THE ENGINEER AND ANY APPROVAL GIVEN IS NOT AN AUTHORISATION FOR A VARIATION TO THE CONTRACT. ANY VARIATION INVOLVED MUST BE TAKEN UP WITH G.T.C.C. BEFORE THE WORK IS COMMENCED.

SERVICES

G16. THE CONTRACTORS ATTENTION IS PARTICULARLY DRAWN TO THE POTENTIAL HAZARD PRESENTED BY THE PRESENCE OF BURIED, CONCEALED, AND/OR OVERHEAD SERVICES IN THE AREA OF CONSTRUCTION ACTIVITY.

G16. REFERENCE IS MADE TO THE GEOTECHNICAL REPORT No. RGS02648.1-AB DATED ON 26 APRIL 2021, ISSUED BY REGIONAL GEOTECHNICAL SOLUTIONS

GENERAL NOTES cont.

G16. PRIOR TO ANY CONSTRUCTION ACTIVITY ON SITE (INCLUDING EXCAVATION, DRILLING OR PILING) THE CONTRACTOR SHALL CHECK WITH ALL RELEVANCE AUTHORITIES, OBTAIN ALL NECESSARY PERMITS, THE CONTRACTOR SHALL BY SITE EXPLORATION CONFIRM THE LOCATION OF ALL SERVICES WHICH MAY RE AFFECTED BY THE WORKS. THE CONTRACTOR SHALL MARK THE LOCATION OF ALL SERVICES CLEARLY AND ACCURATELY ON SITE AND ON THE AS-BUILT DRAWINGS.

G17. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO ESTABLISH THE LOCATION OF AND PROTECT ALL AFFECTED SERVICES AT THE SITE. SERVICES SHOWN ON DRAWINGS ARE INDICATIVE LOCATIONS ONLY. NOT ALL SERVICES ARE SHOWN ON THE DRAWINGS.

G18. HAND EXCAVATION ONLY IS PERMITTED WITHIN ONE METER OF IN-GROUND SERVICES

TEMPORARY WORKS

G19. THESE DRAWINGS DO NOT DETAIL TEMPORARY WORKS, CONSTRUCTION METHODS AND TEMPORARY WORKS ARE THE RESPONSIBILITY OF THE CONTRACTOR.

G20. THE DESIGN CERTIFICATION AND PERFORMANCE OF FORMWORK AND FALSE WORK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE CARRIED OUT IN ACCORDANCE WITH THE RELEVANT CODES.

G21. THE CONTRACTOR IS RESPONSIBLE FOR THE CONSTRUCTION PROCEDURE AND ALL LOADS APPLIED DURING CONSTRUCTION MAINTAIN THE STRUCTURE IN A STABLE CONDITION DURING CONSTRUCTION AND PROVIDE TEMPORARY BRACING AND/OR SUPPORT AS REQUIRED. ENSURE NO PART IS OVERSTRESSED. DO NOT PLACE OR STORE BUILDING MATERIALS ON STRUCTURAL MEMBERS WITHOUT SUPERINTENDENTS APPROVAL. THE CONTRACTOR SHALL PROVIDE CALCULATIONS TO JUSTIFY THE ADEQUACY OF THE STRUCTURE TO SAFELY WITHSTAND THE INTENDED IMPOSED LOADS AND/OR CONSTRUCTION PROCEDURE.

DESIGN REQUIREMENTS

D1. CAUSEWAY SLAB HAS BEEN DESIGNED IN ACCORDANCE WITH RELEVANT CLAUSES OF AS 5100, AS 3600 AND AUSROADS ROAD DESIGN PART 5B.
DESIGN LOADS ARE IN ACCORADANCE WITH AS 5100.2-2017 (A160. SM1600)
AND FIRE SAFETY GUIDLINE (ACCESS FOR FIRE BRIGADE VEHICLES AND FIREFIGHTERS

D2. THE STRUCTUAL ELEMENTS SHOWN ON THESE DRAWINGS HAVE BEEN, OR DESIGN LOADS IN ACCORDANCE WITH THE FOLLOWING IMPOSED LOADINGS:

DESIGN CRITERIA	LOADING	
ARE TO BE DESIGNED IN ACCORDANCE AS5100.2 (2017) BRIDGE DESIGN PART 2 DESIGN LOADS	WITH AS 5100.2-2017 BRIDGE DESIGN FOR TRAFFIC - SM1600, A160 AND W80	
NUMBER OF DESIGN LANES	1	
OPERATING SPEED	20km/h	
DEAD LOADING - CONCRETE DENSITY	24kN/m3	
SUPERIMPOSED DEAD LOADING	22kN/m3	
BRIDGE & OFF STRUCTURE BARRIERS REGULAR PERFORMANCE LEVEL)	FT (ULS LONG OR TRANSVERSE	250kN
	OUTWARD LOAD	
	FL (ULS LONG OR TRANSVERSE LOAD)	80kN
	LL (VEHICLE CONTACT LENGTH)	1.1m
	FV (ULS VERITICAL LOAD)	80kN
	LV (ULS VERTICAL CONTACT LENGTH)	L5.5m
	HR (MINIMUM EFFECTIVE HEIGHT)	800mm
	VU (ULS VELOCITY)	VU2.5m/s
FLOOD HEIGHT	ABOVE DECK LEVEL	

STEEL

GALVANISING

S1. HOT DIP GALVANISING SHALL BE IN ACCORDANCE WITH RELEVANT AUSTRALIA STANDARDS AS 1214, AS 1559, AS 4680, AS 4791 AND AS 4792
REPAINTING/REPAIR OF DAMAGED GALVANISED SURFACES (EG. SITE WELDS) TO BE PAINTED WITH TWO COATS OF APPROVED ZINC RICH PAINT.

S2. HOT DIP GALVANISE BOLTS, SCREWS, NUTS AND WASHERS TO AS 1214 ORDERED AS SUCH FROM BOLT MANUFACTURER. TAP GALVANISED NUTS 0.4mm OVERSIZE TO SUIT GALVANISED THREADS TO AS 1214 AND OIL FOR PROTECTION. INSTALL WASHERS UNDER BOLT HEAD AND NUT. USE TAPERED WASHERS AS REQUIRED

S3. WHERE NOMINATED AS GALVANISED ON DRAWINGS, STEELWORK TO BE HDG TO AS 4680 AND AS 1214. ANNEAL COLD WORKED ITEMS TO 650C PRIOR TO GALVANISING. ZINC COATING TO BE CONTINUOUS, ADHERENT FREE FROM LUMPS, SPIKES, DAGS, RUNS, BLISTERS, ROUGHNESS, GRITTY AREAS, UNCOATED SPOTS, ACID AND BLACK SPOTS, DROSS, FLUX AND OTHER IMPERFECTIONS.

S4. TREAT CONTACT SURFACES OF FRICTION-TYPE BOLTED JOINTS BY WIRE BRUSHING OR LIGHT BLASTING TO EXTENT NECESSARY TO ACHIEVE REQUIRED SLIP FACTOR

S5. PASSIVATE GALVANISED STEEL TO BE IN CONTACT WITH CONCRETE BY DIPPING IN 0.2% SODIUM DICHROMATE SOLUTION.

S6. REPAIR DAMAGE TO GALVANISED COATING BY POWER TOOL CLEANING TO AS 1627.2 OR IF INACCESSIBLE BY HAND TOOL CLEANING TO AS 1627.7 FOLLOWED BY SOLVENT CLEANING/ DEGREASING TO AS 1627.1 AND APPLY TWO COATS OF AN ORGANIC ZINC-RICH PRIMER EACH 60 MICRONS DRY FILM THICKNESS OVERLAPPING SOUND METALLIC ZINC.

CONCRETE

C1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS 5100--2017 AND CONTRACT SPECIFICATION.

C2. WHERE THE MEANING OF ABBREVIATIONS USED IS UNCERTAIN, REFER TO ENGINEER FOR CLARIFICATION PRIOR TO PROCEEDING.

C3. CONCRETE SHALL BE FROM AN APPROVED SOURCE AND SHALL COMPLY WITH THE REQUIREMENTS OF THE FOLLOWING STANDARDS, UNLESS NOTED OTHERWISE

STANDARD NUMBER	STANDARD NAME
AS 5100.6 TE	BRIDGE DESIGN PART 6 STEEL
AS 4671	STEEL REINFORCING MATERIALS
AS 3972	PORTLAND CEMENT
AS 1379	READY-MIX CONCRETE
AS 2758.1	CONCRETE AGGREGATES

C4. UNLESS NOTED OTHERWISE ALL CEMENT SHALL COMPLY WITH AS 3972

DESIGNATION	DSESCRIPTION
GP	GENERAL PURPOSE
GB	GENERAL PURPOSE BLENDED
SR	SULPHATE RESISTANT CEMENT

C5. NO PENETRATIONS, RECESSES OR CHASES OTHER THAN THOSE SHOWN ON THE DRAWINGS SHALL BE MADE IN THE CONCRETE MEMBERS WITHOUT PRIOR APPROVAL OF THE ENGINEER.

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C	PRELIMINARY	10-06-2024
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A	DRAFT	28-02-2024

Client: Julianne Blain

Project: Causeway Replacement
Site Address: 2414 Thunderbolts Way, Tibbuc N.S.W

Drawing Title: Structural Notes (First Sheet)

Design	Checked	Size	Scale	Project No.
M.A.	P.T.	A1	N/A	M23014
Drawn	Date			Sheet No. / Rev
B.A.	28-02-2024			S1 / D

CONCRETE cont.

C6. CONCRETE SHALL BE (SPECIAL CLASS PERFORMANCE, VIC ROADS), (B80, NSW RTA), (QLD DMR, MRS 1170) STANDARD SPECIFICATION FOR ALL BRIDGEWORKS:

STRUCTURAL ELEMENT	CONCRETE GRADE	EXPOSURE	CEMENT TYPE
ROAD DECK	32 MPa	B1	GB
BEAMS	32 MPa	B1	GB
ABUTMENTS AND WINGWALLS	32 MPa	B1	GB
	32 MPa	B1	GB
GROUTING	32 MPa	B1	GB
MASS CONCRETE	32 MPa	B1	GB

C7. MANUFACTURE AND DELIVERY OF CONCRETE SHALL COMPLY WITH THE REQUIREMENTS OF THE CONTRACT SPECIFICATION.

C8. PLACEMENT, COMPACTION, CONSTRUCTION JOINTS AND CURING OF CONCRETE SHALL COMPLY WITH THE REQUIREMENTS OF THE CONTRACT SPECIFICATION.

C9. PROVIDE LOCATIONS AND DETAILS OF CONSTRUCTION JOINTS FOR SUPERINTENDENTS APPROVAL PRIOR TO CONSTRUCTION.

C10. CONCRETE ELEMENTS SHALL BE CONSTRUCTED WITHIN THE DIMENSIONAL TOLERANCES GIVEN IN THE CONTRACT SPECIFICATION.

C11. MINIMUM COVER (mm) TO ALL REINFORCEMENT EXCEPT SL41MECH UNO SHALL BE AS FOLLOWS:

STRUCTURAL ELEMENT	EXPOSURE CONDITION			
	CAST AGAINST			PRECAST
	FORMS	BLINDING	GROUND	
BEAMS	50	50	50	N/A
ABUTMENTS AND WINGWALLS	50	50	50	–
	50	50	50	–
MASS CONCRETE PIERS	50	50	50	–
DECK SLAB TOP & SIDES	50	50	50	–
DECK SLAB BOTTOM	50	50	50	–
APPROACH ROADS	50	50	50	–

C12. COVER IS THE CLEAR DISTANCE BETWEEN ANY REINFORCING (INCLUDING FITMENTS) AND THE SURFACE OF THE STRUCTURAL ELEMENT.

C13. REINFORCING BARS SHALL NOT BE USED TO KEEP FORMS APART. A THROUGH TIE STEEL SYSTEM SHALL BE USED TO MAINTAIN THE POSITION OF THE FORMS. ALL REINFORCEMENT SHALL BE FIRMLY SUPPORTED ON APPROVED BAR CHAIRS AT NOT GREATER THAN 800mm CENTERS BOTH WAYS. MESH SHALL BE SUPPORTED ON APPROVED BAR CHAIRS AT 800mm MAXIMUM CENTERS.

C14. EXTERNAL ELEMENTS ARE THOSE EXPOSED TO WEATHER, RAIN AND WATER PENETRATION AND ARE CLASSIFIED B1 UNLESS NOTED OTHERWISE.

C15. THE COVERS SHALL BE MAINTAINED USING APPROVED BAR CHAIRS, IN SLABS BAR CHAIRS BE PROVIDED AT 800x800mm MAXIMUM CENTERS.

C16. CONSTRUCTION JOINTS SHALL BE LOCATED AND DETAILED AS SHOWN ON THE DRAWINGS OR SHALL BE LOCATED AND FORMED TO THE APPROVAL OF THE ENGINEER. CONCRETE AGAINST WHICH NEW CONCRETE IS TO BE PLACED SHALL BE INTENTIONALLY ROUGHENED IN ACCORDANCE WITH CONTRACT SPECIFICATION TO EXPOSE THE INBOUND COURSE AGGREGATE TO ENSURE 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.

CONCRETE cont.

C17. CONDUITS AND PIPES WHEN CAST IN SLABS AND WALLS ARE TO BE PLACED AT MIDDLE THIRD THICKNESS OF MEMBERS AND BETWEEN TWO REINFORCEMENT LAYERS WHERE THERE IS ONLY ONE LAYER OF REINFORCEMENT, PROVIDE 50mm COVER TO CONDUIT. MAXIMUM ALLOWED FREE DROP OF CONCRETE DURING PLACING CONCRETE TO BE 2m.

C18. CURING OF CONCRETE SHALL COMMENCE NO LATER THAN ONE HOUR AFTER FINISHING OPERATIONS HAVE BEEN COMPLETED ON THE CONCRETE PLACED. THE CONCRETE SHALL BE CURED IN ACCORDANCE WITH THE CONTRACT SPECIFICATION.

C19. ALL CONCRETE SURFACE FINISHES ARE TO MEET THE REQUIREMENTS OF THE CONTRACT SPECIFICATION.

C20. ALL FORMED EXPOSED EDGES AND RE–ENTRANT CORNERS SHALL BE CHAMFERED OR FILLETED 20 x 20mm U.N.O. ON THE ENGINEERS DRAWINGS.

FORMWORK AND FALSEWORK

K1. THE FORMWORK AND FALSEWORK PROPOSALS, DESIGN, MATERIALS, CONSTRUCTION AND REMOVAL SHALL COMPLY WITH THE REQUIREMENTS OF THE CONTRACT SPECIFICATION AND AS 5100 UNLESS OTHERWISE APPROVED BY THE SUPERINTENDENT

K2. DURING CONSTRUCTION, SUPPORT PROPPING IS REQUIRED WHERE LOADS FROM STACKED MATERIALS, FORMWORK AND OTHER SUPPORTED SLABS INDUCE LOADS IN A SLAB DR BEAM WHICH EXCEED THE DESIGN LOAD FOR STRENGTH OR SERVICEABILITY AT THAT AGE OR WHERE THE STRUCTURE IS INCOMPLETE, ONCE THE NOMINATED 28 DAY STRENGTH HAS BEEN ATTAINED, THESE LOADS SHALL NOT EXCEED THE DESIGN SUPERIMPOSED LOADS SET OUT UNDER DESIGN REQUIREMENTS NOTE D1.

K3. THE FORMWORK SHALL NOT BE DESIGNED TO RELY ON RESTRAINT OR SUPPORT FROM THE PERMANENT STRUCTURE WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

STEEL REINFORCEMENT

R1. THE STEEL REINFORCEMENT SHALL COMPLY WITH THE REQUIREMENTS OF THE CONTRACT SPECIFICATION AND AS 5100 UNLESS OTHERWISE APPROVED BY THE SUPERINTENDENT.

R2. REINFORCEMENT SHOWN ON THE DRAWINGS IS REPRESENTED DIAGRAMMATICALLY AND NOT NECESSARILY SHOWN IN TRUE PROJECTION.

R3. SPLICES IN REINFORCEMENT SHALL BE MADE ONLY IN THE POSITION SHOWN ON THE DRAWINGS OR AS OTHERWISE APPROVED BY THE ENGINEER. BAR LAPS IN MILLIMETERS ARE TO BE AS SHOWN BELOW UNLESS SHOWN OTHERWISE.

BAR Dia	BAR LAPS	
	HORIZONTAL BARS WITH >300mm CONCRETE CAST BELOW	ALL OTHER BARS
N12	400	300
N16	500	400
N20	750	600
N24	900	700
N28	1200	900
N32	1500	1200
N36	1750	1400

NOTE: BAR LAPS CALCULATED ASSUMING B1 EXPOSURE F'c=32 Mpa AND COVER TO REINFORCEMENT = 45mm.

STEEL REINFORCEMENT cont.

R4. BUNDLED BARS SHALL BE TIED TOGETHER AT 30 BAR DIAMETER CENTERS WITH THREE WRAPS OF THE WIRE.

R5. REINFORCEMENT SYMBOLS:

SYMBOL	DESCRIPTION
N	GRADE 500 DEFORMED REINFORCING BARS, DUCTILITY CLASS TO AS 4671
R	GRADE 250 PLAIN REINFORCING BARS TO AS 1302
W	HARD DRAWN STEEL REINFORCING WIRE, GRADE 500 DUCTILITY CLASS L TO AS 4671
TM	HARD DRAWN STEEL TRENCHMESH, GRADE 500
RL	DUICTILITY CLASS L TO AS 4671
SL	SQUARE RIB MESH, GRADE 500 DUCTILITY CLASS TO AS 4671

R6. DESIGNATION OF REINFORCEMENT BARS IS AS SHOWN:
EXAMPLE: 17 – N20 – 350 EF
17 = NUMBER OF BARS
N = BAR GRADE AND DUCTILITY CLASS
20 = NOMINAL BAR DIAMETER IN mm
350 = BAR SPACING IN mm
EF = BAR LOCATION

R7. THE CONTRACTOR SHALL PROVIDE THE SUPERINTENDENT WITH ACRS (AUSTRALIAN CERTIFICATION AUTHORITY FOR REINFORCING STEEL LTD.) CERTIFICATION OF COMPLIANCE WITH AS 4871 FOR ALL REINFORCEMENT. THE CONTRACTOR SHALL PROVIDE THE SUPERINTENDENT WITH CERTIFICATION OF COMPLIANCE WITH AS 1311 FOR ALL PRESTRESSING TENDONS.

R8. PROVIDE STANDARD COGS AND HOOKS TO AS 5100. TERMINATE ENDS OF COLUMN AND BEAM LIGATURES IN A HOOK OF AT LEAST 135 DEGREES. PROVIDE FIRST LIGATURE WITHIN 50mm OF FACE OF SUPPORT.

R9. ALL REINFORCEMENT SHALL BE SECURELY TIED WITH WIRE TIES AND ALL TIE ENDS SHALL BE TURNED INTO THE MEMBER CLEAR OF THE COVER ZONE.

R10. MINIMUM LAPS IN MESH SHALL BE THE LARGER SPACING OF TRAVERSE WIRES UNLESS SHOWN OTHERWISE.

R11. DO NOT WELD OR HEAT REINFORCEMENT UNLESS SHOWN ON DRAWINGS OR OTHERWISE APPROVED BY SUPERINTENDENT, WHERE ALLOWED, WELDING OF REINFORCEMENT (INCLUDING TACK–WELDING FOR FIXING PURPOSES) TO COMPLY WITH AS 5100 AND AS 1554.3 DO NOT WELD REINFORCEMENT WITHIN 75mm OF A SECTION THAT HAS BEEN BENT (100mm FOR N28 AND N32 BARS, 125mm FOR N36 BARS). EXTENT OF WELD INSPECTION/TESTING TO BE:

WELD INSPECTION METHOD	QUANTUM
ANTI–CARBONATION	100% OF WELDS
VISUAL EXAMINATION	50% OF WELDS
RADIOGRAPHIC OR ULTRASONIC	5% OF FILLET WELDS & 100% OF BUTT WELDS

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C	PRELIMINARY	10-06-2024
B	PRELIMINARY	13-03-2024
A	DRAFT	28-02-2024

Client: Julianne Blain

Project: Causeway Replacement
Site Address: 2414 Thunderbolts Way, Tibbuc N.S.W

Drawing Title: Structural Notes (Sheet 2)

Design: M.A. | Checked: P.T. | Size: A1 | Scale: N/A
Drawn: B.A. | Date: 13.03.2024

Project No.: M23014
Sheet No.: S2 | Rev: D

STEEL REINFORCEMENT cont.

R13. MESH SHALL NOT BE LAID ON THE GROUND AND PULLED INTO POSITION THROUGH THE CONCRETE.

R14. REINFORCEMENT DEVELOPMENT LENGTHS SHALL EQUAL LAP LENGTHS.

R15. ALL RE–ENTRANT CORNERS OR PENETRATIONS THROUGH WALLS AND SLABS SHALL BE TRIMMED USING MINIMUM 2N16 DIAGONAL CORNER BARS 1500mm LONG.

R16. REINFORCEMENT SHALL NOT BE CUT OR BENT ON SITE WITHOUT THE PRIOR APPROVAL OF THE ENGINEER.

R17. AT SLAB EDGES INCLUDING CONSTRUCTION AND OTHER JOINTS AT LEAST ONE REINFORCING BAR OR FABRIC WIRE SHALL BE RELOCATED PARALLEL TO AND WITHIN 75mm OF THE SLAB EDGE.

R18. AT PENETRATIONS WITH DIMENSIONS LESS THAN 400mm DO NOT CUT REINFORCEMENT, PLACE REINFORCEMENT TO EACH SIDE OF PENETRATION U.N.O, ON THE PLANS. AT PENETRATIONS WITH DIMENSIONS LEGS THAN 600mm LAY REINFORCEMENT IN REQUIRED POSITION AND CUT OUT TO SUIT PENETRATION. PROVIDE ADDITIONAL BARS TO MATCH THE SIZE, LENGTH AND NUMBER OF BARS CUT AND PLACE EQUALLY ON EACH SIDE OF THE PENETRATION U.N.O. ON PLANS. PROVIDE 2N12 BARS ACROSS PENETRATION CORNERS.

R19. THE FINAL INSPECTION OF REINFORCEMENT SHALL BE COMPLETED AND SUPERINTENDENTS APPROVAL GIVEN BEFORE CONCRETE IS DELIVERED FOR THE RELEVANT SECTION.

R20. SPLICES SHALL BE STAGGERED SO THAT NOT MORE THAN 50% OCCUR AT ANY LOCATION U.N.O.

R21. THE TOLERANCE ON THE NOMINAL COVERS FOR FIXING THE REINFORCEMENT SHALL BE AS NOTED IN THE CONTRACT SPECIFICATION.

R22. SPACING OF REINFORCEMENT SHALL BE TAKEN AS EQUAL U.N.O.

R23. REINFORCING BAR COUPLERS SHALL DEVELOP AT LEAST THE FULL STRENGTH OF THE JOINED BARS AS PER AS 5100.

R24. ENSURE REINFORCING CAGES ARE ELECTRICALLY CONTINUOUS.

R.25. EMBEDDED FIXTURES (INSERTS, THREADED SOCKETS, FERRULES, BOLTS AND STAINLESS REINFORCING ETC.) 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.

INSPECTIONS

I1. 48 HOURS NOTICE SHALL BE GIVEN SO THAT INSPECTION CAN BE MADE OF THE FOLLOWING:

ITEM	DESCRIPTION
1	REMOVE OLD LOGS
2	FINISH ESCAVATIONS
3	GROUTING PROCEEDURE
4	ALL STEELWORK
5	FINAL INSPECTION

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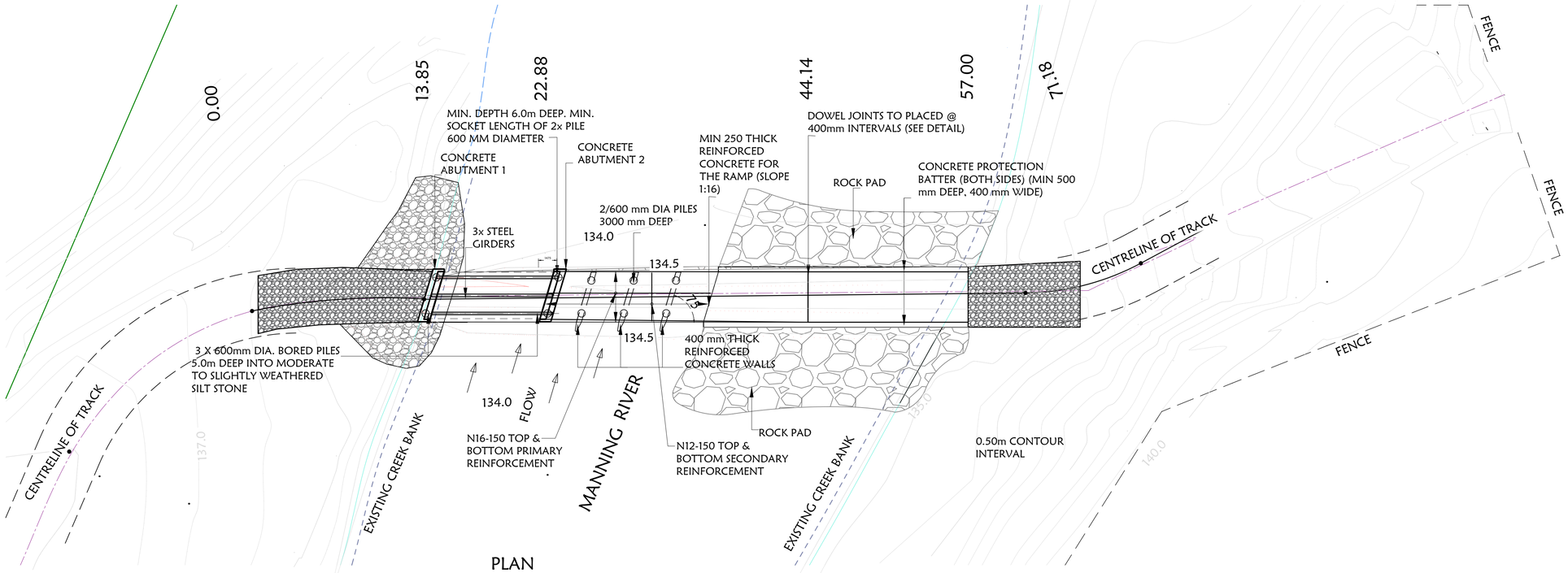
Design	Checked	Size	Scale
M.A.	P.T.	A1	N/A

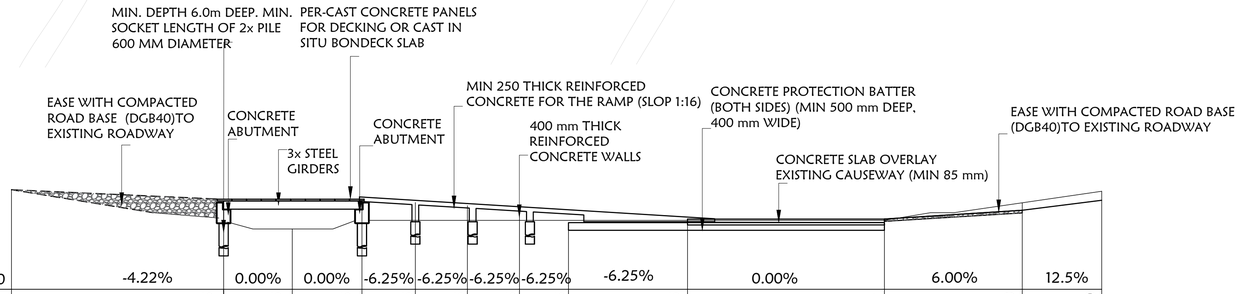
Drawn	Date
B.A.	13-03-2024

Project No. M23014
Sheet No. S3
Rev D



PLAN

Scale 1:200 A1



R.L. 130.00		-4.22%		0.00%	0.00%	-6.25%	-6.25%	-6.25%	-6.25%	-6.25%	0.00%	6.00%	12.5%
DESIGN SURFACE	136.50	135.915		135.915	135.915	135.695	135.485	135.275	135.075	134.585	134.585	135.160	135.800
EXISTING SURFACE	136.50	134.400		134.000	134.500	134.500	134.500	134.500	134.500	134.500	135.000	135.650	136.400
CHAINAGE	0.00	13.850		18.335	22.885	26.370	29.770	33.170	36.370	44.140	57.000	66.000	71.189

CAUSEWAY LONGITUDINAL SECTION

Hz Scale 1:200 A1

Vt Scale 1:200 A1

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B	PRELIMINARY	13-03-2024
A	DRAFT	28-02-2024

Client: Julianne Blain

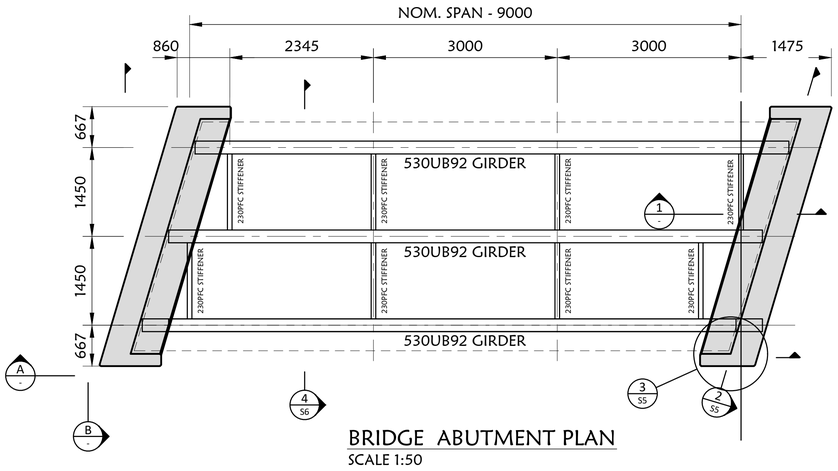
Project: Causeway Replacement

Site Address: 2414 Thunderbolts Way, Tibbuc N.S.W

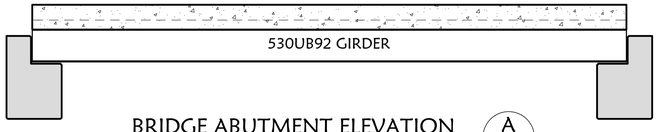
Drawing Title: Causeway Plan & Long Sect.

Design	Checked	Size	Scale	Project No.
M.A.	P.T.	A1	1:200 (A1)	M23014

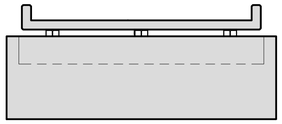
Drawn	Date	Sheet No.	Rev
B.A.	13-03-2024	S4	D



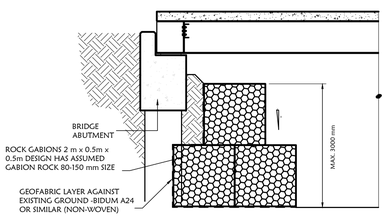
BRIDGE ABUTMENT PLAN
SCALE 1:50



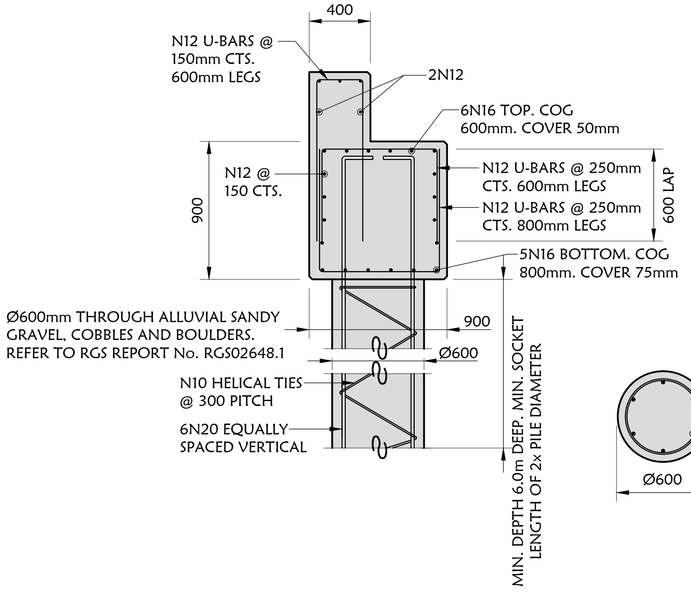
BRIDGE ABUTMENT ELEVATION A
SCALE 1:50



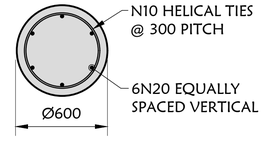
BRIDGE ABUTMENT ELEVATION B
SCALE 1:50

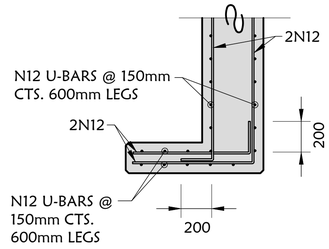


TYPICAL ROCK FILLED GABION STABILISATION WHERE REQUIRED
ROCK RUBBLE
SCALE 1:50 @ A3

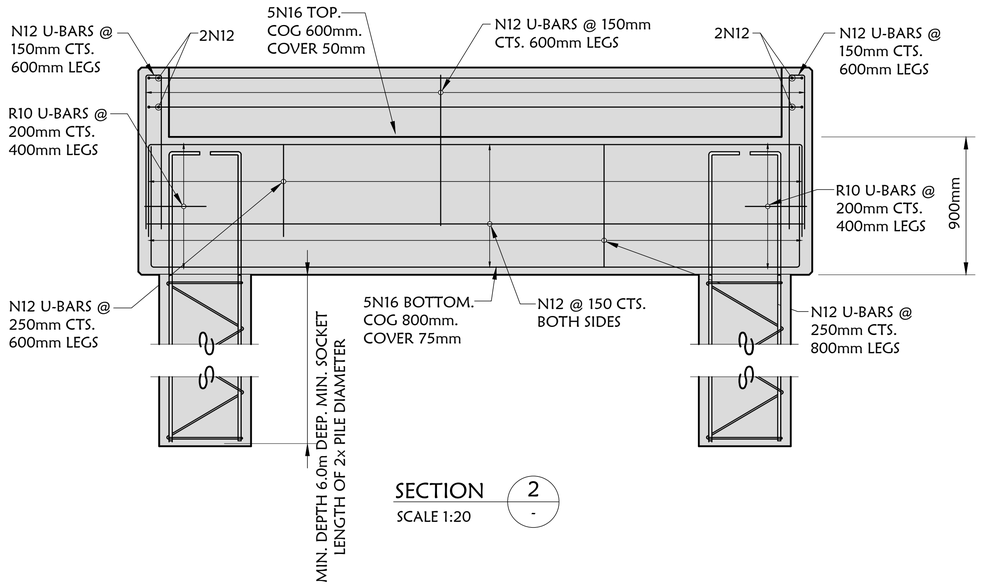


SECTION 1
SCALE 1:20





DETAIL 3
SCALE 1:20



SECTION 2
SCALE 1:20

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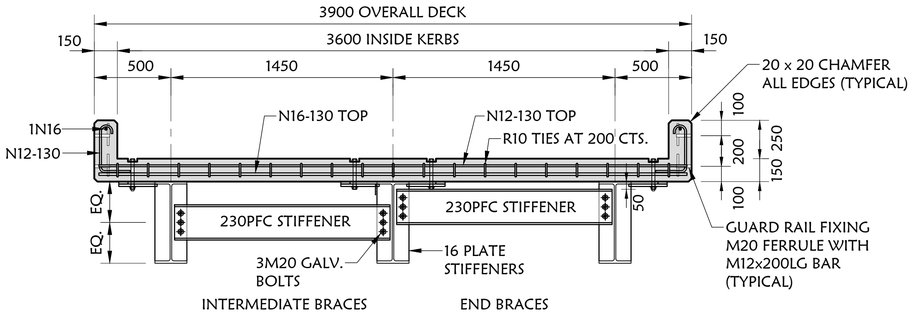
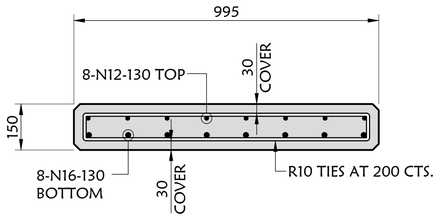
ENGINEERS AUSTRALIA
Philip Thornton BE (UNSW) MIE (Aust.)
Chartered Professional Engineer
Membership No. NER 295662

REVISION	DESCRIPTION	DATE
D	For Construction	03-10-2024
C	PRELIMINARY	10-06-2024
B	PRELIMINARY	13-03-2024
A	DRAFT	28-02-2024

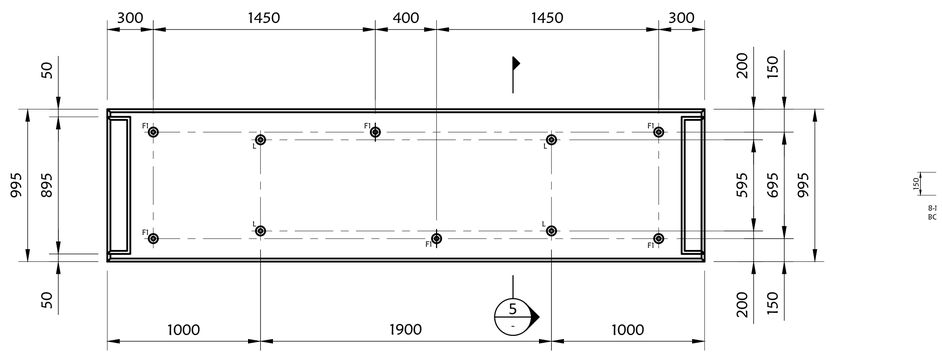
Client: Julianne Blain
Project: Causeway Replacement
Site Address: 2414 Thunderbolts Way, Tibbuc N.S.W
Drawing Title: Details (Sheet 1)
Design: M.A. | Checked: P.T. | Size: A1 | Scale: AS SHOWN | Project No.: M23014
Drawn: B.A. | Date: 13-03-2024 | Sheet No.: S5 | Rev: D



SECTION 4
SCALE 1:20 S5

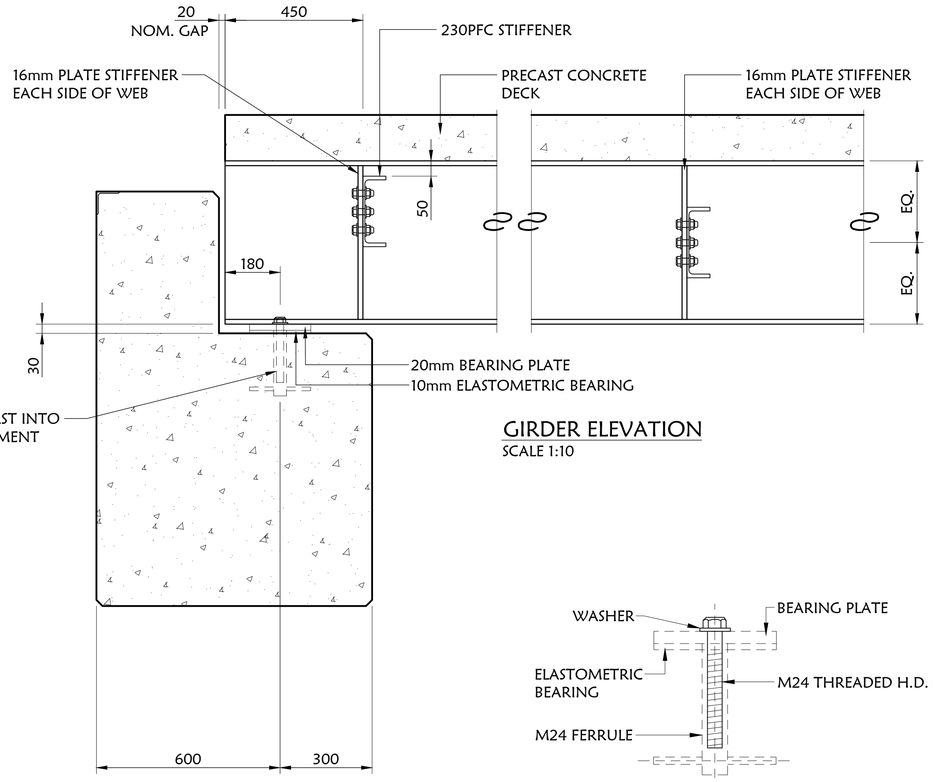


SECTION 1
SCALE 1:10 5 -

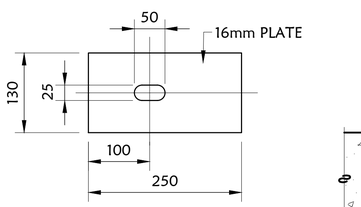


PRECAST DECK PANEL
SCALE 1:20

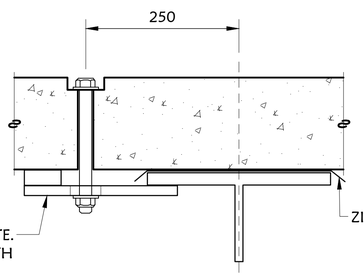
F1 = FIXING VOID FOR UNIVERSAL BEAMS - SEE DETAIL
L = LIFTING INSERT - SEE DETAIL
CONCRETE STRENGTH = 40MPa



GIRDER ELEVATION
SCALE 1:10

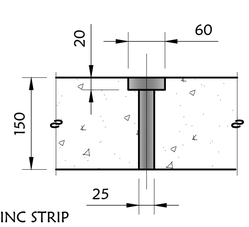


CLAMP PLATE
SCALE 1:5



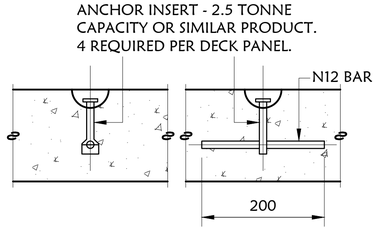
130x250x16 FABRICATED CLAMP PLATE. 1M20 8.8/S BOLT x 210mm LONG WITH NUT AND LOCK WASHERS @ 695mm c/c THROUGH FIXING VOID (REFER DETAIL). 6 REQUIRED.

DECK PANEL FIXING "F1"
WELDED BEAMS
SCALE 1:5



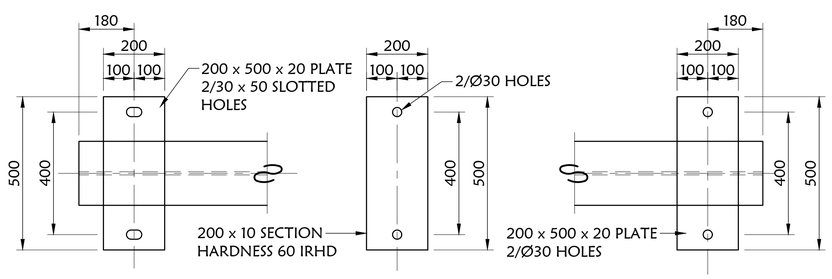
FIXING VOID
SCALE 1:5

REID SWIFTLIFT COMBINATION ANCHOR INSERT - 2.5 TONNE CAPACITY OR SIMILAR PRODUCT. 4 REQUIRED PER DECK PANEL.



DECK LIFTING INSERT "L"
SCALE 1:5

HD BOLT
SCALE 1:5



BEARING PLATE
EXPANSION END
SCALE 1:10

ELASTOMETRIC BEARING
HARDNESS 60 IRHD
SCALE 1:10

BEARING PLATE
FIXED END
SCALE 1:10

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Philip Thornton BE (UNSW) MIE (Aust.)
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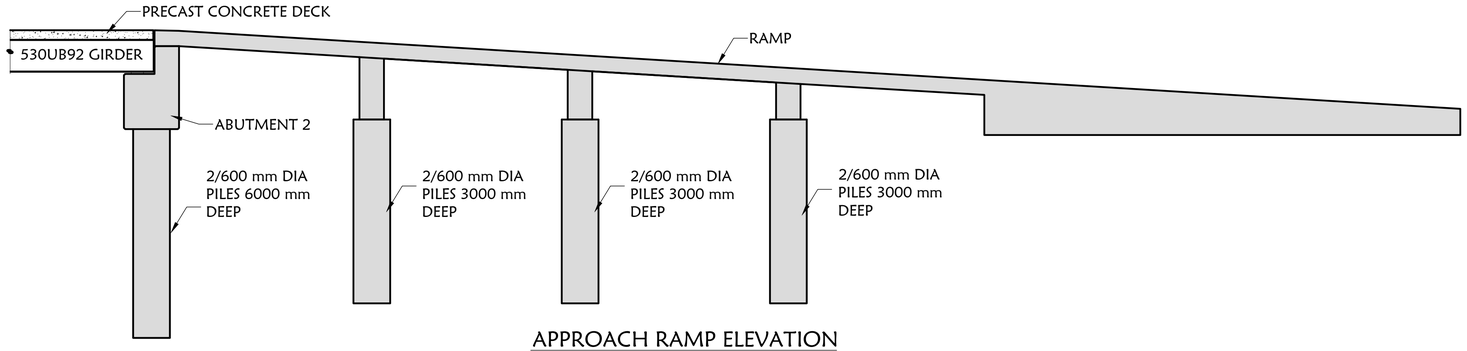
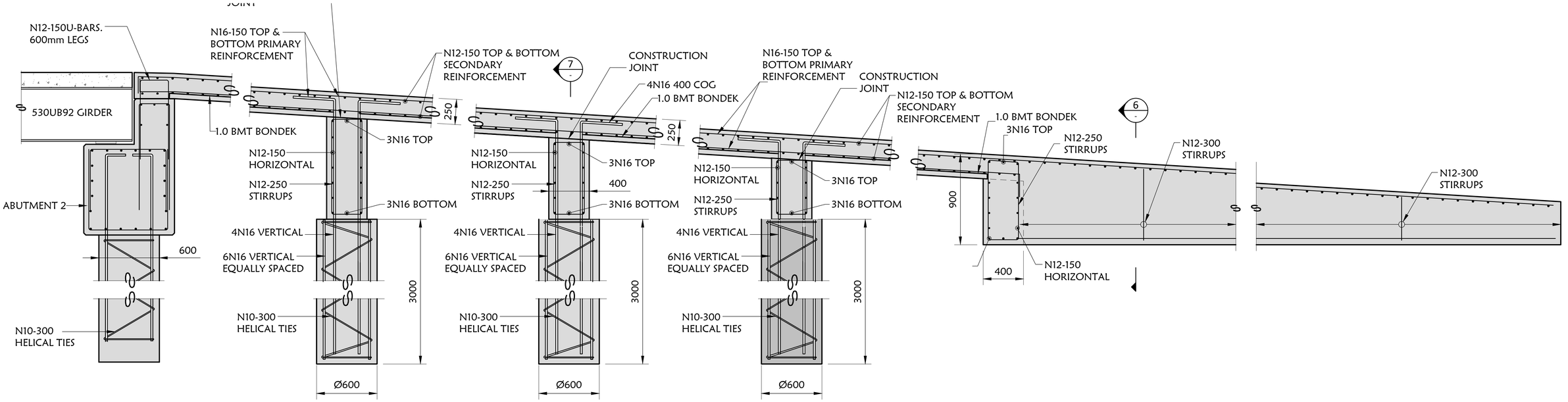
REVISION	DESCRIPTION	DATE
D	For Construction	03-10-2024
C	PRELIMINARY	10-06-2024
B	PRELIMINARY	13-03-2024
A	DRAFT	28-02-2024

Client: Julianne Blain
Project: Causeway Replacement
Site Address: 2414 Thunderbolts Way, Tibbuc N.S.W
Drawing Title: Details (Sheet 1)
Design: M.A. | Checked: P.T. | Size: A1 | Scale: AS SHOWN | Project No.: M23014
Drawn: B.A. | Date: 13-03-2024 | Sheet No.: S6 | Rev: D



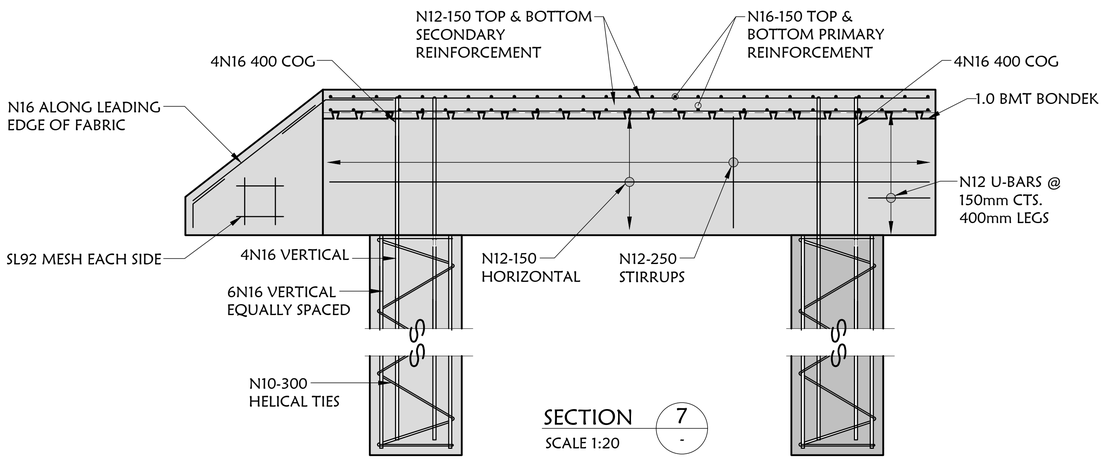
APPROACH RAMP ELEVATION

SCALE 1:50



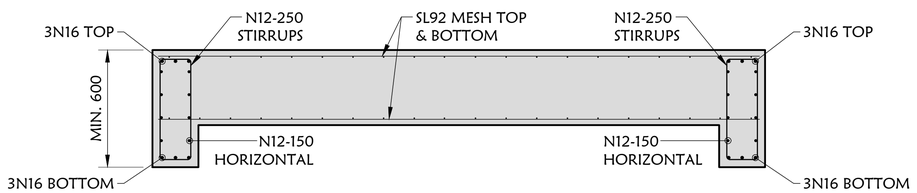
APPROACH RAMP DETAILS

SCALE 1:20



SECTION 7

SCALE 1:20



SECTION 6

SCALE 1:20

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ENGINEERS AUSTRALIA
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REVISION	DESCRIPTION	DATE
D	For Construction	03-10-2024
C	PRELIMINARY	10-06-2024
B	PRELIMINARY	13-03-2024
A	DRAFT	28-02-2024

Client: Julianne Blain

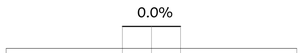
Project: Causeway Replacement

Site Address: 2414 Thunderbolts Way, Tibbuc N.S.W

Drawing Title: Details (Sheet 2)

Design	Checked	Size	Scale	Project No.
M.A.	P.T.	A1	AS SHOWN	M23014

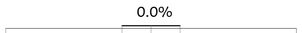
Drawn	Date	Sheet No.	Rev
B.A.	13-03-2024	S7	D



Datum: 130.00

PROPOSED LEVELS	134.40	135.915	135.915	135.915		134.40
EXISTING LEVELS	134.40	134.40	134.40	134.40		134.40
LEVEL DIFFERENCE	-0.000	1.515	1.515	1.515		-0.000
OFFSETS	-10.000	-2.000	0.000	2.000		10.000

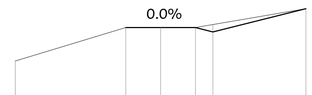
13.85



Datum: 130.00

PROPOSED LEVELS		134.585	134.585	134.585		
EXISTING LEVELS	134.50	134.50	134.50	134.50		134.50
LEVEL DIFFERENCE	-0.000	0.085	0.085	0.085		-0.000
OFFSETS	-10.000	-2.000	0.000	2.000		10.000

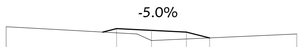
57.00



Datum: 130.00

PROPOSED LEVELS	136.70	139.00	139.00	139.00	138.70	140.30
EXISTING LEVELS	136.70	139.00	139.00	139.00	139.20	140.30
LEVEL DIFFERENCE	-0.000	0.00	0.00	0.00	-0.50	-0.000
OFFSETS	-10.000	-2.400	0.000	2.400	3.600	10.000

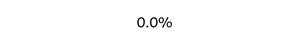
92.60



Datum: 130.00

PROPOSED LEVELS	136.50	136.37	136.25	136.13	135.73		136.00
EXISTING LEVELS	136.50	136.08	135.55	135.66	136.08		136.00
LEVEL DIFFERENCE	-0.000	0.290	0.700	0.470	-0.000		-0.000
OFFSETS	-10.000	-2.400	0.000	2.400	4.000		10.000

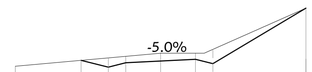
T.P 5.85



Datum: 130.00

PROPOSED LEVELS		134.585	134.585	134.585		
EXISTING LEVELS	134.50	134.50	134.50	134.50		134.50
LEVEL DIFFERENCE	-0.000	0.085	0.085	0.085		-0.000
OFFSETS	-10.000	-2.000	0.000	2.000		10.000

44.14



Datum: 130.00

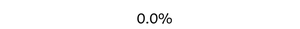
PROPOSED LEVELS		135.91	135.44 135.74	135.86	135.98	135.68		139.50
EXISTING LEVELS	135.50	135.91	136.08 136.18	136.40	136.40	136.66		139.50
LEVEL DIFFERENCE	-0.000	0.000	-0.640 -0.440	-0.540	-0.420	-0.980		-0.000
OFFSETS	-10.000	-5.470	-3.600 -2.400	0.000	2.400	3.600		10.000

T.P 71.85

Datum: 130.00

PROPOSED LEVELS	136.50	136.62	136.50	136.38	136.08	136.50	136.50
EXISTING LEVELS	136.50	136.62	136.50	136.38	136.08	136.50	136.50
LEVEL DIFFERENCE	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
OFFSETS	-10.000	-2.400	0.000	2.400	3.600	5.280	10.000

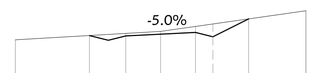
Chainage 00



Datum: 130.00

PROPOSED LEVELS		135.915	135.915	135.915		
EXISTING LEVELS	134.50	134.50	134.50	134.50		134.50
LEVEL DIFFERENCE	-0.000	1.415	1.415	1.415		-0.000
OFFSETS	-10.000	-2.000	0.000	2.000		10.000

22.88



Datum: 130.00

PROPOSED LEVELS	134.500	134.79	134.77	134.89	135.01	134.71	135.94	
EXISTING LEVELS	134.50	134.79	134.94	135.08	135.42	135.59	135.94	136.50
LEVEL DIFFERENCE	-0.000	-0.000	-0.170	-0.190	-0.410	-0.880	-0.000	-0.000
OFFSETS	-10.000	-4.900	-2.400	0.000	2.400	3.600	6.060	10.000

T.P 62.11

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ENGINEERS AUSTRALIA
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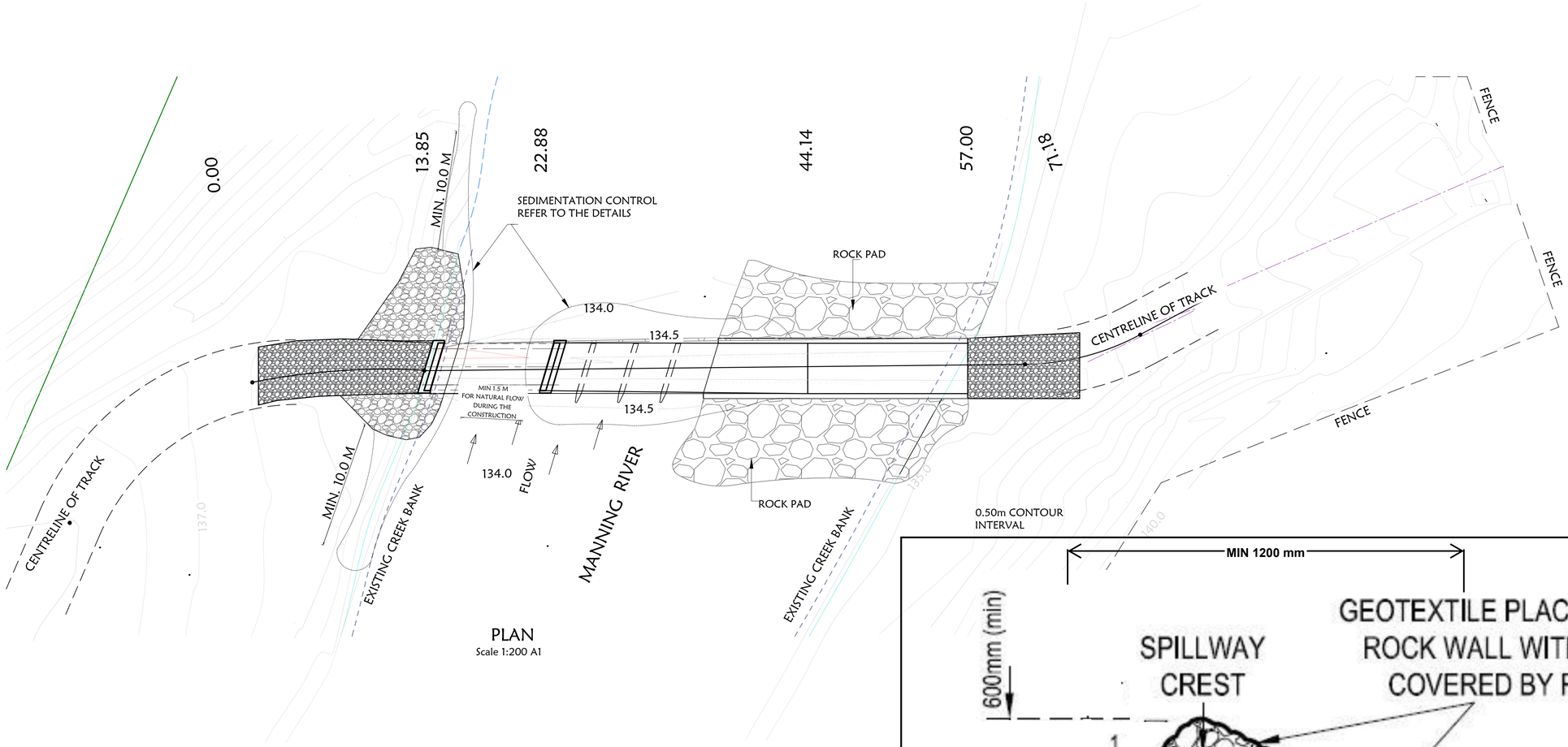
REVISION	DESCRIPTION	DATE
D	For Construction	03-10-2024
C	PRELIMINARY	10-06-2024
B	PRELIMINARY	13-03-2024
A	DRAFT	28-02-2024

Client: Julianne Blain

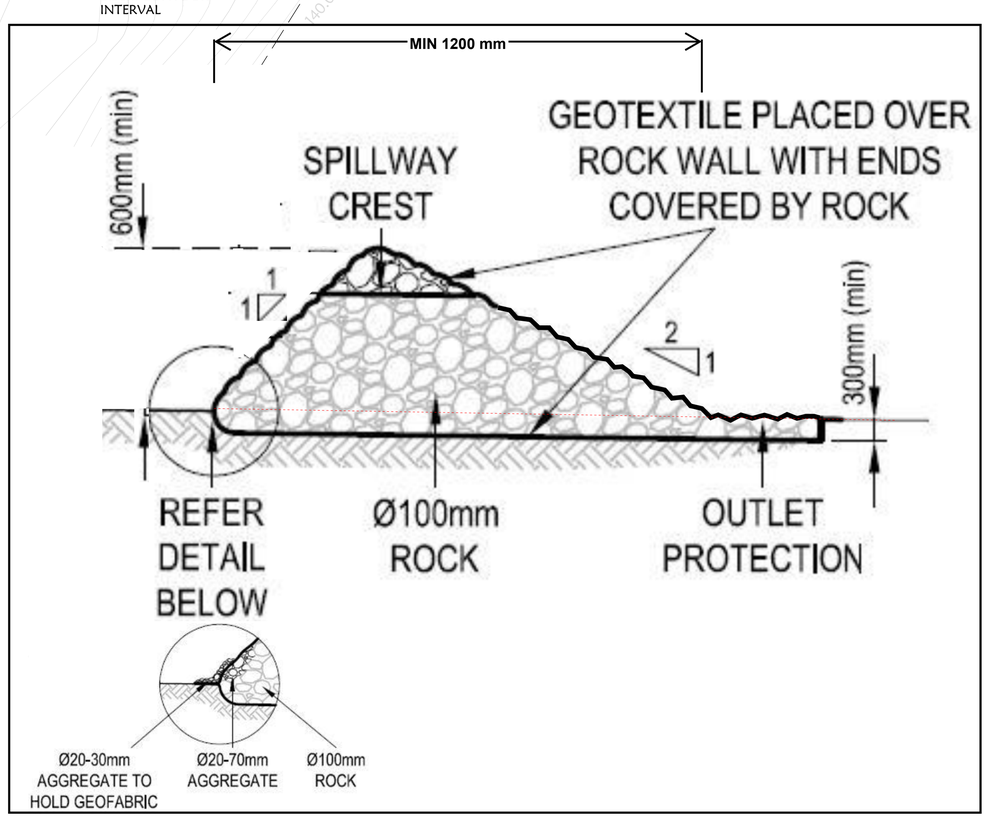
Project: Causeway Replacement
Site Address: 2414 Thunderbolts Way, Tibbuc N.S.W

Drawing Title: Road Cross Sections

Design: M.A. | Checked: P.T. | Size: A1 | Scale: AS SHOWN | Project No.: M23014
Drawn: B.A. | Date: 13-03-2024 | Sheet No.: S8 | Rev: D



PLAN
Scale 1:200 A1



CONSTRUCTION NOTES:

1- EXCAVATE TO 300MM DEPTH FOR THE BASE OF THE DAM WALL
2- LINE THE EXCAVATION WITH GEOTEXTILE ALLOWING SUFFICIENT TO LINE BELOW THE WALL AND OVER THE UPSTREAM ROCK AND SPILLWAY TO 500MM BELOW THE SPILLWAY EXIT ON THE DOWNSTREAM FACE
3- MAKE UP THE WALL PROFILE AND PROTECTION WITH Ø100MM (MINIMUM) GRADED ROCK. FOR MORE EVEN SURFACE ADD 100MM OF Ø20-70MM AGGREGATE OVER THE UPSTREAM BATTER
4- LAY GEOTEXTILE OVER THE UPSTREAM BATTER AND THROUGH THE SPILLWAY, FIXING IN PLACE WITH Ø100MM ROCK
5- PLACE A 'FULL OF SEDIMENT' MARKER TO SHOW WHEN LESS THAN DESIGN CAPACITY OCCURS AND SEDIMENT REMOVAL IS REQUIRED
6- REPLACE THE UPSTREAM GEOTEXTILE LAYER EACH TIME THE SEDIMENT IS REMOVED
7- THIS STYLE OF SEDIMENT BASIN IS ONLY SUITABLE FOR COURSE, RAPID SETTLING SEDIMENTS (TYPE C). FOR MATERIALS CONTAINING A HIGHER PERCENTAGE OF FINER SEDIMENTS (TYPE F) OR HIGHLY DISPERSIBLE SEDIMENTS (TYPE D), ALTERNATIVE SEDIMENT BASINS DESIGNS ARE REQUIRED.
8- FOR FUTURE ADVICE REFER TO DPIRD FISHERIES' "BEST PRACTICE RECOMMENDATIONS FOR WATERWAYS CROSSING".

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D	For Construction	03-10-2024
C	PRELIMINARY	10-06-2024
B	PRELIMINARY	13-03-2024
A	DRAFT	28-02-2024

Client: Julianne Blain
Project: Causeway Replacement
Site Address: 2414 Thunderbolts Way, Tibbuc N.S.W
Drawing Title: Sedimentation Plan
Design: M.A. | Checked: P.T. | Size: A1 | Scale: 1:200 (A1) | Project No.: M23014
Drawn: B.A. | Date: 13-03-2024 | Sheet No.: S9 | Rev: D