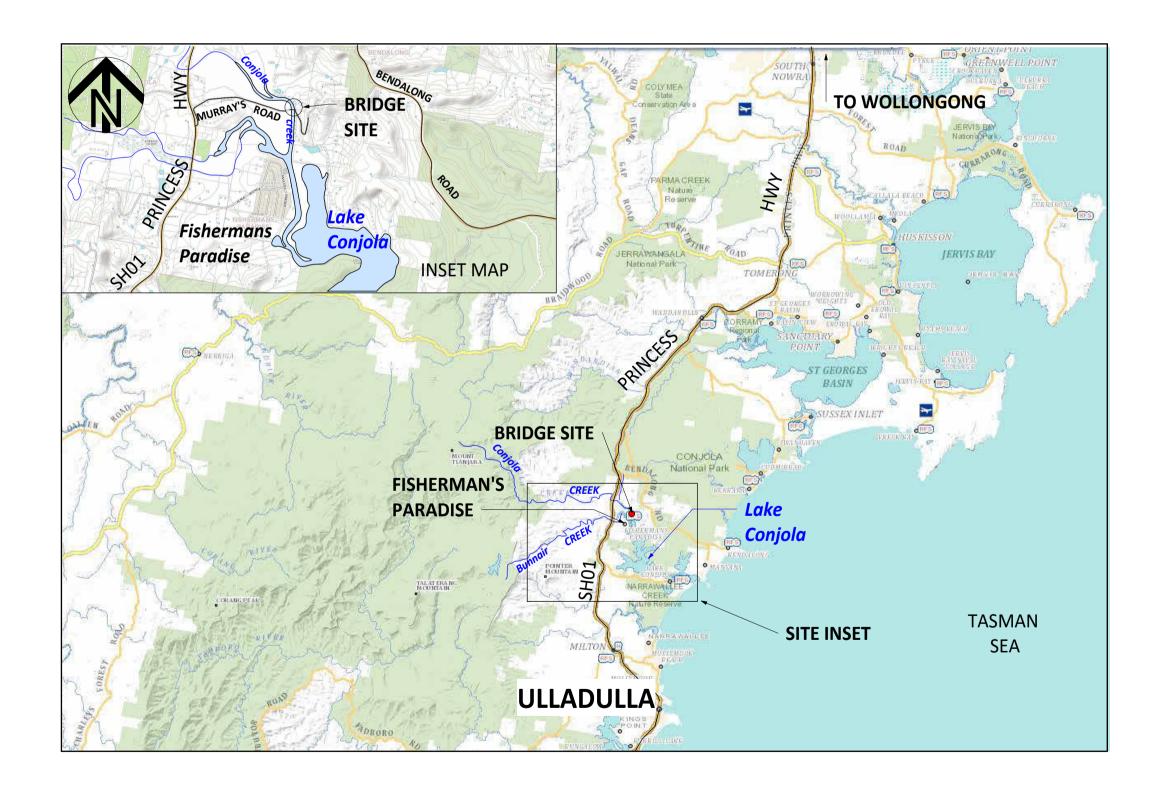
# MURRAYS BRIDGE OVER CONJOLA CREEK BRIDGE ON MURRAYS ROAD 1.36km EAST OF INTERSECTION WITH PRINCESS HWY (SH01), 1.0KM NORTH OF FISHERMANS PARADISE

# **AUTHORITY: SHOALHAVEN COUNCIL**





# **DRAWING LIST**

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# **BRIDGE DESIGN:**

BRIDGE DESIGN TO AS5100-2017
TRAFFIC LOADING SM1600. DESIGN SPEED 60km/h.
EARTHQUAKE DESIGN CLASSIFICATION BEDC-2.
ALLOWANCE FOR SUPERIMPOSED DEAD LOADS 1.7kPa (serviceability)
TRAFFIC BARRIERS 'LOW PERFORMANCE' LEVEL.

# WATERWAY DATA (EXCLUDING AFFLUX):

ANNUAL	FLOW	VELOCITY	WATER LEVEL	ULTIMATE
EXCEEDENCE	m³/s	m/s	(excl AFFLUX)	LOAD FACTOR
PROBABILITY (%)			RL (m)	$\mathbf{Y}_{WF}$
5	515	1.08	2.68	1.0
1	1240	1.7	3.24	1.3
0.05	2080	1.7	3.94	1.3

# NOT FOR CONSTRUCTION

A1 APPROVAL

P1 Preliminary 80%

Issue Description

Name

Initial Date

WEATHERILL PARK NSW 2450

FORTEC AUSTRALIA
Unit 12/55-57 Newton Road

SITE LOCATION

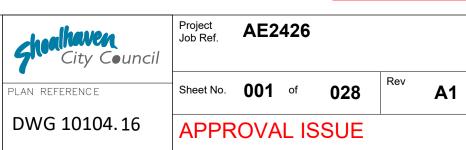
BRIDGE ON MURRAYS ROAD
1.36km EAST OF
INTERSECTION
WITH PRINCESS HWY (SH01),
1.0KM NORTH OF
FISHERMANS PARADISE

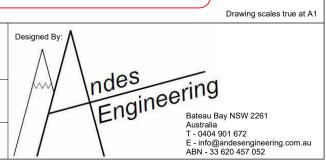
Designer - Design Chk
DOA - MUI

Drafter
DOA DOA DOA

Approved by:

MURRAYS BRIDGE OVER CONJOLA CREEK
COVER SHEET





- G3. RESPONSIBILITY FOR DESIGN CERTIFICATION OF ITEMS SHOWN ON THESE DRAWINGS: - ALL STRUCTURAL ELEMENTS: ANDES ENGINEERING.
- G4. DRAWINGS TO BE READ IN CONJUNCTION WITH:
  - GEOTECHNICAL REPORT: D&N GEOTECHNICAL REPORT REF. NO. C-2296.00 R1 DATED 10 SEPTEMBER 2004
- G5. EXTENTS OF SUPPLIED GEOTECHNICAL INFORMATION: GENERAL INDICATION ONLY OF THE CONDITIONS LIKELY TO BE ENCOUNTERED. GROUND CONDITIONS COULD VARY.
- G6. ENGINEERING DESIGN IS BASED ON SURVEY SUPPLIED BY: H & S LAND SURVEYORS, CONJOLA **IMPORTANT SURVEY NOTES:** 
  - DESIGN USES DATA TERRAIN MODEL COMPUTER GENERATED FROM THE SITE SURVEY.
  - SOME ELEMENTS OF THE SURVEY DATA ARE INTERPOLATED AND MAY VARY FROM THE ACTUAL SITE CONDITIONS.
  - CONTRACTOR SHALL LIAISE WITH THE SURVEYOR AND SET OUT THE WORKS ONLY FROM APPROVED BENCHMARKS.
- G7. CONSTRUCTION TO BE SET OUT USING FOLLOWING SURVEY INFORMATION: BENCHMARKS PROVIDED BY H & S LAND SURVEYORS, CONJOLA'S SURVEYOR.
- G8. CONTRACTOR TO OBTAIN APPROVAL FOR FULL EXTENT OF VEGETATION CLEARING BEFORE COMMENCING WORKS.
- G9. CONTRACTOR TO MAINTAIN 'AS CONSTRUCTED' RECORDS TO FOLLOWING STANDARD: COUNCIL'S 'AS CONSTRUCTED' REQUIREMENTS
- G10. CURRENT EDITION OF STANDARDS (AT TIME OF CONSTRUCTION) TO BE USED, UNO.

#### **DIMENSIONS / LEVELS:**

- L1. REDUCED LEVELS, CHAINAGES AND COORDINATES ARE ALL IN METRES.
- ALL OTHER DIMENSIONS ARE IN MILLIMETRES.
- L3. ALL LEVELS ARE TO LOCAL SITE DATUM ONLY.
- L4. ALL COORDINATES ARE TO LOCAL GRIDS.
- L5. DIMENSIONS SHALL NOT BE SCALED FROM DRAWINGS.
- L6. BRIDGE LEVELS AND SETOUT POINTS ARE TO BE CONFIRMED ON SITE BY A REGISTERED SURVEYOR PRIOR TO CONSTRUCTION. ADVISE ANY DISCREPANCY BEFORE PROCEEDING.

# **EXISTING SERVICES:**

- ES1. LOCATE SERVICES BEFORE STARTING: SERVICE LOCATIONS SHOWN ON DRAWINGS ARE APPROXIMATE ONLY.
- ES2. POTHOLE AND PROTECT SERVICES: ACCURATELY LOCATE SERVICES ADJACENT TO BRIDGE STRUCTURE BEFORE COMMENCING CONSTRUCTION. PROTECT SERVICES FROM DAMAGE.

# **TEMPORARY WORKS:**

- T1. OBTAIN DESIGN AND INSTALLATION CERTIFICATION FOR TEMPORARY WORKS: STRUTS, PROPPING, TIE BACKS, EXCAVATION SHORING, PROTECTION WORKS, DE-WATERING SYSTEMS, FORMWORK, EARLY LOADING OF STRUCTURES AND THE LIKE.
- T2. INSTALL SUITABLE AND STRONG BARRIERS FOR THE PROTECTION AND SAFEGUARDING OF TRAFFIC AND PEDESTRIANS.
- T3. ANY TEMPORARY ROAD SURFACES TO BE TRAFFIC-ABLE AT ALL TIMES AT LOW SPEED (30 km/hr). POTHOLES, ETC. TO BE MONITORED AND REPAIRED.

#### PROGRAM AND CONSTRUCTION CONSTRAINTS:

- PR1. CONSTRUCTION CONSTRAINTS:
  - ALLOW FOR LIKELIHOOD OF FLOODING WITHIN THE CREEK:

PROTECT CONSTRUCTION EQUIPMENT AND WORKS

- PROGRAM CONSTRUCTION WORKS TO OCCUR DURING DRY WINTER MONTHS (JUNE TO SEPTEMBER), TO REDUCE LIKELIHOOD OF FLOODING
- PR2. PROVIDE WORK SCHEDULE AND CONSTRUCTION SITE PLAN INDICATING ACCESS, PROTECTIVE FENCING, BARRIERS, BOARDING'S, SIGNAGE AND SEDIMENT & EROSION CONTROL.
- PR3. PROVIDE A TRAFFIC MANAGEMENT PLAN INCORPORATING:
  - SHOALHAVEN COUNCIL REQUIREMENTS
  - DETAILS OF PUBLIC NOTIFICATION PROPOSALS (IN ACCORDANCE WITH PROJECT SPECIFICATION)
  - PROVISION TO ADVISE THE SUPERINTENDENT OF ALL IMPENDING CHANGES TO TRAFFIC CONDITIONS
  - INFORMATION SIGNAGE FOR ALTERED TRAFFIC CONDITIONS INCLUDING TRAFFIC DETOURS AND ACCESS FOR PRIVATE PROPERTIES.
  - CONTACT DETAILS OF PERSON RESPONSIBLE FOR MAINTENANCE OUTSIDE WORKING HOURS. - DETAILS OF PROPOSED SIGNAGE LAYOUTS, INCLUDING REQUIREMENTS FOR NIGHT WORK AND TEMPORARY
- PR4. PROVIDE COMMENCEMENT NOTICE, OPERATIONAL WORKS SIGNAGE AND COMPLETION NOTICE AS REQUIRED BY THE ENVIRONMENTAL APPROVALS.

#### **DESIGN LOADINGS / PARAMETERS:**

DIRECTION.

- D1. CONCRETE UNIT WEIGHT (INCL. REINFORCING): 24.5 kN/m<sup>3</sup>
- D2. ASPHALT UNIT WEIGHT: 24.0 kN/m<sup>3</sup>
- D3. TRAFFIC LOADING:
  - STANDARD HIGHWAY LOADING: SM1600 AS PER AS5100-2017
- D4. ALLOWANCE FOR SUPERIMPOSED DEAD LOADS: 1.7 kPa (SERVICEABILITY)
- D5. MINIMUM DESIGN LATERAL LOADING: 500 kN
- D7. DESIGN LIFE: 100 YEARS FOR ALL CONCRETE ELEMENTS
- D8. AVERAGE BRIDGE TEMPERATURE RANGES: -5°C, +45°C
- D9. AVERAGE BRIDGE TEMPERATURE: 20-25 °C FOR SETTING BEARINGS AND JOINTS.
- D10. WATERWAY/FLOOD DATA (EXCLUDING AFLUX):
- HYDROLOGY/HYDRAULIC DATA TAKEN PRELIMINARY CALCULATIONS ONLY.
- AEP 5 EVENT: V<sub>AVERAGE</sub>= 1.08 m/s, RL 2.68 m, Yw=1.0
- AEP 1 EVENT: V<sub>AVERAGE</sub>= 1.7 m/s, RL 3.24 m, Yw=1.3
- AEP 0.05 EVENT: V<sub>AVERAGE</sub>= 1.7 m/s, RL 3.94 m, Yw=1.3
- D11. THE FOLLOWING MAXIMUM SCOUR HAS BEEN CONSIDERED FOR BRIDGE ABUTMENT/PIER DESIGN: ABUTMENT SCOUR TO APPROX. 0.3
  - ABUTMENTS A & B SCOUR PROTECTION SIZED TO ARI100 FLOOD VELOCITIES PIER SCOUR TO APPROX. 0.9m
- D12. DESIGN GUST WIND SPEED (ULTIMATE):  $V_{SITE} = 63 \text{ m/s}$ ; (TERRAIN CATEGORY 2; REGION B)
- D13. EARTHQUAKE: BEDC-2
- D14. PROBABILITY FACTOR:  $k_p = 0.08$ SEISMIC HAZARD FACTOR: z = 1
- D15. DESIGN LANE WIDTH: 3.2m
- D16. ROAD DESIGN SPEED AS FOLLOWS: ALL: 60 km/h
- D17. DESIGN TRAFFIC VOLUMES: CURRENT AADT:
- 'LOW PERFORMANCE' PERFORMANCE LEVEL (DETERMINED IN ACCORDANCE WITH D18. BRIDGE TRAFFIC BARRIERS:

#### **STANDARD SPECIFICATIONS:**

TRANSPORT FOR NEW SOUTH WALES (TfNSW) SPECIFICATIONS

R44 *EARTHWORKS* 

B30 EXCAVATION AND BACKFILL FOR BRIDGEWORKS

B54 DRIVEN TUBULAR STEEL PILES

B58 BORED CAST IN PLACE REINFORCED CONCRETE PILES WITH PERMANENT STEEL CASINGS

B59 BORED CAST IN PLACE REINFORCED CONCRETE PILES WITHOUT PERMANENT STEEL CASINGS

B80 CONCRETE WORK FOR BRIDGES

B110 SUPPLY OF PRETENSIONED PRECAST CONCRETE MEMBERS

B150 ERECTION OF PRETENSIONED PRECAST CONCRETE MEMBERS

B170 SUPPLY AND INSTALLATION OF VOID FORMERS

B201 STEELWORK FOR BRIDGES

B240 SUPPLY OF BOLTS, NUTS, SCREWS AND WASHERS

**B264 ERECTION OF BARRIER RAILINGS AND MINOR COMPONENTS** 

B280 UNREINFORCED ELASTOMERIC BEARING PADS AND STRIPS

**B281 LAMINATED ELASTOMERIC BEARINGS** 

**B284 INSTALLATION OF BRIDGE BEARINGS** 

3552 SUBSURFACE DRAINAGE PIPE (CORRUGATED PERFORATED AND NON-PERFORATED PLASTIC)

#### **CONSTRUCTION SEQUENCE NOTES:**

BRIDGE DESIGN IS BASED ON THE CONSTRUCTION SEQUENCE AS FOLLOWS:

- CS1. SURVEY OUT ALIGNMENT CENTRELINE
- CS2. FORM AND CONSTRUCT SOLID LEVELLING PAD BEHIND ABUTMENT A TO ENABLE PILING WORKS FROM **CREEK BANK**
- CS3. INSTALL BARGE WITH EXCAVATOR TO ASSIT WITH PILING WORKS.
- CS4. UTILISE CRANE TO LIFT AND INSTALL TUBE PILES IN PIER POSITION USING EXCAVATOR ON BARGE.
- CS5. UTILISE CRANE TO SUPPORT HYDRAULIC HAMMER OVER PIERS. DRIVE TUBE PIERS TO REFUSAL BY ENSURING MINIMUM REQUIRED SET OF < 20MM DISPLACEMENT. ON COMPLETION OF PIER PILES, DRIVE ABUTMENT PILES TO REFUSAL
- CS6. ON COMPLETION OF PILING WORKS, UNDERTAKE AUGURING OF TUBE PILES TO PROVIDE INSITU PILE PLUG. INSTALL REINFORCEMENT BEFORE AND POUR CONCRETE INTO TUBE PILES. PIER PILES TO ENSURE PLACEMENT OF STARTER BARS FOR HEADSTOCK. ALSO UNDERTAKE AUGURING OF WING WALL PILES.
- CS7. CONSTRUCT ABUTMENT HEADSTOCKS. INSTALL PRECAST ELEMENTS TO ABUTMENTS
- CS8. INSTALL PRECAST PIER HEADSTOCKS AND SEAL SLEEVE JOINTS WITH NON SHRINK HIGH STRENGTH GROUT. INSTALL BEARINGS OVER HEADSTOCK UNITS
- CS9. ERECT GIRDERS ON BEARINGS/GROUT PADS AND GROUT INTO PLACE.
- CS9. CONSTRUCT DECK SLAB STARTING WITH MIDSPAN POURED FIRST FOLLOWED BY LINK SLAB JOINTS.
- CS10. BACKFILL BEHIND ABUTMENTS. BACKFILL TO OCCUR NO EARLIER THAN 7 DAYS AFTER DECK CONSTRUCTION OF DECK SLAB. BACKFILL SHALL BE UNDERTAKEN IN A MANNER SUCH THAT THE FILL DEPTHS AT THE TWO OPPOSING ABUTMENTS DO NOT VARY BY MORE THAN 600mm.
- CS11. INSTALL BRIDGE TRAFFIC BARRIERS.
- CS12. FORM AND CONSTRUCT APPROACH SLABS
- CS13. COMPLETE APPROACH ROAD WORKS. INSTALL APROACH BARRIERS.
- CS14. COMPLETE ROCK PROTECTION WORKS AS REQUIRED.

NOT FOR CONSTRUCTION

A1 APPROVAL D.Anabalon P1 Preliminary 80% D.Anabalon Description Name Initial Date Design not to be amended without authorisation by Certifier



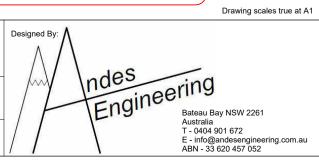
SITE LOCATION BRIDGE ON MURRAYS ROAD WITH PRINCESS HWY (SH01), 1.0KM NORTH OF FISHERMANS PARADISE

DOA DOA DOA Douglas Anabalon, Manager BEng, ME,CPEng, MIEAust., NER No.217659 **MURRAYS BRIDGE OVER CONJOLA CREEK** 

STRUCTURAL NOTES - SHEET 1

City Council DWG 10104.17

Project Job Ref. **AE2426** Sheet No. **002** of **APPROVAL ISSUE** 



- EW3.ALL ORGANIC MATERIAL, TOPSOIL AND UNSUITABLE SUBGRADES ARE TO BE STRIPPED FROM THE AREA TO BE FILLED AND REMOVED FROM THE SITE. SUFFICIENT TOPSOIL IS TO BE RETAINED FOR RE-SPREADING TO A MINIMUM DEPTH OF 75 mm ALL OVER THE SITE AFTER EARTHWORKS. AFTER STRIPPING AS ABOVE THE WHOLE SITE IS TO BE COMPACTED AND PROOF ROLLED TO THE SATISFACTION OF THE GEOTECHNICAL CONSULTANT PRIOR TO PLACING OF EMBANKMENT.
- EW4. FILLING IS TO BE CARRIED OUT IN CONTROLLED LAYERS NOT TO EXCEED 200mm DEPTH. EACH LAYER IS TO BE COMPLETELY COMPACTED TO A MINIMUM OF 95% RELATIVE DRY DENSITY FOR COHESIVE SOILS OR A MINIMUM DENSITY INDEX OF 70% FOR NON-COHESIVE SOILS AND TESTED AND APPROVED BY THE GEOTECHNICAL CONSULTANT PRIOR TO THE PLACEMENT OF THE NEXT LAYER. THE TOP 300mm OF THE ROAD SUBGRADE IS TO BE COMPACTED TO A MINIMUM OF 98% RELATIVE DRY DENSITY.
- EW5.MATERIAL IN ANY PARTICULAR LAYER SHOULD BE HOMOGENOUS. IF NECESSARY, SMALL QUANTITIES OF FILL DIFFERING FROM THE REST SHOULD BE SPREAD AS A THIN LAYER OVER THE WHOLE SITE AND INCORPORATED INTO A FULL LAYER. IN A CUT/FILL SITUATION THE GEOTECHNICAL CONSULTANT MAY DIRECT THAT ANY EXISTING SOIL WITHIN 600mm OF THE FINISHED SURFACE LEVEL BE REMOVED AND REPLACED WITH FILL EQUIVALENT TO THE GENERAL FILL MATERIAL. THE MATERIAL SO REMOVED MAY, IF IT OTHERWISE MEETS THE SPECIFICATION, BE USED AS GENERAL FILL AS ABOVE.
- EW6.FILL (IMPORTED OR IN-SITU) IN ROADWAYS IS TO CONSIST OF HOMOGENOUS SITE MATERIAL CONTINUOUSLY GRADED WITH A MAXIMUM PARTICLE SIZE OF 75mm, A MINIMUM CBR OF 8 AND A MOISTURE CONTENT BETWEEN -2% TO +2% OF OPTIMUM MOISTURE CONTENT AT TIME OF COMPACTION. REFER NOTES BA1, BA2 FOR BACKFILL BEHIND STRUCTURES.
- EW7.ALL TESTING IS TO BE CARRIED OUT BY A NATA CERTIFIED LABORATORY.
- EW8.ALL "UNCONTROLLED FILL" IDENTIFIED ON SITE SHALL BE REMOVED TO NATURAL SURFACE LEVEL AND, IF SUITABLE, REUSED AND PLACED AS SPECIFIED ABOVE.
- EW9. VISIBLE SUBGRADE MOVEMENT SHALL BE ASSESSED USING A WATER TRUCK WITH A SINGLE REAR AXLE AND A GROSS MASS OF NOT LESS THAN 15 TONNES OR APPROVED SIMILAR.

#### LEVELLING GROUT, INJECTION EPOXY AND NON-SHRINK GROUT:

- LG1. GENERAL PURPOSE SHRINKAGE COMPENSATED CEMENTITIOUS GROUT TO BE PARCHEM "CONSTRUCTION GROUT" OR APPROVED EQUIVALENT.
- LG2. LEVELLING GROUT FOR BEARING PADS TO BE PARCHEM "RENDEROC BB", OR APPROVED EQUIVALENT, SUITABLE FOR 20mm - 150mm THICKNESS.
- LG3. INJECTION EPOXY FOR EPOXYING OF FIXING BOLTS AND REINFORCEMENT BARS TO BE RAMSET "CHEMSET REO502", OR APPROVED EQUIVALENT. HOLES TO BE BLOWN/VACUUMED AND DRY PRIOR TO INSTALLATION OF EPOXY.

#### **CONCRETE:**

- C1. CONCRETE WORKS TO BE IN ACCORDANCE WITH: TfNSW B80 CONCRETE WORKS FOR BRIDGES.
- C2. CONCRETE STRENGTH, EXPOSURE CLASSIFICATION AND REINFORCEMENT COVER SHALL BE AS FOLLOWS:

		f'c (MPa) &	REINFORCEMENT	TARGET	
		AGGREGATE	COVER (ALL FACES)	SLUMP	SURFACE
LOCATION	EXPOSURE	SIZE	(mm)	(mm)	FINISH
ABUTMENT	B1	S40/	45	100	Formed
CONCRETE	B1	S40/	35		
ABUTMENT	B1	S40/	45	100	Formed
PILE	B1	S50/	45	100	Formed
PIER HEADSTOCK	B1	S40/	50	100	Formed
PIER HEADSTOCK	B1	S40/	50	100	Formed
APPROACH SLAB	B1	S40/	50	100	Formed
WING WALLS	B1	S40/	50	100	Formed
WING WALLS	B1	S40/	50	100	Formed
APPROACH SLAB	B1	S40/	50	100	Formed

NOTE: N = NORMAL PLACEMENT OF CONCRETE, T = TREMIE PLACEMENT OF CONCRETE

- C3. CONCRETE SHALL BE VIBRATED AS FOLLOWS:
  - PRECAST ELEMENTS TO BE CAST IN RIGID FORMS AND SUBJECTED TO INTENSE VIBRATION.
  - ALL OTHER CONCRETE TO BE VIBRATED UNO.
- C4. CONCRETE ELEMENT EDGE FINISHING:
  - CHAMFER EDGES 20X20 AND FILLET RE-ENTRANT ANGLES 20X20 USO.
  - NCF DENOTES NO CHAMFER OR FILLET.
- C5. NO HOLES OR CHASES OTHER THAN THOSE SHOWN ON THE DRAWINGS SHALL BE MADE IN CONCRETE MEMBERS WITHOUT THE PRIOR APPROVAL OF THE DESIGN ENGINEER.
- C6. REINFORCEMENT SHALL BE SUPPORTED TO GIVE THE CORRECT CONCRETE COVER ON CHAIRS AS FOLLOWS:
  - ALL BRIDGE ABUTMENTS, PIERS AND PRECAST DECK UNITS: EXTRUDED FIBRE CONCRETE BLOCKS (60MPa MINIMUM COMPRESSIVE STRENGTH) OR STAINLESS STEEL NIBS WELDED TO THE REINFORCEMENT
  - PILES IN GROUND: PLASTIC CHAIRS AND SPACERS
  - ALL OTHER CONCRETE: PLASTIC CHAIRS AND SPACERS.
- C7. CONSTRUCTION JOINTS SHALL BE USED ONLY AS SHOWN ON THE DRAWINGS. NO CONSTRUCTION JOINT SHOWN ON THE DRAWINGS SHALL BE OMITTED WITHOUT THE WRITTEN APPROVAL OF THE DESIGN ENGINEER.
- C8. TIME FOR SAWCUTTING (WHERE SHOWN ON DRAWINGS): WITHIN 8-10 HOURS OF FINISHING WORKS.
- C9. ANY CONCRETE FACE AGAINST WHICH NEW CONCRETE IS TO BE PLACED SHALL BE THOROUGHLY SCABBLED. CLEAN OFF DUST AND CONTAMINANTS BEFORE NEW POUR.
- C10. FORMWORK TO REMAIN IN POSITION FOR FOLLOWING TIMEFRAMES UNO:
  - SOFFITS OF SUSPENDED SLABS, BEAMS, HEADSTOCKS CONCRETE: COMPRESSIVE STRENGTH TO EXCEED 70% OF F'c AND MINIMUM CONCRETE AGE OF 7 DAYS
  - SIDEFORMS: COMPLY WITH REQUIREMENTS OF AS5100.5 cl17.8 AND TIMEFRAMES DETAILED IN ITP FOR ELEMENT.
- C11. LOADING OF STRUCTURES WITH COMPRESSIVE STRENGTH LESS THAN f'c: OBTAIN APPROVAL BEFORE APPLYING LOADS OR DESIGN & INSTALL SUITABLE PROPPING IN ACCORDANCE WITH NOTE T1.
- C12. CONCRETE TO BE CURED TO THE STANDARD (SHOWN IN NOTE C1) AND BELOW REQUIREMENTS:
  - ALL EXPOSED SURFACES: SPRAY WITH ALIPHATIC ALCOHOL AFTER FIRST SCREED, AND AGAIN AFTER EACH FINISHING OPERATION.

# **CURING PERIODS:**

- ABUTMENT HEADSTOCKS: 7 DAYS DURATION, COMMENCING WITHIN 1 HOUR OF FORMWORK STRIPPING
- BRIDGE DECK AND APPROACH SLABS: 7 DAYS DURATION, COMMENCING WITHIN 1 HOUR OF FORMWORK STRIPPING.

# PREFERRED CURING METHODS:

- UNDER PLASTIC, LAPPED AND TAPED. HOSE WITH WATER ONCE DAILY UNDER PLASTIC AND RETAPE;
- COAT WITH FOSROC CONCURE A99 CURING COMPOUND TO TINSW B80 cl8.4 REQUIREMENTS.
- PRECAST ELEMENTS TO BE STEAM CURED TO TFNSW B110 SUPPLY OF PRETENSIONED PRECAST CONCRETE MEMBERS.

#### **REINFORCEMENT:**

- R1. REINFORCEMENT SHALL CONFORM WITH TINSW B80 CONCRETE WORK FOR BRIDGES. ALL REINFORCEMENT TO BE ACRS (AUSTRALIAN CERTIFICATION AUTHORITY FOR REINFORCING STEEL) CERTIFIED.
- R2. REINFORCEMENT SHALL BE GRADE D500N HOT ROLLED HIGH YIELD BARS TO AS4671 UNO. WHERE R BARS ARE SPECIFIED, THESE SHALL BE ROUND BARS GRADE R250N.
- R3. BAR SHAPES ARE AS SHOWN ON DRAWING
- R4. HOOKS AND COGS SHALL BE IN ACCORDANCE WITH AS5100 cl 13.1.2.7.
- R5. LAPS AND OTHER SPLICES IN REINFORCEMENT SHALL ONLY BE MADE AT THE POSITIONS SHOWN ON THE DRAWINGS UNLESS ALTERNATIVE OR EXTRA LOCATIONS ARE APPROVED IN WRITING BY THE SUPERINTENDENT.
- R6. DO NOT CUT REINFORCEMENT TO CLEAR PENETRATION, SLEEVES OR H.D. BOLTS. DISPLACE REINFORCEMENT SLIGHTLY AS NECESSARY AND PROVIDE CORRECT COVER TO THE PENETRATION, SLEEVES OR H.D. BOLTS.
- R7. SIDE AND END LAPS IN WELDED MESH REINFORCEMENT SHALL BE IN ACCORDANCE WITH AS5100.5 cl 13.2.3.
- R8. REINFORCEMENT LAP SPLICE LENGTHS (UNO ON DRAWINGS) AS FOLLOWS ♦;

EXPOSURE	f'c			DEI	FORME	D BAR I	DIAMET	ΓER		
CLASSIFICATION	(MPa)	N10	N12	N16	N20	N24	N28	N32	N36	N40
B1	32	350	400	550	800	1050	1350	1650	2000	2350
	40	300	350	500	750	1000	1250	1500	1800	2150
B2	40	300	350	500	650	900	1150	1400	1700	2000
DZ	50	300	350	500	650	850	1050	1300	1600	1850
C1	50	300	350	500	600	700	950	1200	1450	1750
CI	≥55	300	350	500	600	700	900	1150	1400	1650
C2	≥55	300	350	500	600	700	850	1050	1300	1600

- ♦ FOR HORIZONTAL BARS WITH MORE THAN 300 OF CONCRETE BELOW THE ABOVE BARS, THE LAP LENGTHS IN THIS TABLE SHALL BE MULTIPLIED BY 1.3. WHERE LAPS ARE REQUIRED BUT NOT SHOWN ON THE DRAWINGS, THEY SHOULD BE STAGGERED AND POSITIONED AWAY FROM POINTS OF MAXIMUM STRESS. WHERE MORE THAN 50% OF REINFORCEMENT IS SPLICED AT POINTS OF MAXIMUM STRESS, LAP LENGTHS SHOWN IN THE TABLE ABOVE ARE TO BE MULTIPLIED BY 1.3.
- **R9. REINFORCEMENT PLACEMENT ABBREVIATIONS AS FOLLOWS:**

FF FAR FACE

NEAR FACE

EACH FACE

EACH END

NSOP NOT SHOWN ON PLAN

NOT SHOWN ON ELEVATION

LENGTH VARIES

NOT FOR CONSTRUCTION

A1 APPROVAL D.Anabalon P1 Preliminary 80% D.Anabalon Initial Date Description Name WEATHERILL PARK NSW 2450 Design not to be amended without authorisation by Certifier



SITE LOCATION BRIDGE ON MURRAYS ROAD WITH PRINCESS HWY (SH01), 1.0KM NORTH OF FISHERMANS PARADISI

DOA DOA DOA

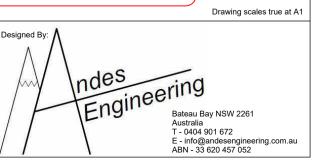
Douglas Anabalon, Manager (BEng, ME,CPEng, MIEAust., NER No.2176595

MURRAYS BRIDGE OVER CONJOLA CREEK

**STRUCTURAL NOTES - SHEET 2** 

Project Job Ref. City Council DWG 10104.18

**AE2426** Sheet No. 003 of **APPROVAL ISSUE** 



#### **ELASTOMERIC BEARING PADS/STRIPS:**

- EB1. ELASTOMERIC BEARING STRIPS SHALL BE UNREINFORCED NATURAL RUBBER BEARING STRIP, TYPE 60H MATERIAL IN ACCORDANCE WITH AS5100.4 TABLE B1.
- EB2. LAMINATED ELASTOMERIC BEARING PADS SHALL BE MANUFACTURED IN ACCORDANCE WITH THE REQUIREMENTS OF AS5100.4 cl 12 FROM TYPE 50H MATERIAL IN ACCORDANCE WITH AS5100.4 TABLE B1.
- EB3. LAMINATED ELASTOMERIC BEARING PADS SHALL BE SUPPLIED WITH HOLES TO SUIT THE BEARING RESTRAINT PINS. HOLE SETOUT SHALL BE AS SHOWN ON THE BEARING DETAIL DRAWINGS.
- EB4. STORE BEARINGS UNDER COVER UNTIL INSTALLATION. ONCE INSTALLED, KEEP PROTECTED FROM THE ELEMENTS WITH COVER SHEET UNTIL DECK UNITS INSTALLED.

#### **INSTALLATION OF ELASTOMERIC BEARINGS**

#### PROCEDURE AS FOLLOWS:

- BI1. PREPARE BEARING GROUT PAD TO LEVEL SPECIFIED (BEARING RL MINUS BEARING THICKNESS).
- BI2. IF BEARING PIN NOT CAST INTO HEADSTOCK THEN DRILL AND CHEMSET BEARING RESTRAINT PIN IN POSITION (TOP OF PIN TO BE INSTALLED 12mm ABOVE LEVEL OF GROUT PAD).
- BI3. INSTALL BEARING ON TOP OF PREPARED GROUT PAD. ENSURE BEARING IS IN FULL CONTACT WITH GROUT PAD.
- BI4. IMMEDIATELY PRIOR TO PLACEMENT OF GIRDER PLACE NOMINAL 5mm LAYER OF MEGAPOXY PM OVER TOP SURFACE OF BEARING.
- BI5. LOWER PSC GIRDER INTO POSITION OVER BEARING UNTIL GIRDER LIGHTLY CONTACTS THE TOP SURFACE OF THE BEARING. (CONTACT DOES NOT HAVE TO OCCUR ON ALL EDGES OF BEARING, LIGHT CONTACT IS DESCRIBED AS THE FIRST POINT OF CONTACT BETWEEN THE BEARING AND GIRDER).
- BI6. SUSPEND GIRDER IN THIS POSITION WITH TIMBER WEDGES. WEDGES TO REMAIN IN POSITION UNTIL MEGAPOXY PM HAS CURED (NOMINAL 24hrs AT 25°C).
- BI7. REMOVE WEDGES AND INSTALL ANY PERMANENT GIRDER FIXINGS.

#### PRESTRESSED BEAM NOTES

- PB1. REINFORCEMENT MAY BE DISPLACED SLIGHTLY WHERE REQUIRED TO CLEAR EMBEDDED OBJECTS, HOLES AND RECESSES.
- PB2. REFER DWG NO. AE2426-S260 FOR MASS OF BEAMS
- PB3. DURING STORAGE, TRANSPORT AND HANDLING, KEEP BEAM UPRIGHT AND SUPPORTED AT NOT MORE THAN 600mm FROM EACH END.
- PB4. PROVIDE SUITABLE LIFTING DEVICES NOT FURTHER THAN 600 mm FROM BEAM ENDS.
- PB5. MINIMUM COMPRESSIVE STRENGTH OF CONCRETE AT TRANSFER 40MP a.
- PB6. STRANDS AS 4672.1 7 WIRE ORDINARY 15.2 1 750 RELAX 2.
- PB7. THE FORCE REMAINING IN EACH STRAND AT BEAM MIDSPAN IMMEDIATELY AFTER TENSIONING SHALL BE: AS SHOWN ON DWG NO. AE2426-S260
- PB8. CUT STRANDS FLUSH WITH THE END OF THE BEAM AND SEAL EXPOSED STRANDS AGAINST CORROSION WITH 3mm THICK EPOXY RESIN MEGAPOXY H THIXOTROPIC OR EQUIVALENT.
- PB9. REFER DWG NO. AE2426-S260 FOR BEAM HOGS

#### BRIDGE TRAFFIC BARRIER NOTES:

- SB1. DIMENSIONS ARE GIVEN TO THE NEAREST MILLIMETER AFTER FABRICATION.
- SB2. STEELWORK SHALL BE FABRICATED TO THE REQUIREMENTS OF TRNSW B201.
- SB3. RHS AND SHS TO BE GRADE C450LO TO AS/NZS 1163.
- SB4. STEEL PLATE TO AS/NZS 3678.
- SB5. FLAT BAR TO BE GRADE 300 TO AS/NZS 3679.1.
- SB6. BOLTS CLASS 8.8, NUTS CLASS 8 AND WASHERS FOR CLASS 8.8 BOLTS SHALL BE FABRICATED IN ACCORDANCE WITH TfNSW B240 AND AS/NZS 1252, THIN NUTS CLASS 5 TO AS 1112.4.
- SB7. THE EXPOSED END OF THREADED BAR SHALL HAVE THE ORIGINAL GALVANIZING FINISH.
- SB8. ALL THREADED BARS, BOLTS, NUTS AND WASHERS SHALL BE HOT DIP GALVANIZED TO AS/NZS 4680 USO.
- SB9. PRIOR TO GALVANIZAING ALL WELD SPLATTER AND WELDING SLAG IS TO BE REMOVED.
- SB10. MEMBERS TO BE BRANDED WITH SUITABLE TYPE NUMBER AFTER FABRICATION.
- SB11. EDGES TO BE PROTECTIVE TREATED SHALL BE ROUNDED TO A RADIUS OF 1.5mm USO.
- SB12. ALL WELDING TO CONFORM TO AS/NZS 1554.1.
- SB13. ALL WELDS EXCEPT LOCATION TACK WELDS TO BE SP CATEGORY.
- SB14. WELDING CONSUMABLES TO BE CONTROLLED HYDROGEN TYPE: G493 TO AS/NZS ISO 14341-B OR T493 TO AS/NZS ISO 17632-B USO.
- SB15. DELINEATION ON THE BRIDGE TRAFFIC BARRIER SYSTEM SHALL BE INSTALLED IN THE LOCATION AND TO THE MAXIMUM SPACING SHOWN ON THE DRAWINGS. DELINEATORS SHALL BE CONSISTENT WITH THE REQUIREMENTS SPECIFIED IN TRNSW R131.

#### STEELWORK GENERAL:

- S1. ALL STEELWORK IS TO BE IN ACCORDANCE WITH TRNSW B201 STEELWORKS FOR BRIDGES.
- S2. FILLET WELDS SHALL BE 6mm, CATEGORY SP, UNO.
- S3. ALL WELDING ELECTODES TO BE E4916, E4918 OR W50X TO AS 4855, UNO.
- S4. ALL STEELWORK, UNLESS OTHERWISE NOTED, SPECIFIED OR APPROVED, SHALL BE HOT DIP GALVANISED AFTER FABRICATION TO AS 4680. HIGH STRENGTH STRUCTURAL BOLTS (GRADE 8.8) TO BE UTILISED UNO. ALL BOLTS, NUTS AND WASHERS TO BE HOT DIP GALVANISED TO AS 1214 UNO.

#### **BACKFILLING BEHIND ABUTMENTS:**

- BA1. BACKFILL MATERIAL SHALL BE AS FOLLOWS:
  - BEHIND HEADSTOCKS, WINGWALLS AND RETAINING WALLS: FREE-DRAINING GRANULAR MATERIAL COMPLYING WITH TRNSW B30 EXCAVATION AND BACKFILL FOR BRIDGEWORKS cl 6.2.2.
  - COMPACTION SHALL BE IN ACCORDANCE WITH TfNSW B30 cl 6.4.
- BA2. WITHIN 1m OF WALLS AND HEADSTOCKS: PLACE IN LAYERS NOT EXCEEDING 100mm AND COMPACT TO 95% RELATIVE COMPACTION (70% MINIMUM DENSITY INDEX IN SAND) USING A HANDHELD VIBRATING PLATE COMPACTOR OR EQUAL. LARGE COMPACTION EQUIPMENT IS NOT PERMITTED IN THESE ZONES.

#### **ROCK FACING:**

ROCK GRADING						
	MIN	MAX				
D15	95	130				
D50	145	175				
D85	200	235				
D100		305				

- RF1. ROCK SHALL BE WELL GRADED WITH NOT LESS THAN 50% LARGER THAN A SIZE TWICE THE MINIMUM SIZE SPECIFIED.
- RF2. ROCK SHALL BE CLEAN, HARD, DENSE AND DURABLE IGNEOUS OR METAMORPHIC ROCKS.
- RF3. ROCK SHALL BE RESISTANT TO WEATHERING, FREE FROM OVERBURDEN, SPOIL, SHALE AND ORGANIC MATTER.
- RF4. ROCK THAT IS LAMINATED, FRACTURED, POROUS, WITH DISCONTINUITIES OR OTHERWISE PHYSICALLY WEAK SHALL NOT BE USED.
- RF5. THE BREADTH OF THICKNESS OF A SINGLE STONE SHALL NOT BE LESS THAT ONE-THIRD ITS LENGTH.
- RF6. ROCK PROTECTION SHALL BE CONSTRUCTED IN THE LOCATIONS AND IN ACCORDANCE WITH THE DRAWINGS.
- RF7. ROCK PROTECTION SHALL HAVE A UNIFORM APPEARANCE OVERALL AND SHALL NOT HAVE NOTICEABLE IRREGULARITIES IN HORIZONTAL AND VERTICAL ALIGNMENTS.
- RF8. ROCK PROTECTION SHALL BE PLACED IN A MANNER WHICH ENSURES THAT THE LARGER ROCKS ARE UNIFORMLY DISTRIBUTED THROUGHOUT THE PROTECTION WORK AND THAT THE SMALLER ROCKS EFFECTIVELY FILL THE SPACES BETWEEN THE LARGE ROCKS WITHOUT LEAVING ANY LARGE VOIDS.
- RF9. THE LAYERS OF PLACED ROCK SHALL BE OF EVEN THICKNESS AND OF EVEN GRADING.

NOT FOR CONSTRUCTION

 A1 APPROVAL
 D.Anabalon
 06/11/24

 P1 Preliminary 80%
 D.Anabalon
 FC

 Issue
 Description
 Name
 Initial
 Date



WEATHERILL PARK NSW 2450

SITE LOCATION

BRIDGE ON MURRAYS ROAD
1.36km EAST OF
INTERSECTION
WITH PRINCESS HWY (SH01),
1.0KM NORTH OF
FISHERMANS PARADISE

DOA 
Drafter DOA DOA

Approved by:

Douglas Anabalon, Manager (BEng, ME, CPEng, MIEAust., NER No.2176595)

MURRAYS BRIDGE OVER CONJOLA CREEK

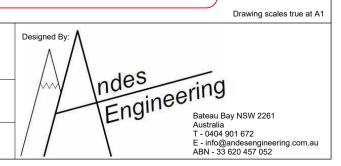
**STRUCTURAL NOTES - SHEET 3** 

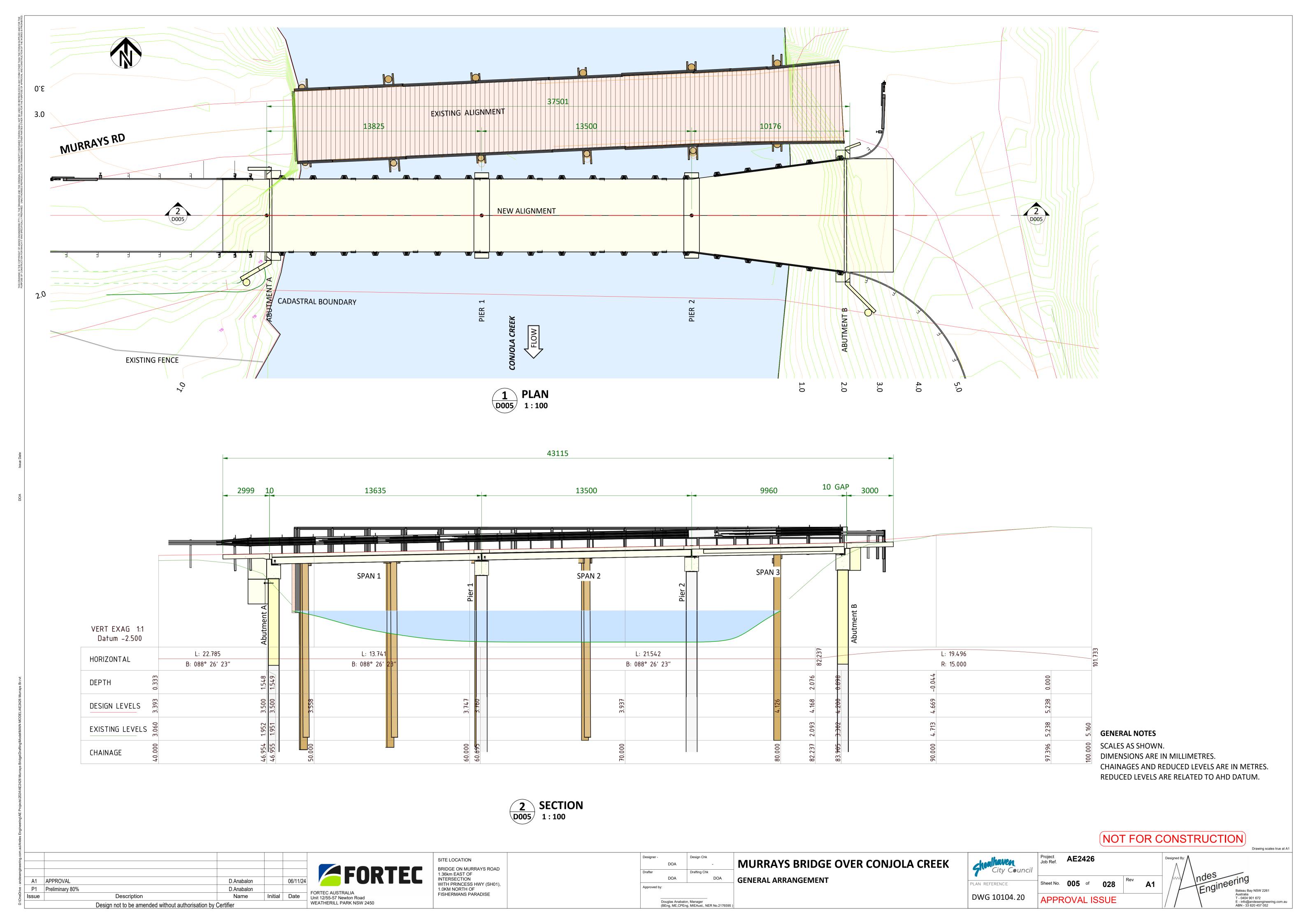


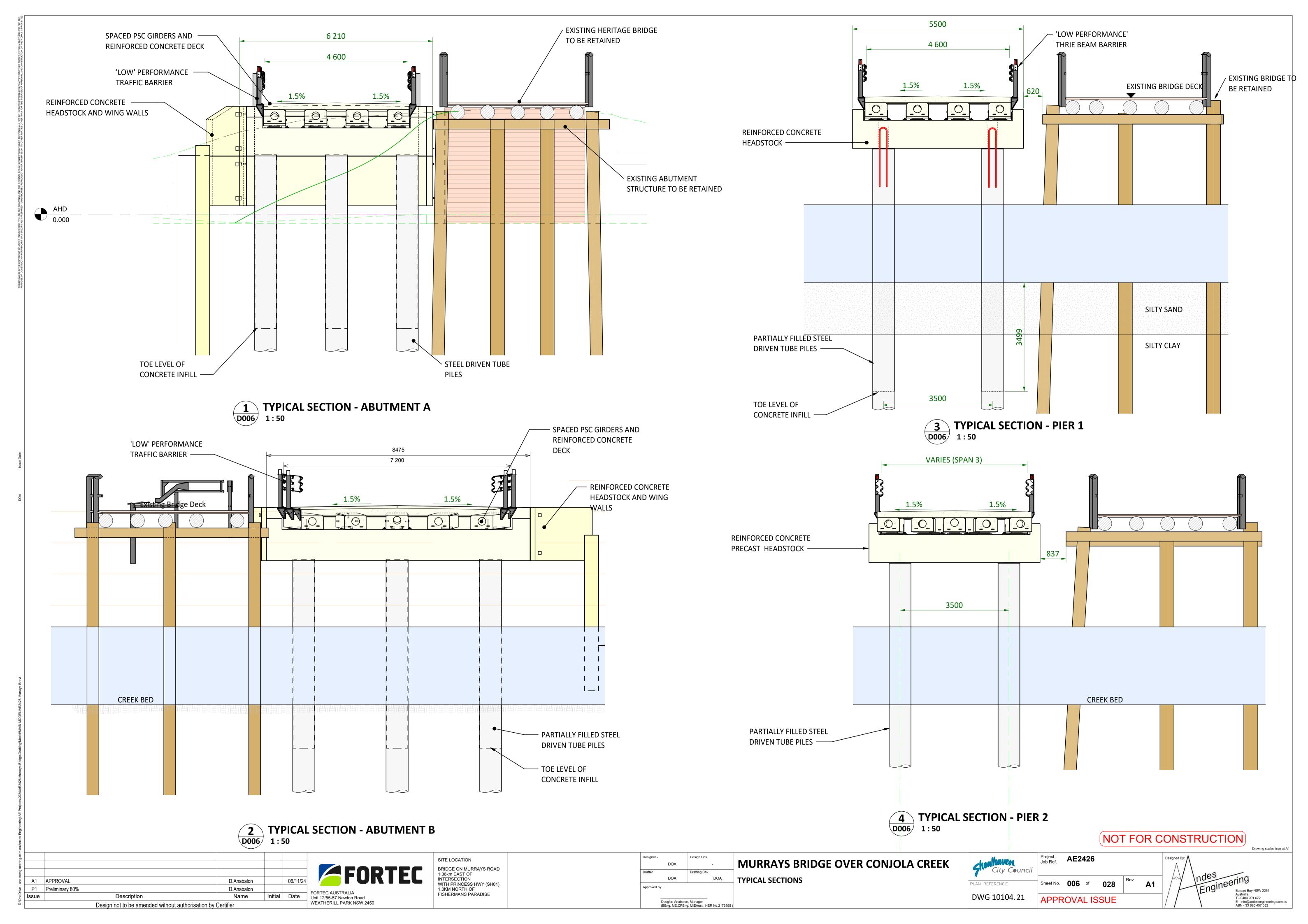
Project Job Ref. AE2426

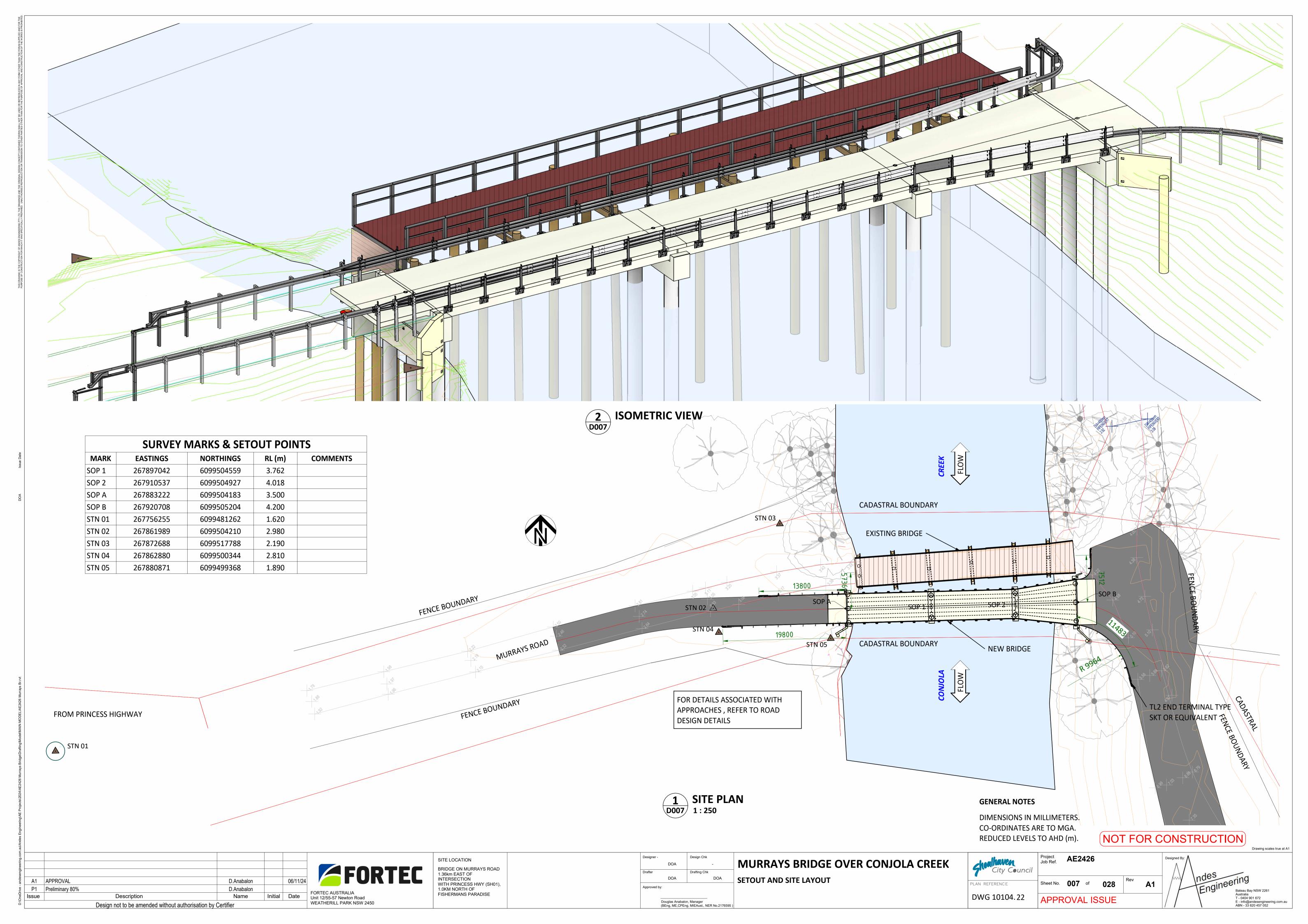
Sheet No. 004 of 028

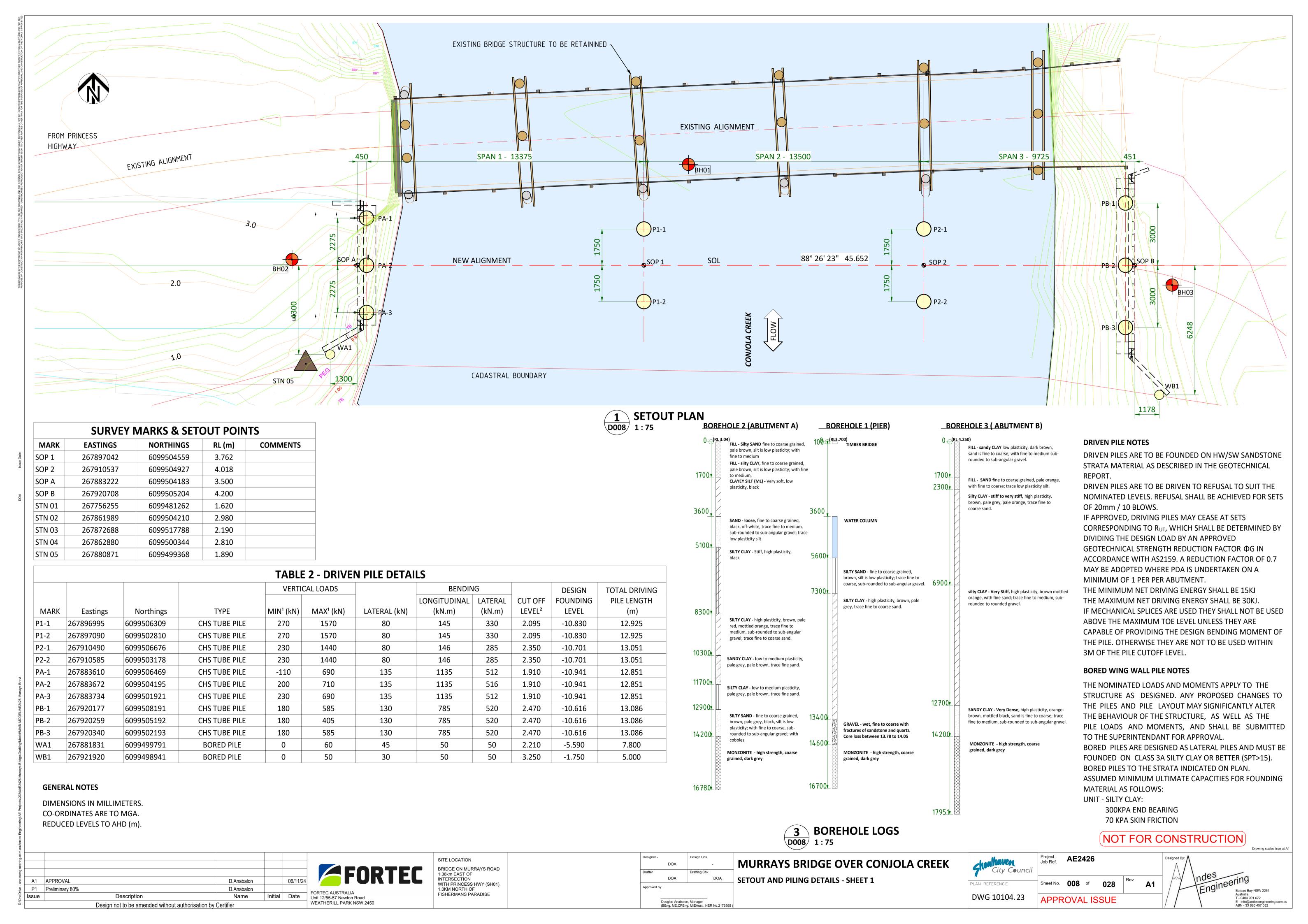
APPROVAL ISSUE

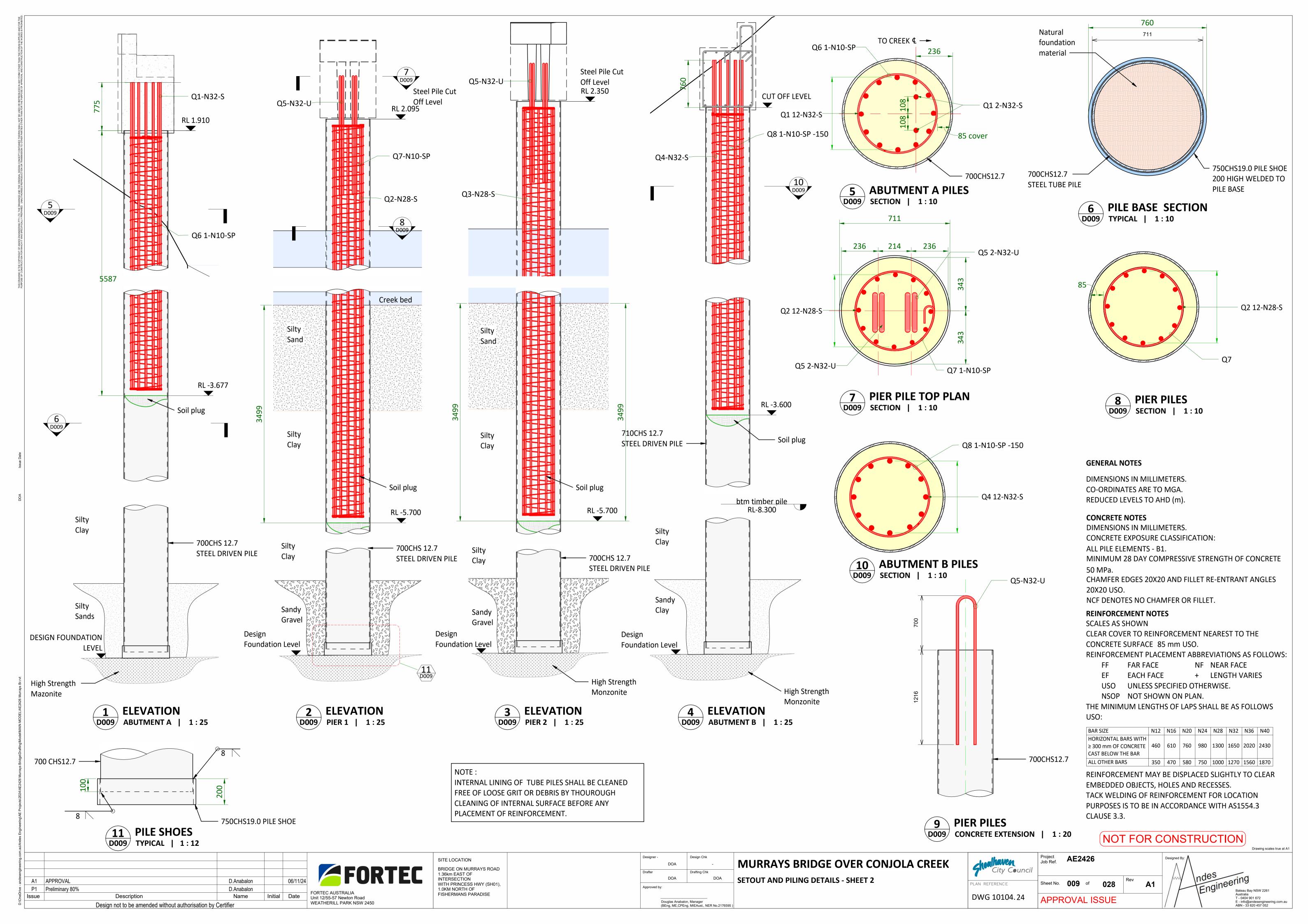


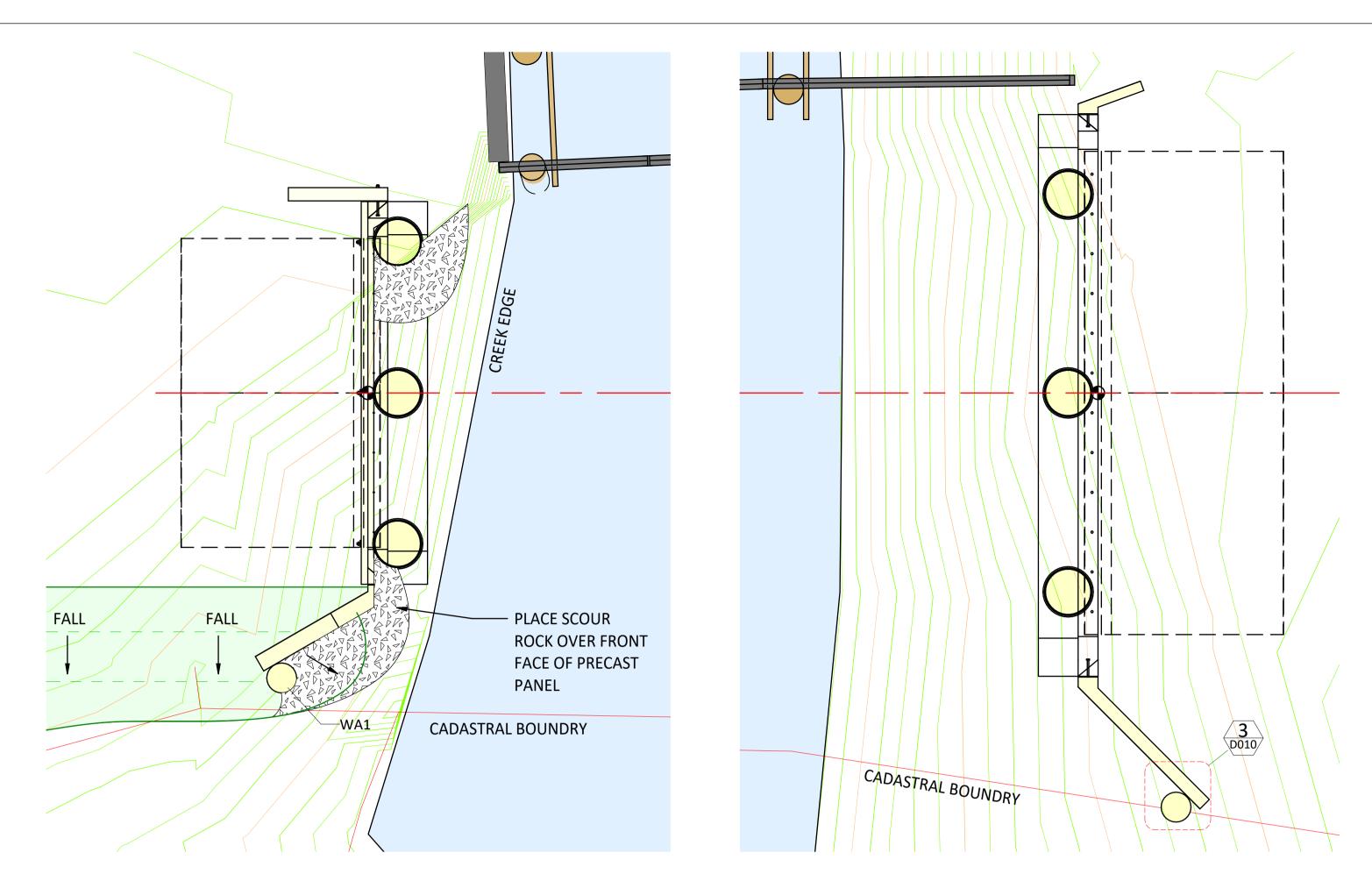




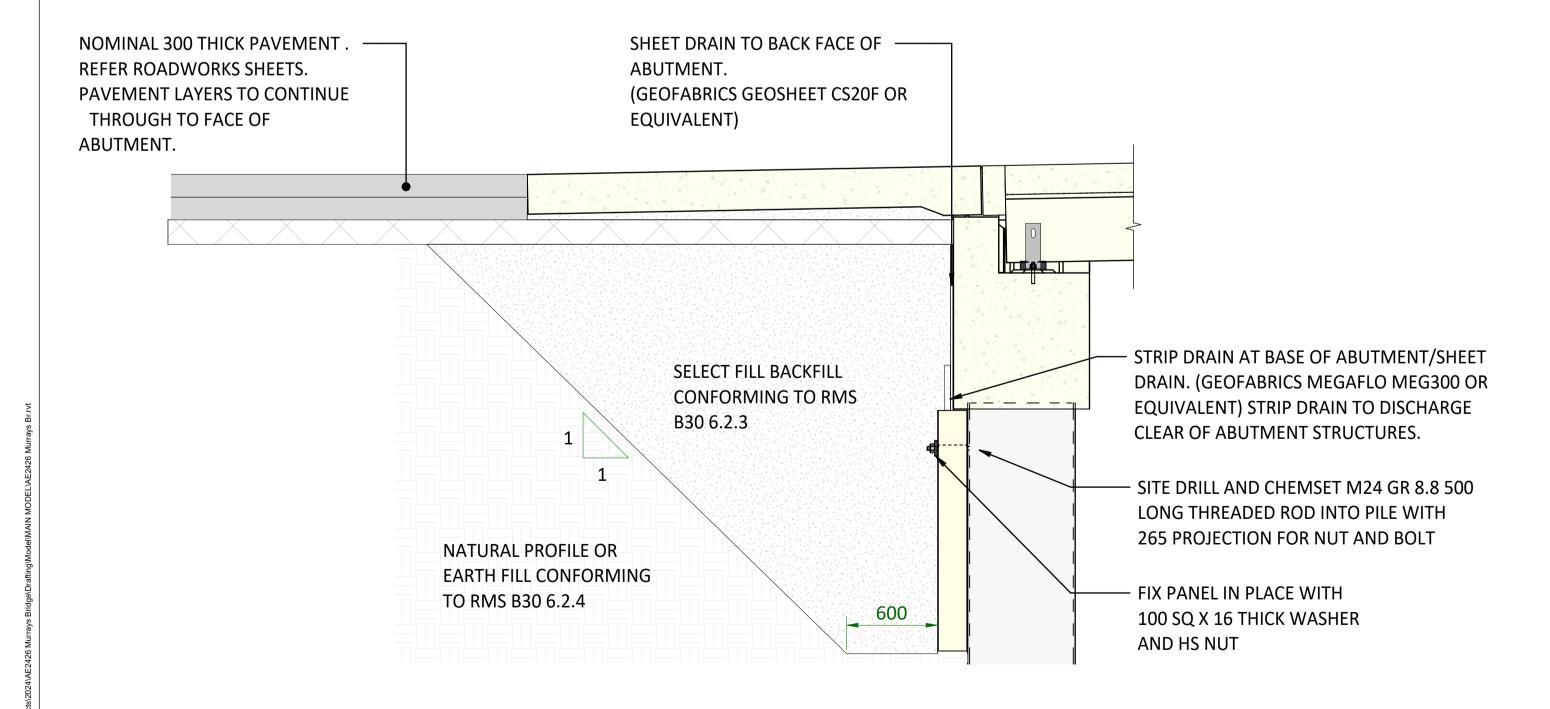


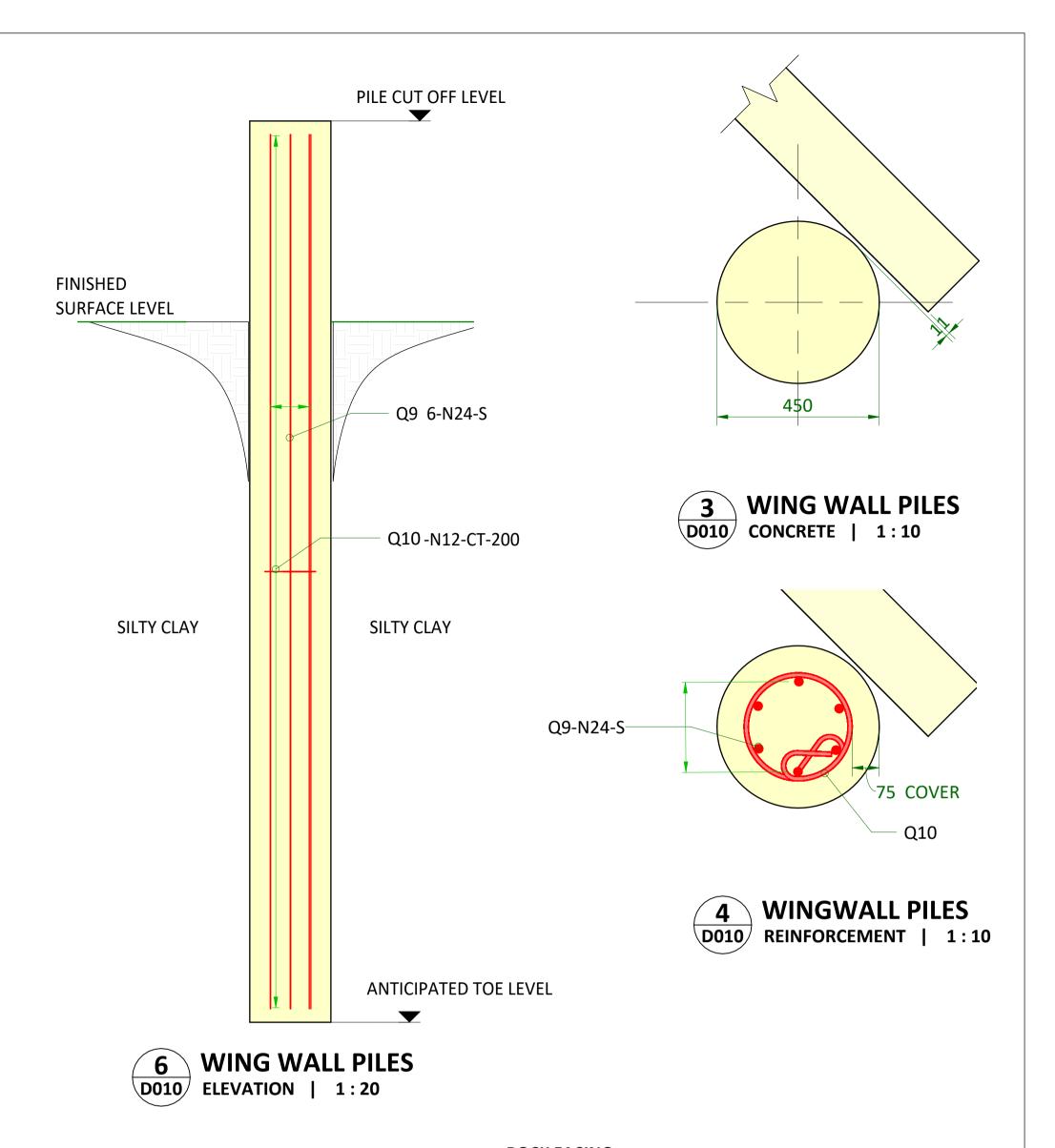












# ROCK FACING

ROCK GRADING						
	MIN MAX					
D15	185	267				
D50	292	356				
D85	394	470				
D100		610				

# **BACKFILLING BEHIND ABUTMENTS**

BACKFILL MATERIAL BEHIND HEADSTOCKS, WINGWALLS AND RETAINING WALLS SHALL BE: FREE-DRAINING GRANULAR MATERIAL COMPLYING WITH TINSW B30 cl 6.2. PLACE AND COMPACT AS PER TINSW B30 cl 6.4.2.

BACKFILLING BEHIND HEADSTOCKS AND WINGWALLS SHALL NOT COMMENCE UNTIL GIRDER INSTALLATION IS COMPLETED AND BEARING STRIPS/GROUT AT GIRDER ENDS HAS BEEN INSTALLED. (ALTERNATE OF TEMPORARY WEDGING GIRDER ENDS AGAINST ABUTMENT IS PERMITTED BUT WEDGES SHALL NOT BE REMOVED UNTIL PERMANENT BEARING STRIPS/GROUT HAS BEEN INSTALLED)

BACKFILL MATERIAL SHALL BE PLACED IN ACCORDANCE WITH THE FOLLOWING:

 WITHIN 1M OF WALLS AND HEADSTOCKS: PLACE IN LAYERS NOT EXCEEDING 100 AND COMPACT TO 95% RELATIVE COMPACTION (70% MINIMUM DENSITY INDEX IN SAND) USING A HEANDHELD VIBRATING PLATE COMPACTOR OR EQUAL. LARGE COMPACTION EQUIPMENT IS NOT PERMITTED IN THESE ZONES. ROCK SHALL BE WELL GRADED WITH NOT LESS THAN 50%
LARGER THAN A SIZE TWICE THE MINIMUM SIZE SPECIFIED.
ROCK SHALL BE CLEAN, HARD, DENSE AND DURABLE IGNEOUS
OR METAMORPHIC ROCKS.

ROCK SHALL BE RESISTANT TO WEATHERING, FREE FROM OVERBURDEN, SPOIL, SHALE AND ORGANIC MATTER.
ROCK THAT IS LAMINATED, FRACTURED, POROUS, WITH DISCONTINUITIES OR OTHERWISE PHYSICALLY WEAK SHALL NOT BE USED.

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THE LAYERS OF PLACED ROCK SHALL BE OF EVEN THICKNESS

NOT FOR CONSTRUCTION

 A1 APPROVAL
 D.Anabalon
 06/11/24

 P1 Preliminary 80%
 D.Anabalon
 FC

 Issue
 Description
 Name
 Initial
 Date

Design not to be amended without authorisation by Certifier

FORTEC AUSTRALIA
Unit 12/55-57 Newton Road

**ABUTMENT BACKFILL SECTION** 

WEATHERILL PARK NSW 2450

**D010** 1:25

SITE LOCATION

BRIDGE ON MURRAYS ROAD

1.36km EAST OF
INTERSECTION
WITH PRINCESS HWY (SH01),
1.0KM NORTH OF
FISHERMANS PARADISE

Designer 
DOA

Drafter

DOA

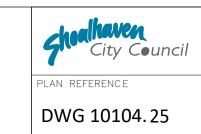
Drafting Chk

DOA

Approved by:

Douglas Anabalon, Manager
(BEng, ME,CPEng, MIEAust., NER No.2176595)

MURRAYS BRIDGE OVER CONJOLA CREEK
WING WALL PILE AND SCOUR PROTECTION MEASURES

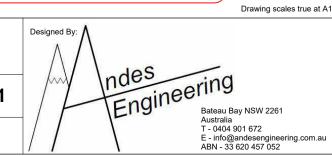


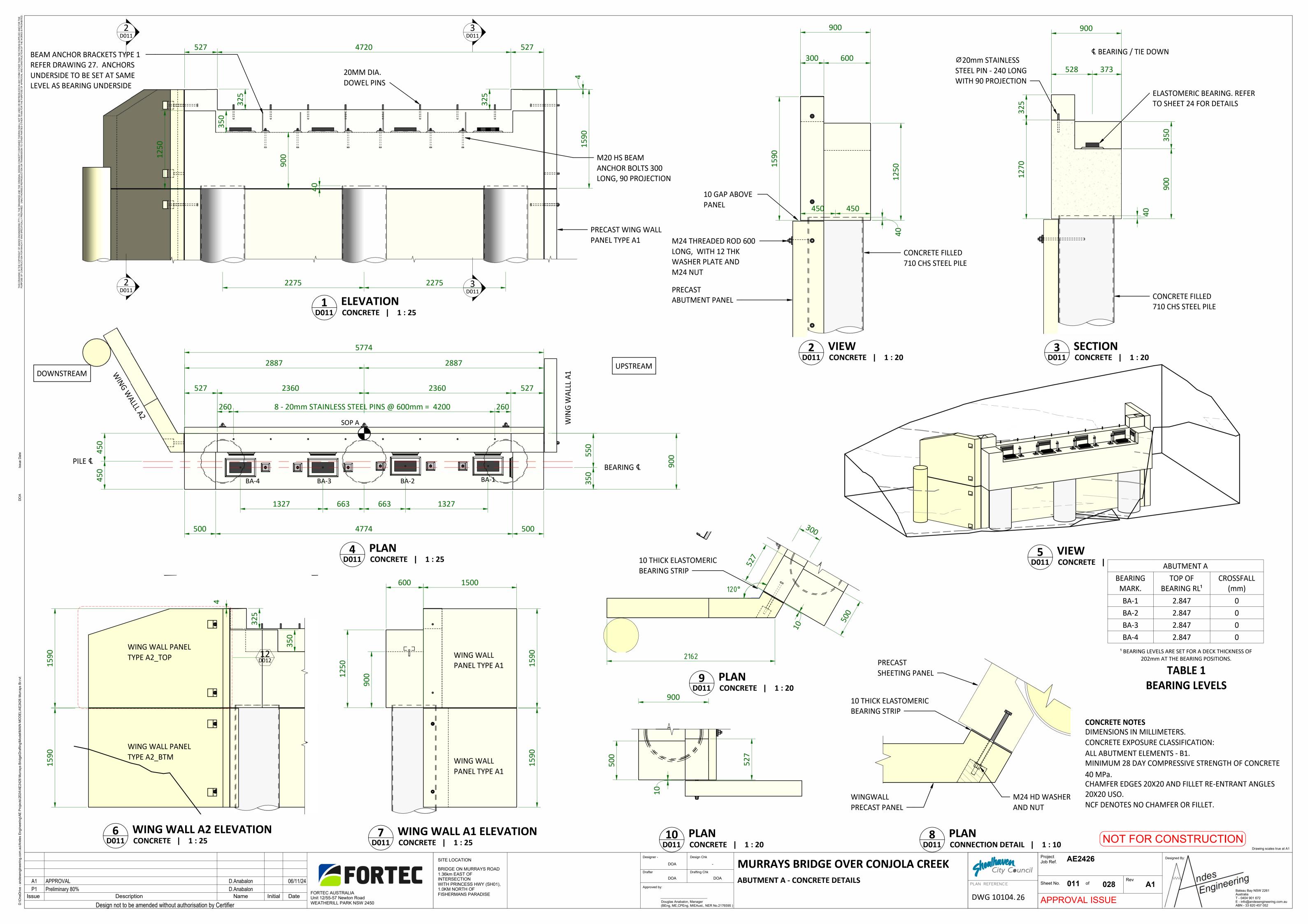
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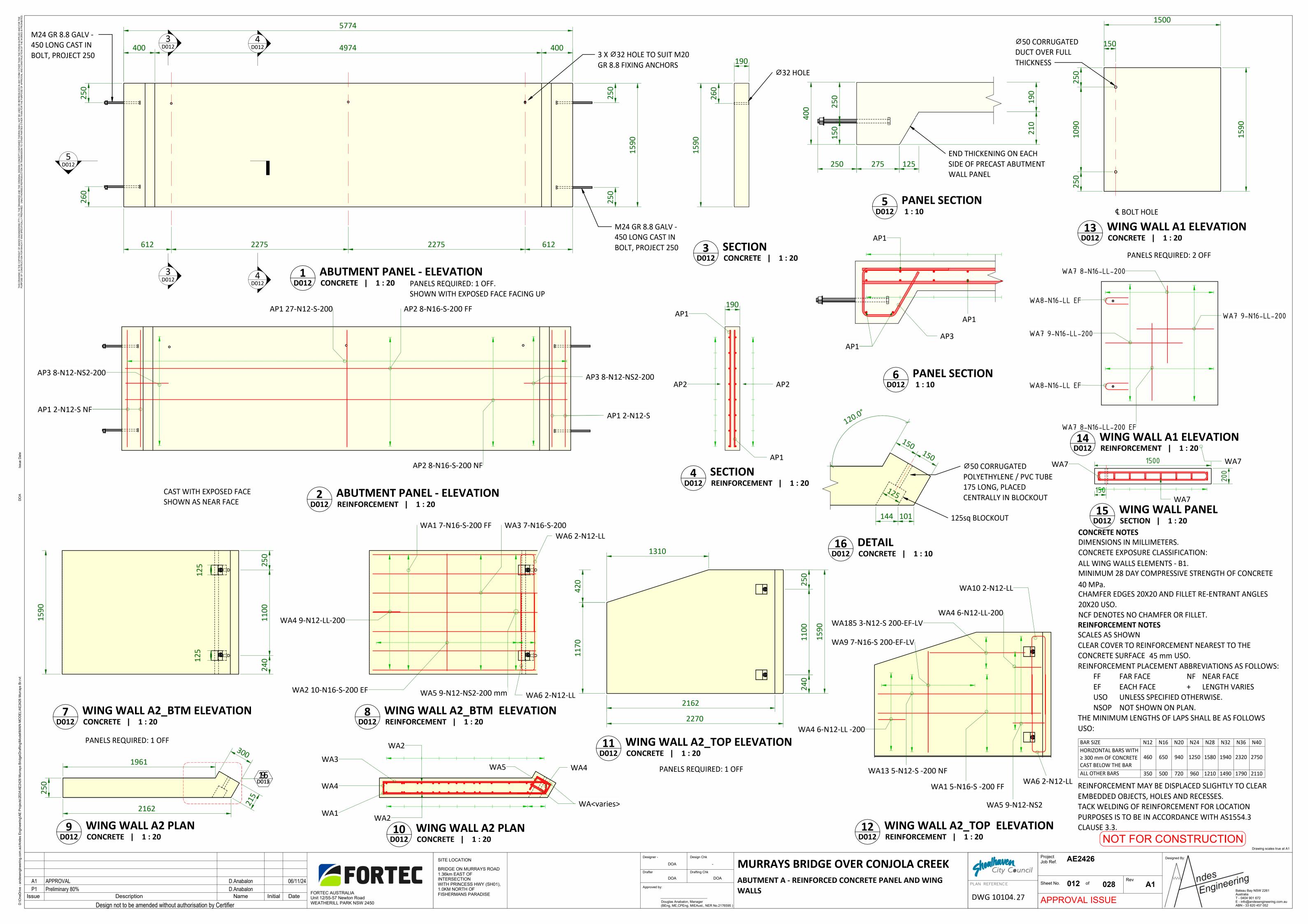
Sheet No. 010 of 028 Rev A1

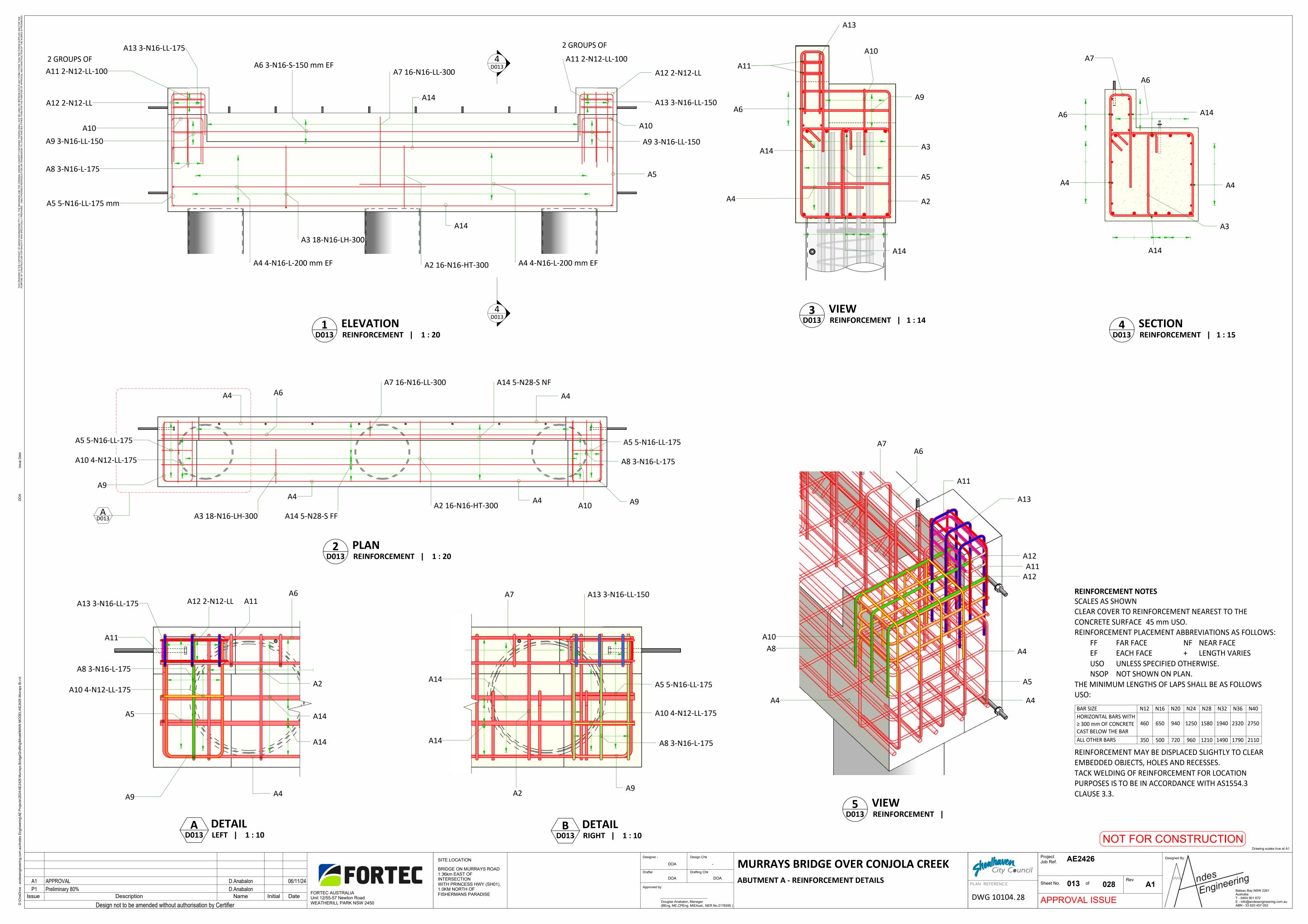
APPROVAL ISSUE

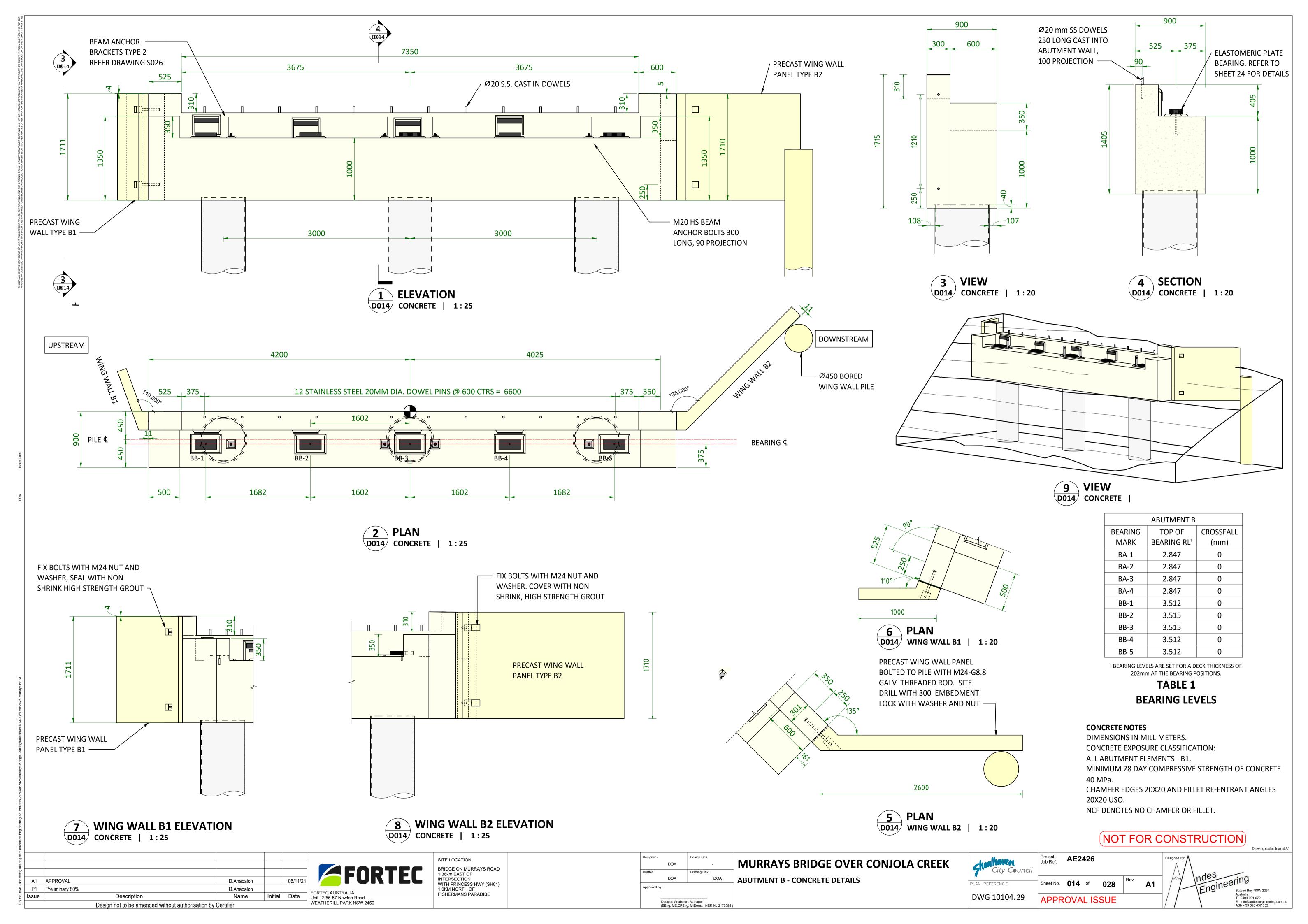
AND OF EVEN GRADING.

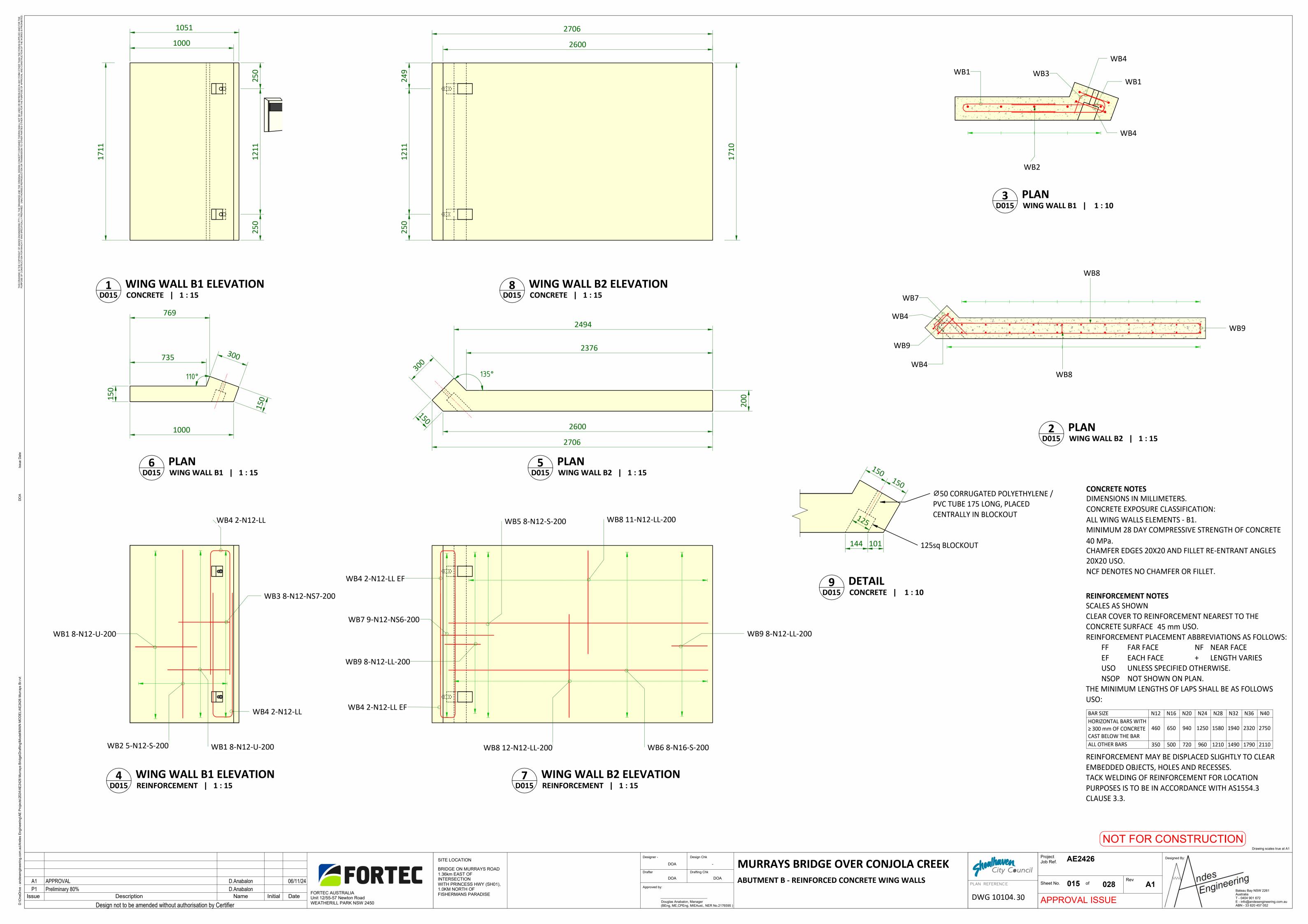


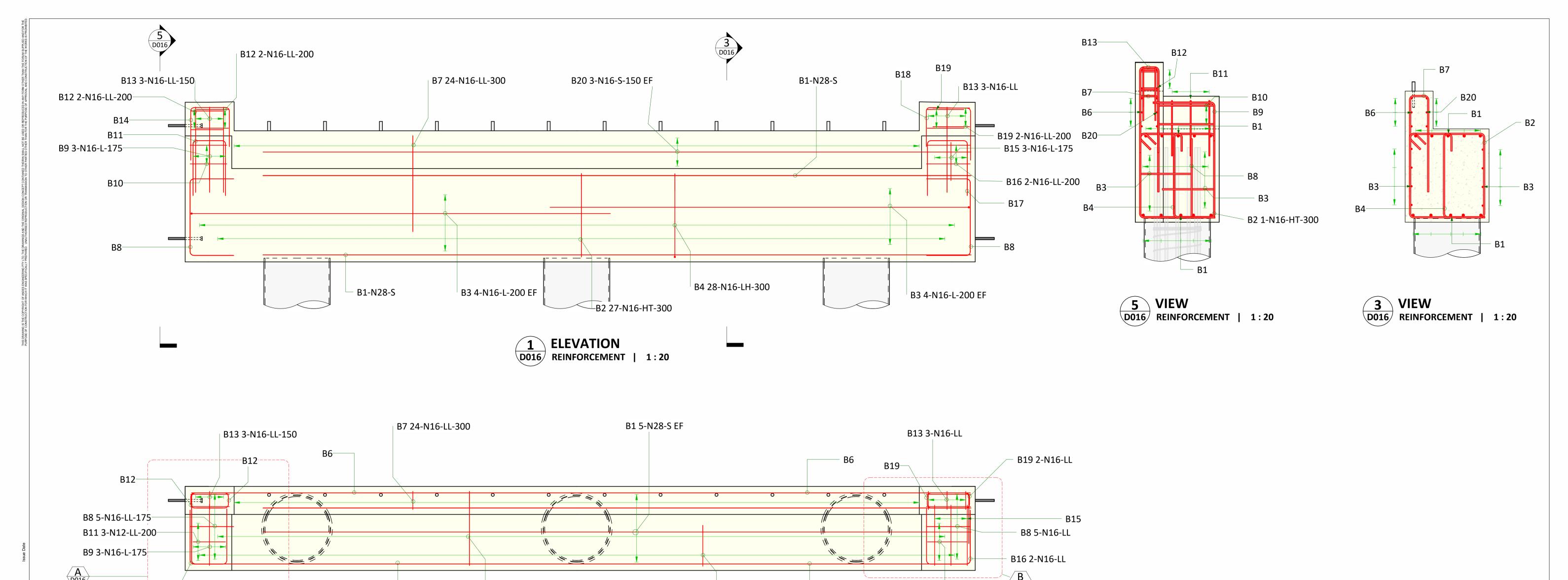












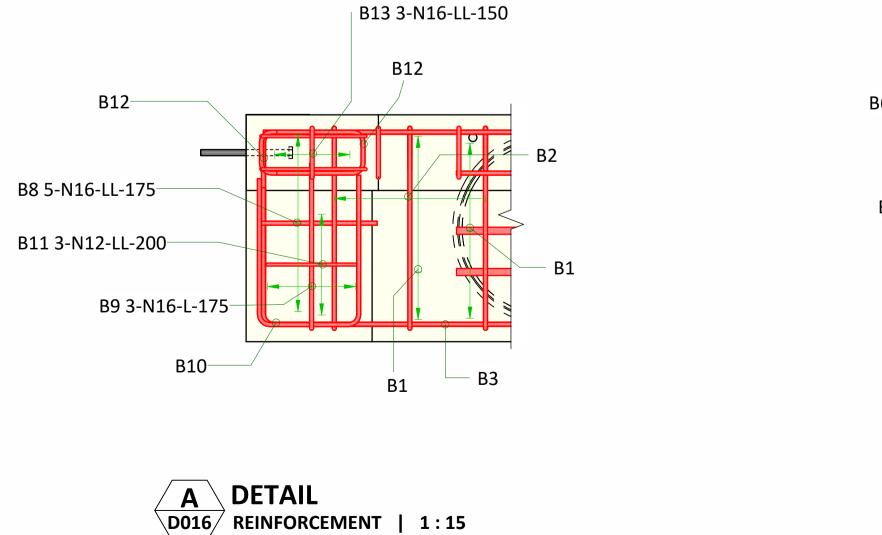
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B4 28-N16-LH-300

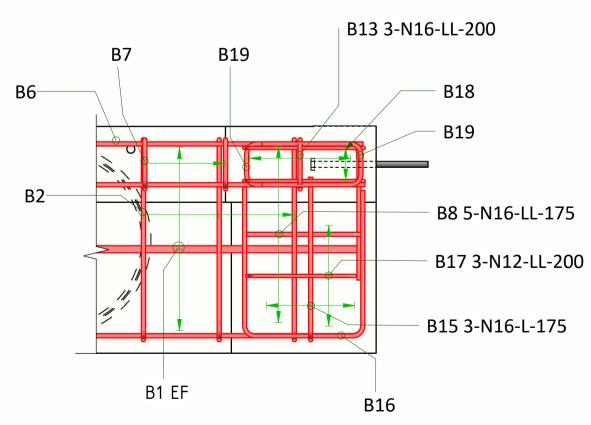
B17 3-N12-LL-200 mm



B2 27-N16-HT-300



B10 2-N16-LL



**B** DETAIL D016 REINFORCEMENT | 1:15

# REINFORCEMENT NOTES

SCALES AS SHOWN CLEAR COVER TO REINFORCEMENT NEAREST TO THE

CONCRETE SURFACE 45 mm USO. REINFORCEMENT PLACEMENT ABBREVIATIONS AS FOLLOWS:

FAR FACE FF

NF NEAR FACE **EACH FACE** + LENGTH VARIES

USO UNLESS SPECIFIED OTHERWISE.

NSOP NOT SHOWN ON PLAN.

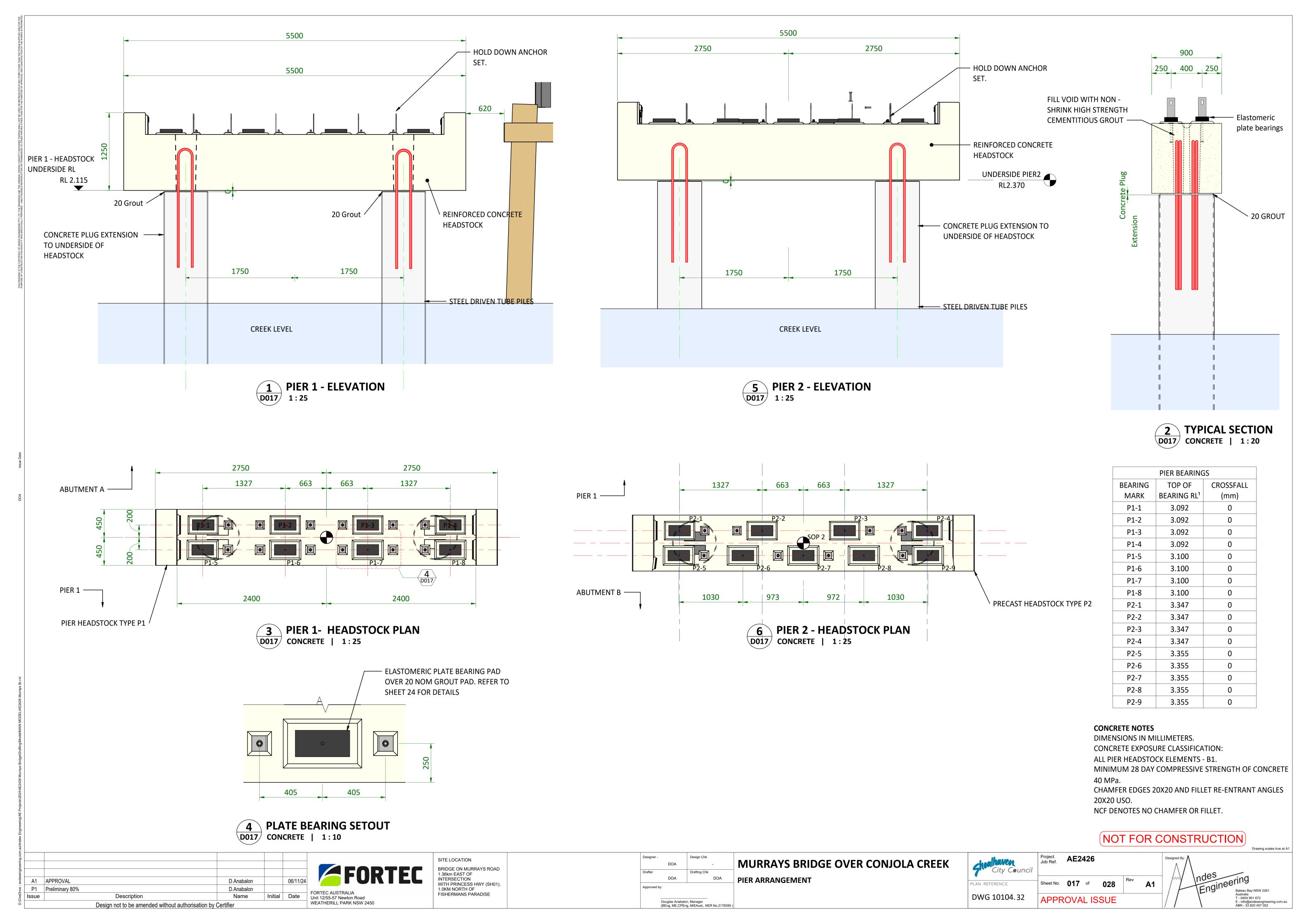
THE MINIMUM LENGTHS OF LAPS SHALL BE AS FOLLOWS USO:

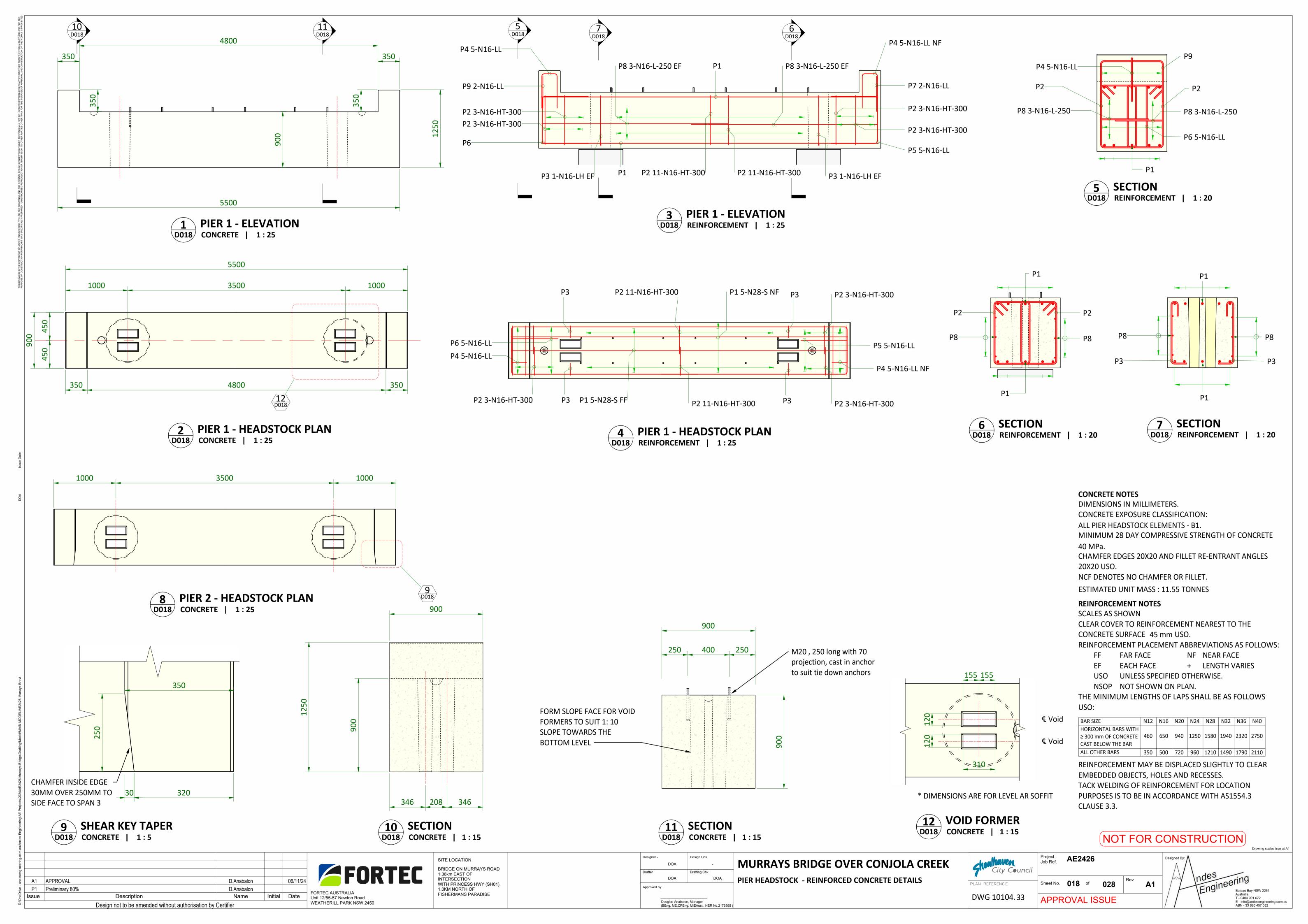
BAR SIZE	N12	N16	N20	N24	N28	N32	N36	N40
HORIZONTAL BARS WITH								
≥ 300 mm OF CONCRETE	460	650	940	1250	1580	1940	2320	2750
CAST BELOW THE BAR								
ALL OTHER BARS	350	500	720	960	1210	1490	1790	2110

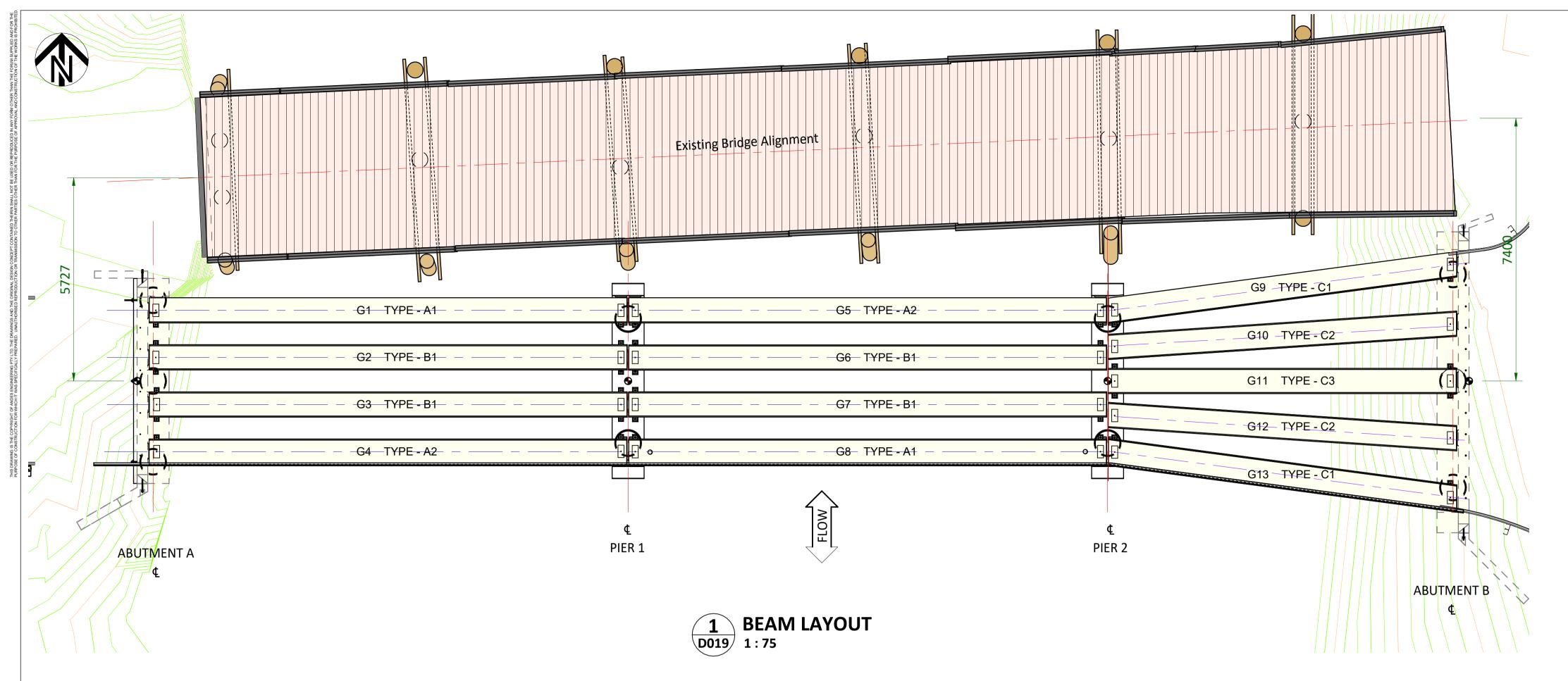
REINFORCEMENT MAY BE DISPLACED SLIGHTLY TO CLEAR EMBEDDED OBJECTS, HOLES AND RECESSES. TACK WELDING OF REINFORCEMENT FOR LOCATION PURPOSES IS TO BE IN ACCORDANCE WITH AS1554.3 CLAUSE 3.3.

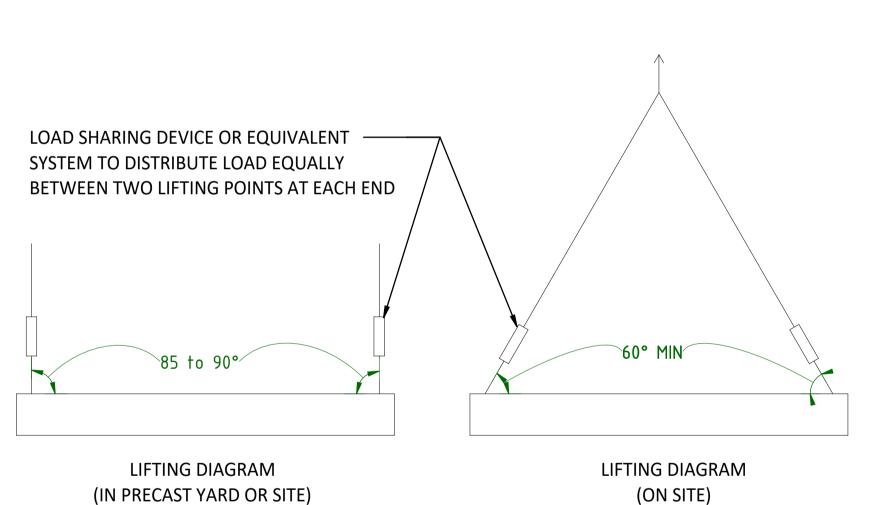
# NOT FOR CONSTRUCTION

Project Job Ref. **AE2426** SITE LOCATION MURRAYS BRIDGE OVER CONJOLA CREEK DOA City Council BRIDGE ON MURRAYS ROAD 1.36km EAST OF DOA **ABUTMENT B - REINFORCEMENT DETAILS** A1 APPROVAL D.Anabalon Sheet No. **016** of WITH PRINCESS HWY (SH01), P1 Preliminary 80% D.Anabalon 1.0KM NORTH OF Bateau Bay NSW 2261 FORTEC AUSTRALIA FISHERMANS PARADISE Initial Date Australia T - 0404 901 672 E - info@andesengineering.com.au ABN - 33 620 457 052 DWG 10104.31 Name Description Unit 12/55-57 Newton Road WEATHERILL PARK NSW 2450 **APPROVAL ISSUE** Douglas Anabalon, Manager (BEng, ME,CPEng, MIEAust., NER No.2176595) Design not to be amended without authorisation by Certifier









LIFTING DIAGRAM

**D019** 1:100

	PRECAST UNIT SCHEDULE								
Туре	Type Mark	CAST LENGTH	VOLUME	WEIGHT (T)	PRESTRESSING FORCE (KN)	COUNT			
Type A1	G1 & G8	13455	3.65 m <sup>3</sup>	9.3	175	2			
Type A2	G4 & G5	13455	3.65 m³	9.3	175	2			
Type B1	G2 & G3 , G6 & G7	13455	3.64 m³	9.3	175	4			
Type C1	G9 & G13	9906	2.71 m³	6.9	175	2			
Type C2	G10 & G12	9841	2.68 m³	6.8	175	2			
Type C3	G11	9806	2.67 m <sup>3</sup>	5.6	175	1			

PRECAST UNIT HOG TABLE						
TYPE	AT TRANSFER (mm)	AT 30 DAYS (mm)	CALCULATED DEFLECTION DUE TO DECK CAST (mm)			
G1 & G8	15	18	6			
G2 & G3 , G6 & G7	18	15	6			
G4 & G5	18	15	6			
G9 & G13	14	16	4			
G10 & G12	14	16	4			
G11	14	16	4			

#### **GENERAL NOTES**

GENERAL NOTES REFER DWG NO. 002 - DWG NO. 004 DIMENSIONS IN MILLIMETRES.

#### **POST-TENSIONING**

THE DESIGN IS BASED ON THE USE OF FORTEC MONOSTRAND FLAT SLAB POST TENSIONING ANCHORAGE SYSTEM:

LIVE END: FMA505 OR EQUIVALENT

DEAD END: SWAGED END ANCHORAGE FSS505 OR END ANCHOR FMA505 OR EQUIVALENT

TENDONS SHALL CONSIST OF A TOTAL NO. OF 10 - No. 15.2mm DIAMETER LOW RELAXATION, STRESS RELIEVED, SUPERGRADE 7 WIRE STRANDS TO AS/NZS 4672.1 (MINIMUM BREAKING LOAD OF 250kN). DUCTS FOR TENDONS SHALL BE CONSISTENT WITH FORTEC SUPPLIED GALVANISED CORRUGATED STEEL DUCT SYSTEM OF SIZE 90mm X 19mm.

SINGLE END STRESSING TO BE UNDERTAKEN FROM LIVE END ONLY. DUCTS SHALL BE RIGIDLY SUPPORTED DURING CONCRETING AND FIXED TO A SMOOTH PROFILE OF THE SPECIFIED POINTS SHOWN ON THE VERTICAL DUCT PROFILE USING A METHOD APPROVED BY THE DESIGN ENGINEER. GROUT VENTS SHALL BE PROVIDED AT ALL ANCHORAGES, MIDSPAN AND SAG POINTS OF ALL DUCTS.

ALL TENDON LOCATIONS ARE MEASURED FROM THE CENTERLINE OF THE DUCT TO THE SOFFIT VERTICALLY. THE TENDONS SHALL BE STRESSED FROM THE LIVE END ONLY LOCATED ON ABUTMENT A. ALL TENDONS SHALL BE STRESSED BEFORE PLACEMENT OF GIRDERS.

CALCULATION OF FRICTION AND DRAW IN LOSSES HAS BEEN BASED ON THE FOLLOWING ASSUMPTIONS:

FRICTION CURVATURE COEFFICIENT  $\mu = 0.2$ WOBBLE COEFFICIENT  $\beta = 0.016 \text{ rad/m}$ 

DRAW IN AT LOCK OFF = 6mm

ELASTIC MODULUS OF TENDONS Es = 195000 Mpa TENDON DUCTS SHALL BE GROUTED AS SOON AS POSSIBLE AFTER STRESSING. CALCULATED

TENDONS SHALL HAVE A JACKING FORCE OF 175KN (70% UTS) THEORETICAL ELONGATION OF TENDON AT JACKING IS 78mm

# LIFTING AND HANDLING

PRECAST UNITS TO BE LIFTED BY PROVIDED LIFTING ANCHORS ONLY CALCULATED MASS OF PRECAST UNITS REFER TABLE. THE MASS CALCULATION ASSUMES A CONCRETE DENSITY OF 2550 kg/m<sup>3</sup>. OWING TO THE FABRICATION METHODS AND TOLERANCES, THE MASS OF THE DECK UNIT MAY VARY FROM THAT CALCULATED. THE MANUFACTURER SHOULD VERIFY THE ACTUAL MASS AND MARK ON THE SIDE OF THE DECK UNIT.

DURING STORAGE, TRANSPORT AND HANDLING BEAMS SHALL BE KEPT IN AN UPRIGHT POSITION AND SUPPORTED NOT MORE THAN 750mm FROM EACH END.

LIFTING ANCHORS TO BE NOT FURTHER THAN 750mm FROM EACH END OF BEAM. IF ALTERNATE LIFTING METHOD IS ADOPTED, CERTIFICATION IS TO BE PROVIDED BY THE PRECAST SUPPLIER. PRECAST UNITS TO BE BRACED AGAINST OVERTURNING UNTIL DECK POUR COMPLETED.

# **NOT FOR CONSTRUCTION**

A1 APPROVAL D.Anabalon 06/11/24 P1 Preliminary 80% D.Anabalon Initial Date Name Issue Description WEATHERILL PARK NSW 2450

Design not to be amended without authorisation by Certifier

FORTEC AUSTRALIA Unit 12/55-57 Newton Road

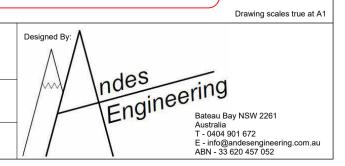
SITE LOCATION BRIDGE ON MURRAYS ROAD WITH PRINCESS HWY (SH01), 1.0KM NORTH OF FISHERMANS PARADISE

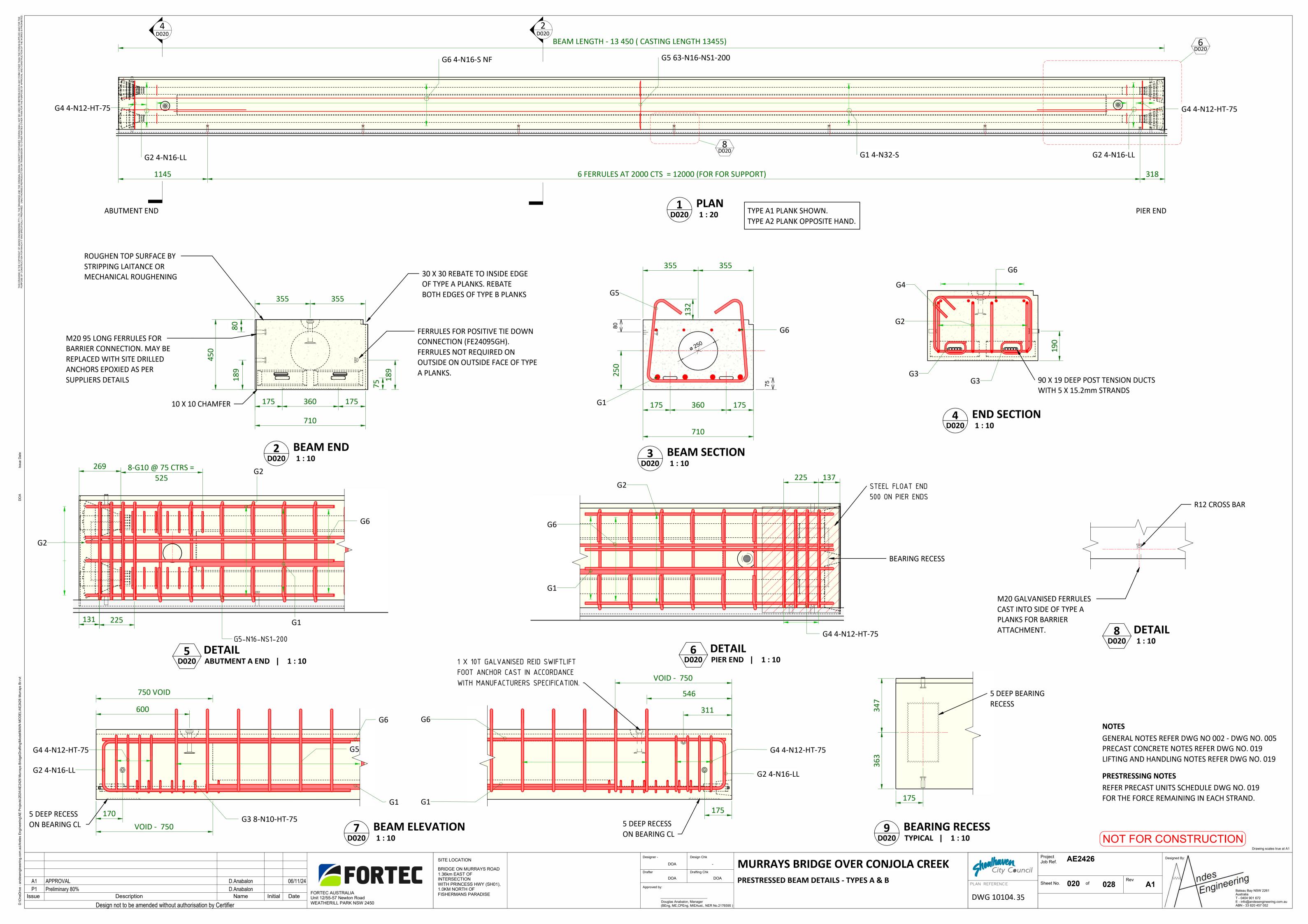
DOA DOA DOA Douglas Anabalon, Manager (BEng, ME,CPEng, MIEAust., NER No.2176595)

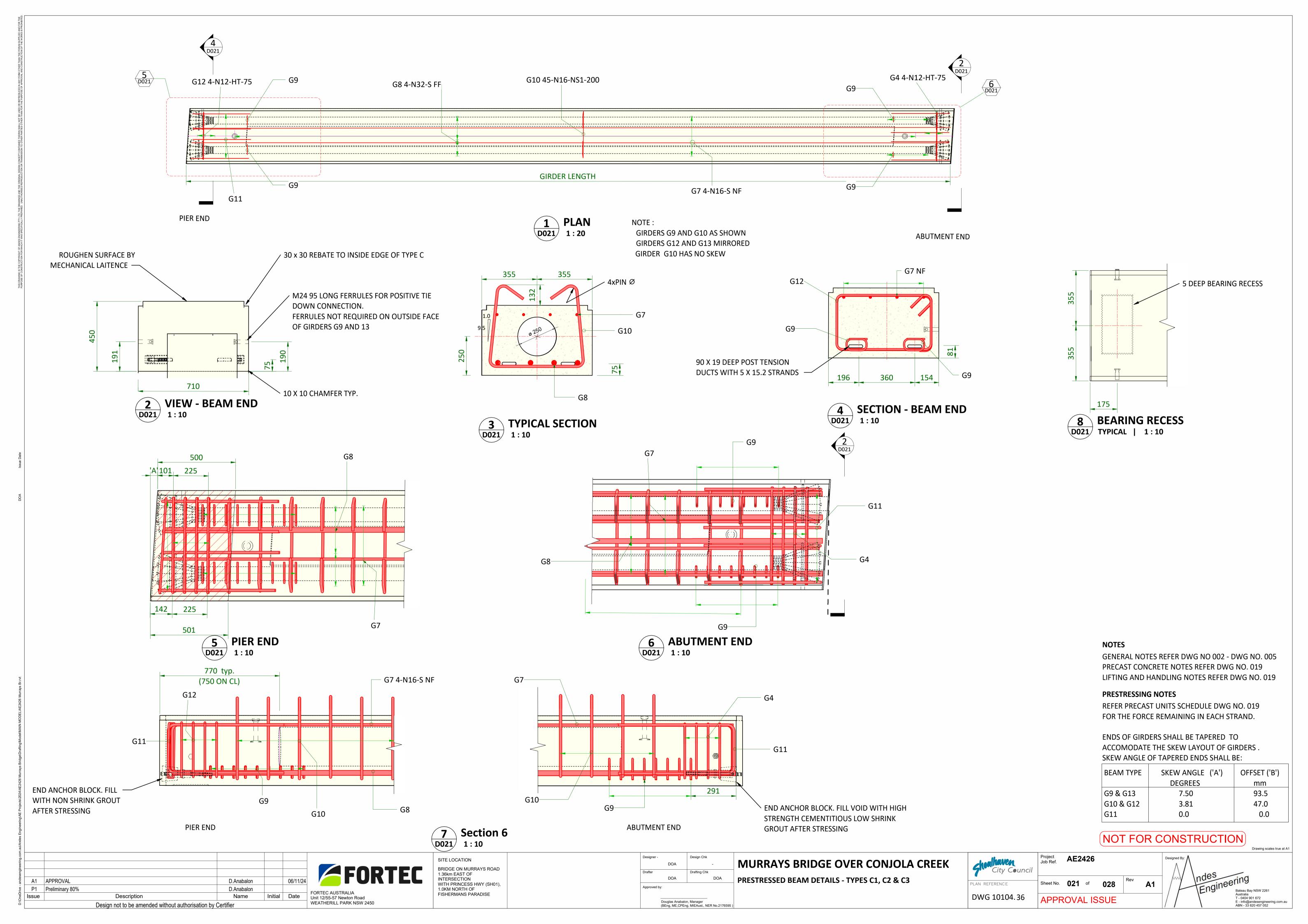
MURRAYS BRIDGE OVER CONJOLA CREEK PRESTRESSED BEAM DETAILS

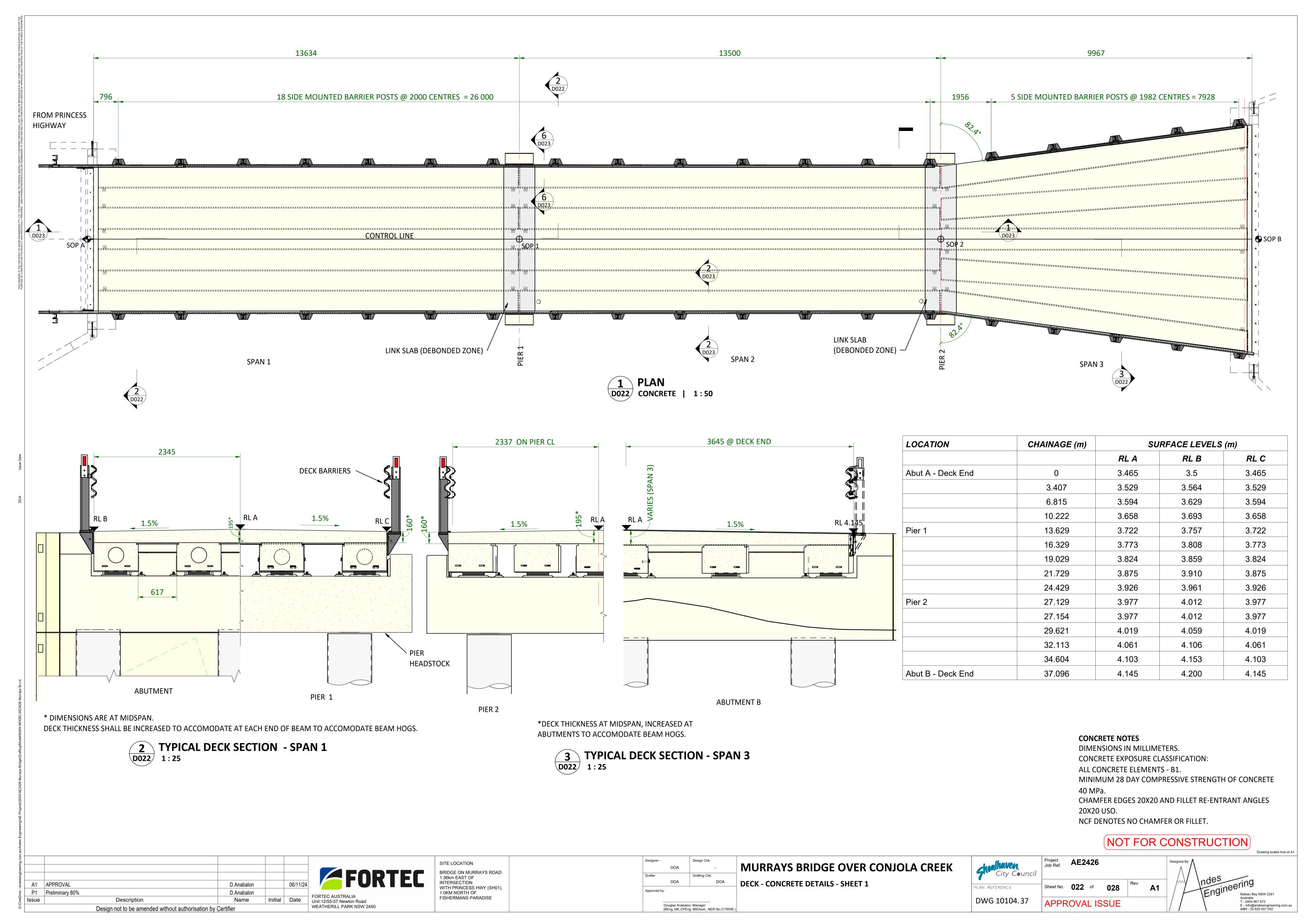


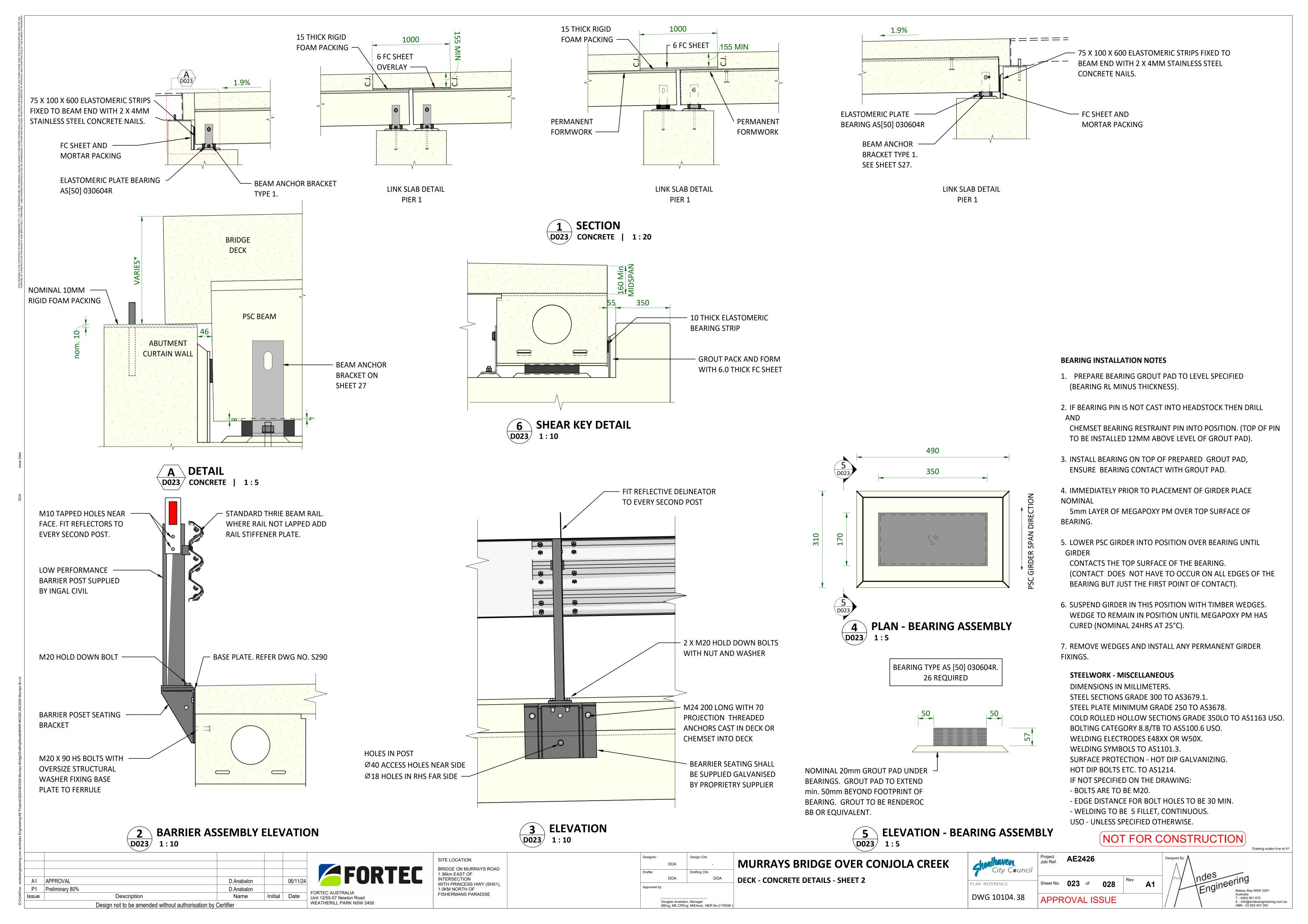
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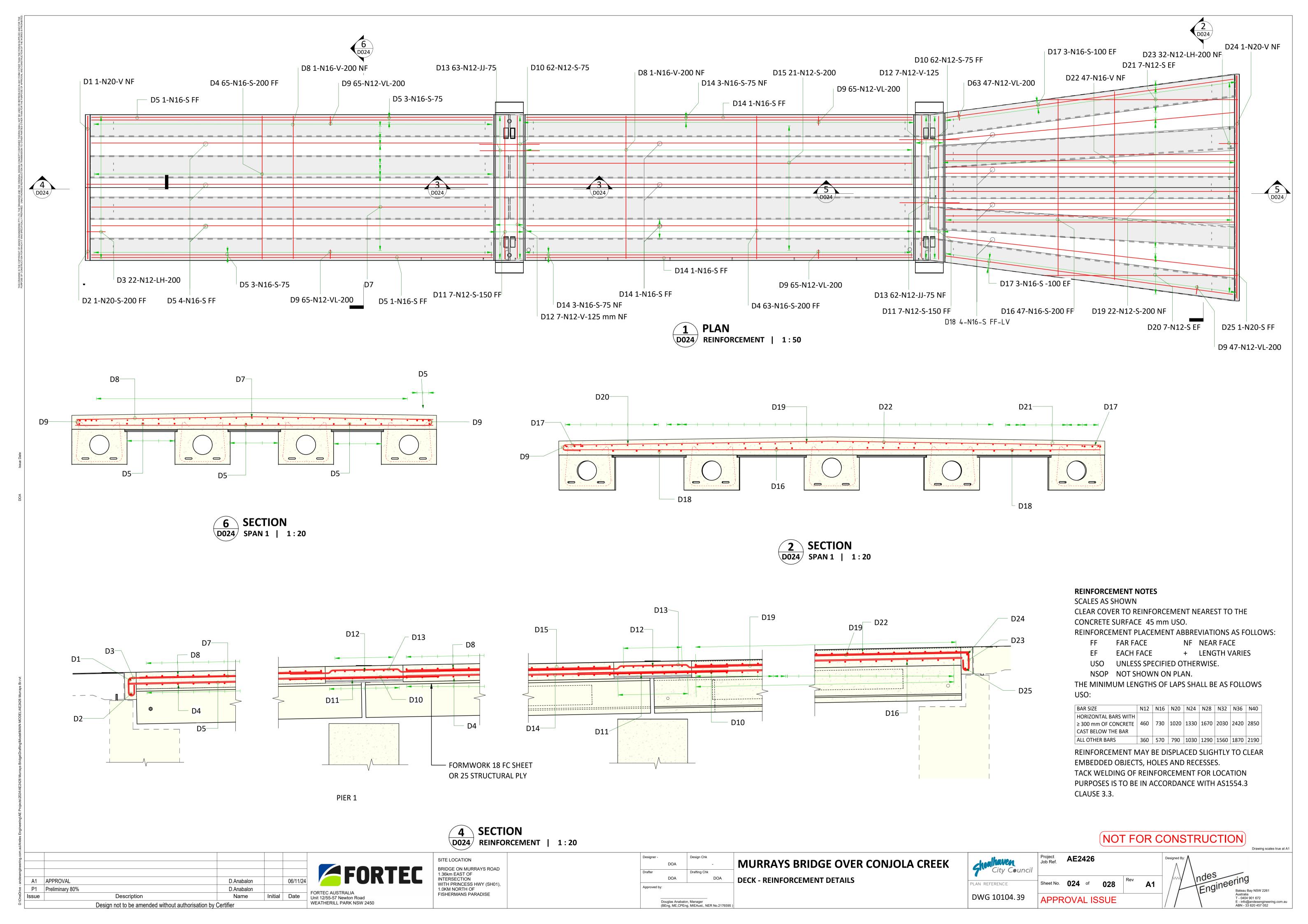


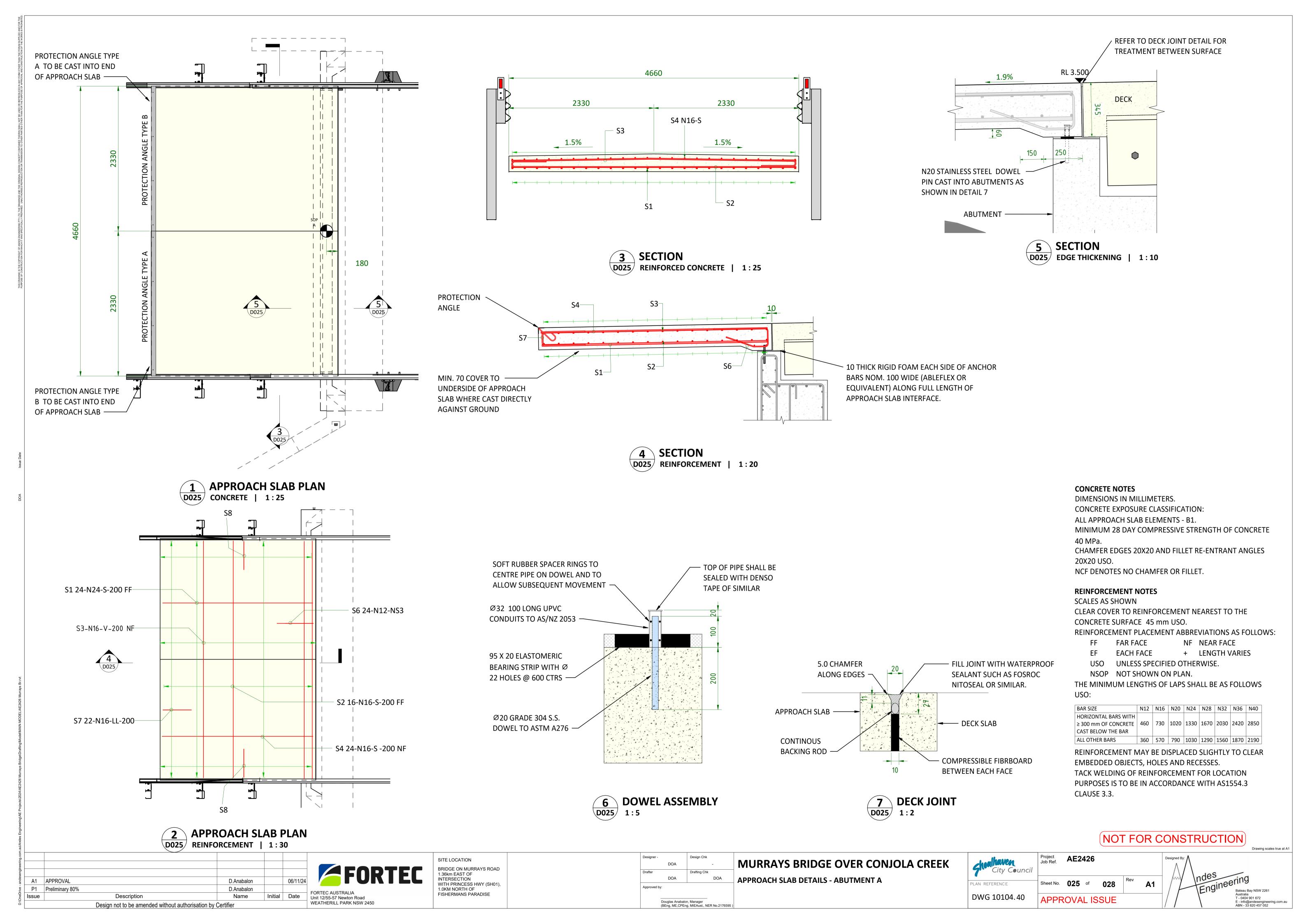


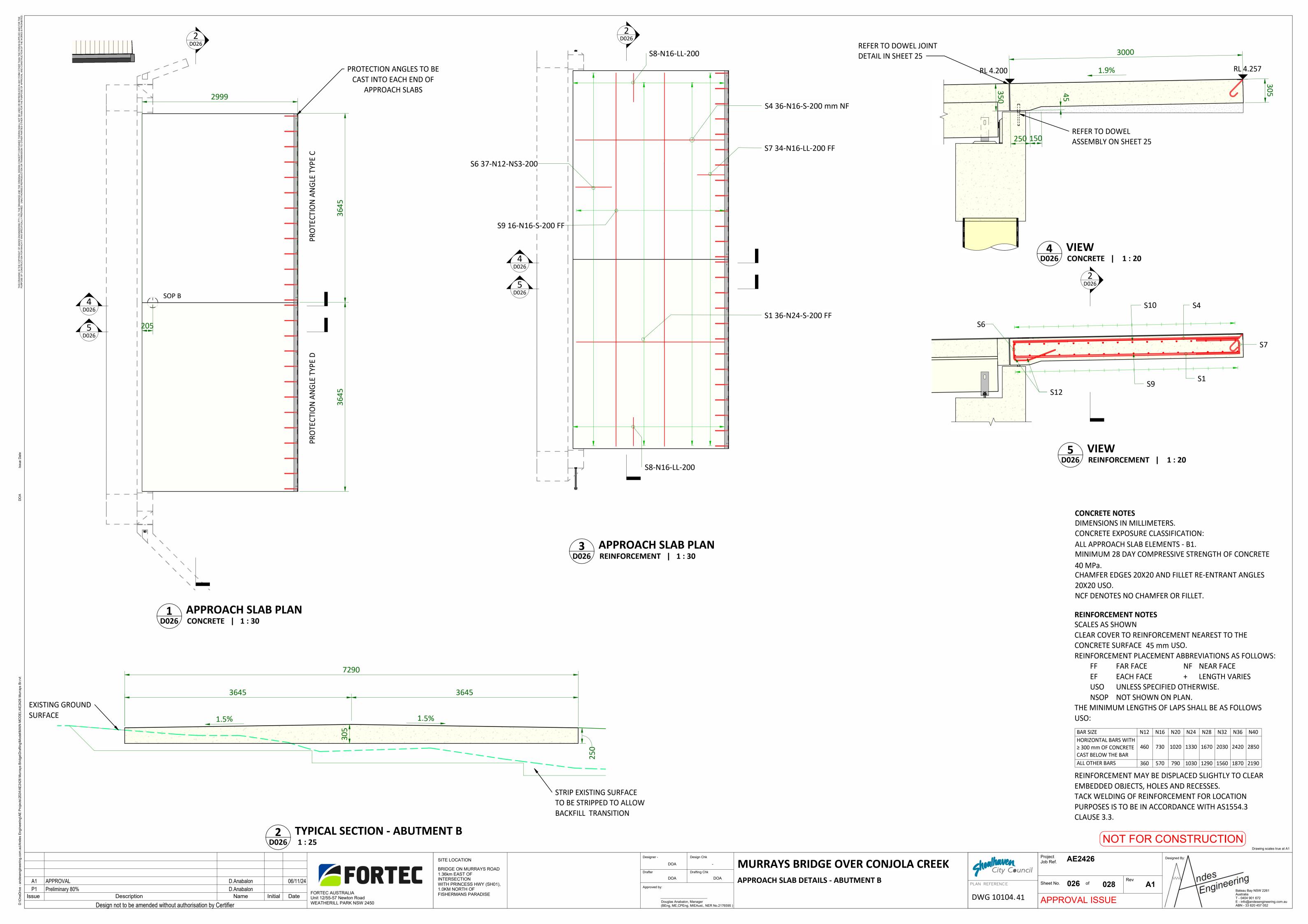


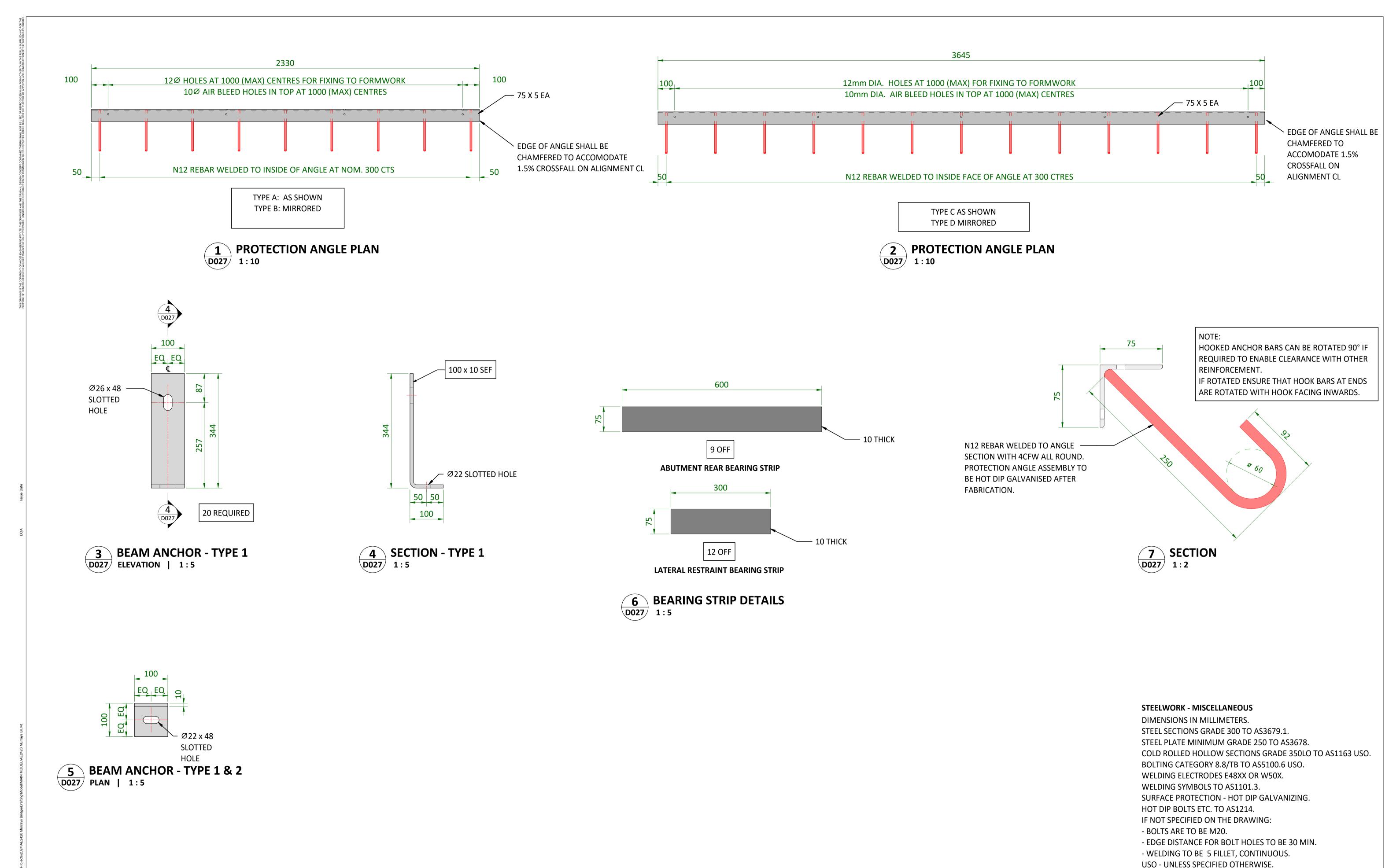












Project Job Ref. **AE2426** SITE LOCATION MURRAYS BRIDGE OVER CONJOLA CREEK DOA City Council BRIDGE ON MURRAYS ROAD 1.36km EAST OF DOA **MISCELLANEOUS DETAILS** A1 APPROVAL D.Anabalon Sheet No. **027** of WITH PRINCESS HWY (SH01), PLAN REFERENCE P1 Preliminary 80% D.Anabalon 1.0KM NORTH OF Bateau Bay NSW 2261 FORTEC AUSTRALIA FISHERMANS PARADISE Australia T - 0404 901 672 E - info@andesengineering.com.au ABN - 33 620 457 052 Initial Date DWG 10104.42 Name Description APPROVAL ISSUE Unit 12/55-57 Newton Road Douglas Anabalon, Manager (BEng, ME,CPEng, MIEAust., NER No.2176595) WEATHERILL PARK NSW 2450 Design not to be amended without authorisation by Certifier

NOT FOR CONSTRUCTION

# **GENERAL NOTES**

AUSTRALIAN STANDARD BAR SHAPES ARE IN ACCORDANCE WITH AS1100.501. BAR SIZE IS THE NOMINAL DIAMETER IN MILLIMETRES OR THE AS4671 FABRIC SIZE.

BARS SHALL BE DEFORMED BAR GRADE D500N TO AS4671 USO.

W DENOTES PLAIN BAR GRADE D500L TO AS4671.

RL AND SL DENOTES WELDED REINFORCING FABRIC, RECTANGULAR AND SQUARE RESPECTIVELY. BAR BENDING INCLUDING STANDARD BENDS, HOOKS AND COGS SHALL BE IN ACCORDANCE WITH SECTION 5.13 OF AS5100.

BARS OF DIAMETER GREATER THAN 16mm SHALL NOT BE REBENT.

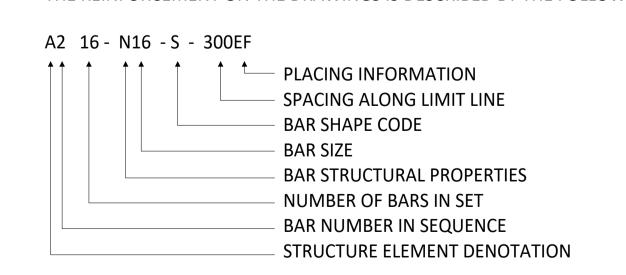
A WELDED LAP MAY BE USED IN LIEU OF STIRRUP HOOKS. SEE TABLE 1 FOR SIZE AND LENGTH OF WELD. WELDING PROCEDURES TO AS1554.3

BAR SIZE	SINGLE LAP WELD	DOUBLE LAP WELD
6	40	25
8	50	25
10	65	35
12	75	40
16	100	50

TABLE 1 LAP SPLICE WELDS FOR REINFORCEMENT

# **BAR MARKING:**

THE REINFORCEMENT ON THE DRAWINGS IS DESCRIBED BY THE FOLLOWING NOTATION



# **STRUCTURE ELEMENT NOTATIONS:**

- A ABUTMENT
- AP ABUTMENT PANEL
- P PIER HEADSTOCKS
- Q PIER PILECAPS
- G GIRDER
- D DECK
- W WING WALL
- K KERB
- S APPROACH SLABS

NOT FOR CONSTRUCTION

A1 APPROVAL D.Anabalon P1 Preliminary 80% D.Anabalon Initial Date Name Description WEATHERILL PARK NSW 2450 Design not to be amended without authorisation by Certifier

FORTEC AUSTRALIA Unit 12/55-57 Newton Road

SITE LOCATION BRIDGE ON MURRAYS ROAD WITH PRINCESS HWY (SH01), 1.0KM NORTH OF FISHERMANS PARADISE

DOA DOA Douglas Anabalon, Manager (BEng, ME,CPEng, MIEAust., NER No.2176595)

MURRAYS BRIDGE OVER CONJOLA CREEK BAR SHAPES DIAGRAM

City Council DWG 10104.43

Project AE2426
Job Ref. Sheet No. 028 of **APPROVAL ISSUE** 

