

PROPOSED BRIDGE OVER YEA RIVER, ON BREAK ODAY ROAD, GLENBURN, VIC, 3717

NOTES

GENERAL

- THIS BRIDGE HAS BEEN DESIGNED TO AS 5100-2017 BRIDGE DESIGN (BEDQ).
- THE CONTRACTOR MUST LOCATE ALL SERVICES AT THE SITE PRIOR TO ANY WORKS.

BRIDGE LOADINGS

TRAFFIC LOADS

BRIDGE TRAFFIC LOADS ARE IN ACCORDANCE TO :
AS 5100.2-2017 BRIDGE DESIGN: PART 2 DESIGN LOADS:
- TRUCK TRAFFIC TO SM1600
- WHEEL LOAD TO W80

SEISMIC LOADS

BRIDGE SEISMIC LOADS HAVE BEEN DESIGNED TO
AS 5100.2-2017 TO BEDC-2, z = 0.09 m/s².

BARRIER LOADS

BRIDGE BARRIER LOADS ARE TO LOW PERFORMANCE LEVELS TO AS 5100-2017.
OFF BRIDGE CONTAINMENT BARRIERS SHALL BE TL2 BARRIERS.

SUPER-TEE BEAM CONSTRUCTION LOADS

SUPER-TEE BEAM CONSTRUCTION LOADS, EXCLUDING WET CONCRETE, MUST NOT
EXCEED 500 kg/sq. m.

FATIGUE CRITERIA

NOT APPLICABLE

PEDESTRIAN LOADS

NO PEDESTRIAN LOADS HAVE BEEN DESIGNED ON THIS BRIDGE.

TRAFFIC DESIGN SPEED

THIS BRIDGE HAS BEEN DESIGNED FOR A TRAFFIC SPEED OF 100 km/hr.

DESIGN WIND SPEED

V_{10/15} (1:2000 YEARS) = 57 m/s
V_{10/15} (1:20 YEARS) = 35 m/s
TERRAIN CATEGORY 2
FACTOR 0.91

FOUNDATIONS

ALL PILES AND FOOTINGS MUST BE IN ACCORDANCE WITH AS 5100.3-2017
BRIDGE DESIGN: PART 3 FOUNDATIONS AND SOIL SUPPORTING STRUCTURES.

THE CONTRACTOR MUST BE CONVERSANT WITH THE SITE GEOTECHNICAL
REPORT No 2128E.P.1152A BY 'CONSTRUCTION SCIENCES'.

CONSTRUCTION SEQUENCE

- CONTRACTOR TO ESTABLISH SITE AND SETOUT PROJECT.
- DRIVE PILES. APPROVE PILE CAPACITY BY PDA TESTING.
- EXCAVATE AROUND PILES FOLLOWING THE SHAPE OF THE ABUTMENT PANELS.
- INSTALL ABUTMENT & CENTRAL PIER PANELS.
- INSTALL CASTING SEQUENCE No 1 REINFORCEMENT. PROJECT SUPERINTENDENT TO INSPECT AND APPROVE.
- CAST SEQUENCE No 1 CONCRETE, LEAVING ROUGHENED SURFACE FOR NEXT CASTING SEQUENCE.
- INSTALL 'TERRADRAIN' DRAINAGE SYSTEM TO SOIL SIDE OF ABUTMENTS.
- MANUFACTURE, DELIVER AND INSTALL PRECAST SUPER-TREE BEAMS.
- INSTALL CASTING SEQUENCE No 2 REINFORCEMENT. PROJECT SUPERINTENDENT TO INSPECT AND APPROVE.
- CAST SEQUENCE No 2 CONCRETE.
- INSTALL CASTING SEQUENCE No 3 REINFORCEMENT (RUN-ON SLABS). PROJECT SUPERINTENDENT TO INSPECT AND APPROVE.
- CAST SEQUENCE No 3 CONCRETE.
- SHAPE ROAD APPROACHES TO BRIDGE USING SIZE 20 CLASS 2 FCR, PLACED IN IN LAYERS NOT EXCEEDING 150mm THICK AND COMPACT TO AT LEAST 95% STANDARD DENSITY TO AS 1289.
- INSTALL BARRIERS AND SIGNAGE TO BRIDGES.
- INSTALL SERVICES TO BRIDGES.
- CONTRACTOR TO MAKE GOOD THE SITE AND VACATE TO THE SATISFACTION OF THE 'BANANA SHIRE COUNCIL PROJECT SUPERVISOR'.

PILES

P I L E S S C H E D U L E		
MARK	SIZE	REMARKS
P1 – P8 (ABUTMENTS)	356 DIA x 12.7 CHS (G350) STEEL PILES	ULS = 1600 kN, SLS = 1100 kN

TOLERANCES FOR PILE LOCATIONS HORIZONTALLY SHALL BE ± 75mm.
PILE RAKE TOLERANCES CAN BE A MAXIMUM OF 1 HORIZONTAL : 60 VERTICAL.

A MINIMUM OF 1 No PILE AT EACH ABUTMENT AND 2 No PILES AT THE CENTRAL PIER, MUST BE PDA TESTED IN ACCORDANCE WITH AS 2159 - 2009.

GEOTECHNICAL REDUCTION FACTOR ϕ_g 0.50
BASIC GEOTECHNICAL REDUCTION FACTOR ϕ_{gb} 0.50
INTRINSIC TEST FACTOR ϕ_{tf} 0.80
TESTING BENEFIT FACTOR K 1.0
MINIMUM PERCENTAGE OF PILES TO BE TESTED 25% (AS NOTED ABOVE)

PILES HAVE BEEN DESIGNED USING THE FOLLOWING LIMIT STATE CAPACITIES
IN HIGH STRENGTH MEGA-SANDSTONE
FRICTION TO PILES COMPRESSION 65 kPa
END BEARING 1500 kPa

STEELWORK

- ALL STEEL CONSTRUCTION SHALL COMPLY WITH AS 5100.6 - BRIDGE DESIGN PART 6 - STEEL AND COMPOSITE CONSTRUCTION.
- DESIGN YIELD STRESS SHALL BE U.N.O.
UNIVERSAL BEAMS AND COLUMNS 300 MPa
SHS AND RHS SECTIONS 450 MPa
FLAT PLATES 350 MPa
RODS AND CHS SECTIONS 250 MPa
- ALL STEELWORK DENOTED 'GALVANISED' MUST BE HOT DIPPED GALVANISED TO AS 4680.
- BOLTS ARE DESIGNATED BY: 4/M20-8.8/S THAT IS:
4 No 20mm DIAMETER METRIC (M) BOLTS
BOLT GRADE: 4.6 COMMERCIAL BOLTS
8.8 HIGH STRENGTH BOLTS
TIGHTENING PROCEDURE: /S = SNUG TIGHT
/TB = TENSION BEARING
/TF = TENSION FRICTION
- ALL WELDING TO END PLATES SHALL BE SPECIAL PURPOSE (SP) AND ALL OTHER WELDING SHALL BE GENERAL PURPOSE (GP) UNO.

PRESTRESSING

ALL STRANDS SHALL BE 15.2mm DIA 7-WIRE STRESS RELIEVED STRAND TO AS 4672.1 AND HAVE A CHARACTERISTIC MIN. BREAKING LOAD OF 250 kN.

SAMPLING AND TESTING OF PRESTRESSING STRANDS SHALL COMPLY WITH AS 1391 AND AS 4672 PARTS 1 & 2.
ALL TESTING SHALL BE PERFORMED BY A NATA CERTIFIED LABORATORY.

INITIAL FORCE TO 15.2mm DIA STRESSED STRANDS SHALL BE 188 kN PER STRAND AFTER ALL ALLOWANCES HAVE BEEN MADE FOR ALL LOSSES IN GRIPS AND JACKS.

INITIAL FORCE TO 15.2mm DIA UNSTRESSED STRANDS SHALL BE 38 kN.

CALCULATED FINAL STRAND FORCE IS 127 kN FOR STRESSED STRANDS AT MIDSPAN AFTER LONG TERM SHRINKAGE AND CREEP LOSSES.

STRANDS SHALL BE RELEASED IN THE ORDER SHOWN IN THE DETAILS.

CALCULATED HOG ON TRANSFER OF PRESTRESS : 42mm UPWARDS.

CALCULATED HOG AFTER ONE MONTH : 71mm UPWARDS.

CALCULATED DEFLECTION DUE TO WET CONCRETE DECK : 20mm DOWNWARDS.

LONG TERM DEFLECTION AFTER SHRINKAGE & CREEP HOG : 50mm UPWARDS.

LIFTING ANCHORS

LIFTING ANCHORS SHALL BE 'SWIFTLIFT' ANCHORS 10.0 TONNES x 340mm. LONG OR APPROVED EQUIVALENT.

APPROVED ALTERNATIVE ANCHORS SHALL BE PLACED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.

ANCHORS SHALL BE HOT DIP GALVANISED IN ACCORDANCE WITH AS/NZS 4680.0

LIFTING AND HANDLING

CALCULATED MASS OF THE PRECAST SUPER-TREE BEAMS (AT 2500 kg/m) : 37.0 TONNES.

SUPER-TREE BEAMS SHALL BE LIFTED ONLY BY LIFTING ANCHORS PROVIDED AND SHALL BE STORED AND TRANSPORTED ON TEMPORARY SUPPORTS LOCATED AT NO MORE THAN 500mm FROM ENDS OF SLABS. TOP SURFACE TO BE KEPT UPPERMOST AT ALL TIMES.

CONCRETE

ALL CONCRETE WORKS MUST BE IN ACCORDANCE WITH AS 5100.5-2017 BRIDGE DESIGN: PART 5 CONCRETE.

ALL REINFORCEMENT MUST BE INSPECTED AND APPROVED BY THE PROJECT SUPERINTENDENT PRIOR TO CASTING OF ANY CONCRETE.

CONCRETE SHALL BE SPECIAL CLASS PERFORMANCE CONCRETE AS FOLLOWS:

CONCRETE GRADE	CHARACTERISTIC COMPRESSIVE STRENGTH AT 28 DAYS f _c (MPa)	CEMENTITIOUS MATERIAL CONTENT (MIN.) (kg/cu.m.)	WATER/CEMENTITIOUS MATERIAL RATIO (MAX.)
SC 400/40	40	400	0.45
SC 450/50	50	450	0.40

CONCRETE CYLINDER STRENGTH AT RELEASE OF TENDONS SHALL BE 35 MPa MINIMUM.

REFER TO 'MRT' SPECIFICATION FOR CONCRETE MRTS 70
CYLINDER TESTS MUST BE IN ACCORDANCE WITH AS 1379-2007.

ALL CORNERS SHALL HAVE 15mm x 15mm FILLETS OR CHAMFERS UNLESS NOTED OTHERWISE.

EXPOSURE CLASSIFICATION FOR SURFACES OF CONCRETE SHALL BE INDICATED BELOW UNLESS NOTED ON THE DRAWING.

CLASSIFICATION 'B1'

SURFACES IN CONTACT WITH FRESH WATER

CLASSIFICATION 'A'

SURFACES ABOVE GROUND IN NON-INDUSTRIAL AND ARID CLIMATE ZONES

STRUCTURAL ELEMENTS

CONCRETE COVER (MIN) mm AND CONCRETE STRENGTHS (MPa) SHALL BE IN ACCORDANCE AS 5100.5-2017 BRIDGE DESIGN: PART 5 CONCRETE AND SHALL BE AS FOLLOWS:

EXPOSURE CLASSIFICATION	B1	A	CONCRETE STRENGTH (MPa)
CAST INSITU ABUTMENTS AGAINST SOIL	75		40
PRECAST ABUTMENT PANELS	35		40
PRECAST SUPER-TREE BEAMS WITH RIGID STEEL FORMWORK AND PRECAST PILES	30		50
CAST INSITU DECK SLAB		30	40
CAST INSITU COLUMNS	45		
RUN-ON SLAB - TOP FACE		30	40
RUN-ON SLAB - BOTTOM FACE WITH WATERPROOF MEMBRANE	55		40

REINFORCEMENT

GRADE - 500 (VN) HOT ROLLED DEFORMED BARS TO AS/NZS 4671.

SPACING - TAKEN AS EQUAL UNLESS NOTED OTHERWISE.

WELDING - SHALL NOT BE PERMITTED UNLESS NOTED OTHERWISE.

BARS SHALL BE BENT AROUND A 3d BENDING DYE UNLESS NOTED OTHERWISE.

SUPPLIERS OF REINFORCEMENT AND PRESTRESSING STRAND MUST HOLD A VALID CERTIFICATE OF COMPLIANCE TO THE RELEVANT AUSTRALIAN STANDARDS, ISSUED BY THE AUSTRALIAN CERTIFICATION AUTHORITY FOR REINFORCING STEEL (ACRS).

LAPPED SPLICES IN REINFORCEMENT

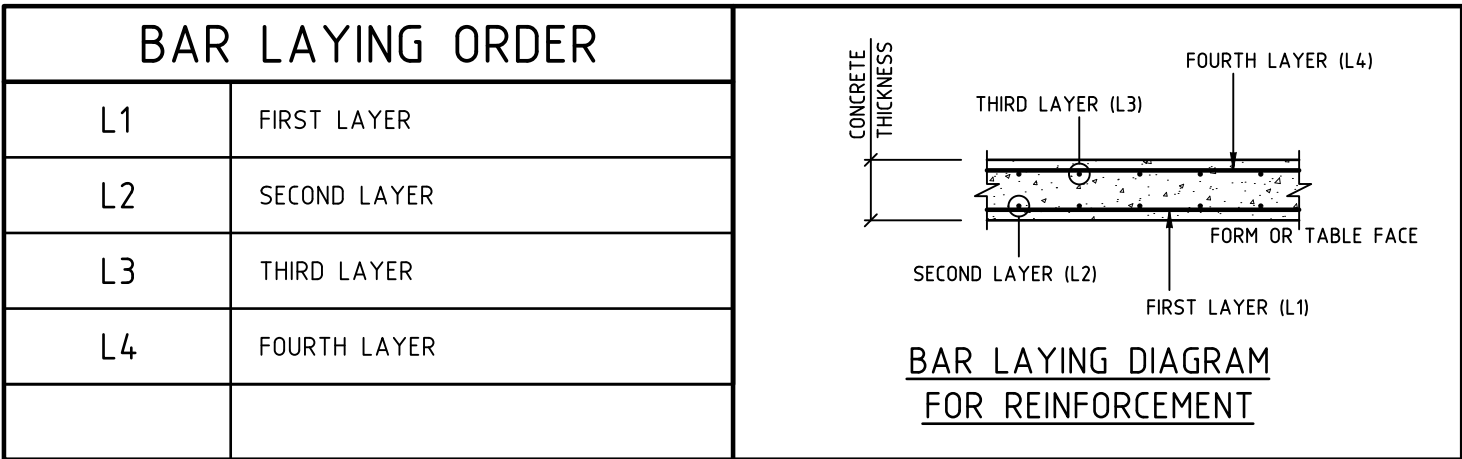
LAPS IN REINFORCEMENT SHALL BE MADE IN THE POSITION SHOWN ON THE DRAWINGS OR OTHERWISE APPROVED BY THE ENGINEER.

UNLESS NOTED OTHERWISE AND IN ACCORDANCE WITH THE NOTES BELOW, MINIMUM LAPS SHALL BE

BAR DIAMETER	LAP LENGTH
N12	350
N16	500
N20	600
N24	700
N28	900
N32	1000
N36	1100
N40	
MESH	MECHANICAL SPLICE 2 TRANSVERSE BARS PLUS 25mm

LAP NOTES

- THE MINIMUM LAP LENGTHS ABOVE SHALL BE INCREASED BY 33% FOR HORIZONTAL BARS WITH MORE THAN 300mm OF CONCRETE BELOW THE BARS.
- LAP LOCATIONS MUST BE 50% STAGGERED. THE MINIMUM DISTANCE BETWEEN STAGGERS IS EQUAL TO ONE LAP LENGTH.
- WHERE STAGGERED LAPS ARE NOT POSSIBLE, THE MINIMUM LAP LENGTHS ABOVE SHALL BE INCREASED BY 25%.
- 3 BUNDLED BARS, MINIMUM LAP LENGTH SHALL BE INCREASED BY 20%.
- 4 BUNDLED BARS, MINIMUM LAP LENGTH SHALL BE INCREASED BY 33%.
- LAP LENGTHS ARE FOR FULL DEVELOPMENT OF BARS.



BEACHING NOTES

THE CONTRACTOR MUST REMOVE SOIL THAT IS REPLACED BY BEACHING.


THE SUBGRADE OF THE BEACHING MUST BE LINED WITH A NON-WOVEN GEOFABRIC, HAVING A MINIMUM WEIGHT OF 250 g/sq.m. (REFER 'VIC ROADS' SPECIFICATION 210).

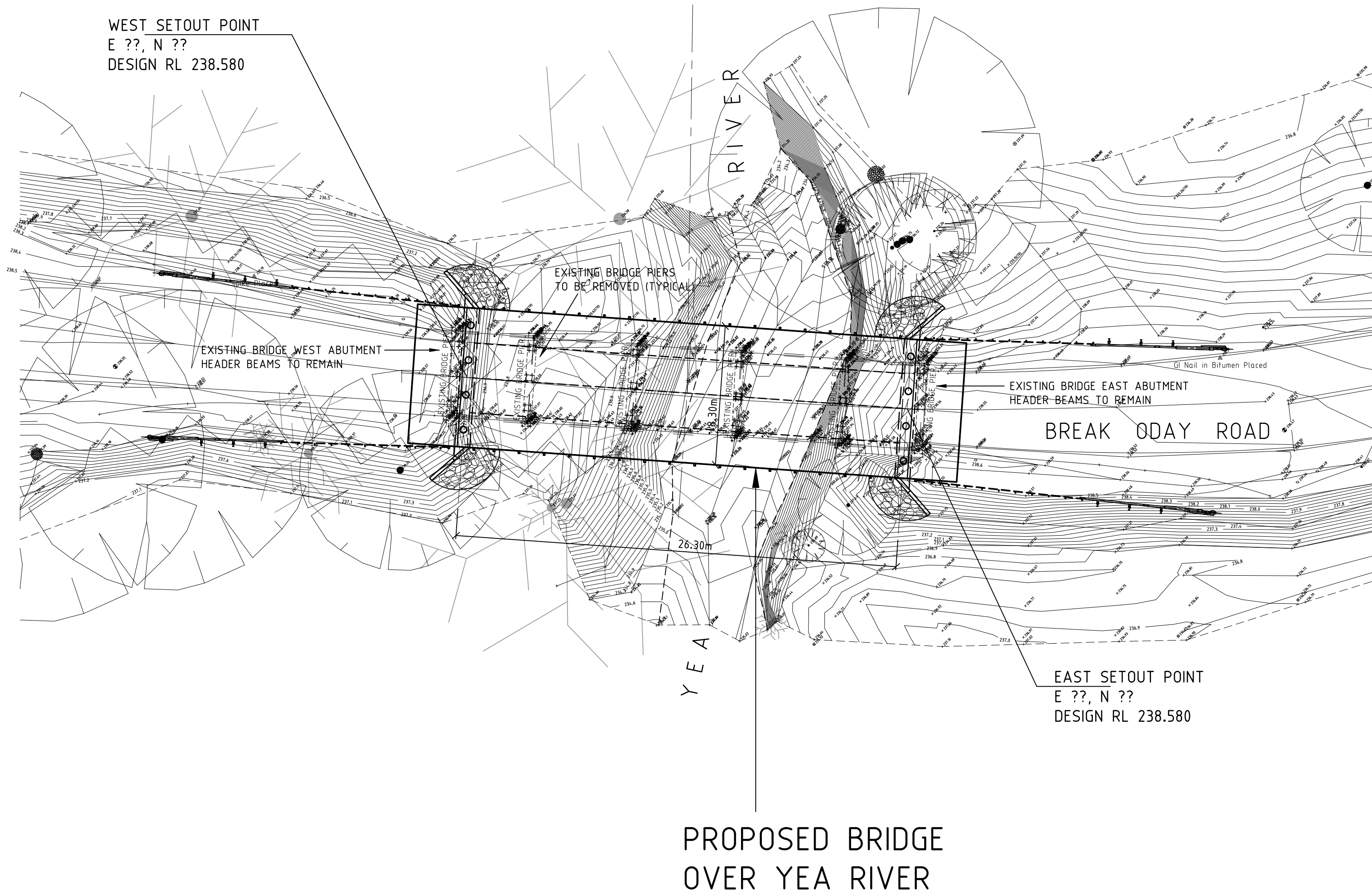
BEACHING SHALL CONSIST OF :

BEACHING THICKNESS	ROCK SIZE (m)	PROPORTION (%)
3m MIN WIDE STRIPS AT ABUTMENTS AND CENTRAL PIER		
1.0 m	0.75	50
	0.55	40
	0.30	10

DRAWING SCHEDULE

- GENERAL NOTES AND DRAWING SCHEDULE
- SITE AND LOCALITY PLANS
- GENERAL ARRANGEMENT PLAN AND ELEVATION
- BRIDGE SECTIONS
- BRIDGE DETAILS - SHEET 1 OF 2
- BRIDGE DETAILS - SHEET 2 OF 2
- PRECAST BEAMS - PLANS & ELEVATIONS
- PRECAST BEAMS - TYPICAL SECTIONS
- DECK SLAB & BARRIER DETAILS

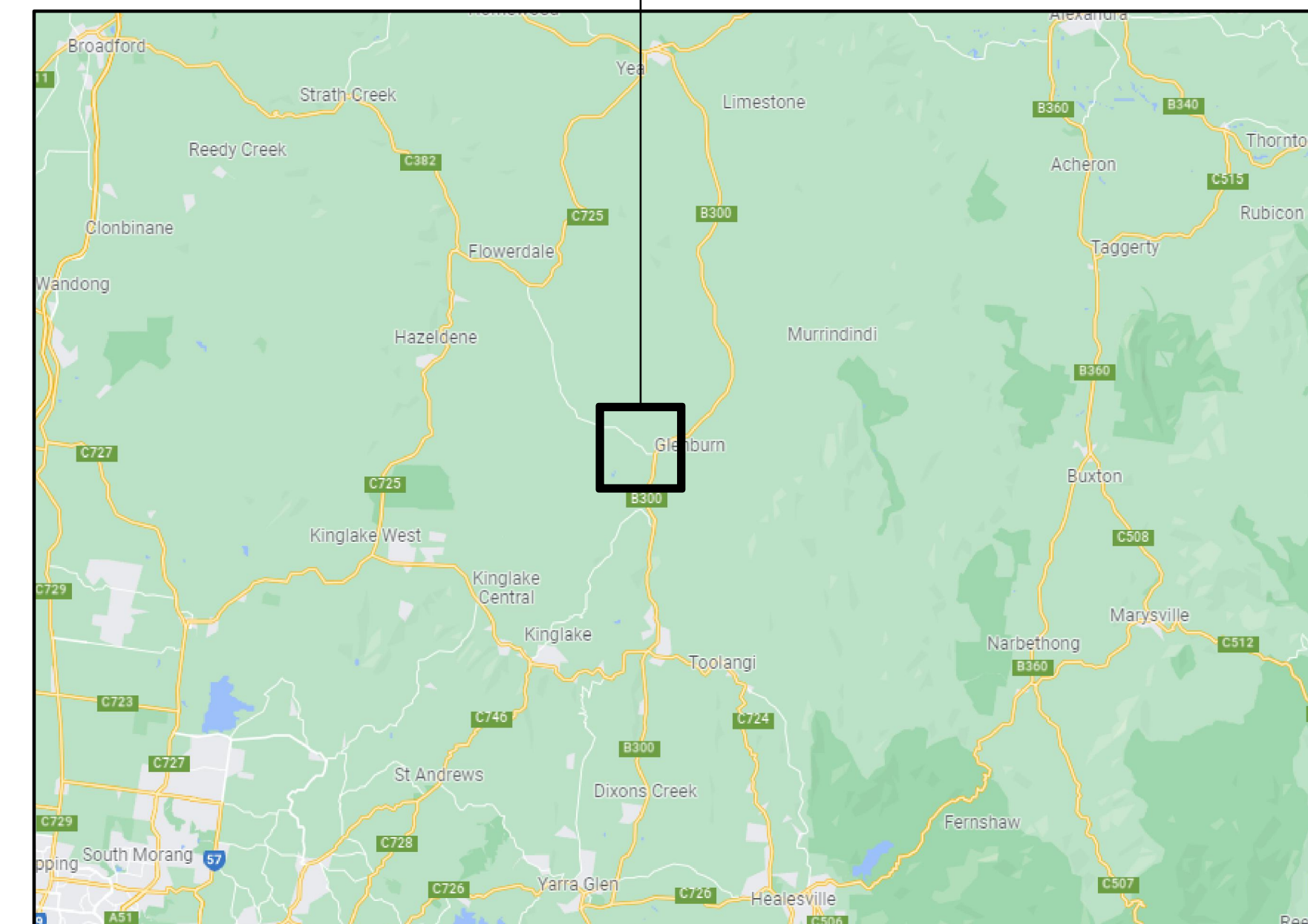
Greg Schofield & Associates Pty Ltd Consulting Structural & Civil Engineers ABN 90 006 727 635 8 King Street Glen Iris Victoria 3146 Telephone 03 9885 9327 Email greg@schofield.net.au	
STRUCTURAL DRAWING	
DRAWING TITLE GENERAL NOTES AND DRAWING SCHEDULE	<div>JAS-ANZ  WWW.JAS-ANZ.COM/AUSTRALIA</div>
PROJECT PROPOSED BRIDGE OVER YEA RIVER, ON BREAK ODAY ROAD, GLENBURN, VIC, 3717	
CLIENT MURRINDINDI SHIRE COUNCIL 	
Checked	Date
Comment	Rev
GMS	DECEMBER 2021
INITIAL ISSUE	
24/02/2022	
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'FOR CONSTRUCTION' ISSUE	
Designed	Scale
GMS	1:2(A3) 1:1(A1)
Job No.	Drawing No.
22031	S1 OF 9



SITE PLAN - PROPOSED BRIDGE OVER YEA RIVER

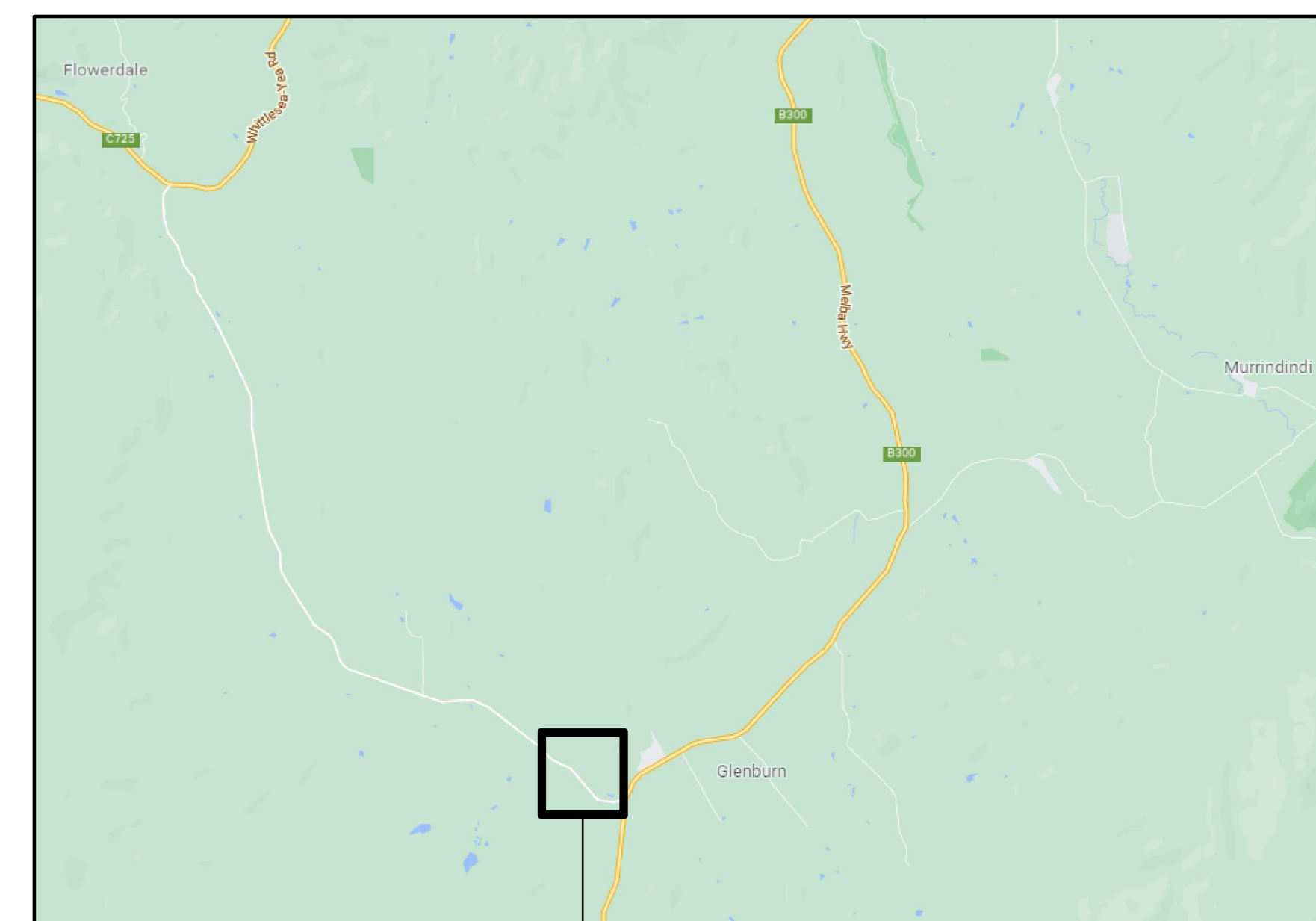
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BRIDGE LOCATION



SITE LOCALITY PLAN

SCALE - N.T.S.

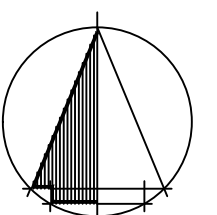


BRIDGE LOCATION

LATITUDE -37.424103, LONGITUDE 145.420136

LOCALITY PLAN

SCALE - N.T.S.



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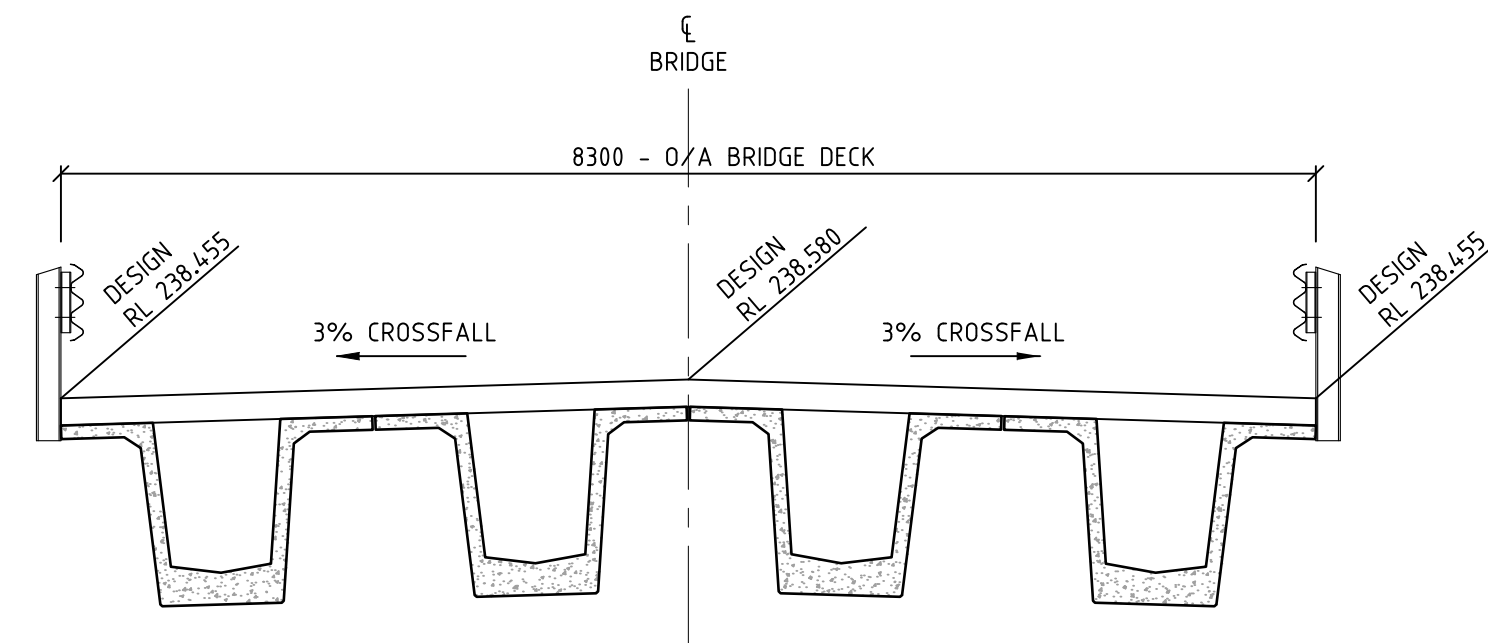
DRAWING TITLE
SITE AND
LOCALITY PLANS

PROJECT
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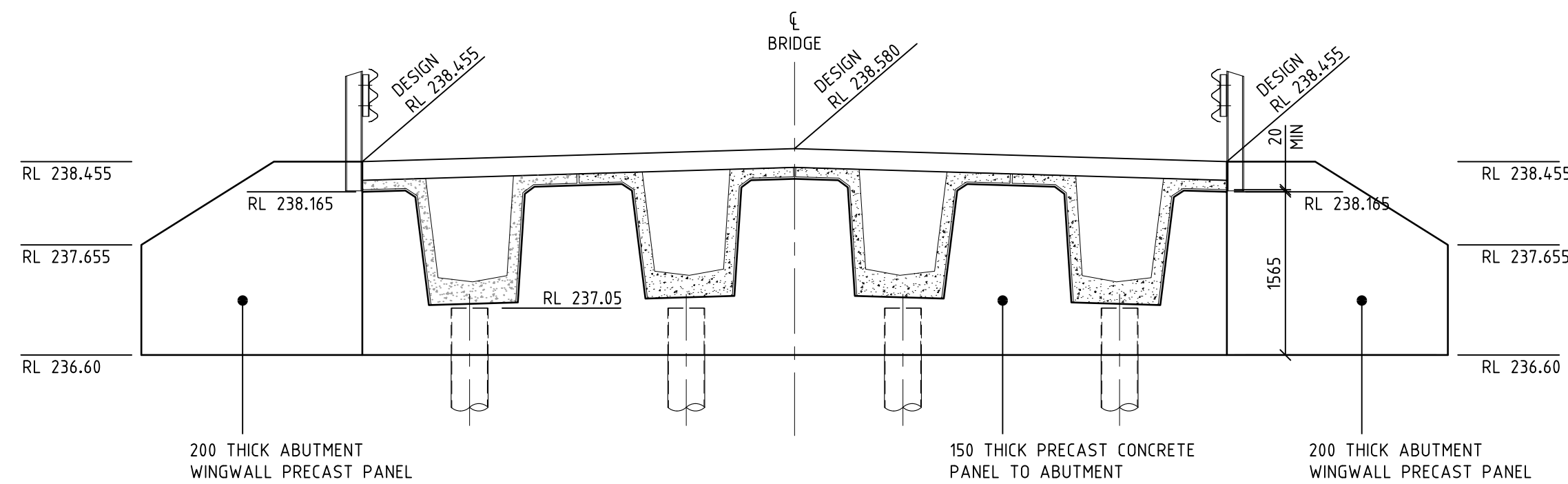
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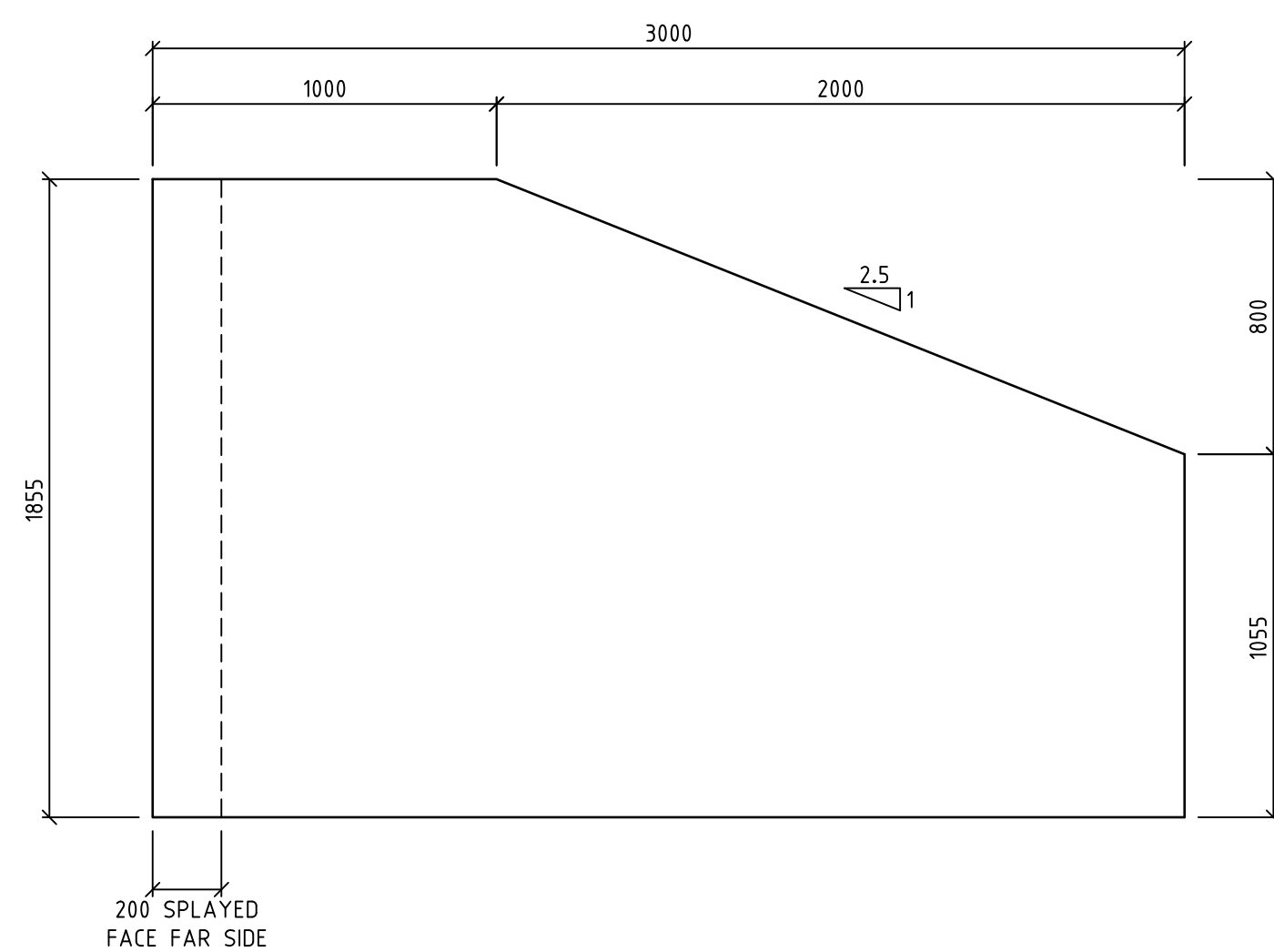
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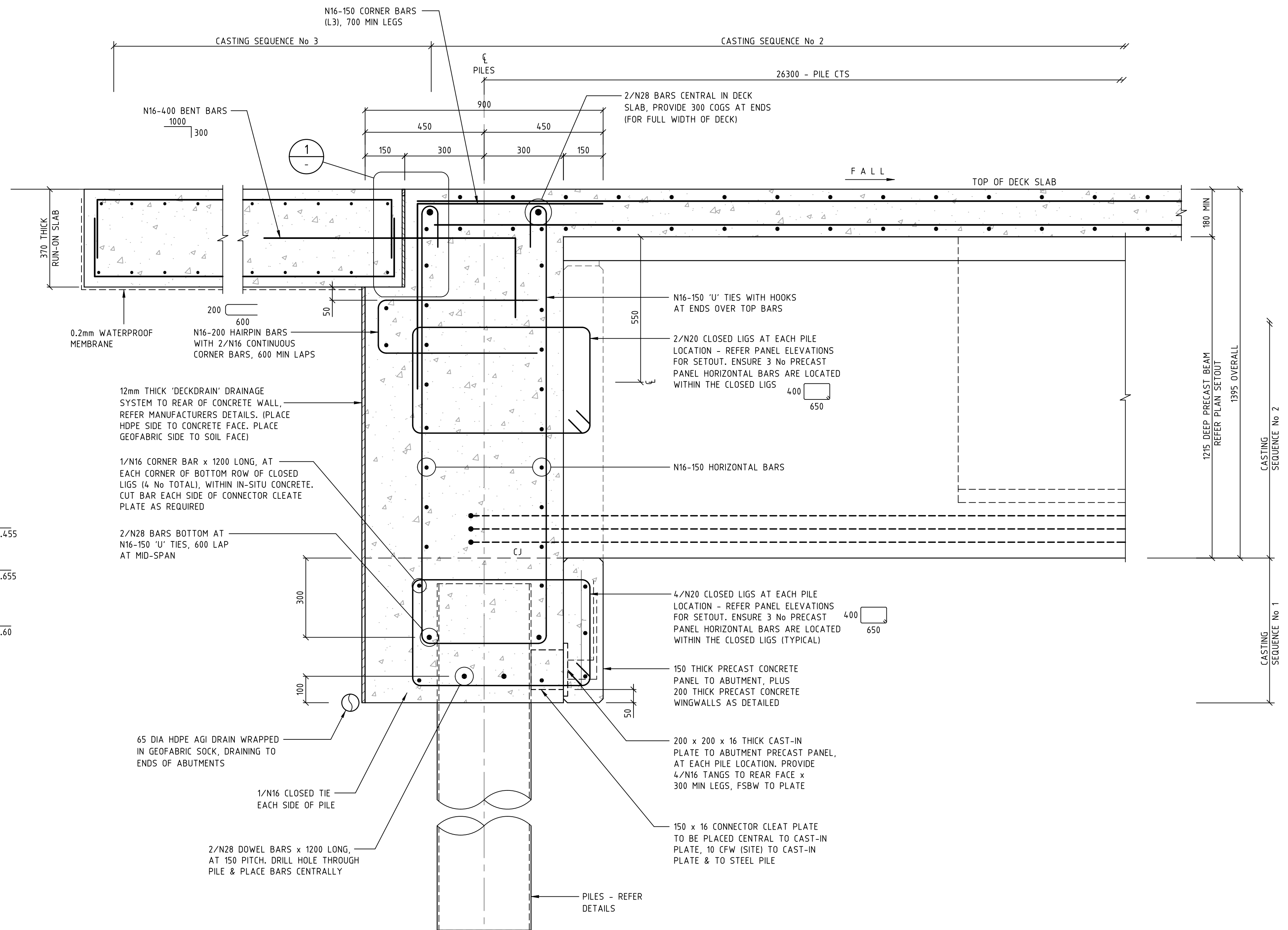
SECTION A
1:50
TYPICAL SECTION THROUGH BRIDGE



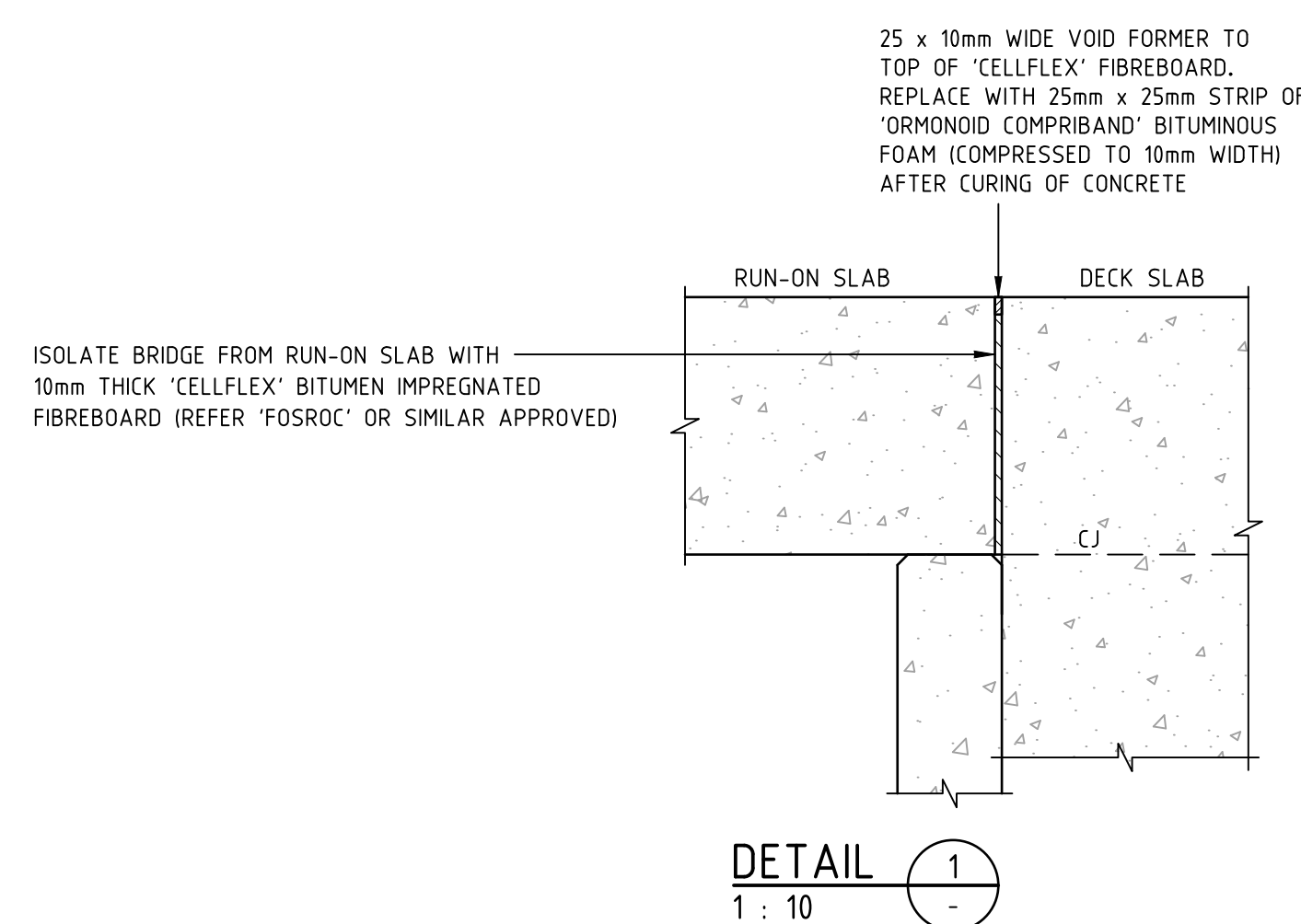
SECTION B
1:50
ELEVATION OF WEST ABUTMENT
ELEVATION OF EAST ABUTMENT SIMILAR



ELEVATION - TYPICAL ABUTMENT WINGWALL
PRECAST PANEL SETOUT
SCALE - 1:20



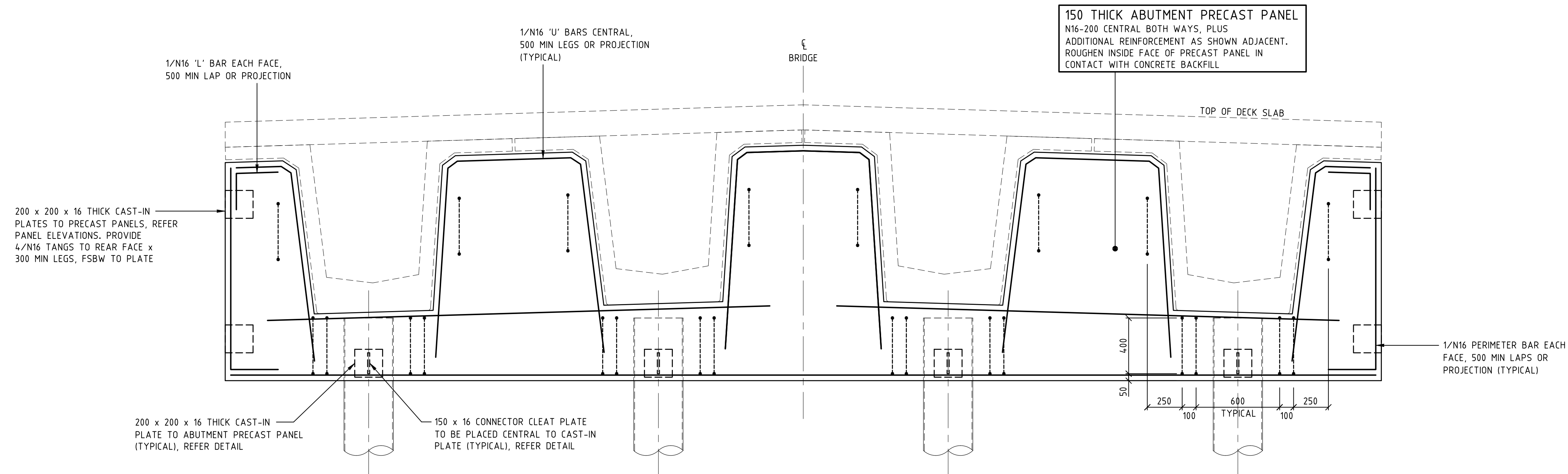
SECTION C
SCALE - 1:10
WEST ABUTMENT DETAIL
EAST ABUTMENT DETAIL SIMILAR



GENERAL NOTES:
RE: PRECAST ABUTMENT PANELS

THE PRECAST MANUFACTURER MUST FORM ABUTMENT PANELS WITH 'ZED' BAR TUBES AT 1200 MAX CTS EACH WAY, TO PROVIDE LATERAL RESTRAINT DURING THE CASTING OF INSITU CONCRETE.

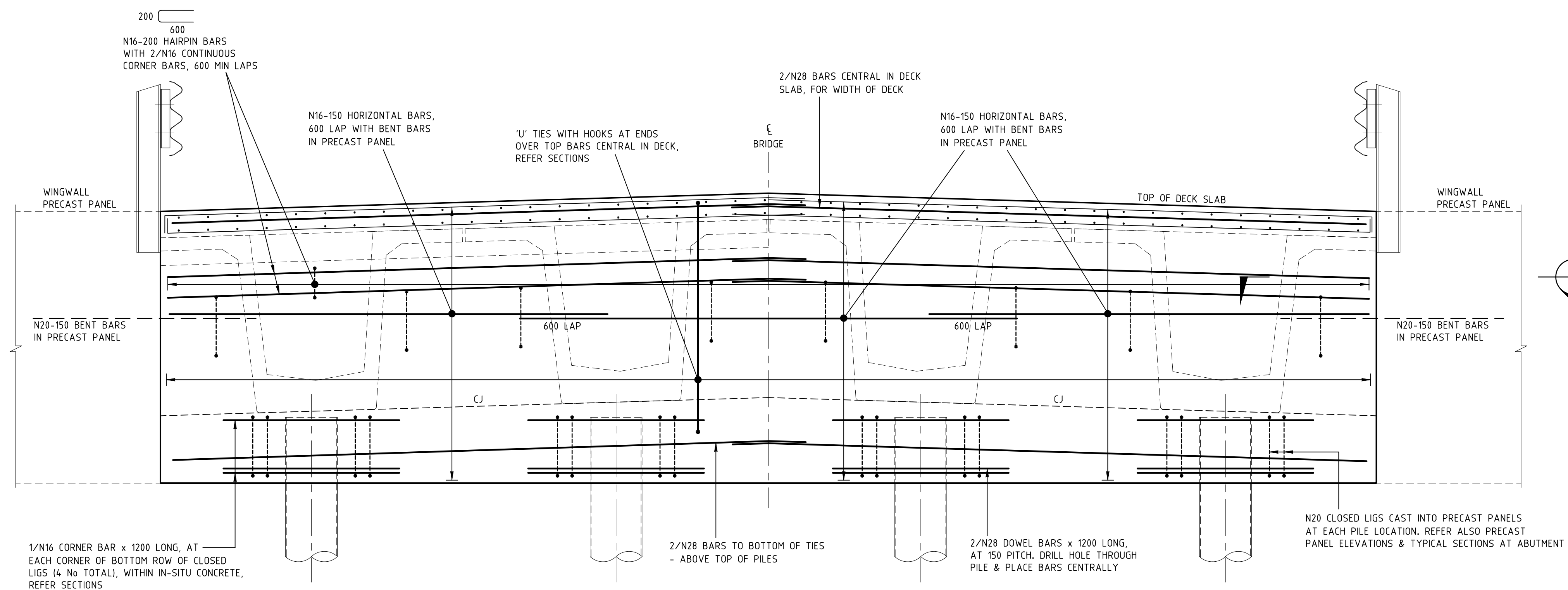
THE PRECAST MANUFACTURER MUST CONSULT THE BUILDER FOR CO-ORDINATION OF THE TUBES.



TYPICAL ELEVATION - WEST ABUTMENT PRECAST PANEL - REINFORCEMENT

SCALE - 1 : 20

ELEVATION - EAST ABUTMENT PRECAST PANEL - REINFORCEMENT SIMILAR



TYPICAL ELEVATION - WEST ABUTMENT INSITU CONCRETE - REINFORCEMENT

SCALE - 1 : 20

TYPICAL INSITU CONCRETE WALL REINFORCEMENT

ALL WALL REINFORCEMENT TO BE N16-200 EACH WAY
BOTH FACES OF INSITU CONCRETE (NOT SHOWN FOR
CLARITY). PROVIDE 500 MIN LAPS AS REQUIRED

ELEVATION - EAST ABUTMENT INSITU CONCRETE - REINFORCEMENT SIMILAR

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STRUCTURAL DRAWING

DRAWING TITLE
BRIDGE DETAILS
SHEET 1 OF 2



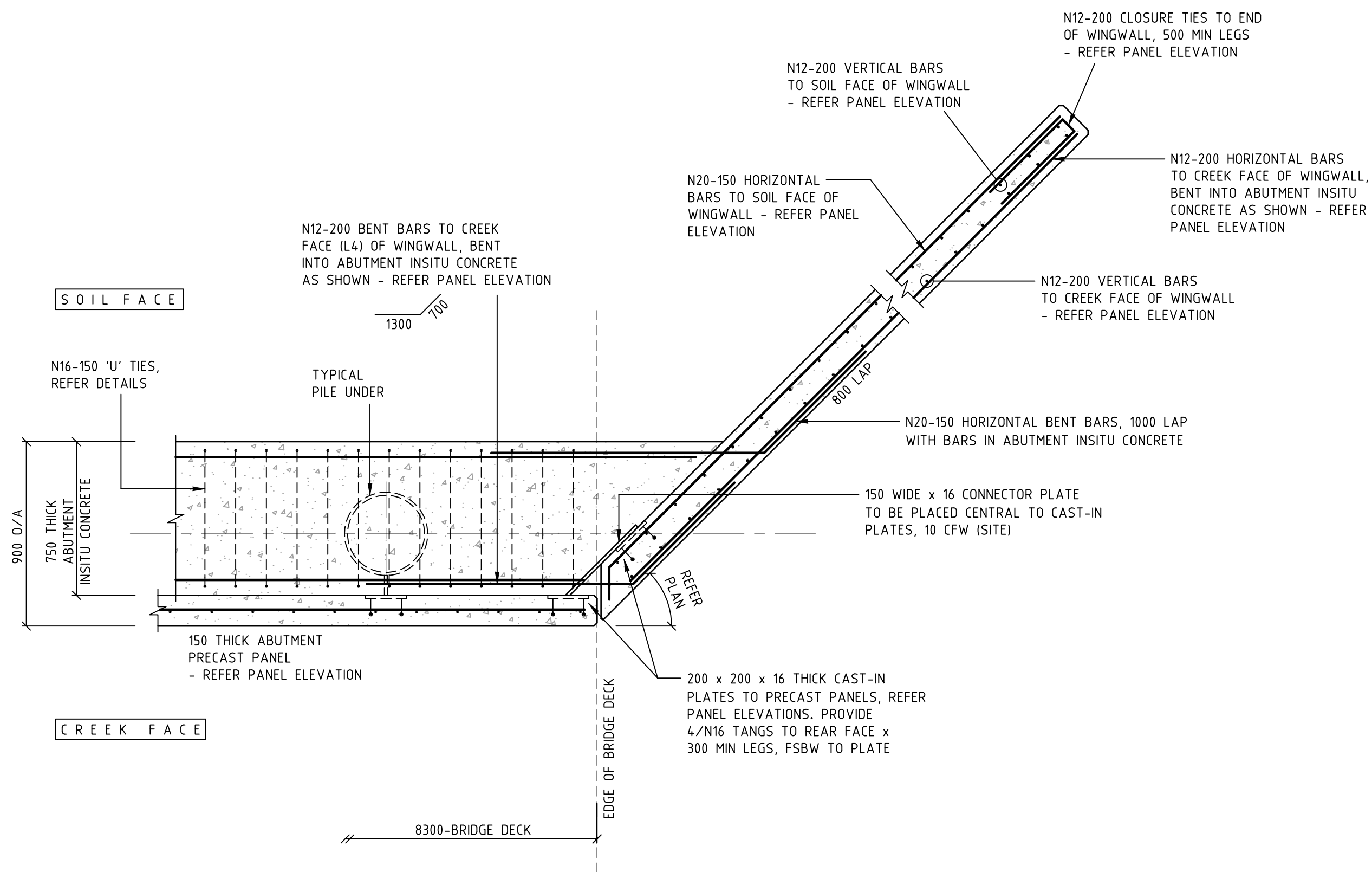
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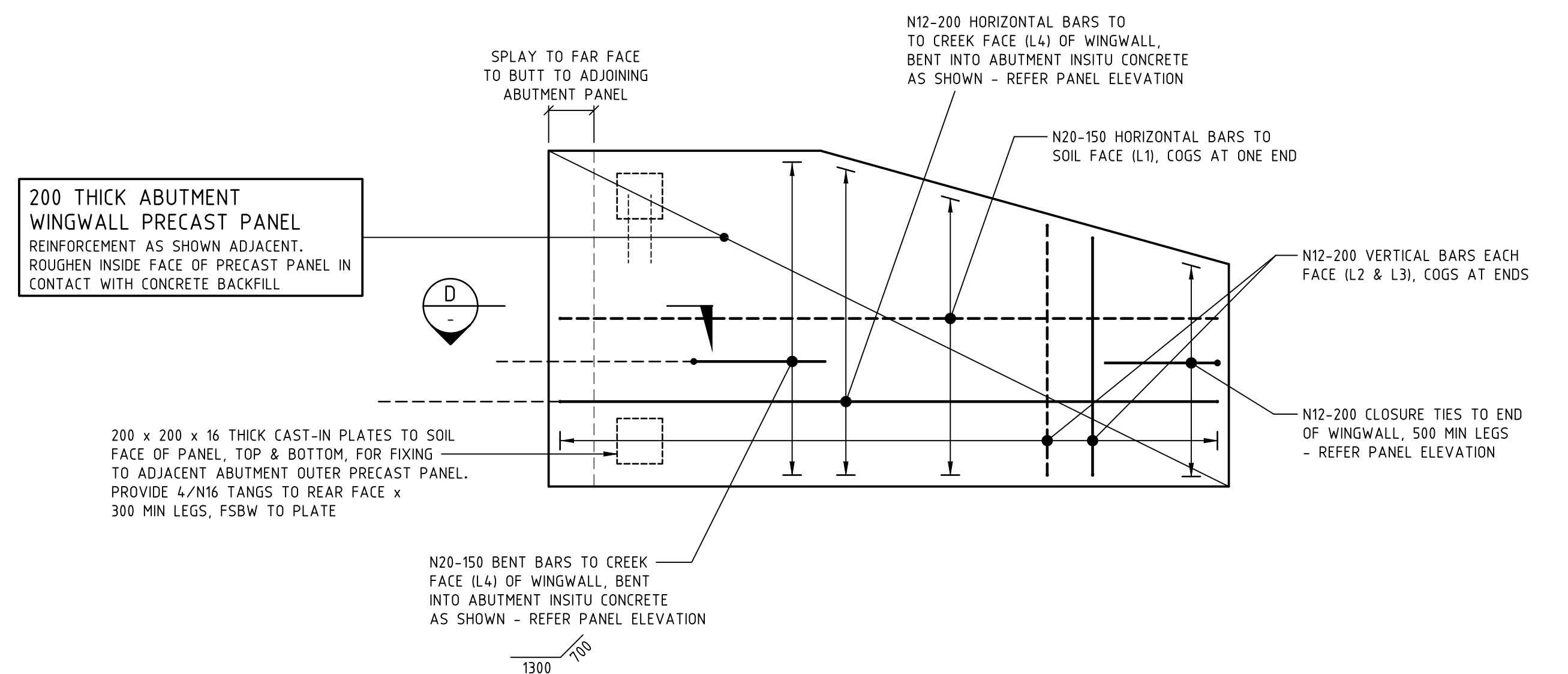
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PLAN VIEW - ABUTMENT WINGWALL
& PRECAST PANELS SETOUT

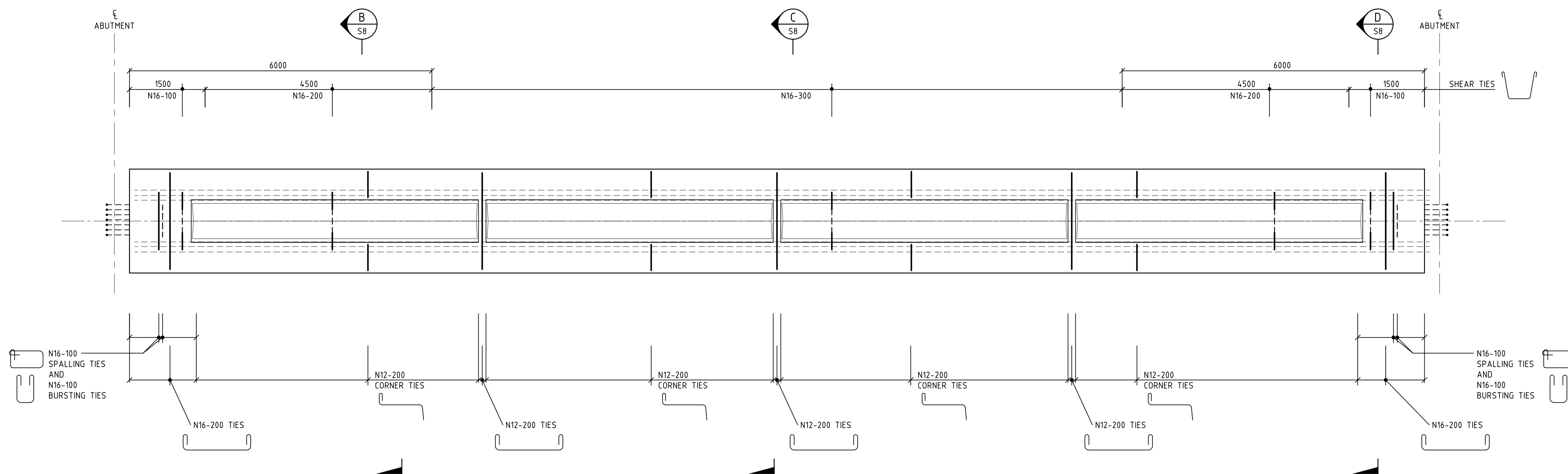
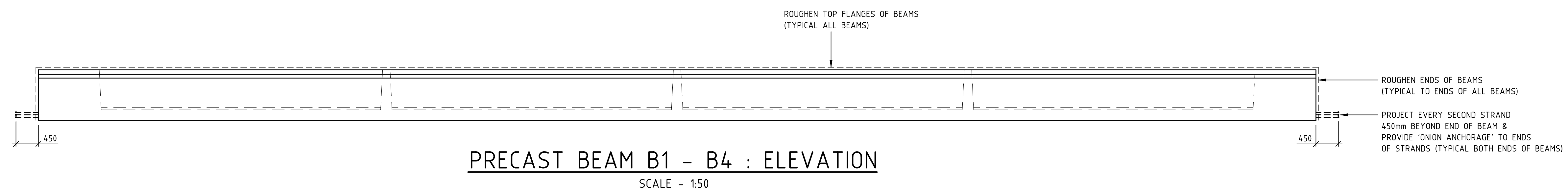
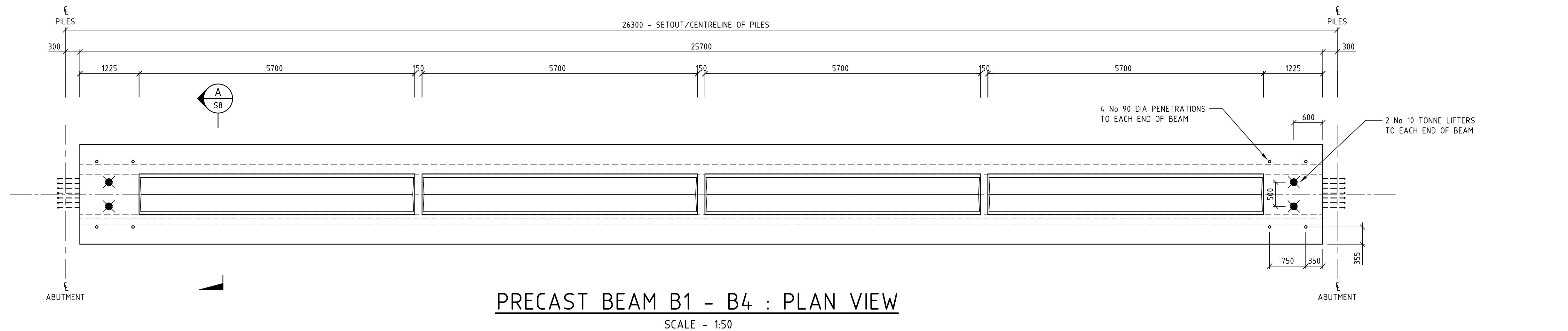
SCALE - 1 : 20

SECTION D
1 : 20



TYPICAL ELEVATION - ABUTMENT WINGWALLS
PRECAST PANELS - REINFORCEMENT

SCALE - 1 : 20



(SHEAR TIES & TRANSVERSE BARS ONLY SHOWN. FOR ALL OTHER REINF'T & STRANDS REFER SECTIONS)

NOTE: ALL TIES SHALL HAVE 130mm LONG HOOKS WHERE SHOWN

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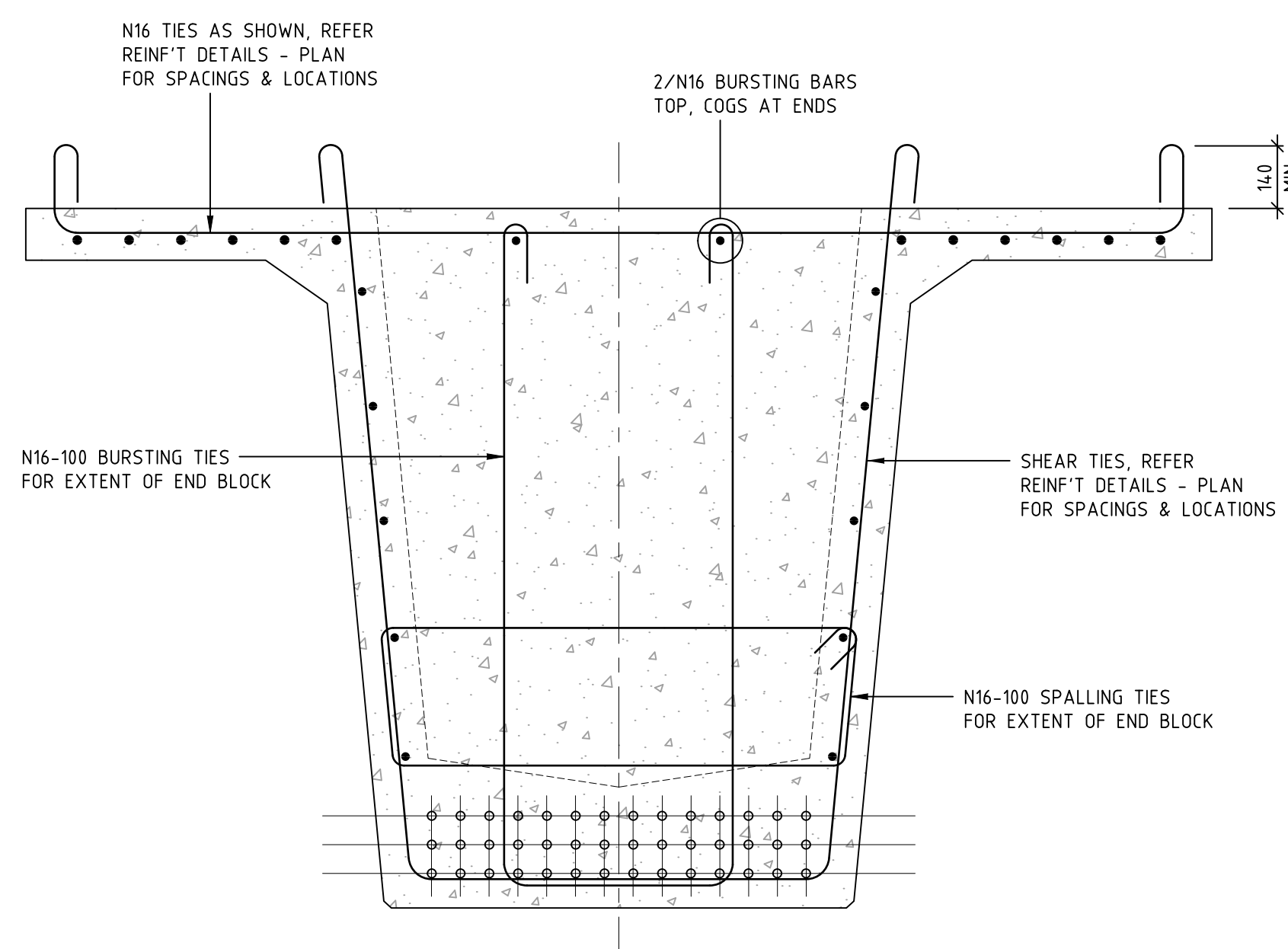
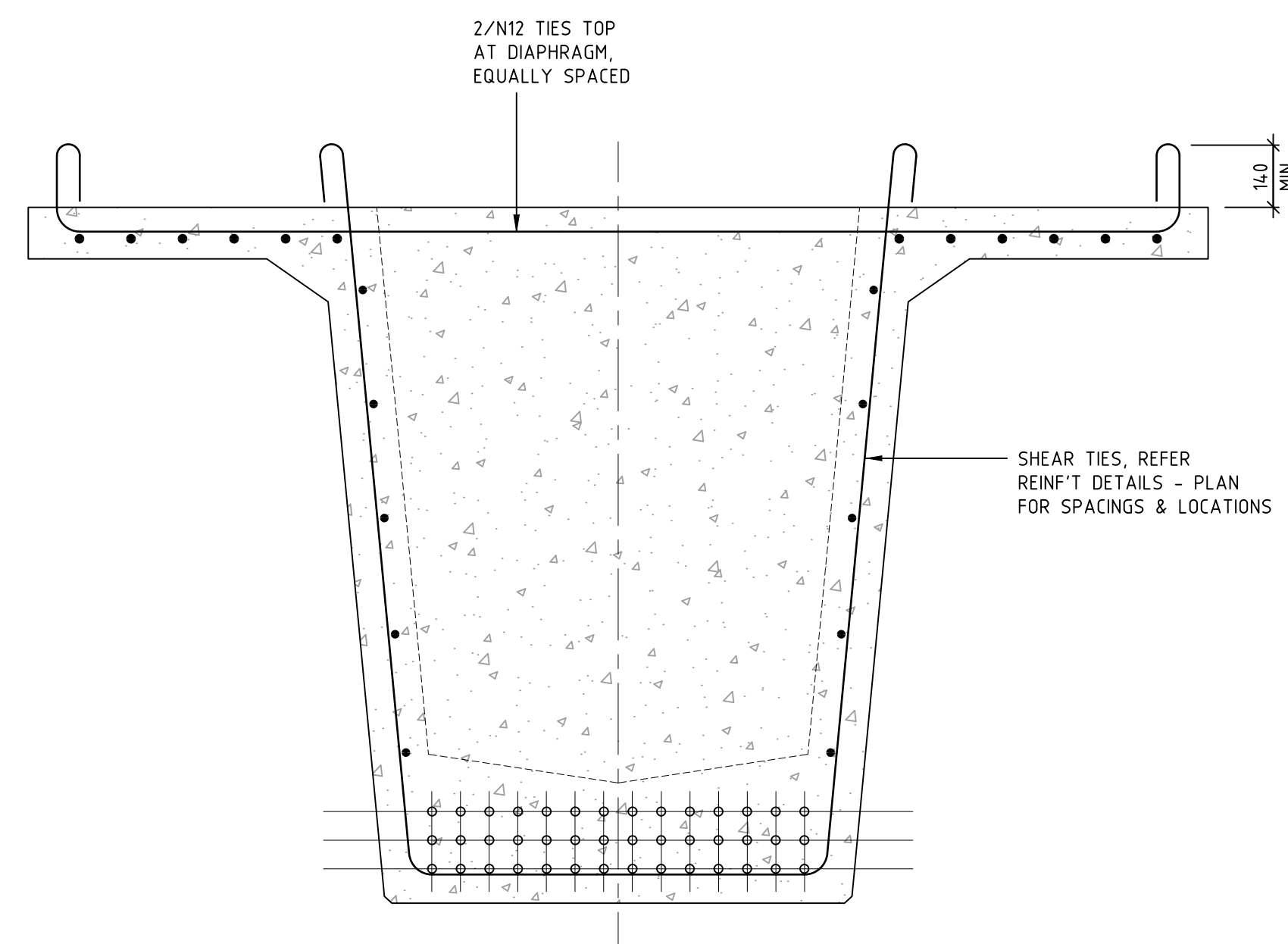
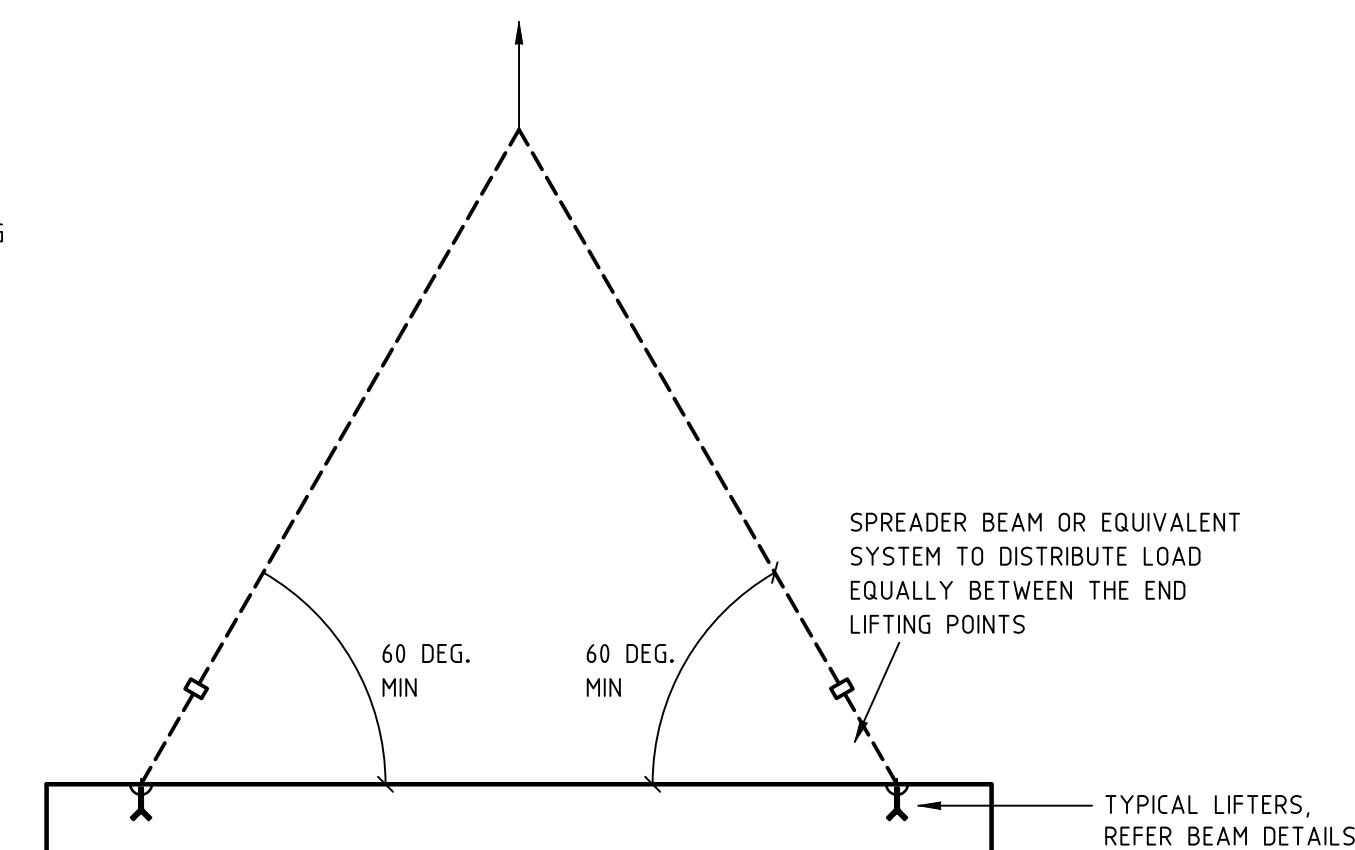
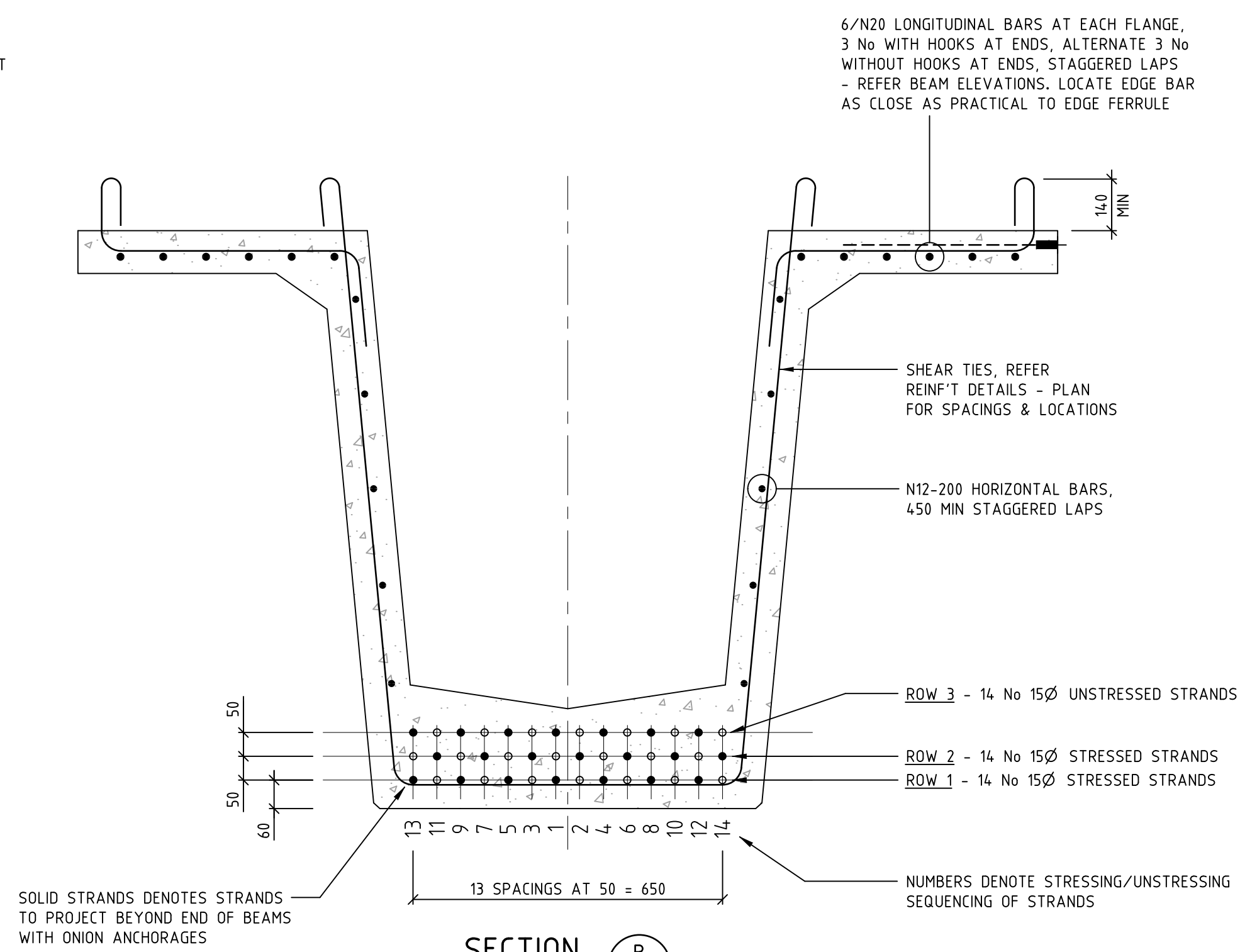
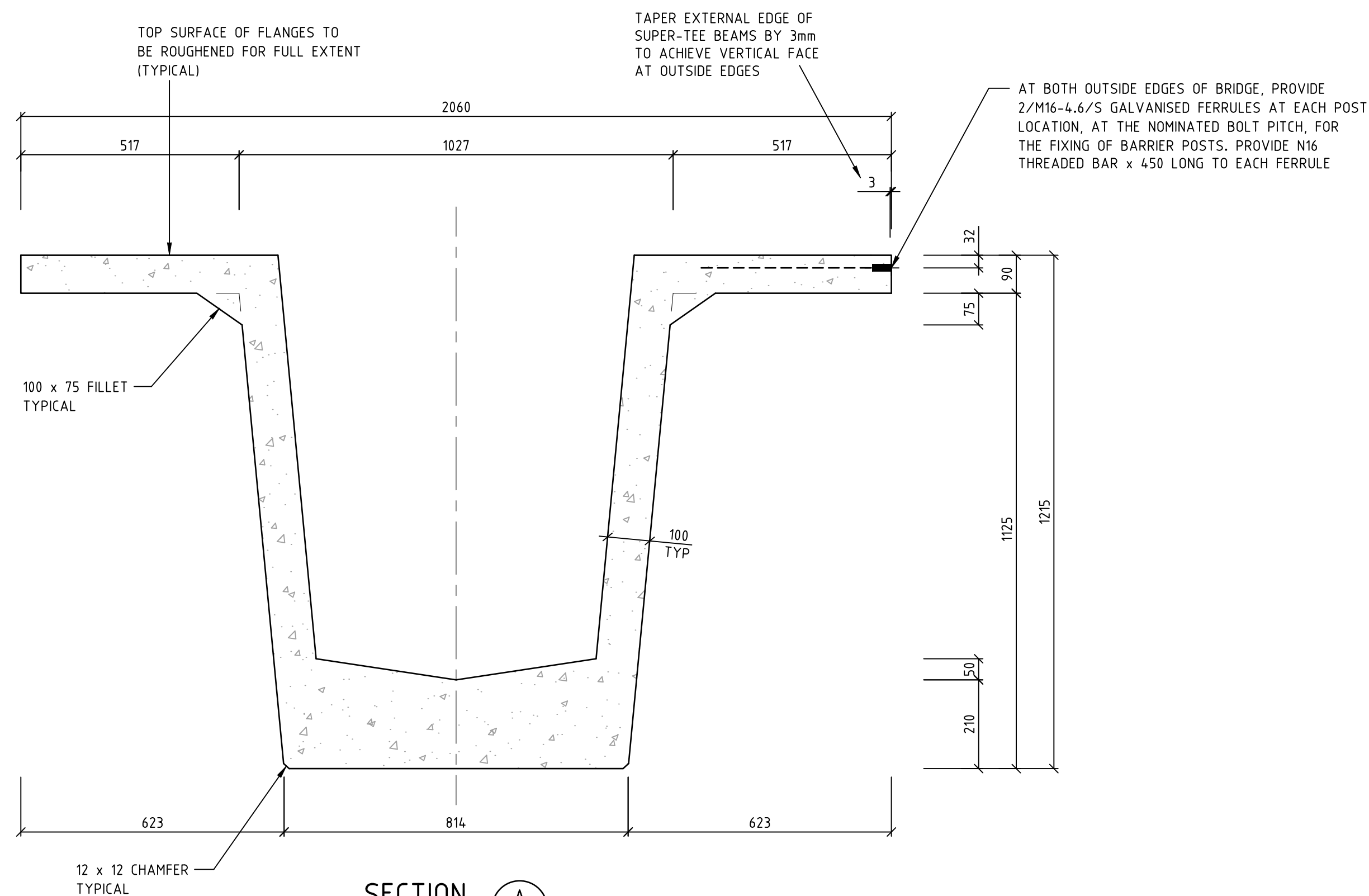
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**PRECAST BEAMS
PLANS & ELEVATIONS**

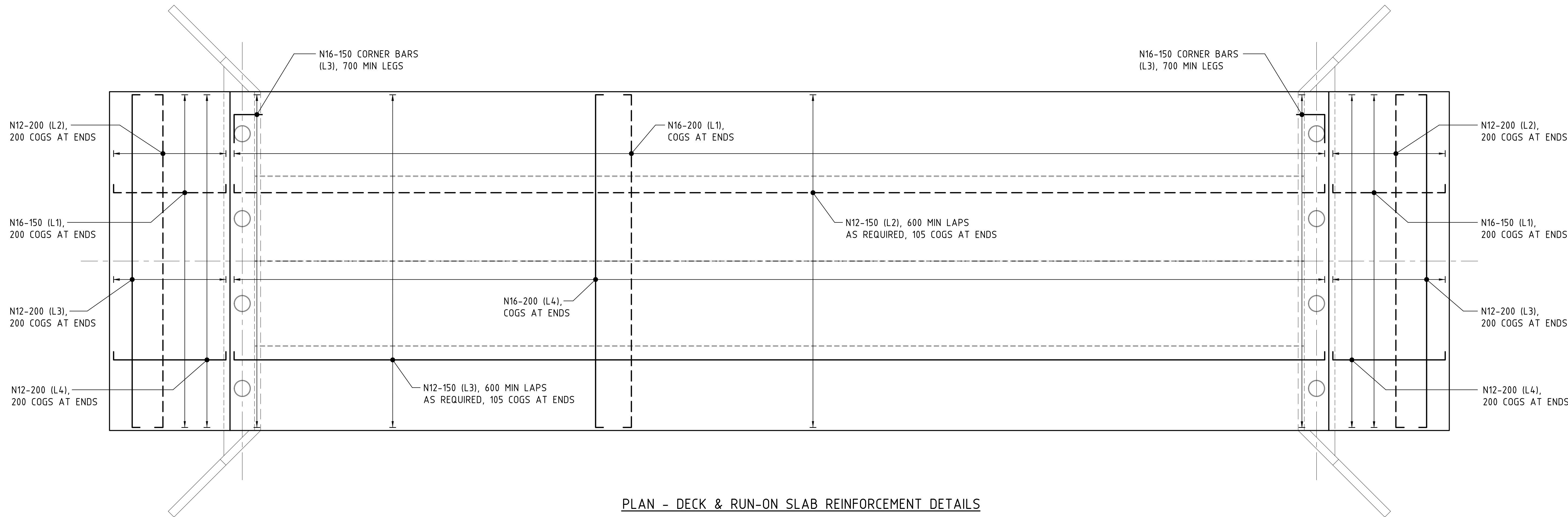
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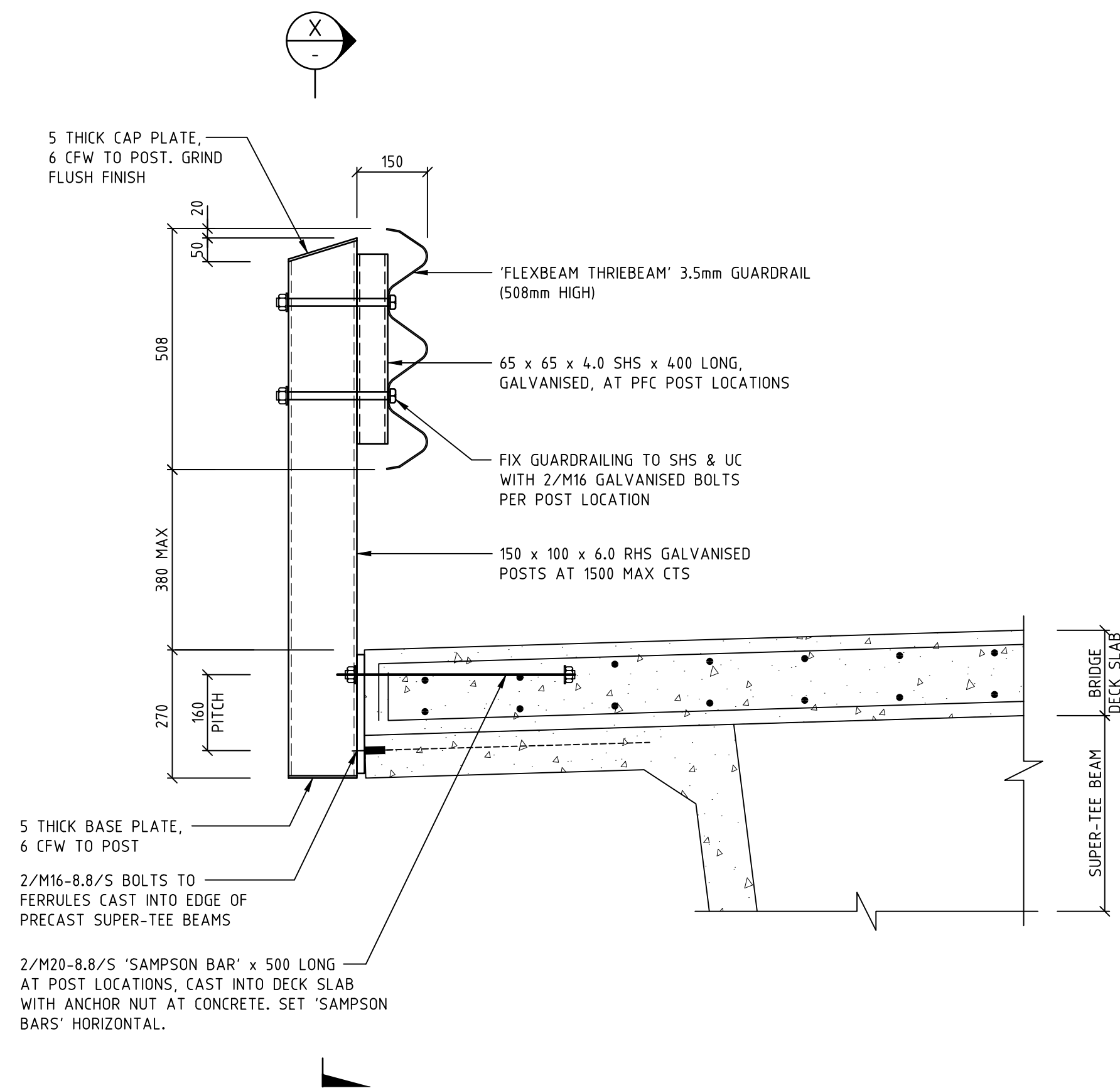
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DRAWING PREPARED ON A1 SHEET

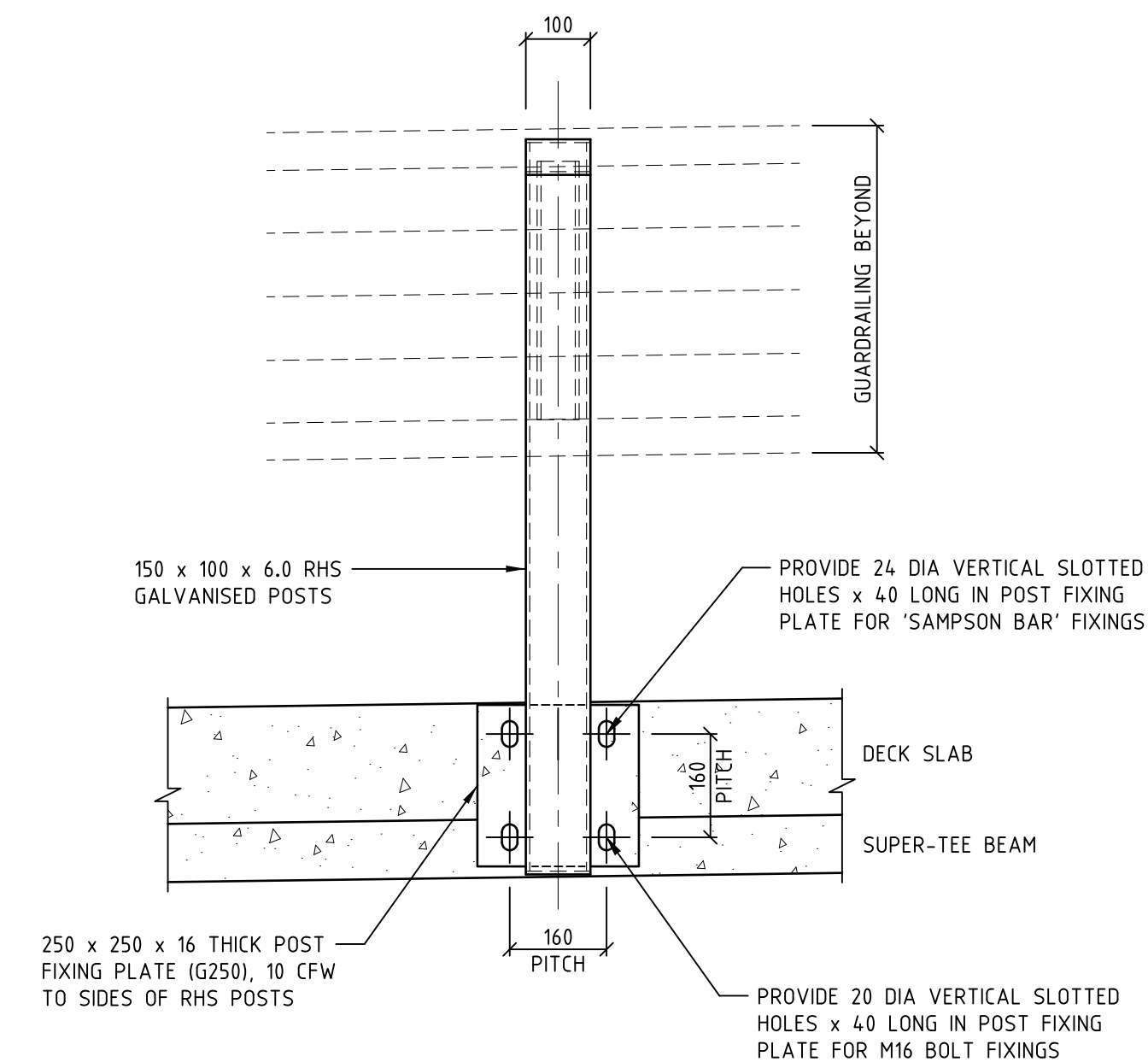




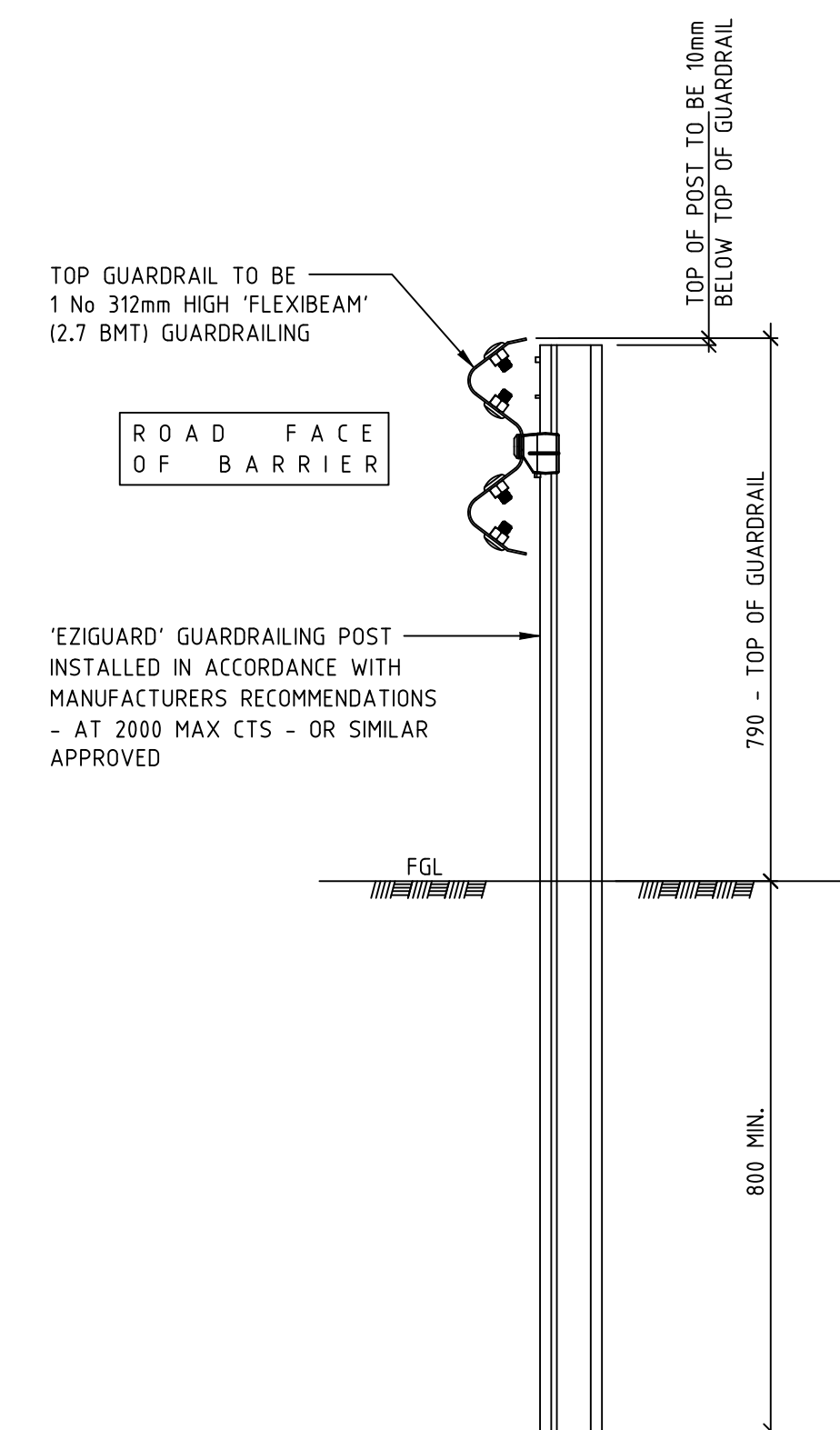
PLAN - DECK & RUN-ON SLAB REINFORCEMENT DETAILS
SCALE - 1 : 50



TYPICAL LOW PERFORMANCE BRIDGE BARRIER DETAIL
SCALE - 1 : 10


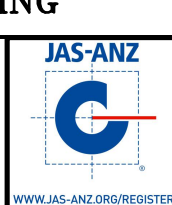



SECTION
SCALE - 1:10



TYPICAL 'TL3' BARRIER DETAILS
(OR SIMILAR APPROVED TO CONTRACTORS SELECTION)
SCALE - 1 : 10

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DECK SLAB & BARRIER DETAILS			
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