

NOTE

The purpose of this Standard Drawing is to provide typical standard details. The fitness for purpose of this drawing for a specific project shall be determined and certified by an RPEQ, project specific details shall be required to be included in the scheme Drawings. Refer to Structural Drafting Standards – Chapter 15 for further associated information.

NOTES:

- DESIGN ASSUMPTIONS:** Refer Standard Drawing 2042 for design assumptions used for the standard details in this Drawing. Typical Sections through the Bridge are shown. The Project designer shall provide general arrangement details in the project drawings that are specific to the actual bridge geometry. Where unit types vary from span to span a unit layout diagram showing locations, numbers and type marks of units shall be shown on the project drawings.
- BRIDGE BARRIER:** Two types of regular performance bridge barriers have been considered in the standard details, as follows:
Cast in-situ kerb with steel post and rail type, where the kerb shall be continuous across the full span.
For standard cast in-situ kerb details refer Standard Drawing 2045.
Cast in-situ parapet type, where the parapet shall have joints at minimum 2.0m and maximum 4.0m centres along the barrier. These parapet joints shall be stopped at 340mm above the top of the outer deck unit and the joints shall be filled with an approved compressible filler. 340 mm depth of parapet shall be continuous across the full span. Parapet joints shall be located away from transverse stressing bar locations by 500 minimum.
Maximum Unfactored Uniformly distributed barrier self weight of 12 kN/m has been considered for kerb with steel post and rail barrier or parapet.
Kerb or parapet can accommodate single or two conduits.
Bridge barrier including kerb or parapet shall be designed by the bridge designer. The bridge designer shall confirm the starter bars projecting from the top of the deck unit shown in this standard drawing are appropriate for the proposed barriers.
- PSC DECK UNITS** shall be manufactured to MRTS73.
- CONCRETE** shall be in accordance with MRTS70.
Concrete S50/20.
Strength at transfer shall be 40MPa.
Exposure classification B2.
Concrete shall be cast in rigid forms with intense compaction. An approved super-workable concrete mix may be used in lieu of intense compaction.
All chamfers where shown to be 25 x 25 unless shown otherwise.
- REINFORCING STEEL** shall be read in conjunction with Standard Drawings 1043 and 1044. Reinforcing steel shall be in accordance with MRTS71 and AS/NZS 4671. Deformed bars Grade D500N. Round bars Grade R250N. Minimum cover to reinforcing steel shall be 40 to all sides and the construction tolerance shall be in accordance with MRTS73.
All carbon reinforcing steel shall be ACRS certified.
- STRANDS** shall be AS/NZS 4672.1– 7 wire ordinary–12.7–1870–Relax 2, to MRTS73, and testing requirements to AS/NZS 4672.2.
Pretensioning force at stressing = 147kN per strand.
Ends of strands to be coated with three coats minimum of approved surface tolerant epoxy after grinding flush with ends of units. Each coat shall be a minimum of 0.3 mm dry film thickness.
- STEELWORK** shall be fabricated to MRTS78.
Steel plate Grade 250 minimum to AS/NZS 3678.
Bolts Class 4.6 to AS 1111.1.
All bolts and nuts shall be hot dip galvanised to AS 1214.
All other steelwork shall be hot dip galvanised to AS/NZS 4680.
Prior to galvanising, all weld splatter and welding slag to be removed.
Stainless Steel shall be fabricated to MRTS78A.
Stainless steel plate shall be to ASTM A240M.
Stainless steel round bar shall be to ASTM A276.
Refer Standard Drawing 2200 for Steelwork Notes for regular performance level post and rail barriers.
- TRANSVERSE STRESSING BARS** shall be to MRTS73.
Stressing Units shall be AS/NZS 4672.1–bar–29–1030–P, or –bar–32–1030–P, (with 300 mm minimum coarse thread at each end) and testing requirements to AS/NZS 4672.2.
Transverse stressing force at lock off shall be 350kN.
Stressing holes shall be grouted in accordance with MRTS74.
Grouting between deck units shall be in accordance with MRTS74.
A clear gap shall be maintained between the abutment sidewall and the outside face of the kerbs and shall not be filled with grout.
- ERECTION AND DECK CONSTRUCTION:** Supply and erection of deck units shall be in accordance with MRTS74.
Bridge deck using transversely stressed deck units to this standard drawing shall be constructed in accordance with MRTS77.

- WELDING** symbols to AS 1101.3.
All welds, except location tack welds, shall be SP category.
Tack welding for location purposes to AS/NZS 1554.3.
Welding consumables shall be controlled hydrogen type: G49X to AS/NZS 14341–B or T49X to AS/NZS ISO 17632–B.
Stainless Steel Welding
Welding shall be to AS/NZS 1554.6. Weld quality shall be Category 2B.
Welding consumables shall be E316L to AS/NZS 1167.2 and/or AS/NZS 4854.
- CAST-IN LIFTING ANCHORS** shall be hot dip galvanised to AS 1214.
For all lifting notes refer to "Lifting Notes" on this Drawing.
For all lifting hoop notes refer to "Cast-in Lifting Hoop Notes" on this Drawing.
- PVC DRAINAGE PIPES** shall be to AS/NZS 1260.
- FINAL DECK UNIT DIMENSIONS:** When casting units the manufacturer shall make allowance in formwork for end formwork kick due to hog and axial shortening (equal amounts each end) so that the units assume the detailed dimensions, shown in this drawing, at 100 days.
- HOG DIFFERENTIAL:** Deck units shall be cast in a span by span configuration, with no more than 3 weeks elapsed between all units in the same span. This is to minimise hog differentials between internal and edge units at the time of erection.
Each Unit to be clearly marked with its Span and Unit type.
- DIMENSIONS** are in millimetres unless shown otherwise.

ASSOCIATED DOCUMENTS:

Design Criteria for Bridges and Other Structures
Drafting and Design Presentation Standards – Structural Drafting Standards

REFERENCED DOCUMENTS:

Departmental Standard Drawings:
1043 Reinforcing Steel – Standard Bar Shapes
1044 Reinforcing Steel – Lap Lengths
2042 Precast Units – Design Assumptions for Transversely Stressed Standard Deck Units
2045 Cast Insitu Kerbs – Standard Details for Transversely Stressed Bridges
2200 Bridge Traffic Barriers – Post and Rail Traffic Barriers Regular Performance Level

Departmental Specifications:

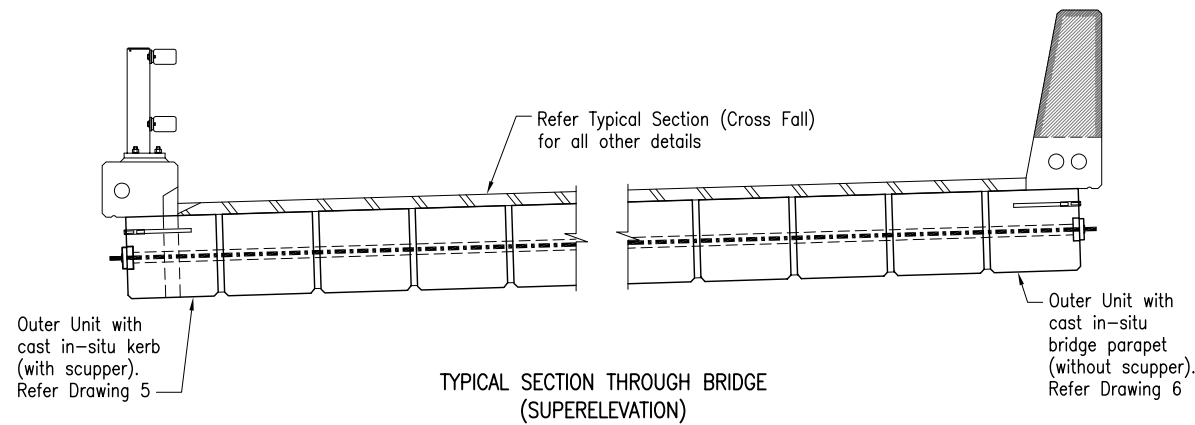
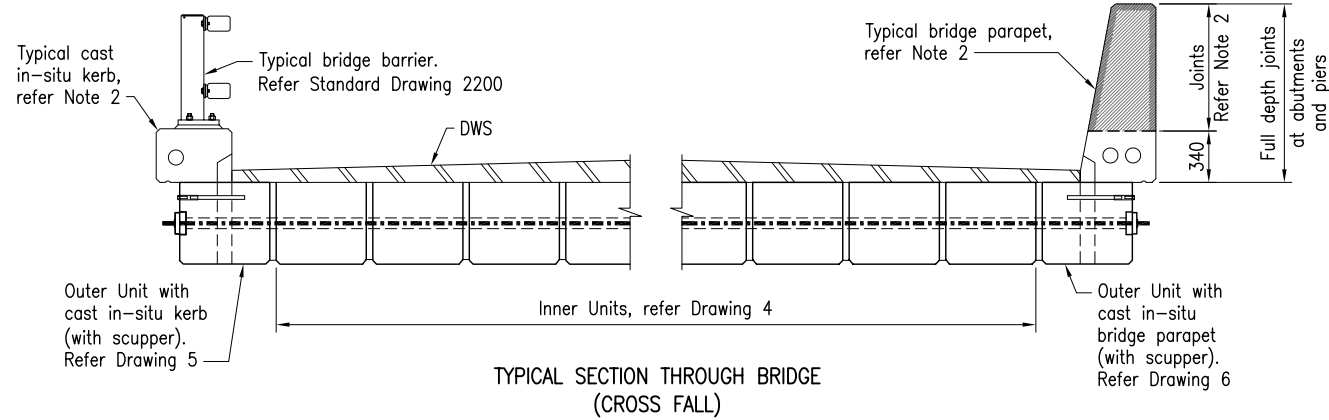
MRTS70 Concrete
MRTS71 Reinforcing Steel
MRTS73 Manufacture of Prestressed Concrete Members and Stressing Units
MRTS74 Supply and Erection of Prestressed Concrete Deck and Kerb Units
MRTS77 Bridge Deck
MRTS78 Fabrication of Structural Steelwork
MRTS78A Fabrication of Structural Stainless Steelwork

LIFTING NOTES:

- Maximum dynamic load factor used for this design is 2.0, unless higher dynamic allowance is required for project specific design.
- Proprietary lifting anchors shall be a TMR approved product.

CAST-IN LIFTING HOOP ANCHOR NOTES:

- CAST-IN HOOP CAPACITY:** The critical characteristic cast-in hoop anchor capacity R_u shall exceed 250kN (WLL = 6.4 tonnes with FoS = 4).
- After lifting hoop is no longer required, cut-off and grind flush with top of deck unit, apply three coats of approved surface tolerant epoxy to provide a minimum film thickness of 0.3 mm dry or 0.6mm wet.



GENERAL ARRANGEMENT FOR ALL 13m DECK UNIT TYPES

DECK UNIT SCHEDULE

TYPE OF DECK UNIT	MASS (tonnes approx)	No OFF	TOTAL MASS (tonnes)
A	X.X	XX	XXX.X
B	X.X	XX	XXX.X
C	X.X	XX	XXX.X

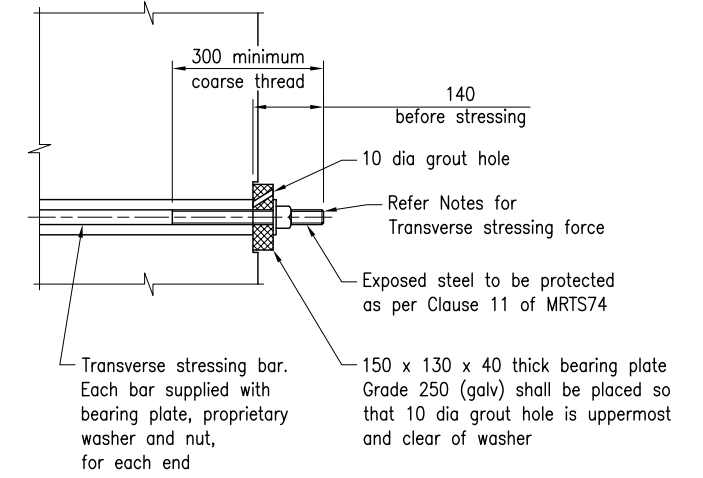
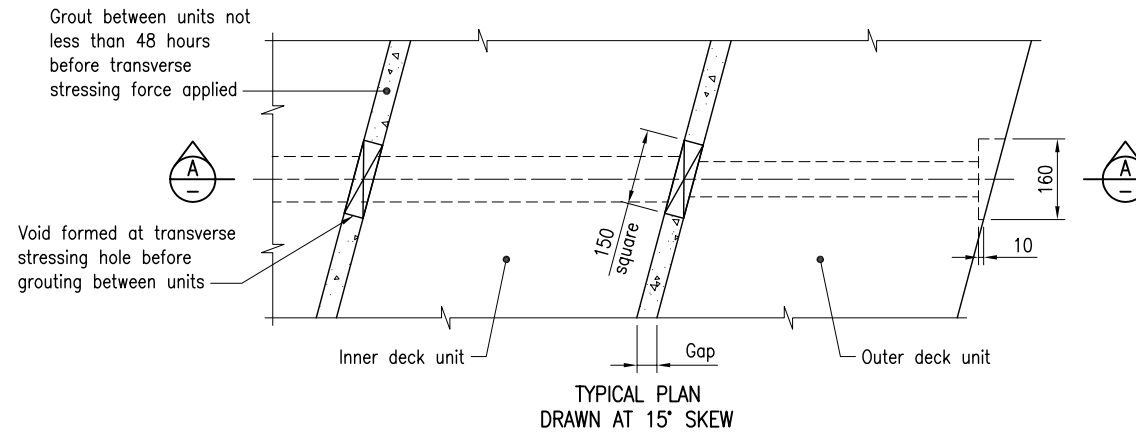
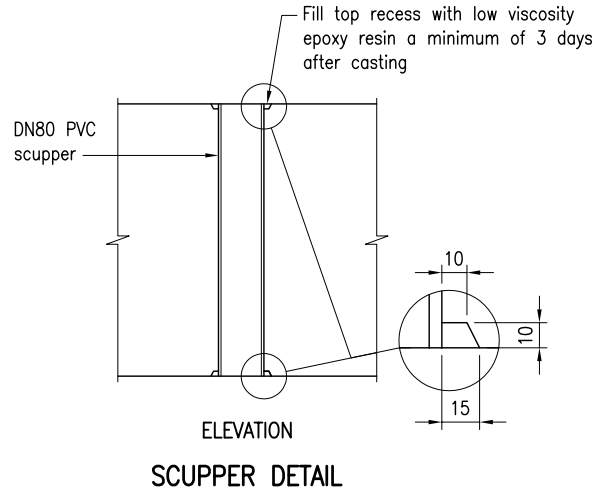
XX denotes information to be included in the project drawings

TRANSVERSE STRESSING UNIT SCHEDULE

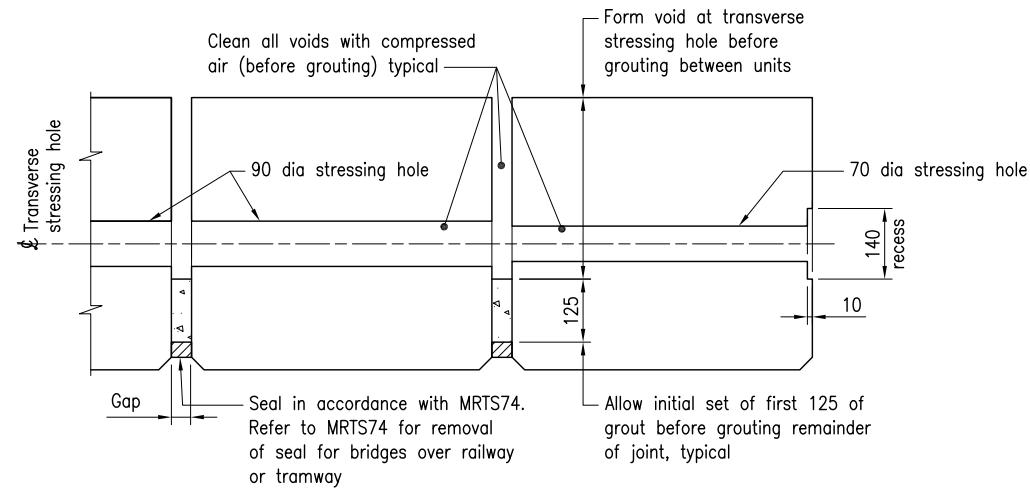
LENGTH (m)	MASS # (tonnes)	No OFF	TOTAL MASS # (tonnes)
XX.XXX	X.XXX	XX	X.XXX

including transverse stressing anchorages
XX denotes information to be included in the project drawings

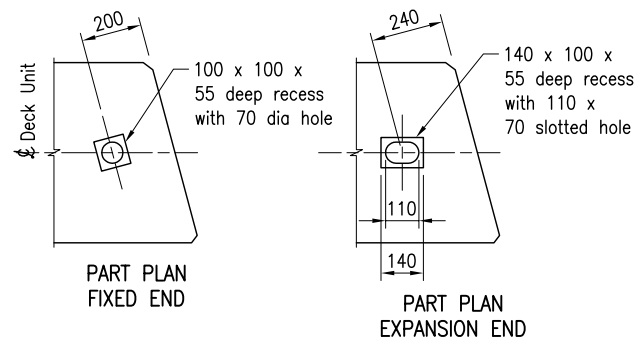
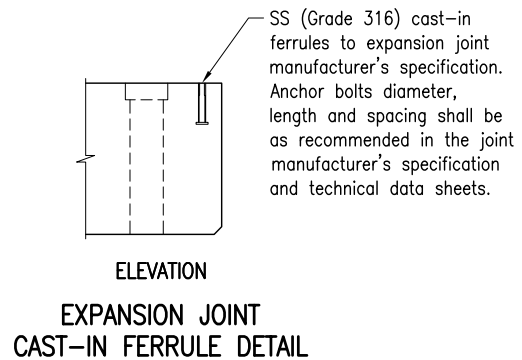
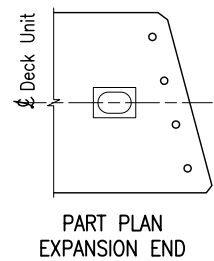
Department of Transport and Main Roads		<p>© The State of Queensland (Department of Transport and Main Roads) 2018 http://creativecommons.org/licenses/by/3.0/au</p>	
PRECAST UNITS			
13m PSC DECK UNIT		A3	Standard Drawing No
DRAWING 1 OF 6		Not to Scale	2053
GENERAL ARRANGEMENT AND NOTES			Date 11/18
A	B	C	



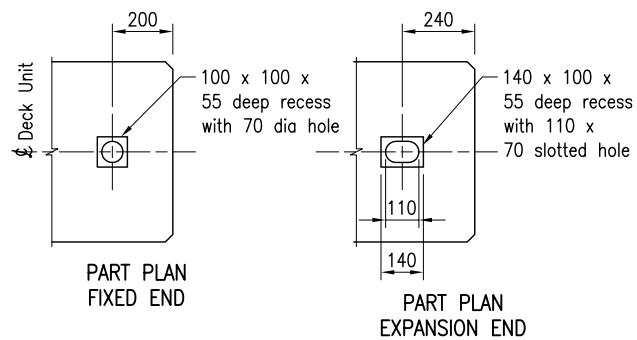
TRANSVERSE STRESSING BAR ASSEMBLY



SECTION A



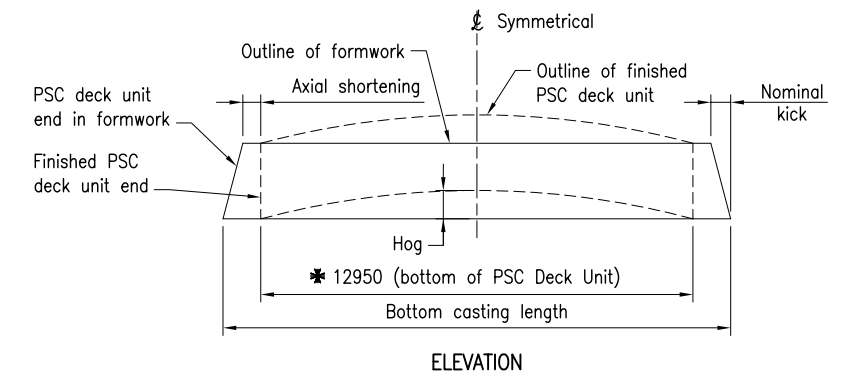
SETOUT FOR HOLD DOWN BOLTS FOR SKEWED UNIT



SETOUT FOR HOLD DOWN BOLTS FOR SQUARE UNIT

HOG SCHEDULE

DESIGN HOG (mm)		
Transfer	30 days	100 days
19	22	29



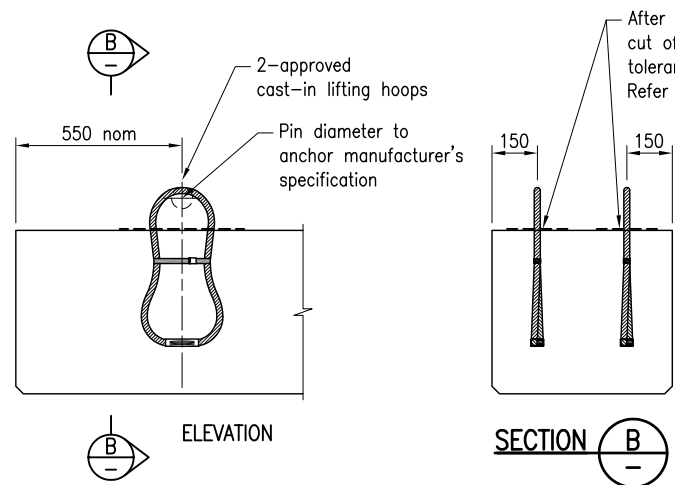
* Final Precast Deck Unit length. When casting deck units the manufacturer is to make allowances in formwork for axial shortening and kick (equal amounts each end)

FORMWORK KICK DIAGRAM

NOTES:

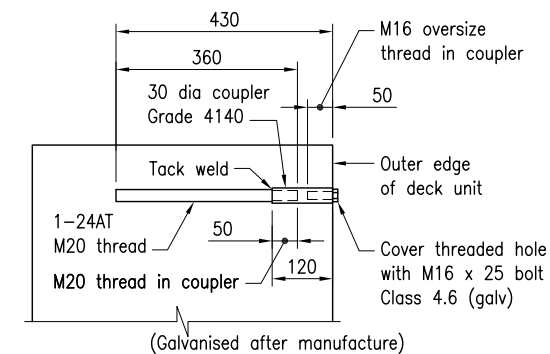
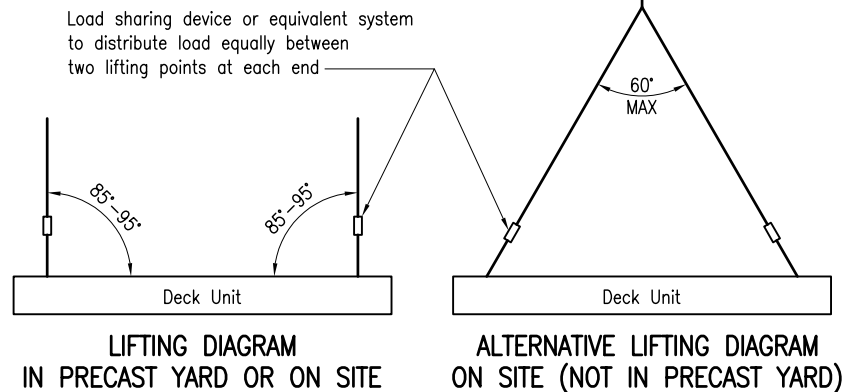
1. Refer Drawing 1 for all notes.
2. Refer Drawing 3 for LIFTING DETAILS and TYPICAL SECTION and TYPICAL STRAND LAYOUT

Department of Transport and Main Roads		<p>© The State of Queensland (Department of Transport and Main Roads) 2018 http://creativecommons.org/licenses/by/3.0/au</p>	
PRECAST UNITS			
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DRAWING 2 OF 6 GENERAL DETAILS		Not to Scale	2053
			Date 11/18
A	B	C	



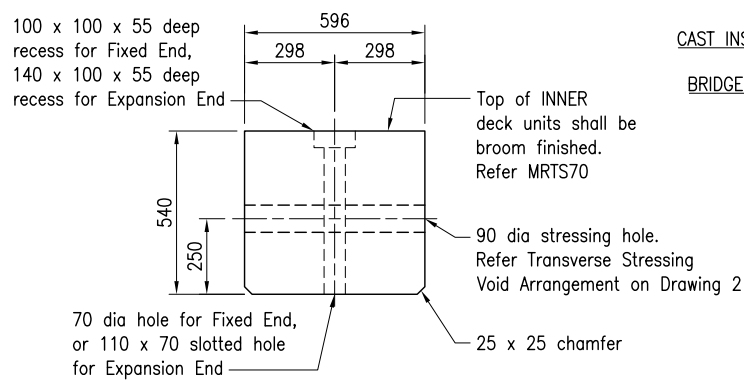
CAST-IN LIFTING ANCHORS

After lifting hoops are no longer required, cut off flush and apply 3-coats surface tolerant epoxy 200 x 200 at each cut. Refer Note H2 on Drawing 1

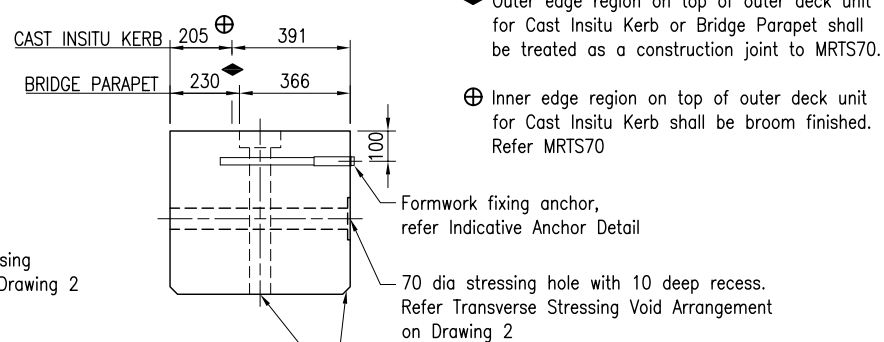


The bridge designer shall verify the adequacy of the formwork fixing anchor details to suit project specific requirements prior to casting the deck units

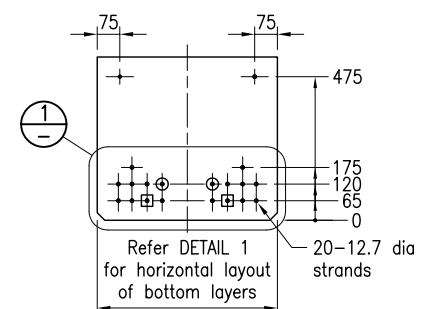
INDICATIVE ANCHOR DETAIL



SECTION C TYPICAL SECTION INNER UNITS

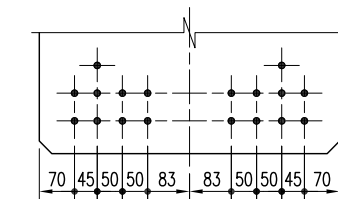


SECTION C TYPICAL SECTION OUTER UNITS

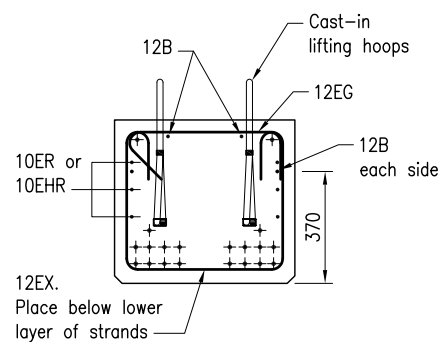


TYPICAL STRAND LAYOUT

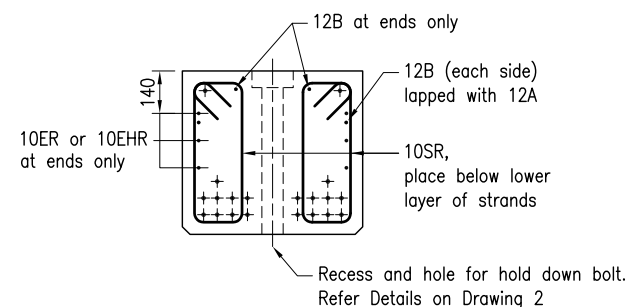
- + Do not Debond
- ⊕ Debond strand 3000 from each end
- ⊗ Debond strand 1500 from each end



DETAIL 1 HORIZONTAL LAYOUT OF BOTTOM STRANDS

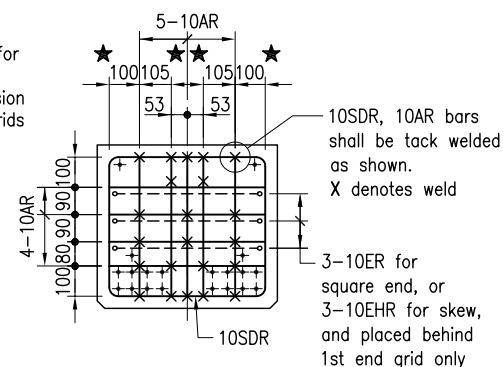


SECTION G CAST-IN LIFTING HOOPS



SECTION H AT HOLD DOWN BOLT HOLE AT SCUPPER SIMILAR

★ Dimension shown for square units. Adjust this dimension for skewed end grids

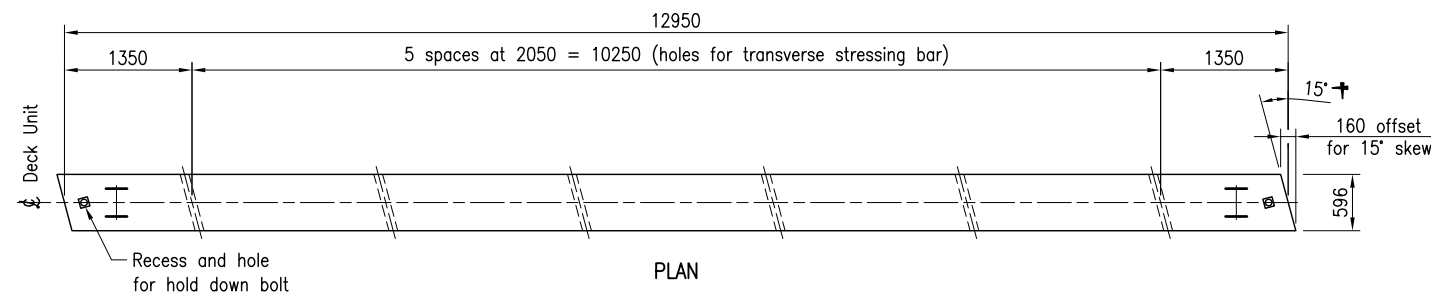


VIEW J END GRID

NOTES:

1. Refer Drawing 1 for all notes.

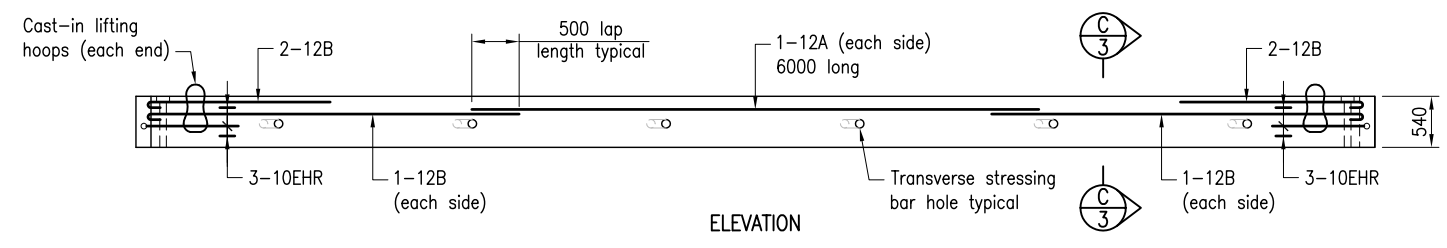
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PRECAST UNITS			
13m PSC DECK UNIT		A3	Standard Drawing No
DRAWING 3 OF 6		Not to Scale	2053
TYPICAL SECTIONS AND LIFTING DETAILS			Date 11/18
A	B	C	



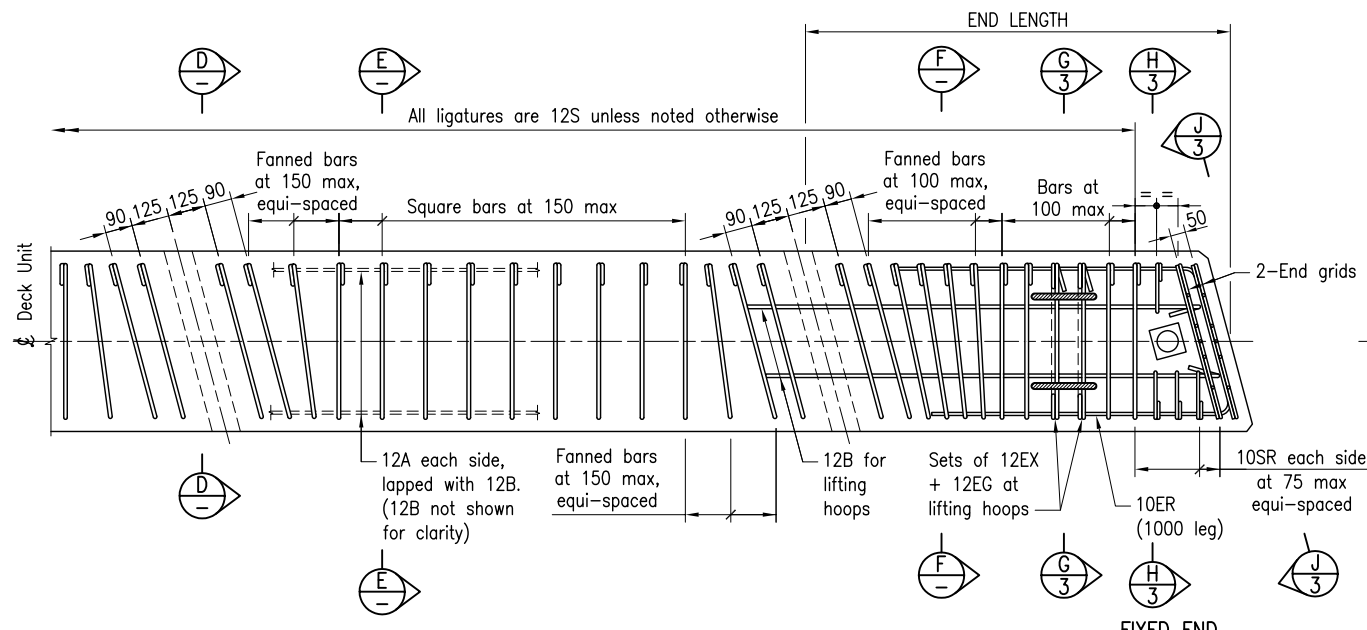
SKIEW DIMENSIONS

Skiew angle	Offset for skiew at ends
0	0
5	50
10	105
15	160
20	215
25	275
30	345

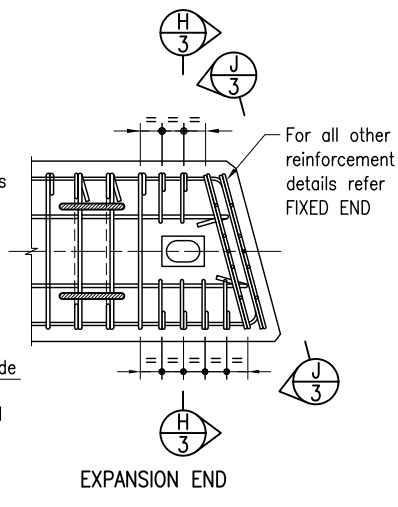
↑ 15° skiew is shown in PLAN



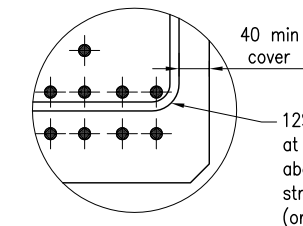
INNER DECK UNIT
Deck Unit drawn with 15° skew – refer Table for other skew dimensions



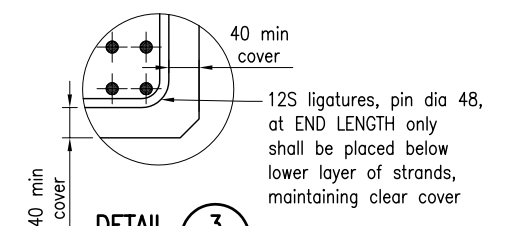
TYPICAL REINFORCEMENT DETAILS FOR UNITS WITH SKEW



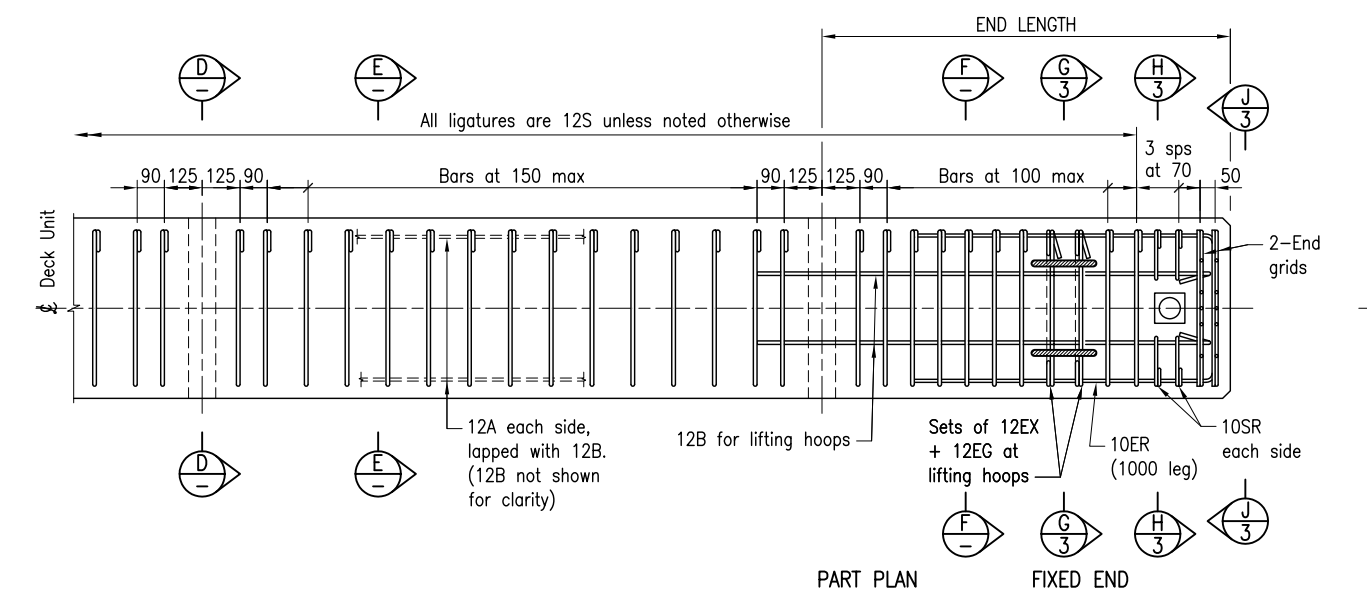
Strands not shown on PART PLANS for clarity



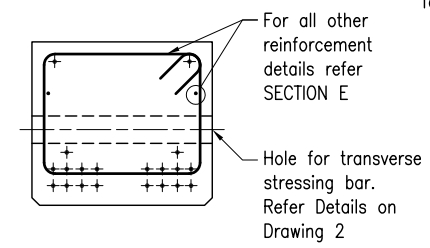
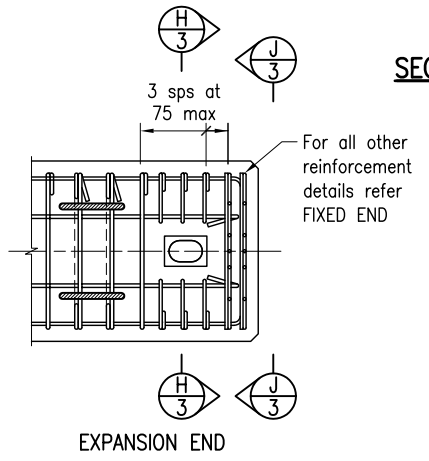
DETAIL 2
-5,6



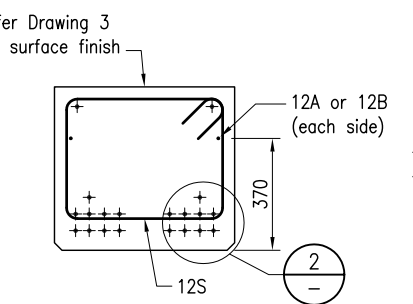
DETAIL 3
-5,6



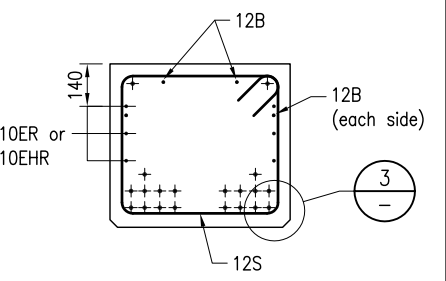
TYPICAL REINFORCEMENT DETAILS FOR SQUARE UNITS



SECTION D
AT TRANSVERSE STRESSING BAR HOLES



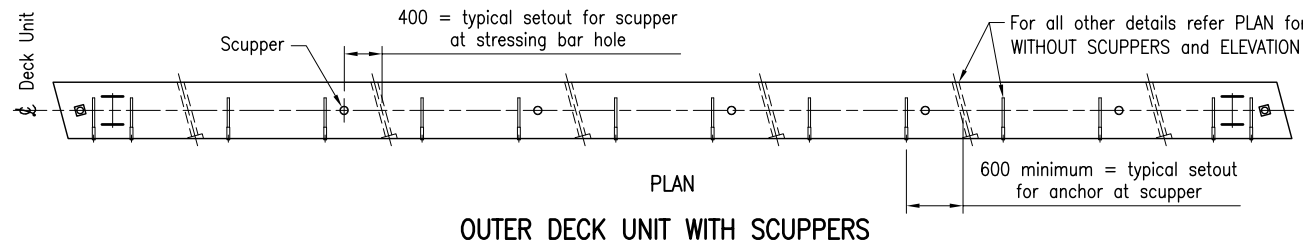
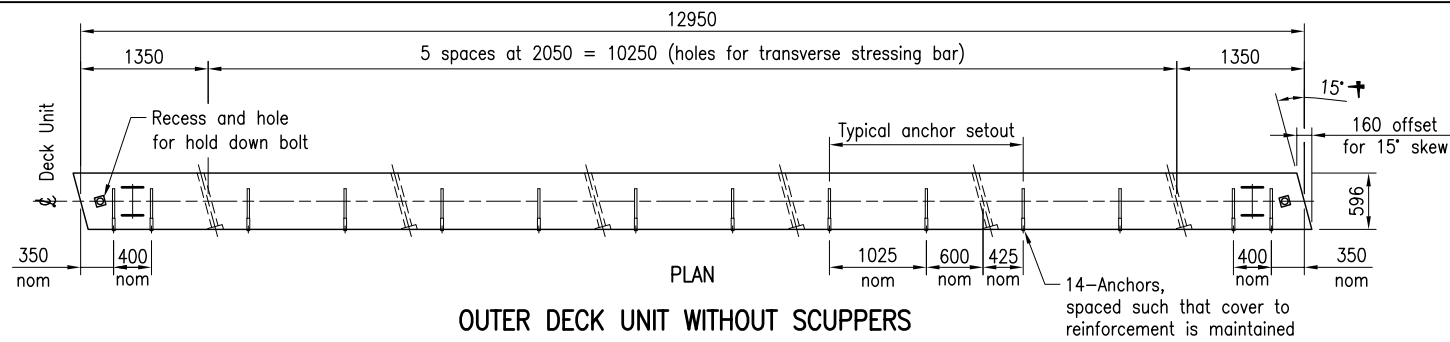
SECTION E
BETWEEN TRANSVERSE STRESSING BAR HOLES



SECTION F
AT END LENGTH

- NOTES:**
1. Refer Drawing 1 for all notes.
 2. Refer Drawing 3 for TYPICAL SECTION and TYPICAL STRAND LAYOUT

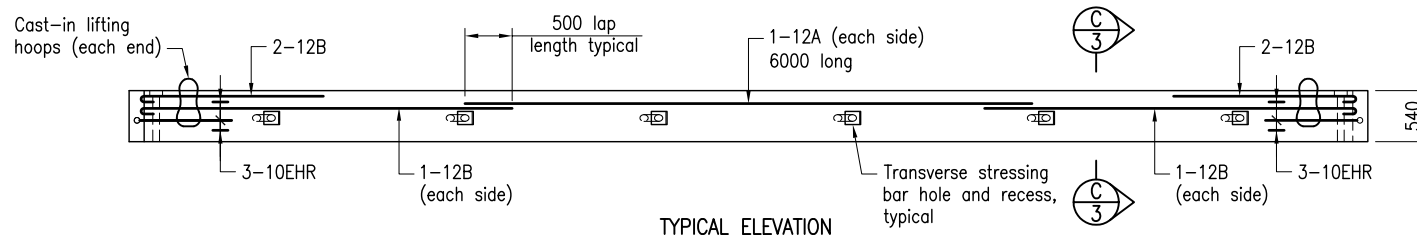
Department of Transport and Main Roads			
PRECAST UNITS			
13m PSC DECK UNIT		A3	Standard Drawing No
DRAWING 4 OF 6 INNER DECK UNIT		Not to Scale	2053 Date 11/18



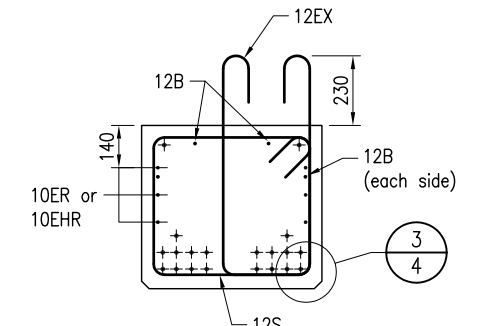
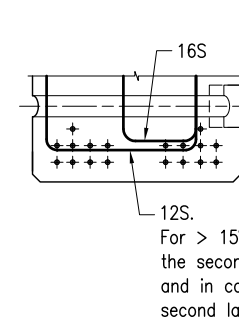
SKEW DIMENSIONS

Skew angle	Offset for skew at ends
0	0
5	50
10	105
15 †	160
20	215
25	275
30	345

† 15° skew is shown in PLAN

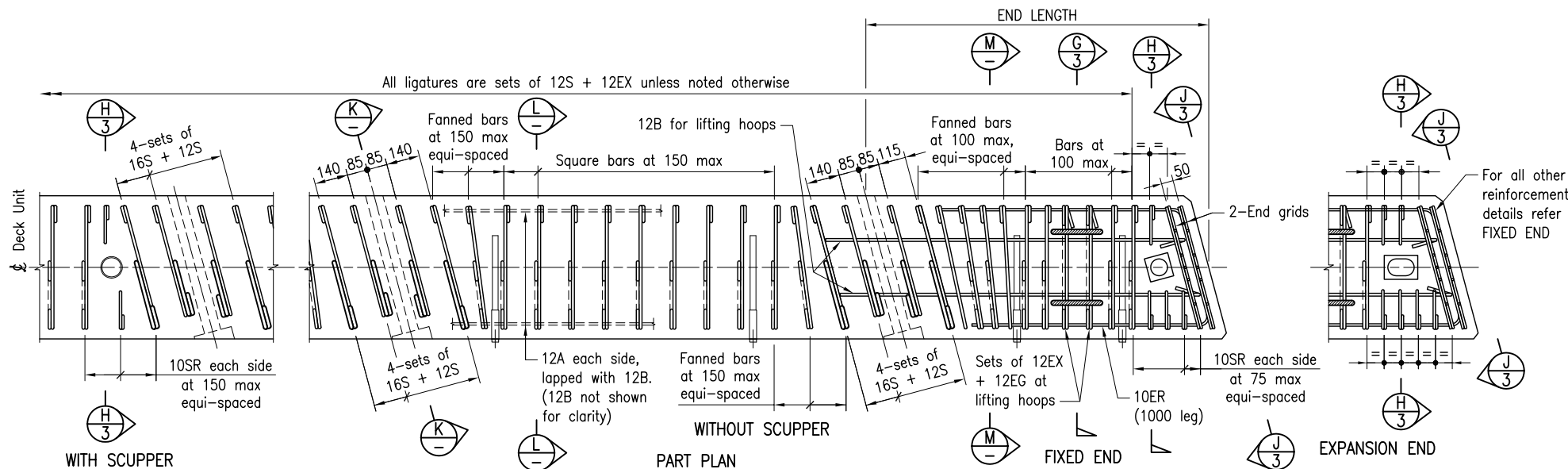


TYPICAL ELEVATION
OUTER DECK UNIT
Deck Unit drawn with 15° skew – refer Table for other skew dimensions

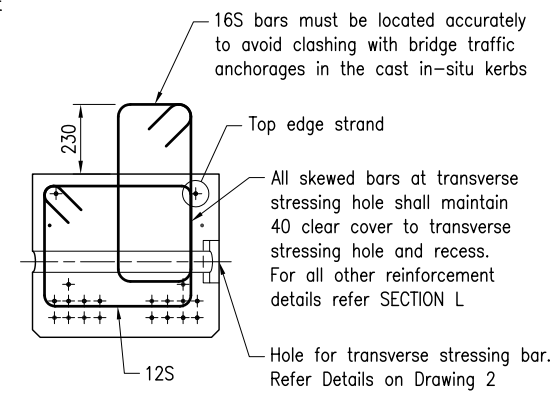


SECTION K AT TRANSVERSE STRESSING BAR HOLES FOR UNITS WITH SKEW ANGLE > 15°

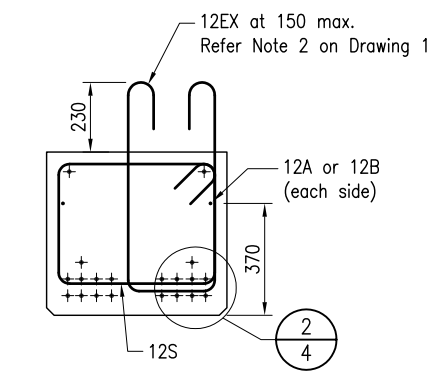
SECTION M AT END LENGTH



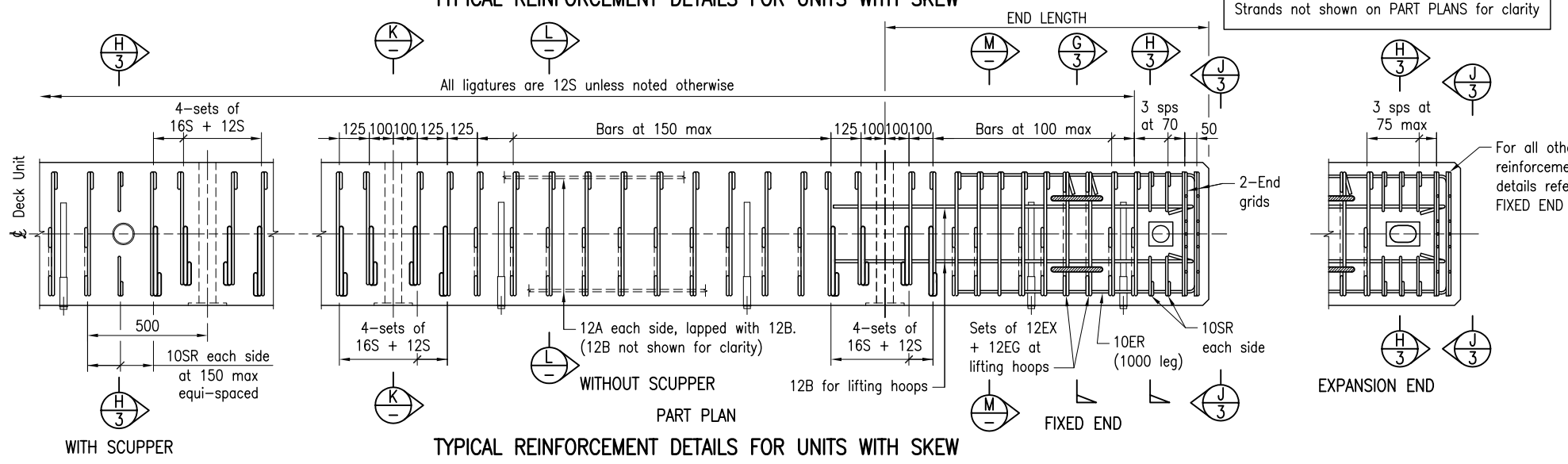
TYPICAL REINFORCEMENT DETAILS FOR UNITS WITH SKEW



SECTION K AT TRANSVERSE STRESSING BAR HOLES FOR UNITS WITH SKEW ANGLE 0° < SKEW ≤ 15°



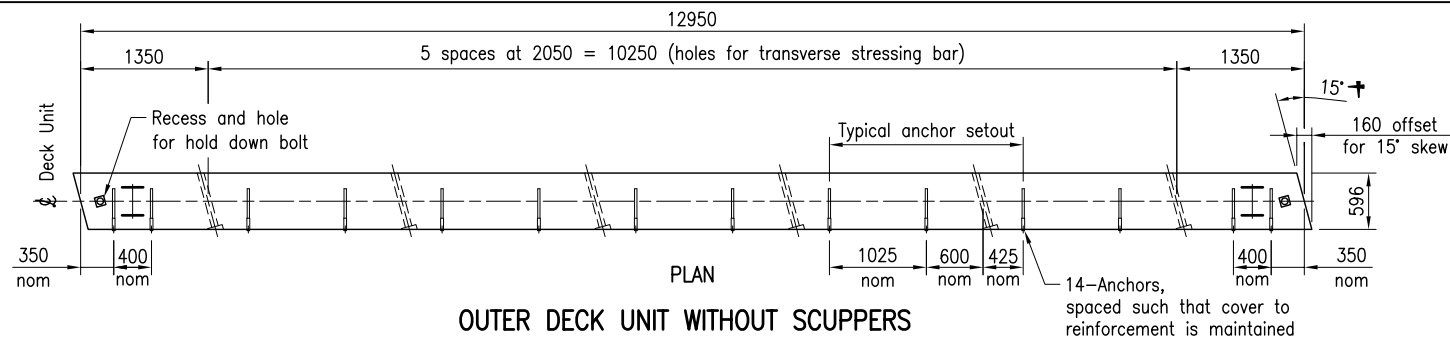
SECTION L BETWEEN TRANSVERSE STRESSING BAR HOLES



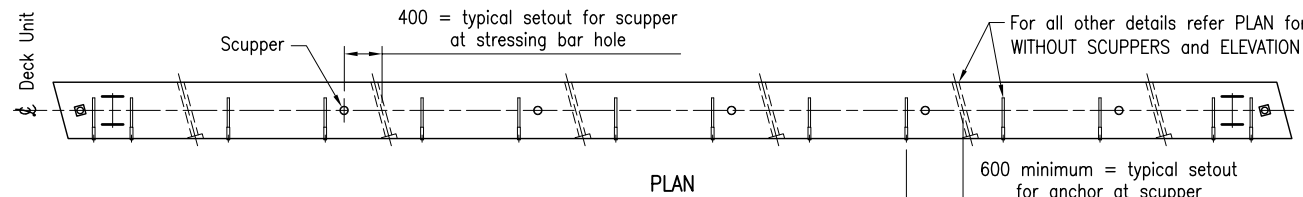
TYPICAL REINFORCEMENT DETAILS FOR UNITS WITH SKEW

- NOTES:**
1. Refer Drawing 1 for all notes.
 2. Refer Drawing 3 for TYPICAL SECTION and TYPICAL STRAND LAYOUT

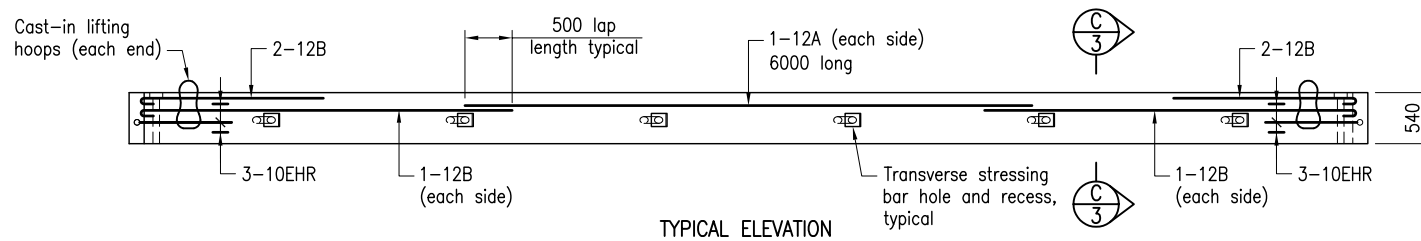
Department of Transport and Main Roads			
PRECAST UNITS			
13m PSC DECK UNIT		A3	Standard Drawing No
DRAWING 5 OF 6		Not to Scale	2053
OUTER DECK UNIT WITH CAST IN-SITU KERB			Date 11/18



OUTER DECK UNIT WITHOUT SCUPPERS



OUTER DECK UNIT WITH SCUPPERS



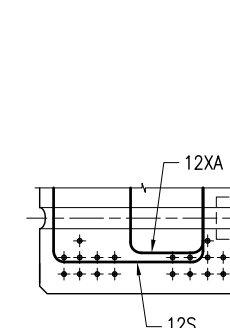
OUTER DECK UNIT

Deck Unit drawn with 15° skew - refer Table for other skew dimensions

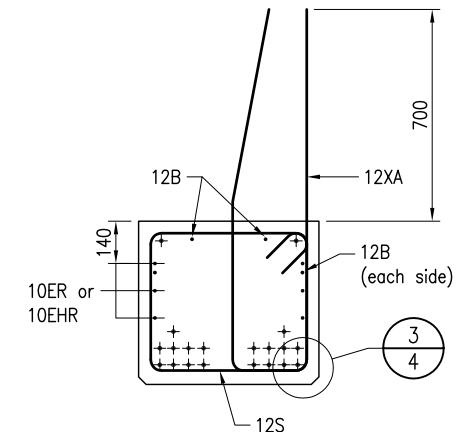
SKIEW DIMENSIONS

Skew angle	Offset for skew at ends
0	0
5	50
10	105
15°	160
20	215
25	275
30	345

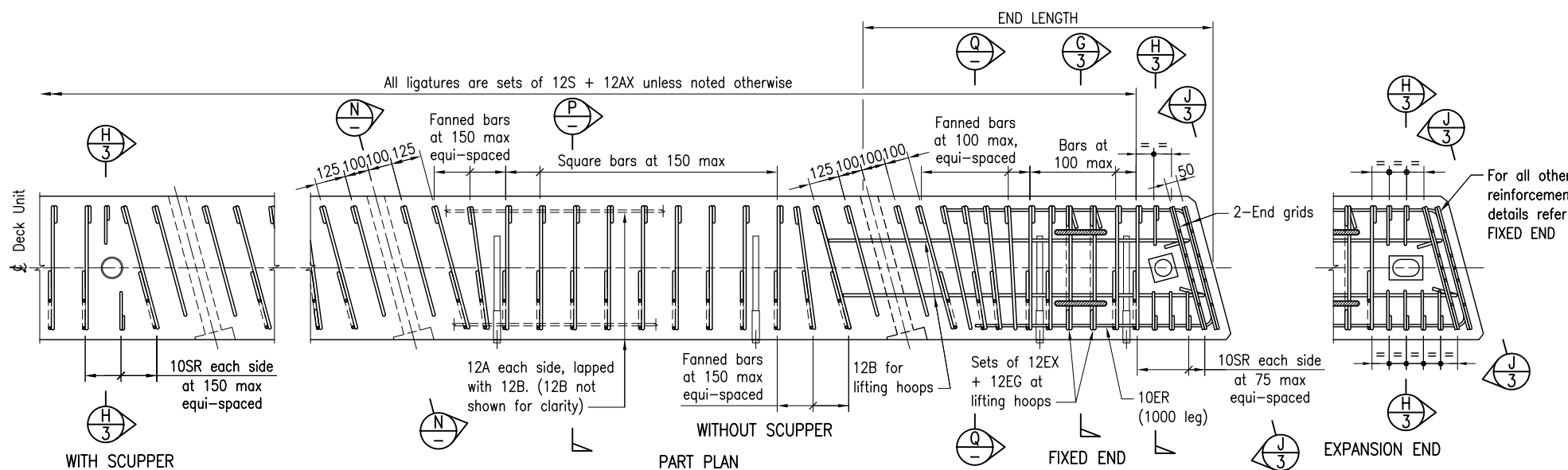
↑ 15° skew is shown in PLAN



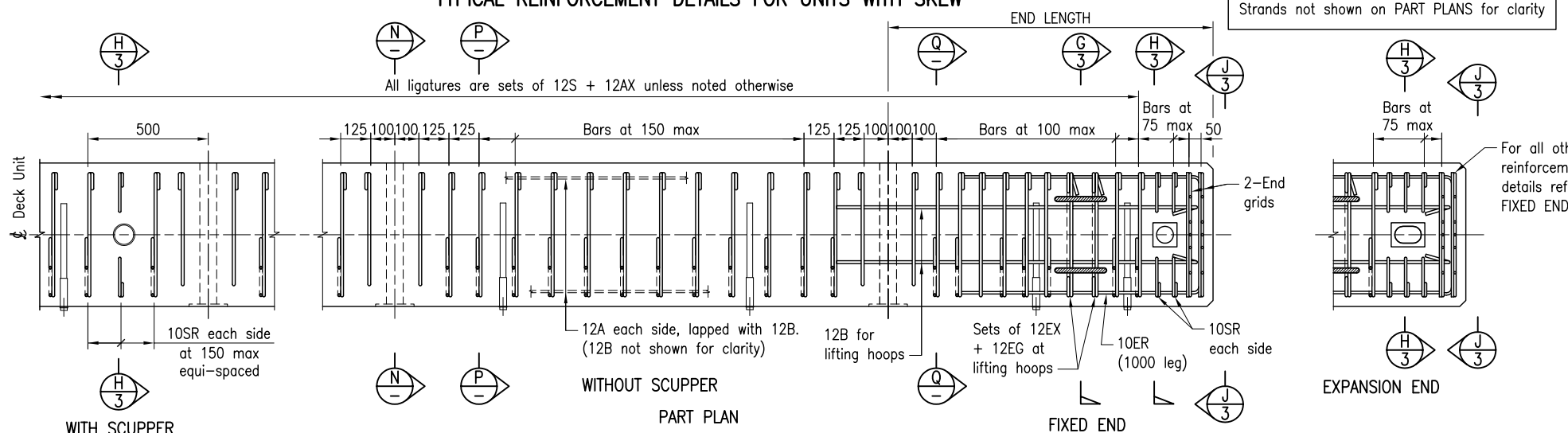
SECTION N AT TRANSVERSE STRESSING BAR HOLES FOR UNITS WITH SKEW ANGLE > 15°



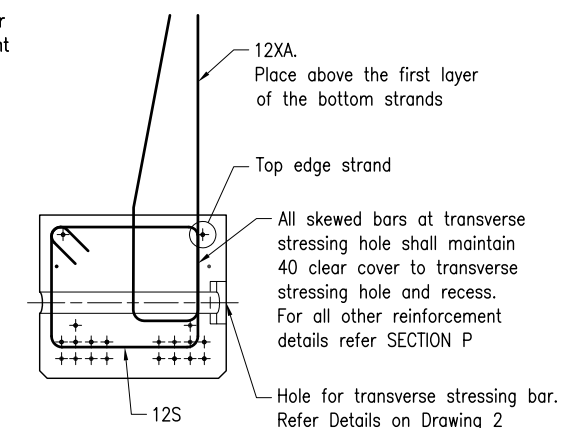
SECTION Q AT END LENGTH



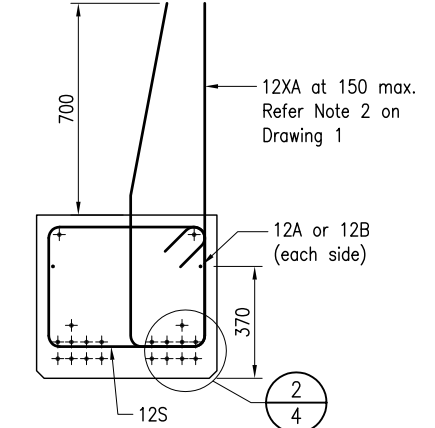
TYPICAL REINFORCEMENT DETAILS FOR UNITS WITH SKEW



TYPICAL REINFORCEMENT DETAILS FOR UNITS WITH SKEW



SECTION N AT TRANSVERSE STRESSING BAR HOLES FOR UNITS WITH SKEW ANGLE 0° < SKEW ≤ 15°



SECTION P BETWEEN TRANSVERSE STRESSING BAR HOLES

NOTES:

1. Refer Drawing 1 for all notes.
2. Refer Drawing 3 for TYPICAL SECTION and TYPICAL STRAND LAYOUT

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PRECAST UNITS			
13m PSC DECK UNIT		A3	Standard Drawing No
DRAWING 6 OF 6		Not to Scale	2053
OUTER DECK UNIT WITH BRIDGE PARAPET			Date 11/18
A	B	C	