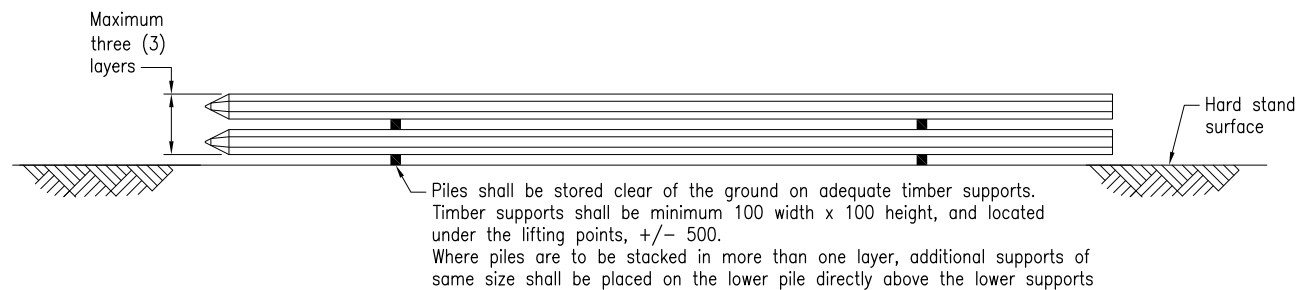


Pile Length  $L \leq 28m$  PSC PILE

LIFTING DIAGRAM



Pile Length  $L \leq 28m$  PSC PILE

STORAGE AT CASTING YARD

CAST-IN ANCHOR/HOOP LIFTING DETAILS

Pile Length	L = #
Cast-in Anchor/Hoop	Part No. #
Working Load Limit (FOS = 4)	#
LIFTING ASSUMPTIONS	
Dynamic Load Factor	1.2 #
Lift Angle	Vertical #
Crane Type	Gantry #

# The above details shall be included on the project drawings

DESIGN CRITERIA NOTES FOR CAST-IN LIFTING ANCHORS AND HOOPS

- C1. WORKING LOAD LIMIT (WLL): The WLL for each cast-in lifting anchor or hoop shall have an equivalent minimum Factor of Safety (FOS) = 4.0.
- C2. APPLIED LOADS ( $W_k$ ) calculated including an allowance for dynamic effects shall not exceed the Working Load Limit (WLL) of the cast-in lifting anchor or hoop.
- C3. All cast-in anchors and lifting hoops shall be designed for the Dynamic Lifting Factors (DLF) specified in MRTS73.
- C4. APPROVED CAST-IN ANCHORS AND HOOPS are published on the TMR Approved Product Index.
- C5. Suppliers of proprietary cast-in anchors and lifting hoops have various Factors of Safety (FOS) specified in their product capacity tables. These tables shall be converted to achieve a minimum FOS = 4.0, for Dynamic Lifting Factors outlined in MRTS73.
- C5. EMBEDMENT LENGTH of the cast-in anchor or lifting hoop shall be in accordance with manufacture's specifications. Minimum cover to bottom of Lifting Hoop shall be in accordance with the required Exposure Classification.

CAST-IN LIFTING ANCHOR NOTES:

- A1. RECESS: Anchor recess shall be hemispherical with maximum diameter 118mm. Recesses shall be sized to allow Proprietary Lifting Clutches to lock onto the Lifting Anchor, in accordance with manufacture's specifications.
- A2. APPROVED RECESS FORMER PRODUCT: Approved Products are published on the TMR Approved Product Index.
- A3. RECESS FINISH: After lifting anchor is no longer required, grout fill with approved epoxy resin grout. TMR Approved Epoxy shall be suitable for high impact loads. After grout epoxy is cured, apply two coats of approved non-abrasive surface tolerant epoxy compound to provide a minimum film thickness of 0.3mm dry or 0.6mm wet.

CAST-IN LIFTING HOOP NOTES:

- H1. LIFTING shall be with minimum pin diameter as per manufacturer's specifications.
- H2. HOOP FINISH: After lifting hoop is no longer required, cut-off flush with top of precast pile, apply two coats of approved non-abrasive surface tolerant epoxy compound to provide a minimum film thickness of 0.3mm dry or 0.6mm wet.

NOTES:

1. PILES shall be manufactured to MRTS73.
2. EARTHQUAKE classification BEDC-1.
3. CONCRETE shall be in accordance with MRTS70. Concrete S50/20. Strength at transfer 35MPa minimum. Exposure classification B2.
4. REINFORCEMENT PATTERN: Headbar Types shall alternate and be placed adjacent to strands while maintaining as uniform a spacing as possible. Refer to HEADBAR SCHEDULE on DRAWING 2 for headbar details. In the calculation of ultimate strength, the strands that are in contact with headbars are to be ignored for the entire contact length.
5. REINFORCEMENT AND STRAND SUPPORT: Multiple spacers are permitted to be used at each support location in the following zones to maintain the correct strand pattern and reinforcement arrangement.
  - Y Zone with headbars: Spacers Type 1 shall be used to maintain the correct strand pattern and headbar formation during casting. Spacer Type 1 shall be located at 4000 maximum centres to form headbar cage. Minimum 2 off Spacer Type 1 shall be used. Spacer Type 1 are permitted to be substituted with Type 2. Where substitutions are made Headbars shall be tied to the inside of the Type 2 spacers. Strand and headbar bundle to be tied to main helix, at maximum 900 centres, typical.
  - # Zone where there are no headbars: Spacers Type 2 shall be used to maintain the correct strand pattern formation during casting. Minimum 1 off Spacer Type 2 shall be used, located 4000 from the pile toe. Additional Spacers shall be placed at 4000 maximum centres to the zone with headbars.
6. STRANDS shall be to MRTS73 and to AS/NZS 4672.1-7 wire ordinary-12.7-1870-Relax 2 and testing requirements to AS/NZS 4672.2. Pretensioning force at stressing = 147kN per strand. Ends of strands at toe only shall be coated with three coats minimum of surface tolerant epoxy after grinding flush with concrete surface. Each coat to provide a minimum 0.3mm dry film thickness.
7. REINFORCING STEEL shall be in accordance with MRTS71 and AS/NZS 4671. Deformed bar Grade D500N. Round bar Grade R250N. Deformed wire Grade D500L. Round wire Grade R500L. All carbon reinforcing steel shall be ACRS certified. Minimum cover to Main Helix to be 50 unless shown otherwise.
8. HELIX: RW7.6 dia deformed wire Helix is valid for applications where the design ultimate axial load is limited to less than or equal to half the axial ultimate capacity. For other design axial loads, the fit for purpose requirements shall be included on the project drawings. The Helix may be spliced within its length. If splices are required, each segment shall be terminated with 1.5 flat turns, Lapped and tied. Helix splices are permitted to be located within a Lifting Hoop.
9. PILE CAST-IN LIFTING ANCHORS AND HOOPS shall be in accordance with the notes and details on this drawing. Cast-in lifting anchors shall be hot dip galvanised to AS 1214.
10. GREY IRON CASTING Grade H-187 to AS 1830.
11. STEELWORK shall be fabricated to MRTS78. Bolts Class 4.6 to AS 1111.1.
12. WELDING symbols shall be to AS 1101.3. Welding of bar splices and tack welding for location purposes shall be to AS/NZS 1554.3. Welding consumables shall be controlled hydrogen type G49X to AS/NZS ISO 14341 or T49X to AS/NZS ISO 17632.
13. DIMENSIONS are in millimetres unless noted otherwise.

ASSOCIATED DEPARTMENTAL DOCUMENTS:

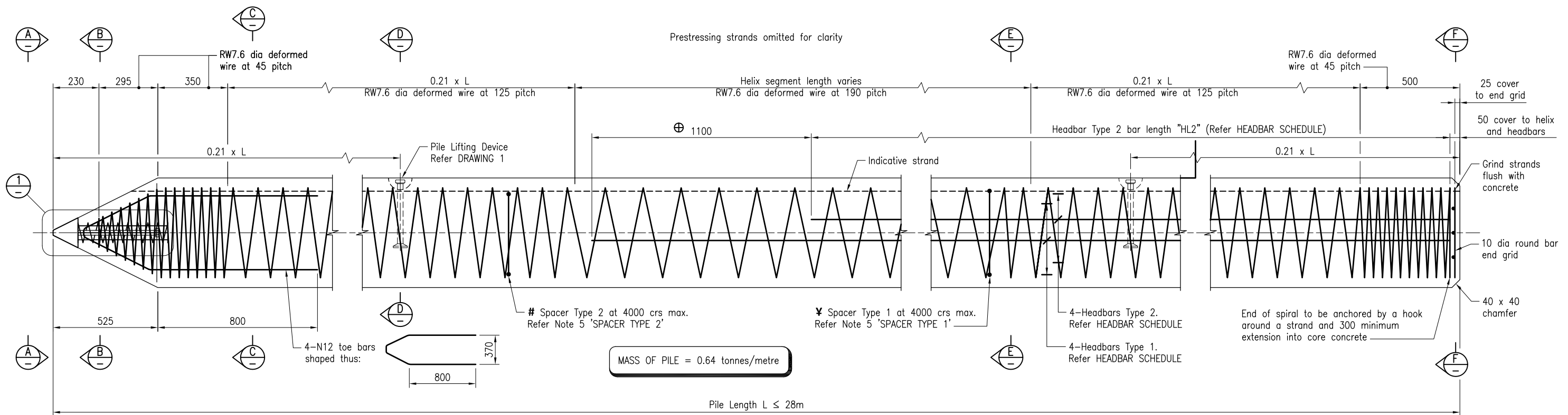
Design Criteria for Bridges and Other Structures

REFERENCED DOCUMENTS:

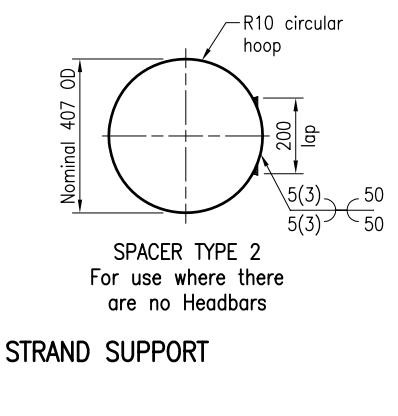
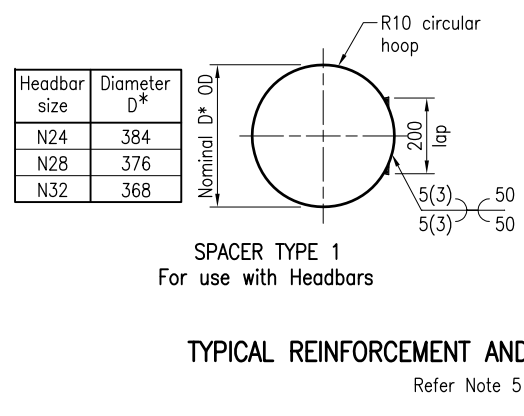
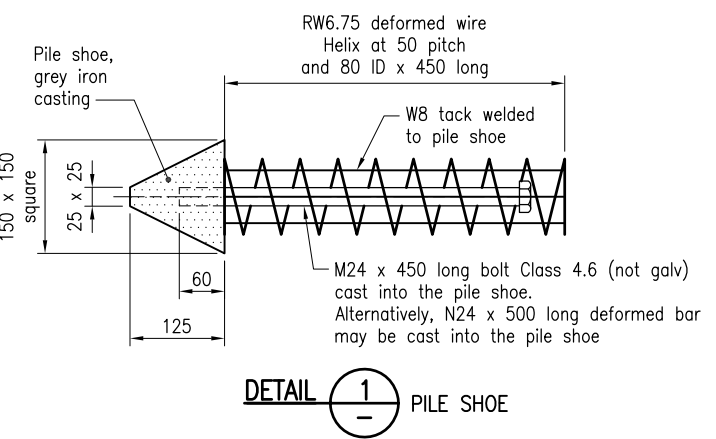
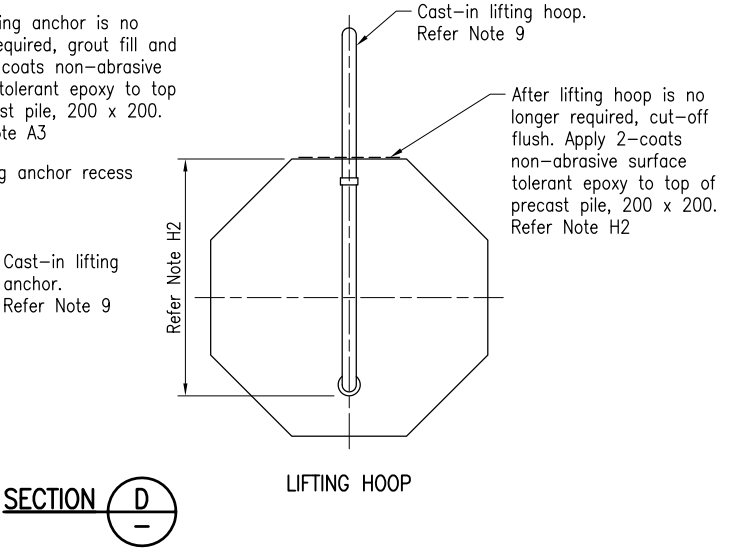
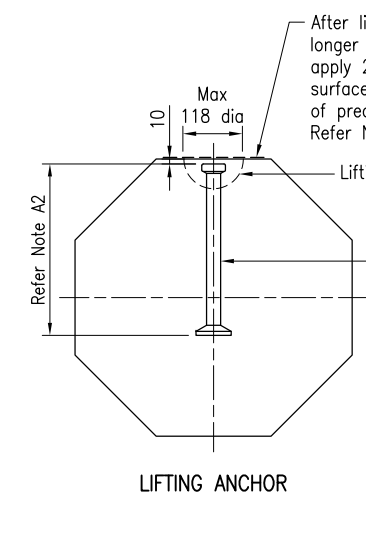
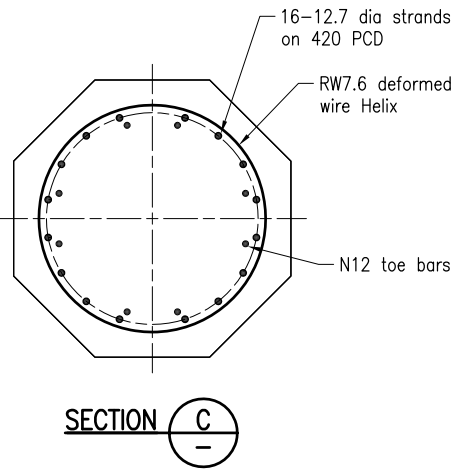
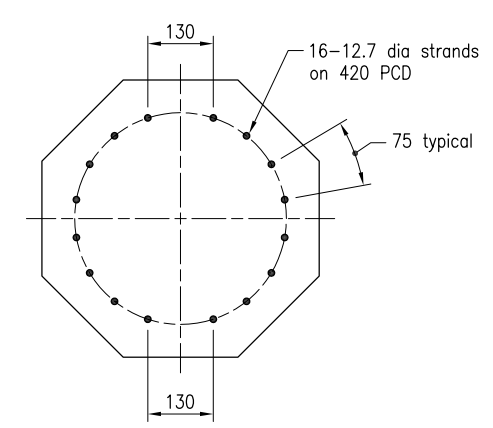
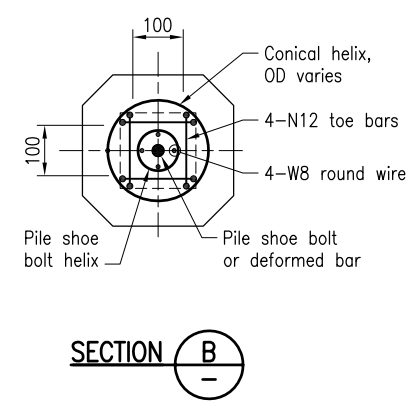
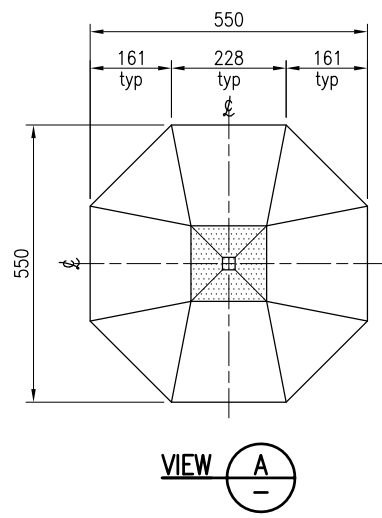
Departmental Specifications:

- MRTS65 Precast Prestressed Concrete Piles
- MRTS70 Concrete
- MRTS73 Manufacture of Prestressed Concrete Members and Stressing Units
- MRTS78 Fabrication of Structural Steelwork

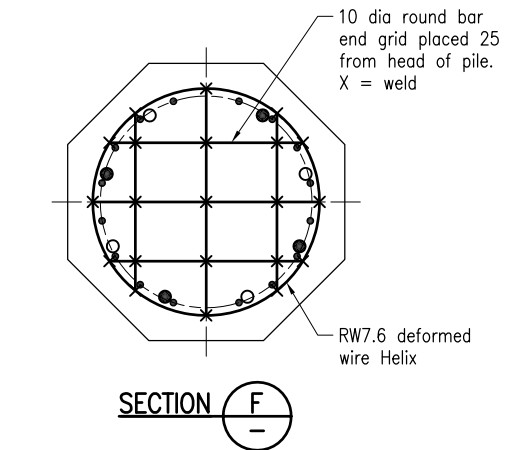
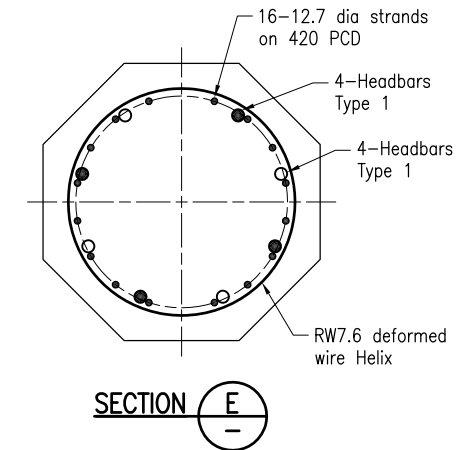
Department of Transport and Main Roads			
550 OCTAGONAL PSC PILES			
EARTHQUAKE CLASSIFICATION BEDC-1		A3	Standard Drawing No
EXPOSURE CLASSIFICATION B2		Not to Scale	2021
DRAWING 1 OF 2		A	Date 5/16



**TYPICAL LONGITUDINAL ELEVATION  
PSC PILE**



**TYPICAL REINFORCEMENT AND STRAND SUPPORT**  
Refer Note 5



**PILE SCHEDULE**

PILE LOCATION	PILE LENGTH (m)	MASS (t)	No OFF	TOTAL MASS (t)

**HEADBAR SCHEDULE**

Headbars					
Type 1		Type 2			
No OFF	Size	Length	No OFF	Size	Length
4	Nxx	L1	4	Nxx	L2

**HEADBAR NOTES:**  
Nxx denotes Bar size  
LH2 = LH1 - 1100 ⊕  
The headbar length and size shall be included on the project drawings

Department of Transport and Main Roads			
<b>550 OCTAGONAL PSC PILES</b>			
EARTHQUAKE CLASSIFICATION BEDC-1 EXPOSURE CLASSIFICATION B2		A3 Not to Scale A	Standard Drawing No <b>2021</b> Date 5/16
DRAWING 2 OF 2			