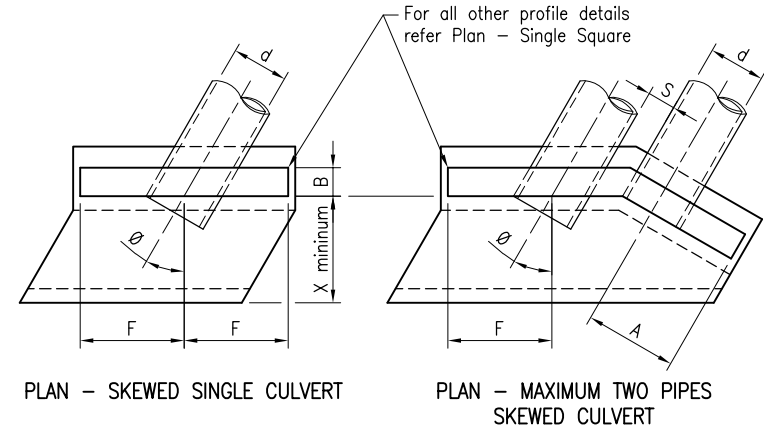
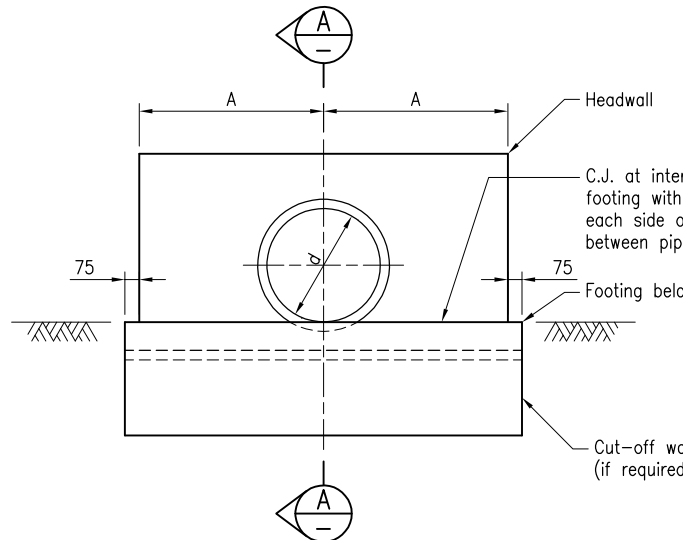
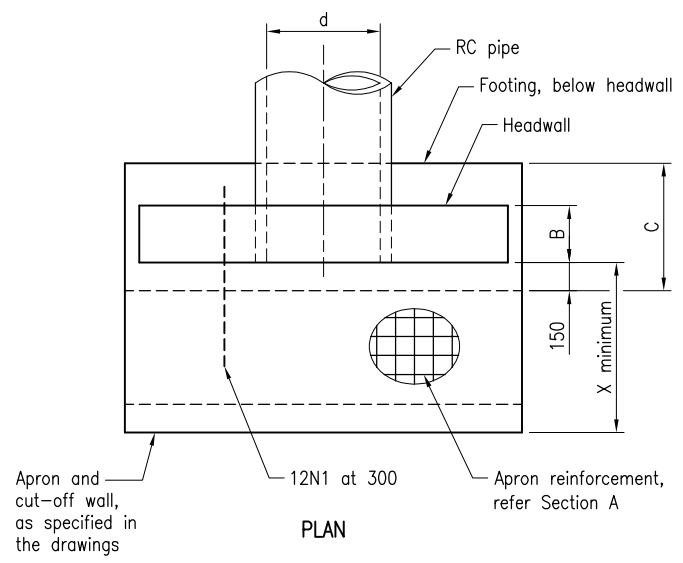


The purpose of this Standard Drawing is to provide typical standard details that shall be used within the limitations specified in the drawing and accordance with the following:

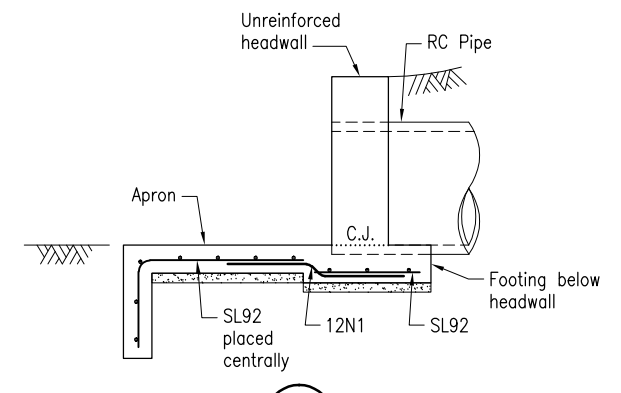
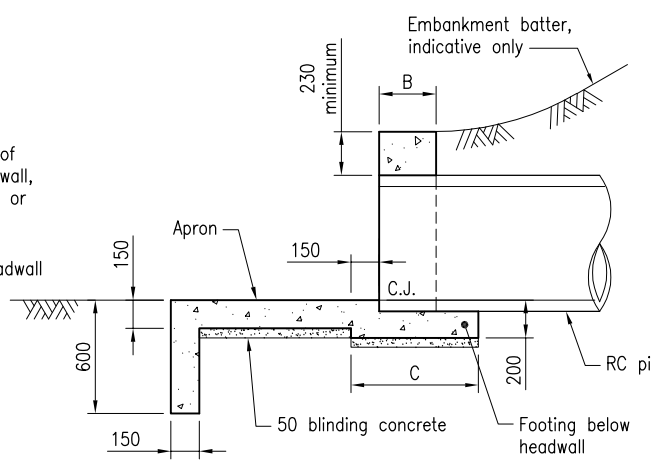
1. The use of the standard details shall be assessed by the project designer in respect of specific project geometric, appropriate foundation and scour conditions.
2. If the field investigation undertaken by the Project Engineer determines that the foundation bearing capacity is not adequate, the Project Engineer shall engage a RPEQ Geotechnical engineer to develop a specific project solution to ensure the adequate bearing capacity. These design solutions shall be reviewed and accepted by E&T Structures and Geotechnical sections.
3. When there is uncertainty regarding the application of the standard details on this drawing for a specific project, advice shall be sought from E&T Structures.
4. The details specific to the project shall be shown on the project specific drawings.

TABLE OF DIMENSIONS

Dim	Nominal internal diameter, d				
	375	450	525	600	675
A	600	725	850	975	1100
B	250	250	300	300	300
C	525	525	675	675	675
F	700	825	950	1100	1250
X	565	675	790	900	1015
S	Spacing for multiple pipes "S" is as specified on Standard Drawing 1359				



FOR MAXIMUM TWO PIPES

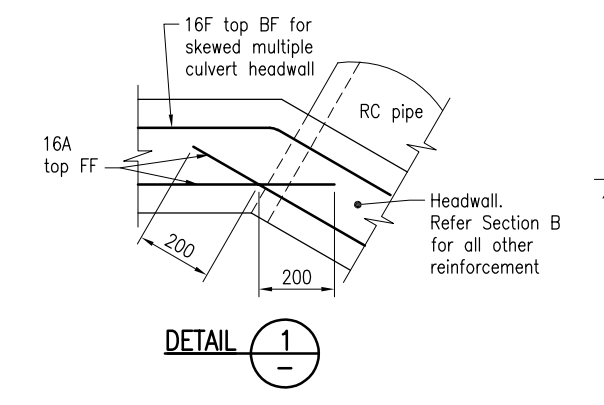
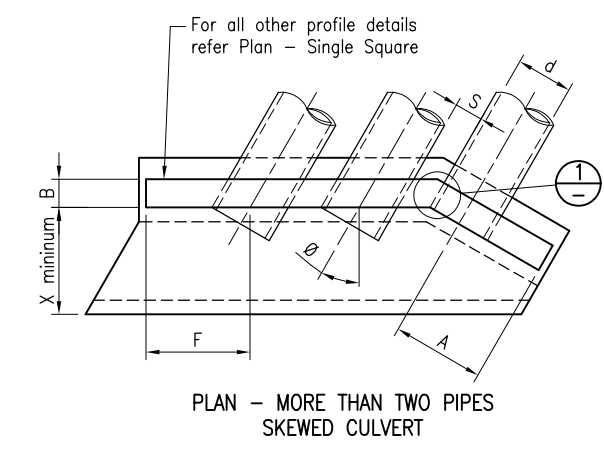
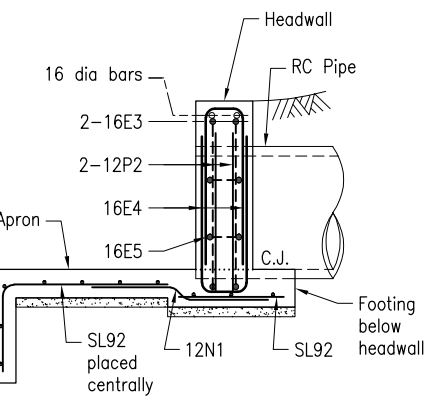
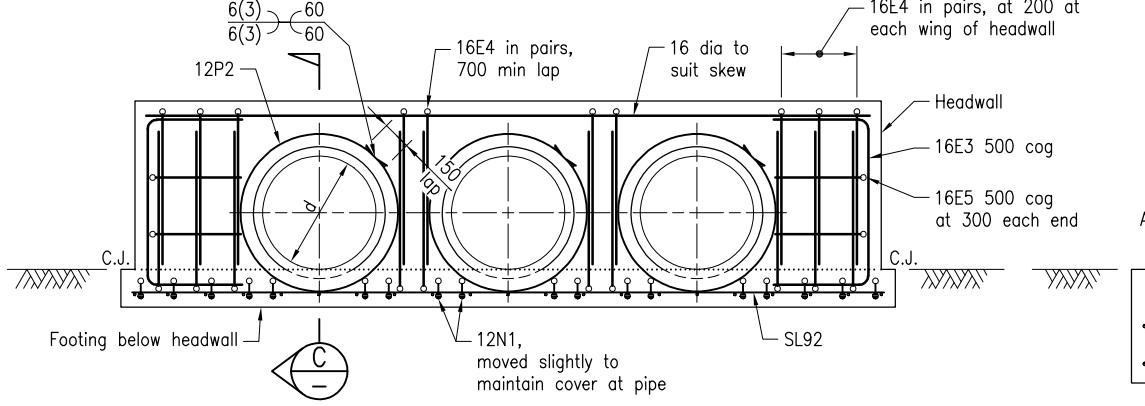
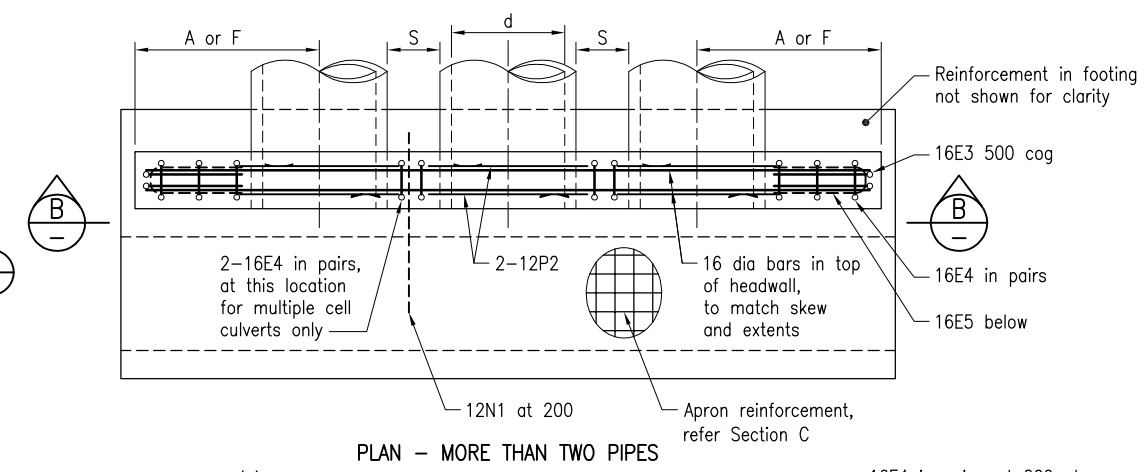


NOTES:

1. PIPE CULVERT END STRUCTURES shall be constructed in accordance with MRTS03. The purpose of this drawing is to detail headwalls and aprons for culverts with pipe diameter 375 to 675. Unreinforced headwall detail shall be used for maximum 2 pipe arrangement. For more than 2 pipe installation, reinforced headwall detail shall be used. For construction details of end structures for pipe culverts with diameter 750 to 2400 refer to Standard Drawing 1304. Refer Standard Drawing 1359 and MRTS03 for details of culvert installation and earthworks.
2. Required minimum foundation bearing capacity is 100 kPa ($\phi_g R_{u,g}$ to AS 5100.3).
3. CONCRETE shall be in accordance with MRTS70. Unreinforced concrete headwall shall be N20/20. Reinforced concrete headwall, apron and footing shall be S40/20. Minimum exposure classification B2 to AS 5100. Minimum cover to reinforcement shall be 60 or 70 against blinding concrete. Blinding concrete shall be N20/20.
4. REINFORCING STEEL shall be read in conjunction with Standard Drawings 1043 and 1044, and shall be in accordance with MRTS71 and AS/NZS 4671. Deformed bars Grade D500N. Mesh Grade D500L.
5. TACK WELDING to reinforcement for location purposes to AS/NZS 1554.3. Welding consumables shall be controlled hydrogen type: G49X to AS/NZS ISO 14341-B or T49X to AS/NZS ISO 17632-B.
6. PROJECT-SPECIFIC INFORMATION TO BE SHOWN ON THE DRAWINGS:
 - Skew angle θ
 - Steel schedule
7. DIMENSIONS are in millimetres.

ASSOCIATED DEPARTMENTAL DOCUMENTS:
Design Criteria for Bridges and Other Structures
NDRRA Design Guidelines

REFERENCED DOCUMENTS:
Departmental Standard Drawings:
1044 Reinforcing Steel - Lap Lengths
1304 Pipe Culverts - Wingwalls, Headwall and Apron for Pipe Diameter 750 to 2400
1359 Culverts - Installation, Bedding and Filling/backfilling against/over Culverts
Departmental Specifications:
MRTS03 Drainage, Retaining Structures and Protective Treatments
MRTS70 Concrete
MRTS71 Reinforcing Steel



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PIPE CULVERTS		
HEADWALL AND APRON FOR PIPE DIAMETER 375 to 675		Standard Drawing No 1305 Date 3/2020
A3	Not to Scale	
A	B	C