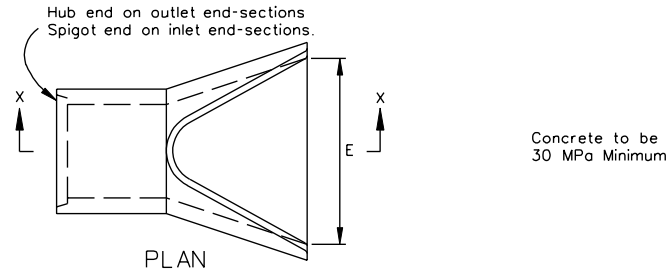
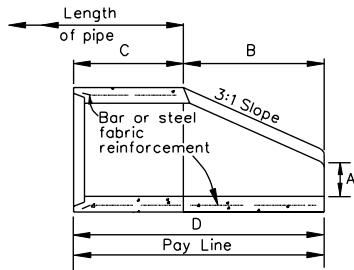


REVISED ON 7/01

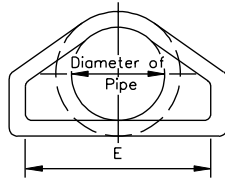
END-SECTION 300 mm - 1500 mm PIPE



Concrete to be 30 MPa Minimum



SECTION X-X

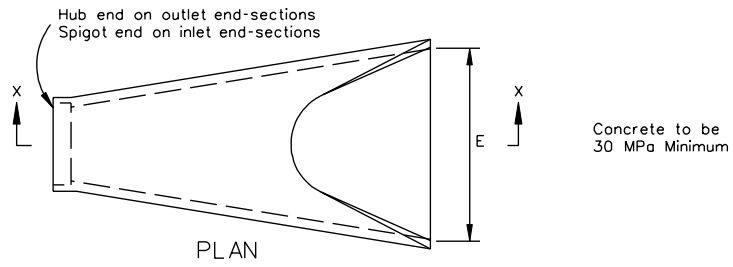


END VIEW

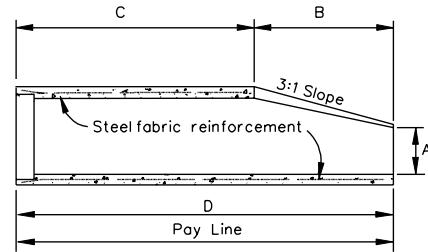
END SECTION DIMENSIONS					
PIPE DIAMETER	A	B	C	D	E
300	100	605	605	1210	600
375	150	680	530	1210	760
450	220	680	530	1210	910
600	240	1090	760	1850	1210
750	300	1370	500	1870	1520
900	380	1600	880	2480	1820
1050	530	1600	880	2480	1980
1200	600	1820	660	2480	2130
1350	680	1650	840	2490	2280
1500	880	1520	990	2510	2430

ALTERNATE END-SECTION 300 mm - 1500 mm PIPE

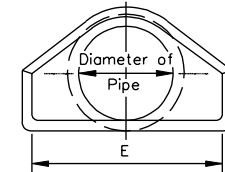
ES-1



Concrete to be 30 MPa Minimum

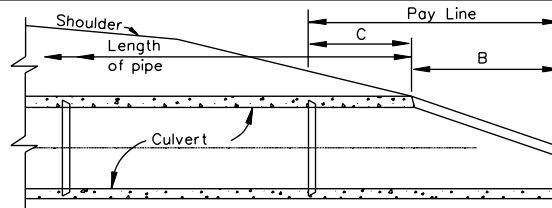


SECTION X-X



END VIEW

END SECTION DIMENSIONS					
PIPE DIAMETER	A	B	C	D	E
300	100	610	1240	1850	600
375	150	685	1165	1850	760
450	220	685	1165	1850	910
525	220	885	965	1850	1060
600	250	1090	810	1900	1210
675	260	1215	645	1860	1370
750	300	1370	500	1870	1520
825	340	1485	995	2480	1670
900	380	1600	880	2480	1820
1050	530	1600	880	2480	1980
1200	600	1820	660	2480	2130
1350	680	1650	890	2540	2280
1500	760	1520	990	2510	2430



SLOPE DETAIL

Notes:

Pipe lengths shown on plans are based on End-Section design shown on the left. If the contractor elects to use the alternate design shown on the right, lengths will be reduced by the difference in dimension "D".

SPECIFICATION REFERENCE

302

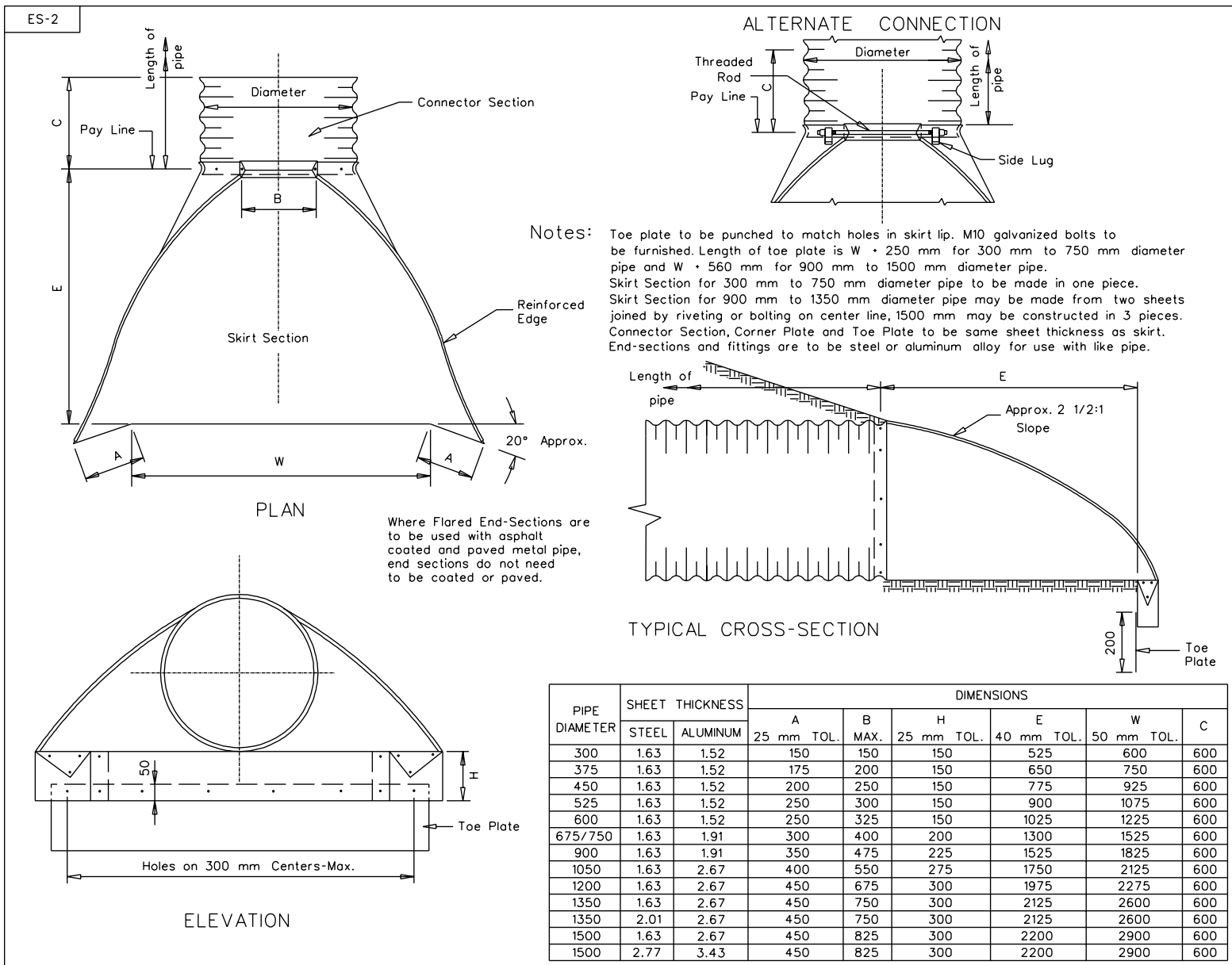
FLARED END-SECTION FOR CONCRETE PIPE CULVERTS

VIRGINIA DEPARTMENT OF TRANSPORTATION

UNLESS OTHERWISE NOTED, ALL DIMENSIONS ON THIS SHEET ARE IN MILLIMETERS

102.01

REVISED ON 7/01



PIPE DIAMETER	SHEET THICKNESS		DIMENSIONS					
	STEEL	ALUMINUM	A	B	H	E	W	C
			25 mm TOL.	MAX.	25 mm TOL.	40 mm TOL.	50 mm TOL.	
300	1.63	1.52	150	150	150	525	600	600
375	1.63	1.52	175	200	150	650	750	600
450	1.63	1.52	200	250	150	775	925	600
525	1.63	1.52	250	300	150	900	1075	600
600	1.63	1.52	250	325	150	1025	1225	600
675/750	1.63	1.91	300	400	200	1300	1525	600
900	1.63	1.91	350	475	225	1525	1825	600
1050	1.63	2.67	400	550	275	1750	2125	600
1200	1.63	2.67	450	675	300	1975	2275	600
1350	1.63	2.67	450	750	300	2125	2600	600
1350	2.01	2.67	450	750	300	2125	2600	600
1500	1.63	2.67	450	825	300	2200	2900	600
1500	2.77	3.43	450	825	300	2200	2900	600

FLARED END-SECTION FOR 300 mm - 1500 mm METAL PIPE CULVERTS

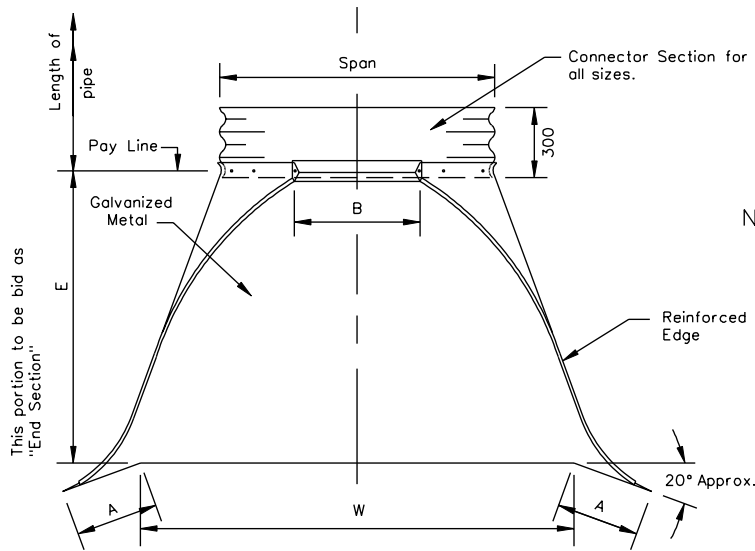
VIRGINIA DEPARTMENT OF TRANSPORTATION

102.02 UNLESS OTHERWISE NOTED, ALL DIMENSIONS ON THIS SHEET ARE IN MILLIMETERS

SPECIFICATION REFERENCE  
302

REVISED ON 8/97

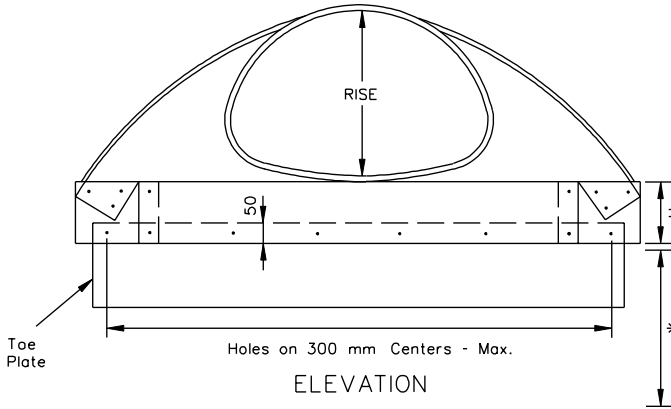
ES-3



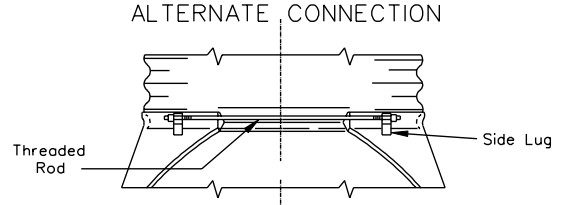
PLAN

Where Flared End - Sections are to be used with asphalt coated and paved metal pipe, end sections do not need to be coated or paved.

\* Indicates pipe arches for which dimensions for either corrugation may be used within fill height limitations.



ELEVATION



Notes: Toe plate to be punched to match holes in skirt lip.

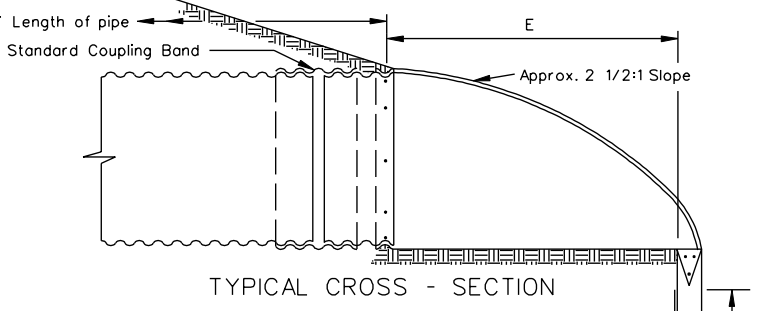
M10 galvanized bolts to be furnished. Length of toe plate is  $W + 250$  mm with rise of 340 mm to 740 mm included and  $W + 450$  mm min. with rise of 840 mm to 1200 mm included.

Skirt Section with Rise of 340 mm to 610 mm included to be made in one piece.

Skirt Section with Rise of 740 mm to 970 mm included may be made from two sheets joined by riveting or bolting on center line.

Skirt Section with Rise of 1100 mm to 1200 mm included may be made from three sheets joined by riveting or bolting at equal distances from center line.

Connector Section, Corner Plate and Toe Plate to be same sheet thickness as skirt and same type of material as culvert.



TYPICAL CROSS - SECTION

PIPE-ARCH DIMENSIONS											
75x25 and 125x25 CORRUGATIONS			68 x 13 CORRUGATIONS				DIMENSIONS				
SPAN	RISE	SHEET THICKNESS	SPAN	RISE	SHEET THICKNESS		25mm TOL.	25mm MAX.	40mm TOL.	50mm TOL.	
					STEEL	ALUM.					
			450	340	1.63	1.52	100	225	150	475	750
			530	380	1.63	1.52	125	250	150	575	900
			610	460	1.63	1.52	150	275	150	700	1050
			710	510	1.63	1.52	175	350	150	800	1200
			885	610	1.63	1.91	225	400	150	975	1500
1010	790	2.01	1060	740	1.63	2.67	275	425	175	1175	1900
1160	920	2.01	1240	840	2.77	2.67	300	500	225	1350	2150
1340	1050	2.01	1440	970	2.77	2.67	350	550	250	1600	2400
1520	1170	2.01	1620	1100	2.77	2.67	400	575	250	1775	2800
1650	1275	2.01	1800	1200	3.50	3.43	425	600	300	1950	3250

SPECIFICATION REFERENCE
302

FLARED END-SECTION FOR METAL PIPE-ARCHES  
340 mm - 1200 mm RISE

VIRGINIA DEPARTMENT OF TRANSPORTATION

UNLESS OTHERWISE NOTED, ALL DIMENSIONS ON THIS SHEET ARE IN MILLIMETERS

102.03