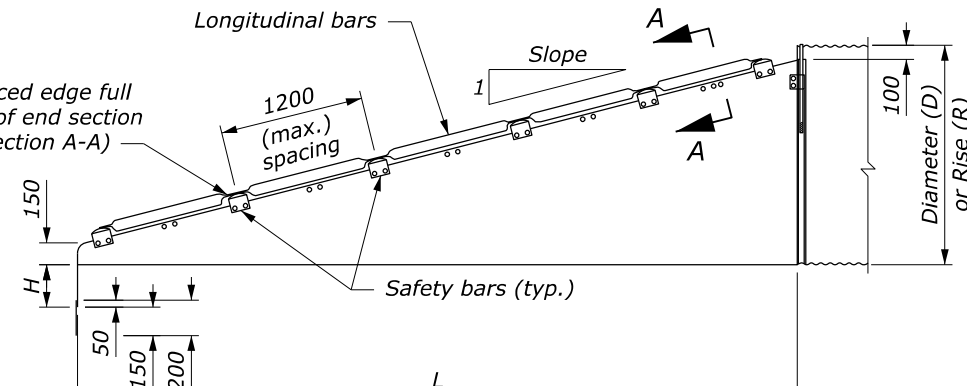
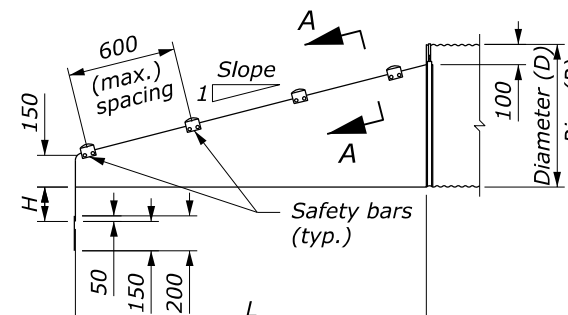


**FRONT VIEW  
ROUND PIPE CULVERT**



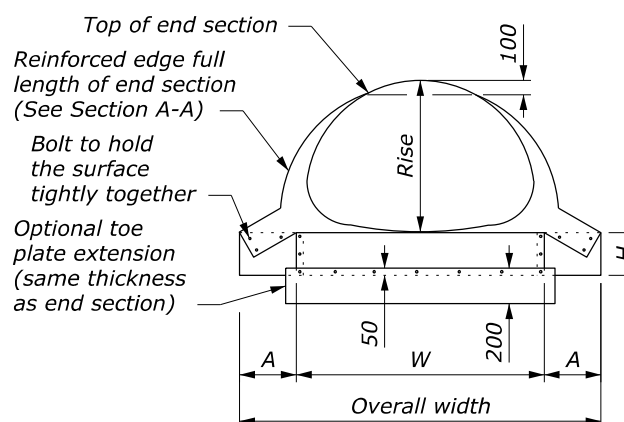
**ELEVATION  
CROSS DRAINAGE END SECTION**



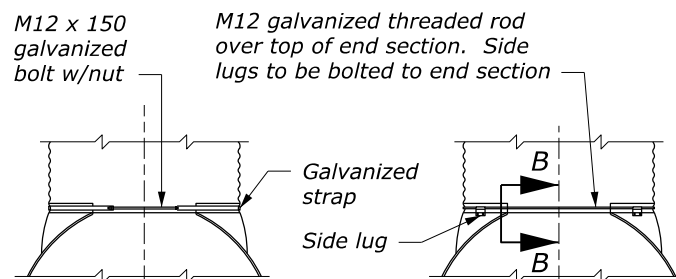
**ELEVATION  
PARALLEL DRAINAGE END SECTION**

**NOTE:**

1. Use end sections on 1V:4H to 1V:6H slopes only. Use toe plate extension where shown on the plans.
2. Fabricate safety and longitudinal bars from steel pipe conforming to ASTM A53 schedule 40 specifications. Galvanize bars hot dipped after fabrication.
3. A longitudinal bar is required for cross drainage end sections when the span is greater than 750 mm. Use additional longitudinal bars if spacing exceeds 750 mm on larger end sections.
4. Safety and longitudinal bars are not required on 750 mm and smaller cross drainage end sections.
5. Safety bars are not required on 450 mm and smaller parallel drainage end sections.
6. 450 mm diameter sleeves have a thickness of 2.01 mm, all others are 2.77 mm.
7. Dimensions without units are millimeters.



**FRONT VIEW  
PIPE ARCH CULVERT**



FOR METAL ROUND PIPES  
375 THRU 600

TYPE #1

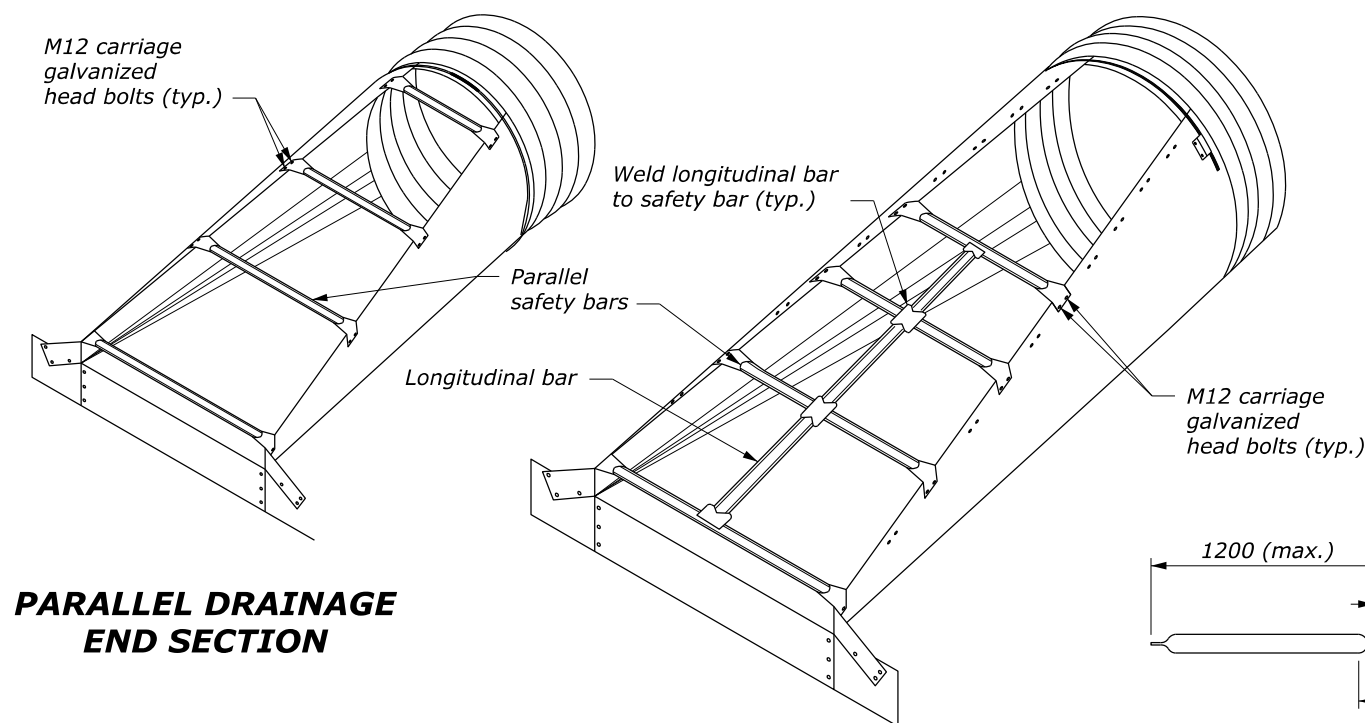
FOR METAL ROUND PIPES 750  
AND LARGER. FOR PIPE ARCHES  
525 X 375 AND LARGER

TYPE #2

FOR ALL SIZES OF CONCRETE  
ROUND OR PIPE ARCHES

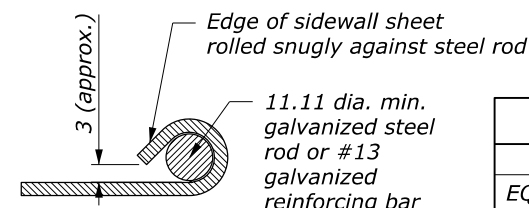
TYPE #3

**CONNECTOR DETAILS**



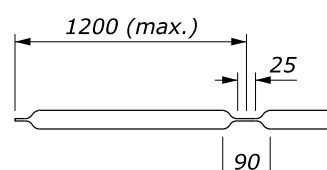
**PARALLEL DRAINAGE  
END SECTION**

**CROSS DRAINAGE END SECTION**

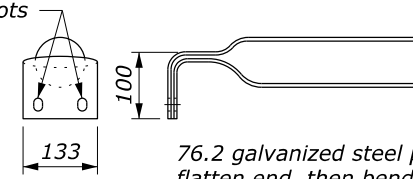


SECTION A-A

SECTION B-B



LONGITUDINAL DRAINAGE BAR



PARALLEL BARS

**SAFETY BAR DETAILS**

<b>METAL END SECTIONS FOR ROUND PIPE CULVERT</b>								
PIPE SIZE Ø	METAL THICK (MIN.)	DIMENSIONS						
		A	H	W	OVERALL WIDTH	L		
						Slope=4	Slope=6	
450	1.63	200	150	600	1000	800	1200	
600	1.63	200	150	750	1150	1400	2100	
750	2.77	300	225	900	1500	2000	3000	
900	2.77	300	225	1050	1650	2600	3900	
1050	2.77	400	300	1200	2000	3200	4800	
1200	2.77	400	300	1350	2150	3800	5700	
1350	2.77	400	300	1500	2300	4400	6600	
1500	2.77	400	300	1650	2450	5000	7500	

<b>METAL END SECTIONS FOR PIPE ARCH CULVERT</b>									
EQUIV. Ø	PIPE SIZE		METAL THICK (MIN.)	DIMENSIONS					
	SPAN	RISE		A	H	W	OVERALL WIDTH	L	
								Slope=4	Slope=6
450	525	375	1.63	200	150	675	1075	500	750
600	700	500	1.63	200	150	850	1250	1000	1500
750	875	600	2.77	300	225	1025	1625	1400	2100
900	1050	725	2.77	300	225	1200	1800	1900	2850
1050	1225	825	2.77	400	300	1375	2175	2300	3450
1200	1425	950	2.77	400	300	1575	2375	2800	4200
1350	1600	1075	2.77	400	300	1750	2550	3300	4950
1500	1775	1175	2.77	400	300	1925	2725	3700	5550
1800	2075	1425	2.77	400	300	2225	3025	4700	7050

U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION  
OFFICE OF FEDERAL LANDS HIGHWAY

METRIC FLH STANDARD

**METAL END SECTIONS  
WITH SAFETY BARS**

STANDARD APPROVED FOR USE 3/1996  
REVISED: 5/1997 6/2005  
DRAFT: 1/2016

STANDARD M602-9

NO SCALE