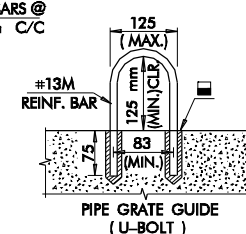
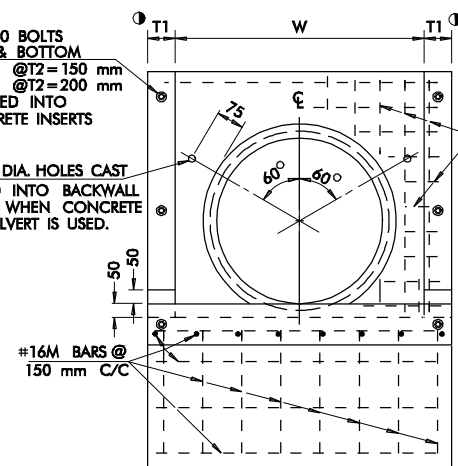
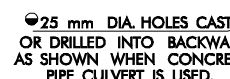
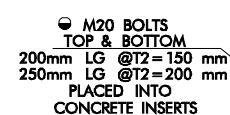
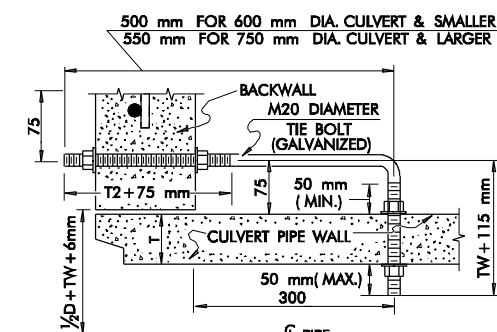
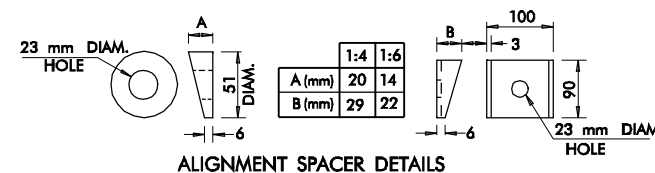
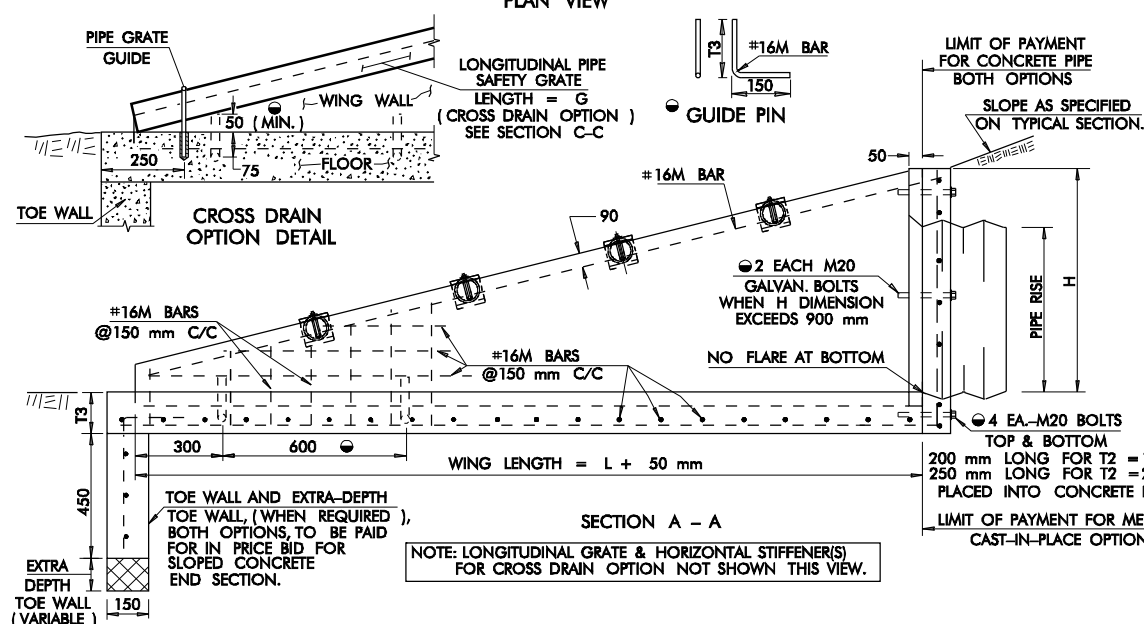
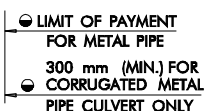
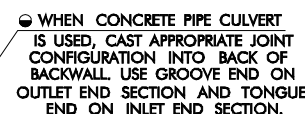
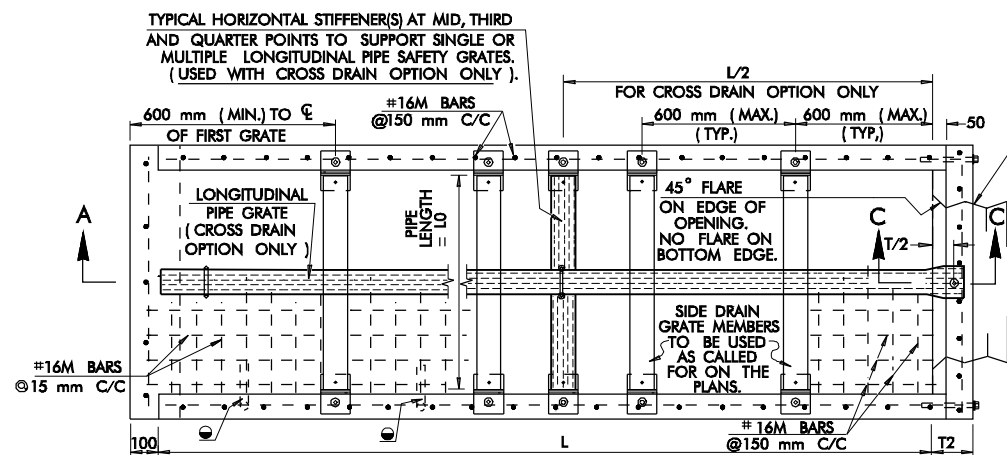
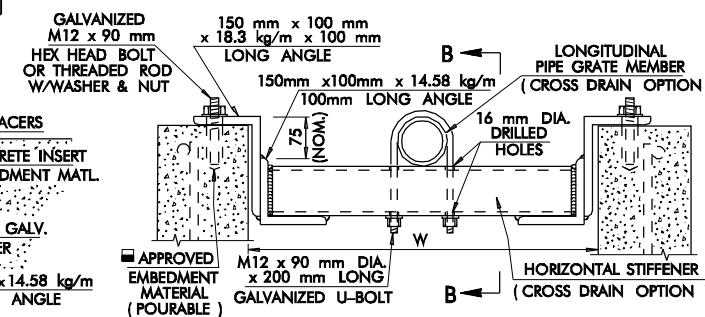
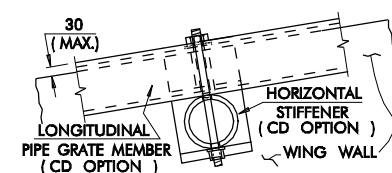
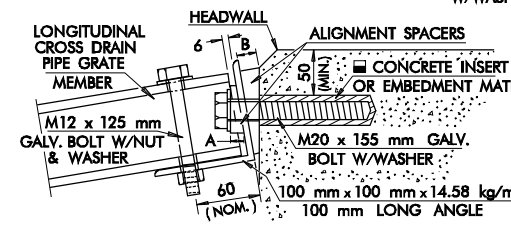
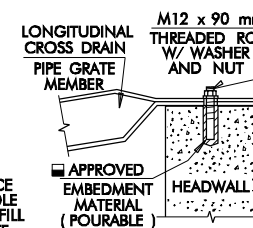


S. C. E. S. END SECTION TYPES		ROUND CULV. SIZE (mm)	END SECTION DIMENSIONS														SUMMARY-QUANTITIES						
																	1:4 SLOPE			1:6 SLOPE			
			W (mm)	T1 (mm)	T2 (mm)	T3 (mm)	H (mm)	L0 (mm)	1:4 SLOPE						1:6 SLOPE			SCES TYPE	CLASS A CONC. (m³)	REINF. STEEL (kg)	SCES TYPE	CLASS A CONC. (m³)	REINF. STEEL (kg)
									▲	▼	L(mm)	G(mm)	▣	▼	L(mm)	G(mm)	▣						
A4	A6	450	915	100	150	150	610	855	1	-	2030	2135	4	-	3050	3350	6	A4	0.67	152.0	A6	0.91	201.0
B4	B6	600	915	100	150	150	815	855	1	1	2845	3109	6	1	4270	4570	8	B4	0.94	210.9	B6	1.36	282.0
C4	C6	750	1220	100	200	200	965	1160	1	1	4265	4520	8	2	5180	5520	9	C4	2.03	328.0	C6	2.37	391.0
D4	D6	900	1220	150	200	200	1170	1160	1	1	4265	4570	8	2	6400	6750	11	D4	2.13	352.4	D6	3.01	502.0
E4	E6	1050	1830	150	200	200	1525	1770	2	2	5690	6020	10	3	8535	8910	15	E4	4.59	603.3	E6	6.51	834.0
F4	F6	1200	1830	150	200	200	1525	1770	2	2	5690	6020	10	3	8535	8910	15	F4	4.50	603.3	F6	6.42	834.0

✖ DESIGN NUMBER OF HORIZONTAL GRATE MEMBERS WHEN REQUIRED (SIDE DRAIN OPTION ).  
 ▲ DESIGN NUMBER OF LONGITUDINAL GRATE MEMBERS FOR BOTH CROSS DRAIN SLOPE OPTIONS.  
 ▼ DESIGN NUMBER OF HORIZONTAL STIFFENER(S) EVENLY SPACED (CROSS DRAIN OPTION, SEC B-B ).  
 ◆ MINIMUM T1 FOR CAST-IN-PLACE OPTION SHALL BE 160 mm.



TYPICAL LEGEND FOR PLAN SUMMARY	
SD4 - SIDE DRAIN	1 :
SD6 - SIDE DRAIN	1 :
CD4 - CROSS DRAIN	1 :
CD6 - CROSS DRAIN	1 :
GR - GRATED	
NG - NONGRATED	

- ## GENERAL NOTES
1. ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE 1999 METRIC STANDARD SPECIFICATIONS.
  2. ALL NOTES DESIGNATED THUS ☉ APPLY ONLY TO PRECAST OPTION.
  3. QUANTITIES SHOWN ARE FOR ONE END ONLY. CONCRETE SHALL CONFORM TO THE MINIMUM REQUIREMENTS OF SECTION 509 OF THE 1999 METRIC STANDARD SPECIFICATIONS. CLASS P CONCRETE, HAVING MINIMUM STRENGTH OF 34500 kPa (5000 psi), SHALL BE USED ON PRECAST UNITS. CLASS A CONCRETE SHALL BE USED ON CAST-IN-PLACE UNITS.
  - ☉ 4. DIMENSIONS SHOWN ARE MINIMUM. ACTUAL DIMENSIONS MAY VARY WITH FABRICATOR AND WITHIN INDUSTRY ACCEPTED TOLERANCES.
  - ☉ 5. UNITS SHALL BE ASSEMBLED USING BOLTS, AS SHOWN, AND EPOXY RESIN ADHESIVE CONFORMING TO AASHTO M 235, CLASS 111, AT ALL JOINTS.
  - ☉ 6. FABRICATOR SHALL SUBMIT TO THE ENGINEER, FOR APPROVAL, PROVISIONS FOR LIFTING COMPONENT PARTS INTO PLACE.
  7. WHEN SHOWN ON PLANS, PIPE ARCH (METAL OR CONCRETE) OR ELLIPTICAL PIPE MAY BE USED IN LIEU OF FULL CIRCLE PIPE. WHEN USING ARCH OR ELLIPTICAL PIPE AS A SUBSTITUTE FOR FULL CIRCLE PIPE, THE RESPECTIVE INSIDE SPAN PLUS TWO WALL THICKNESSES MAY NOT EXCEED ANY W DIMENSION SHOWN IN THE TABLE OF END SECTION DIMENSIONS.
  8. SHARP EDGES ON PRECAST OR CAST-IN-PLACE UNITS MUST BE CHAMFERED OR ROUNDED TO THE POINT OF SAFE HANDLING. THE CHAMFER SHOULD BE 13 mm MINIMUM, OR ROUNDED WITH AN EDGING TOOL.
  9. WHEN GRATE MEMBERS ARE REQUIRED, ALL BOLTS, NUTS, WASHERS, BRACKETS, AND STEEL PIPE ARE CONSIDERED PARTS OF THE END SECTION. PAYMENT FOR THESE ITEMS SHALL BE INCLUDED IN BID PRICE FOR THE END SECTION.
  10. PIPE FOR SAFETY GRATES SHALL BE 75 mm x 3.44 kg/m STANDARD WEIGHT STEEL PIPE, SCHEDULE 40. IT SHALL BE FURNISHED GALVANIZED, PLAIN END AND SHALL MEET THE MINIMUM REQUIREMENTS OF ASTM A-53. HYDROSTATIC TESTS MAY BE WAIVED FOR PIPE SAFETY GRATE MEMBERS.
  11. ANY GALVANIZED AREA(S) OF METAL PIPE DISTRESSED DURING THE POST FABRICATION AND/OR HANDLING PROCESS SHALL BE COATED WITH AN APPROVED ZINC RICH PAINT.
  12. THREADED ROD, BOLT AND NUTS SHALL CONFORM TO ASTM A-307.
  13. ALIGNMENT SPACER HARDWARE SHALL CONFORM TO ASTM A-36.
  14. ALL EXPOSED STEEL SHALL BE GALVANIZED OR PAINTED IN ACCORDANCE WITH SECTION 725A OF THE STANDARD SPECIFICATIONS.
  15. ALL REINFORCING STEEL TO BE  $\pm 16$  M BARS AT 150 mm CENTERS, WITH 300 mm OVERLAPPING REINFORCING STEEL BETWEEN ADJACENT WALLS, WINGS, TOE WALL AND FLOOR.
  16. CRITERIA FOR USE OF PIPE SAFETY GRATE MEMBERS:
    - (A) ALL SIDE DRAIN AND CROSS DRAIN INSTALLATIONS INSIDE THE CLEARZONE.
    - (B) ALL INSTALLATIONS OUTSIDE THE CLEARZONE WHERE HAZARD POTENTIAL IS HIGH BASED ON TRAFFIC DIRECTION, SPEED, CLASS, VOLUME AND SIZE OF CULVERT.
- NOTE: ANALYZE HYDRAULIC PERFORMANCE AT VARYING DEGREES OF CLOGGING AND APPLY RISK ASSESSMENT BEFORE USING GRATES.

BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
613.06/(MM)	( <input checked="" type="checkbox"/> ) SLOPED CONCRETE END SECTION	EACH

- ☐ SPECIFY TYPE (EXAMPLE: TYPE A4 SLOPED CONC. END SECTION )  
☐ S. C. E. S. ORIENTATION, GRATED OR NON-GRATED SHALL BE SHOWN IN PLAN SUMMARIES.

APPROVED BY ROADWAY ENGINEER	DATE
<p align="center"> <b>OKLAHOMA DEPT. OF TRANSPORTATION</b>  <b>ROADWAY STANDARD ( METRIC )</b>  <b>SLOPED CONCRETE</b>  <b>END SECTIONS</b> </p>	
1999 SPECIFICATIONS	SCES-2
ALL DIMENSIONS ON THIS SHEET IN MILLIMETERS UNLESS OTHERWISE NOTED.	00M