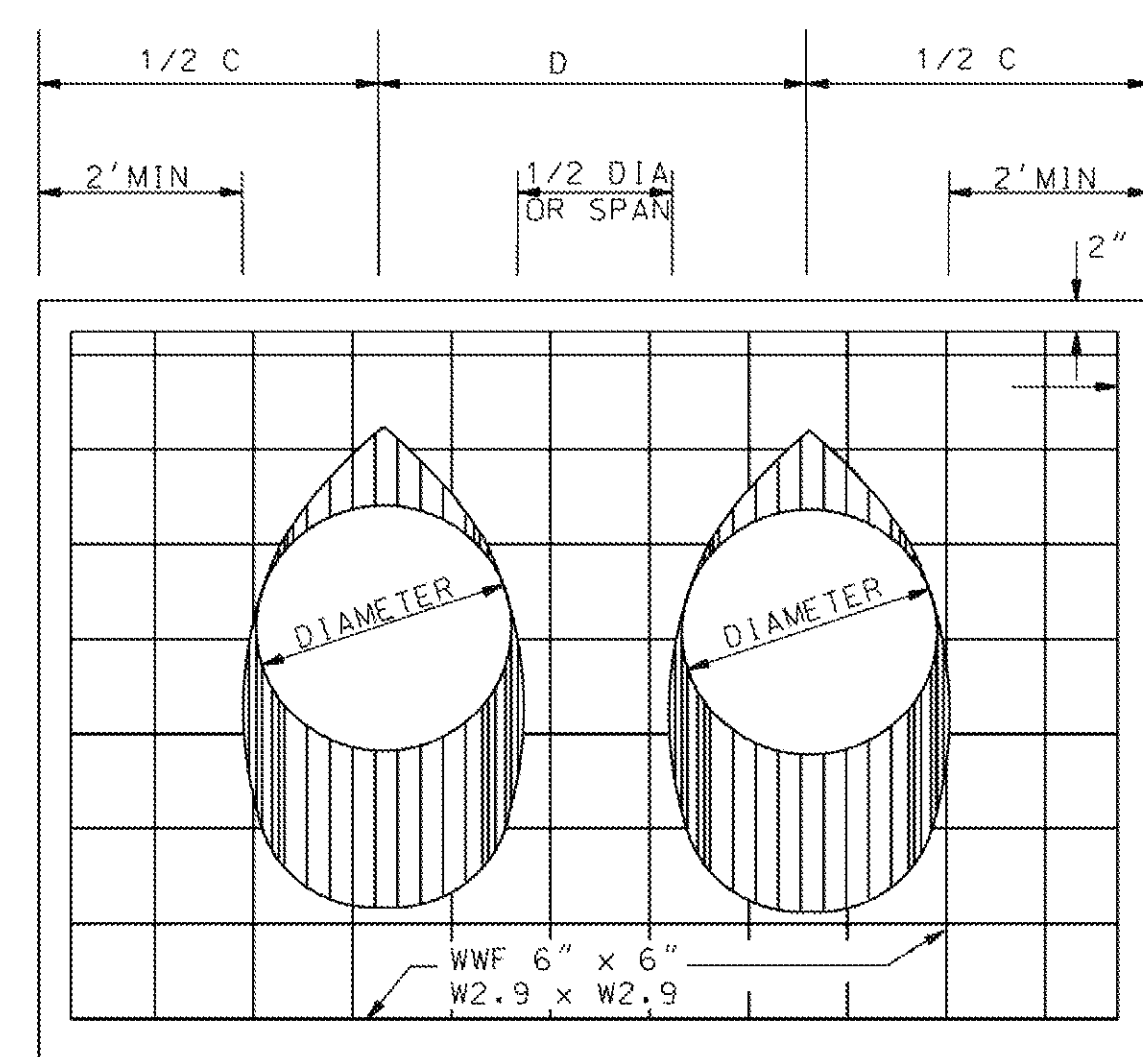
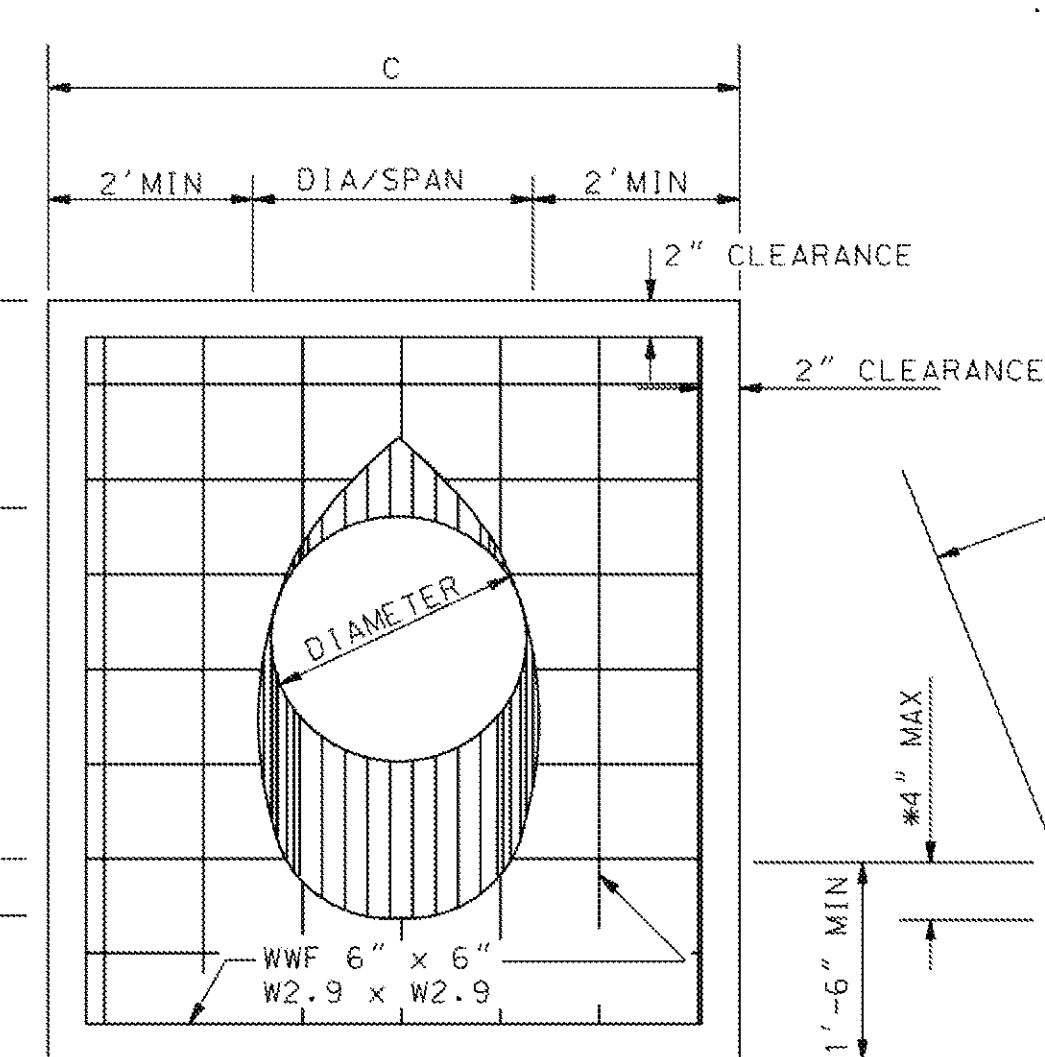


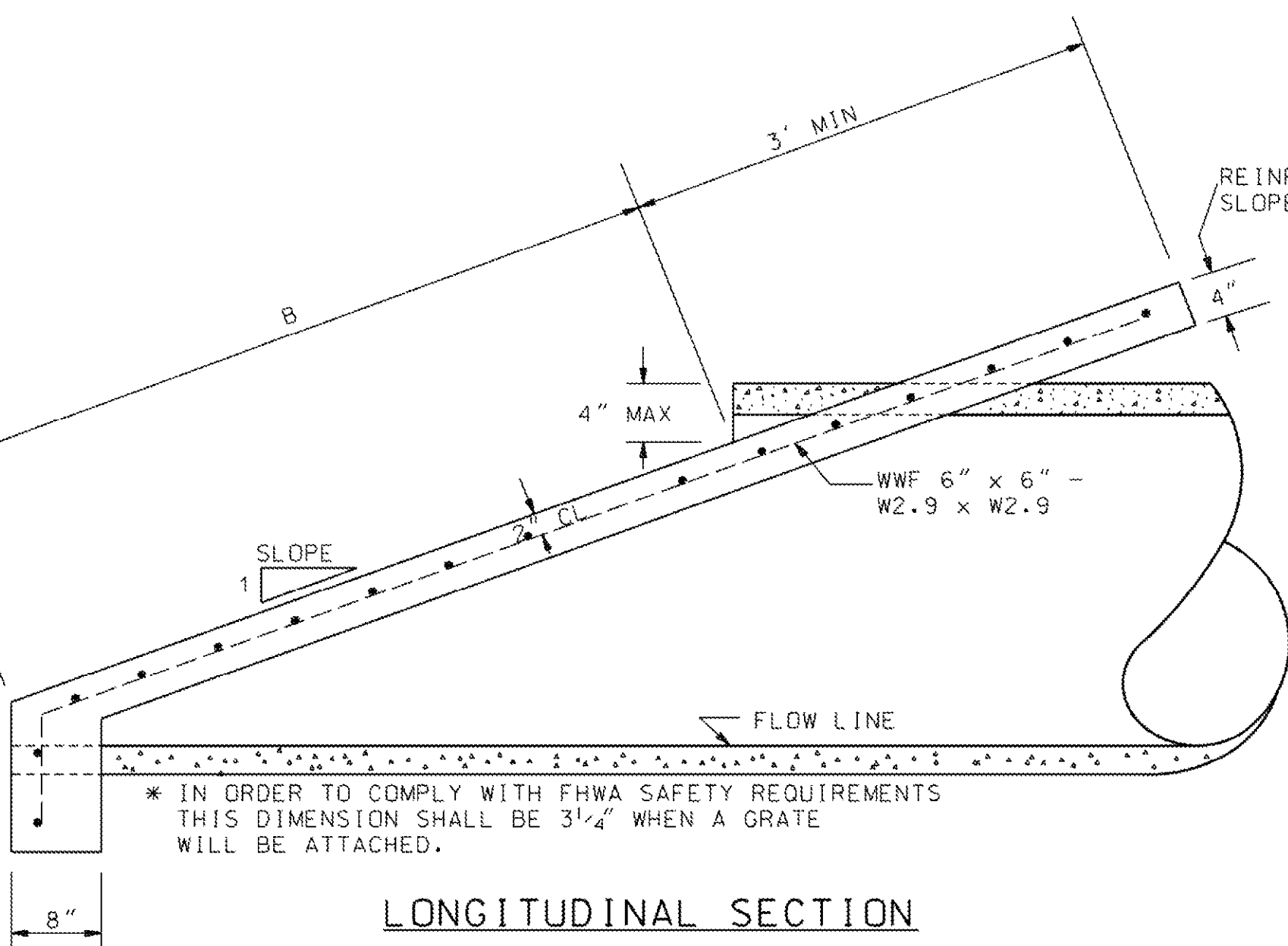
10/1/2014 4:27:05 PM - \\ERS161\F5\PROJECTS\IER11740\200-11740-10003\CAD\SHEET\TREATMENT PLANT\WTP C-9504 TO C-9506\DETAILS.DWG - REYES, HECTOR



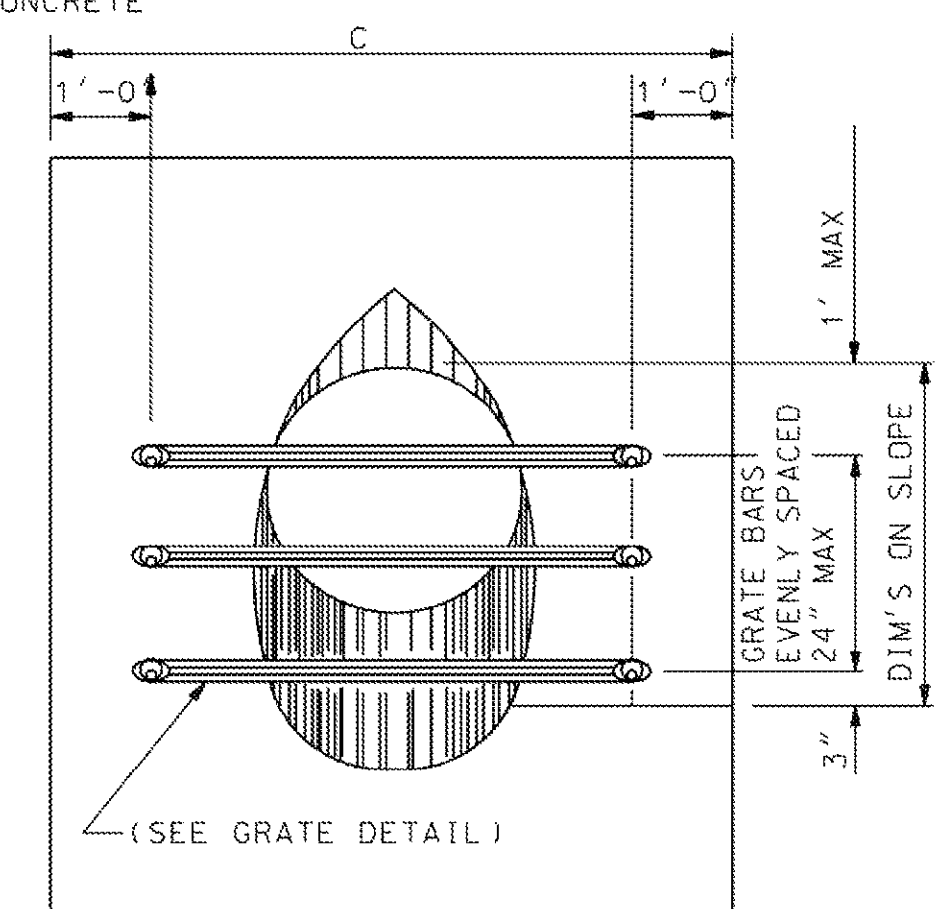
**END ELEVATION DOUBLE BARREL**



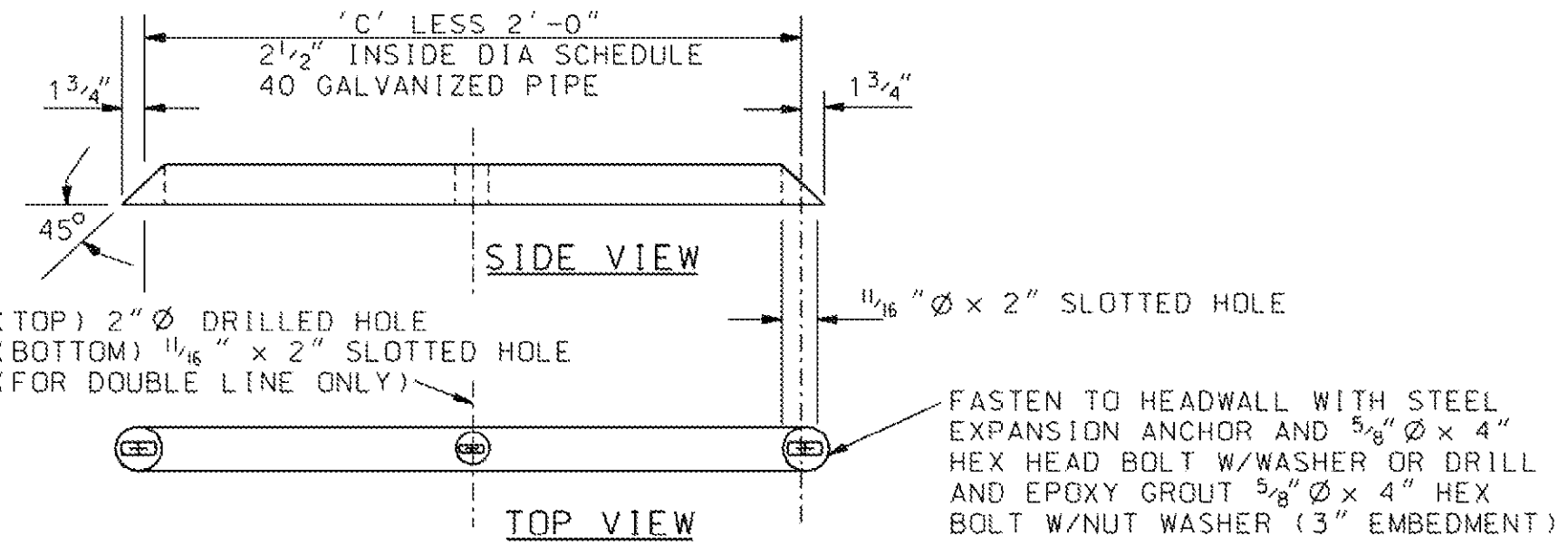
**END ELEVATION SINGLE BARREL**



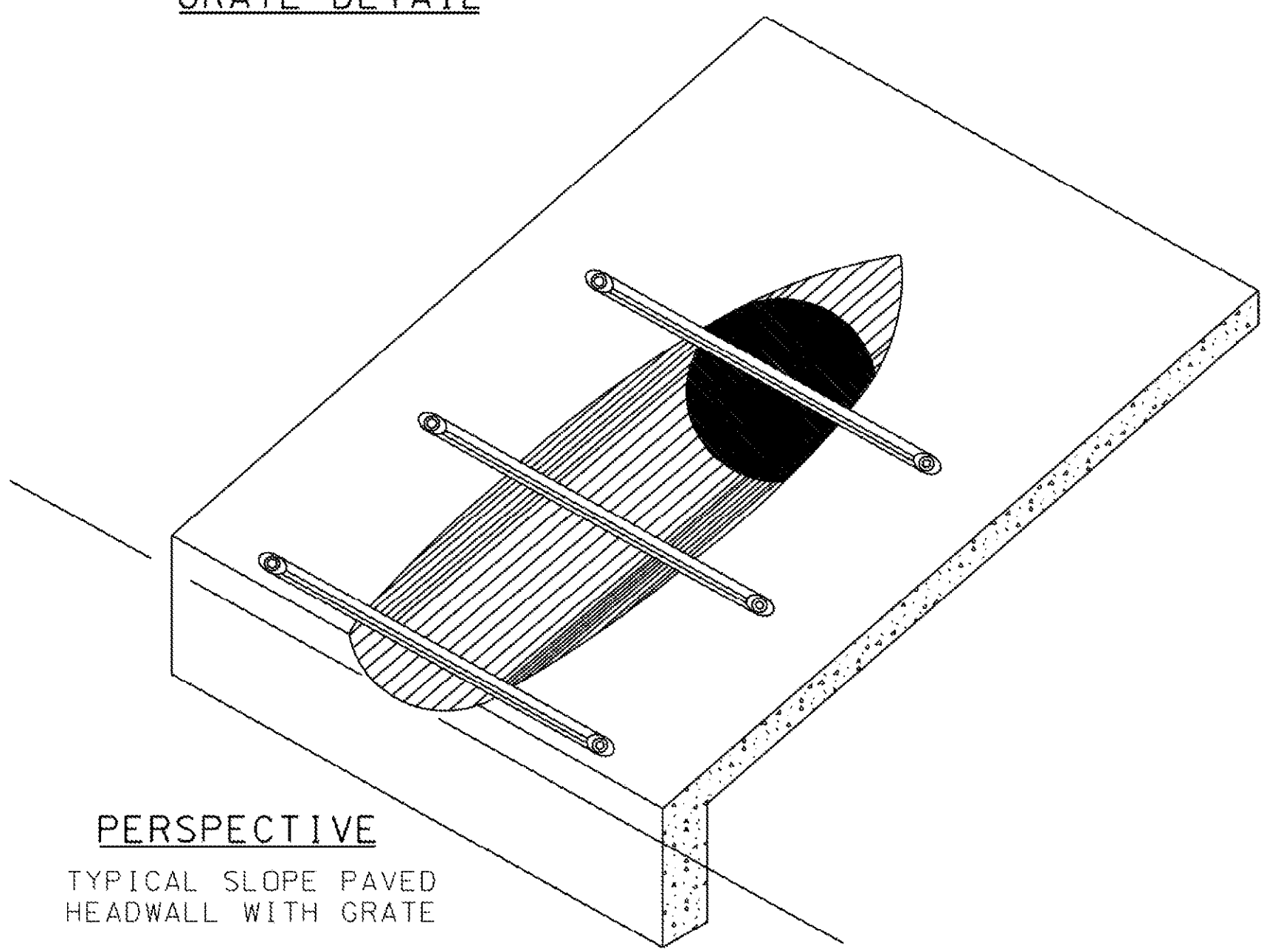
**LONGITUDINAL SECTION**



**END ELEVATION WITH GRATE**



**GRATE DETAIL**



**PERSPECTIVE**  
TYPICAL SLOPE PAVED  
HEADWALL WITH GRATE

PIPE SIZE	AREA SQ FT	SLOPE	DIMENSIONS AND QUANTITIES			CU YDS ONE BARREL	CU YDS ADDITIONAL BARREL
			B	C	D		
15" Ø	1.2	4:1	2'-5"	5'-3"	1'-11"	0.92	0.30
18" Ø	1.8	4:1	3'-6"	5'-6"	2'-3"	1.06	0.36
24" Ø	3.1	4:1	5'-6"	6'-0"	3'-0"	1.32	0.52
30" Ø	4.9	4:1	7'-7"	6'-6"	3'-9"	1.60	0.72
36" Ø	7.1	4:1	9'-8"	7'-0"	4'-6"	1.86	0.94
42" Ø	9.6	4:1	11'-9"	7'-6"	5'-3"	2.20	1.20
48" Ø	12.6	4:1	13'-9"	8'-0"	6'-0"	2.40	1.46
54" Ø	15.9	4:1	15'-10"	8'-6"	6'-9"	2.60	1.76
15" Ø	1.2	6:1	3'-7"	5'-3"	1'-11"	1.04	0.30
18" Ø	1.8	6:1	5'-1"	5'-6"	2'-3"	1.22	0.40
24" Ø	3.1	6:1	8'-1"	6'-0"	3'-0"	1.58	0.60
30" Ø	4.9	6:1	11'-2"	6'-6"	3'-9"	1.94	0.84
36" Ø	7.1	6:1	14'-2"	7'-0"	4'-6"	2.30	1.12
42" Ø	9.6	6:1	17'-3"	7'-6"	5'-3"	2.68	1.42
48" Ø	12.6	6:1	20'-3"	8'-0"	6'-0"	3.04	1.78
54" Ø	15.9	6:1	23'-4"	8'-6"	6'-9"	3.40	2.18
15" Ø	1.2	10:1	5'-10"	5'-3"	1'-11"	1.24	0.32
18" Ø	1.8	10:1	8'-4"	5'-6"	2'-3"	1.54	0.46
24" Ø	3.1	10:1	13'-5"	6'-0"	3'-0"	2.08	0.72
30" Ø	4.9	10:1	18'-5"	6'-6"	3'-9"	2.66	1.06
36" Ø	7.1	10:1	23'-5"	7'-0"	4'-6"	3.20	1.46
42" Ø	9.6	10:1	28'-6"	7'-6"	5'-3"	3.78	1.90
48" Ø	12.6	10:1	33'-6"	8'-0"	6'-0"	4.32	2.42
54" Ø	15.9	10:1	38'-6"	8'-6"	6'-9"	4.88	3.02
15" Ø	1.2	20:1	11'-9"	5'-3"	1'-11"	1.84	0.42
18" Ø	1.8	20:1	16'-8"	5'-6"	2'-3"	2.40	0.62
24" Ø	3.1	20:1	26'-8"	6'-0"	3'-0"	3.38	1.06

- GENERAL NOTES**
1. THE FILL IS TO BE PLACED AND ALL SHORING REMOVED BEFORE THE SLOPE PAVING IS PLACED.
  2. QUANTITIES SHOWN INCLUDE TWO (2) SLOPE PAVED HEADWALLS WITH TOE WALLS.
  3. DIMENSIONS AND QUANTITIES SHOWN APPLIES TO CONCRETE, CORRUGATED METAL PIPE, AND CORRUGATED HDPE PIPE. CONCRETE QUANTITIES ARE SUFFICIENT WHEN HEADWALLS FOR ARCH PIPE IS DESIRABLE.
  4. CONCRETE PIPE SHALL BE BEVELED BY SAWING AFTER SLOPE PAVING HAS BEEN PLACED AND SUFFICIENTLY CURED (SOME HAND FINISHING MAY BE NECESSARY.) METAL PIPE SHALL BE SHOP CUT. CORRUGATED HDPE PIPE MAY BE FIELD BEVELED PRIOR TO PAVING OR SHOP CUT.
  5. CONTRACTOR SHALL INSURE THROUGH MECHANICAL MEANS OR OTHER APPROVED DEVICES THAT CONNECTION BETWEEN BEVELED PIPE END AND CONCRETE WILL NOT BE DETACHED. CORRUGATED HDPE PIPE SHALL HAVE 1/2" Ø x 6" GALVANIZED HOOK BOLTS WITH WASHERS LOCATED AT 30" OC FOR THE TOE AND 1/2" Ø x 6" GALVANIZED THREADED HEX HEAD BOLTS WITH WASHERS LOCATED ON 2'-0" CENTERS FOR SIDES. ANCHOR BOLTS INTO CONCRETE.
  6. SLOPE PAVED HEADWALL WITHOUT GRATE SHALL BE CLASS 1. SLOPE PAVED HEADWALL WITH GRATE SHALL BE CLASS 2.
  7. A 24" PIPE WITH GREATER THAN A 30° SKEW AND 30" OR GREATER IN DIAMETER SHALL HAVE A CLASS 2 END TREATMENT WHEN TERMINATED WITHIN THE CLEAR ZONE.
  8. PIPE FOR GRATE SHALL BE SCHEDULE 40, GALVANIZED (ASTM A53) HARDWARE SHALL BE GALVANIZED ACCORDING TO SPECIFICATIONS.
  9. RAW METAL EXPOSED BY CUTTING AND DRILLING OF PIPE FOR GRATE ASSEMBLY WILL REQUIRE A GALVANIZING REPAIR PAINT IN ACCORDANCE WITH SECTION 855.31 OF ALDOT SPECIFICATIONS.

**CONCRETE SLOPED HEADWALL AND GRATE**

**1** **DETAIL**  
SCALE: N.T.S.

ALABAMA DEPARTMENT OF TRANSPORTATION  
SPECIAL DRAWING NO. **HW-614-SP**  
INDEX NO. **415**

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**BID SET**  
ALABAMA REGISTERED PROFESSIONAL ENGINEER  
CHRISTOPHER S. DALRYMPLE  
10124714

MARK	DATE	DESCRIPTION	BY

HUNTSVILLE UTILITIES  
SOUTHEAST WATER TREATMENT PLANT  
**STANDARD CIVIL DETAILS**

Project No.: 200-11740-10003  
Designed By: JRW  
Drawn By: WDV  
Checked By: JPT

**C-9511**