GENERAL NOTES:

1. Use Class II concrete.

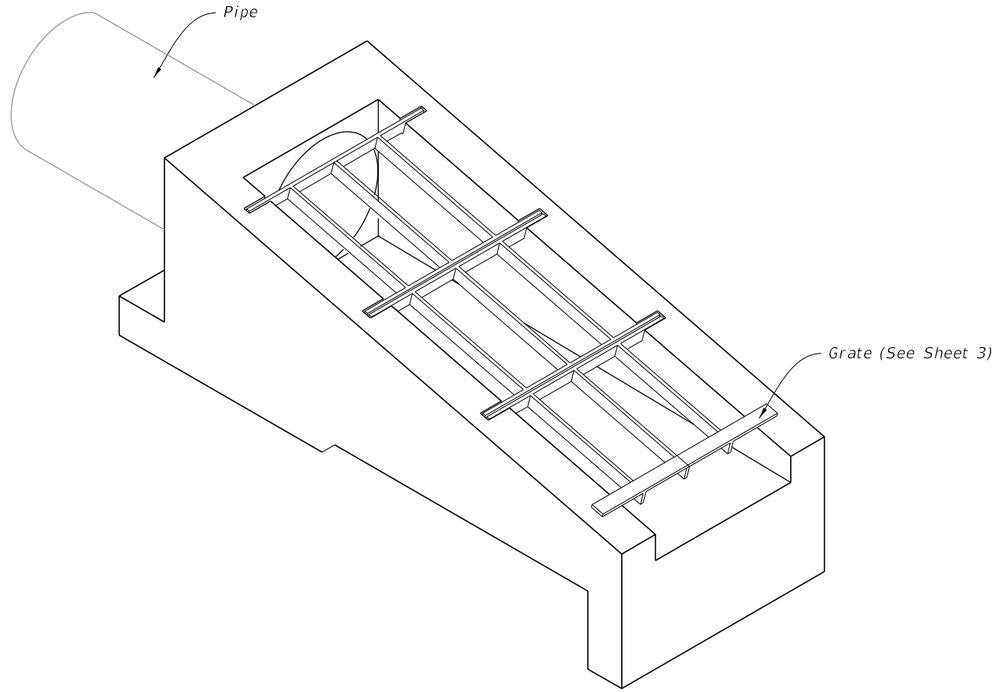
2. Reinforcing steel: All bars are size #4. Spacings shown are center to center. Laps to be 1'-5" minimum. Cover is 2" except as noted. Square welded wire fabric (two cages max.) having an equivalent cross sectional area (0.20 sq. in.) may be substituted for bar reinforcement.

3. Endwall may be cast in place or precast concrete. Construct precast units to dimensions shown, or as shown in approved shop drawings. Use Index 425-001 for opening and grouting details.

4. Quantities shown are for estimating purposes only.

TABLE OF CONTENTS:

Sheet	Description
1	General Notes and Contents
2	Dimensional and Reinforcing Details
3	Type 1 and Type 2 Grate Details



U-TYPE CONCRETE ENDWALLS 15" TO 30" PIPES WITH GRATES

(24" Pipe Shown)

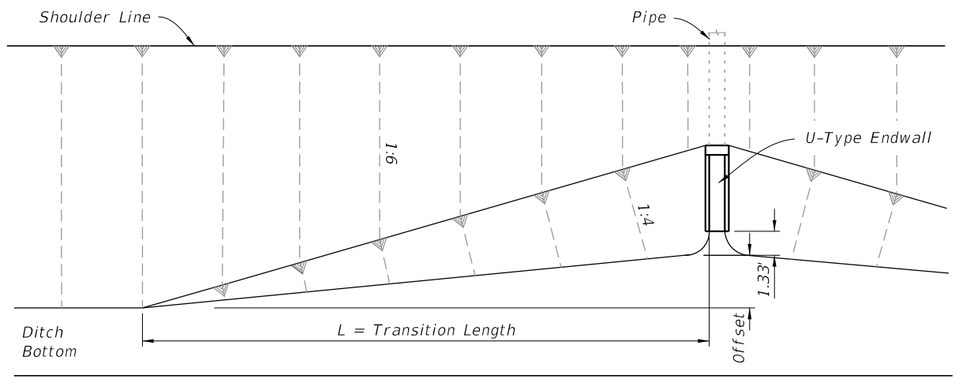


TABLE 1
SLOPE TRANSITIONS

	Pipe Dia.	Offset (Ft.)	L (Ft.)
Slope 1:4	15"	4.2	42
	18"	4.8	48
	24"	5.8	58
	30"	6.9	69

FRONT SLOPE TRANSITION AT ENDWALL

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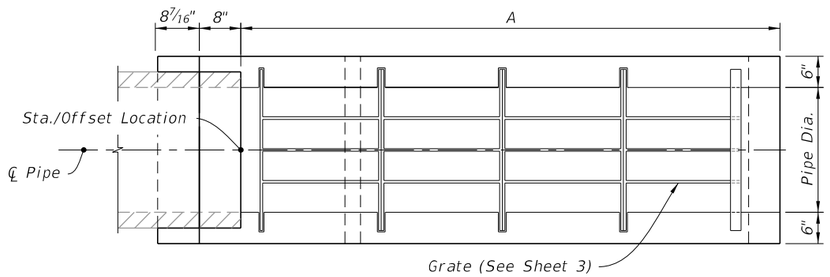
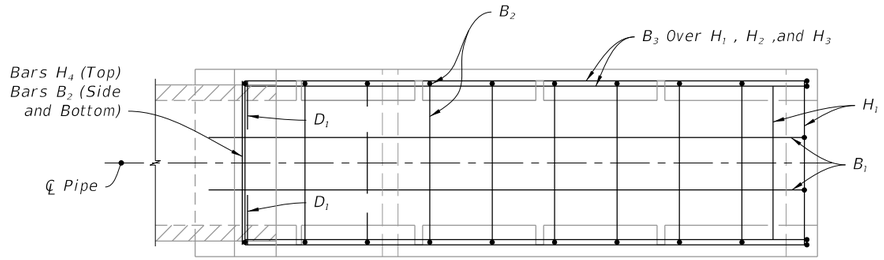
11/01/21			FY 2023-24 STANDARD PLANS	U-TYPE CONCRETE ENDWALLS 15" TO 30" PIPES WITH GRATES	430-010	1 of 3



PLAN



PLAN

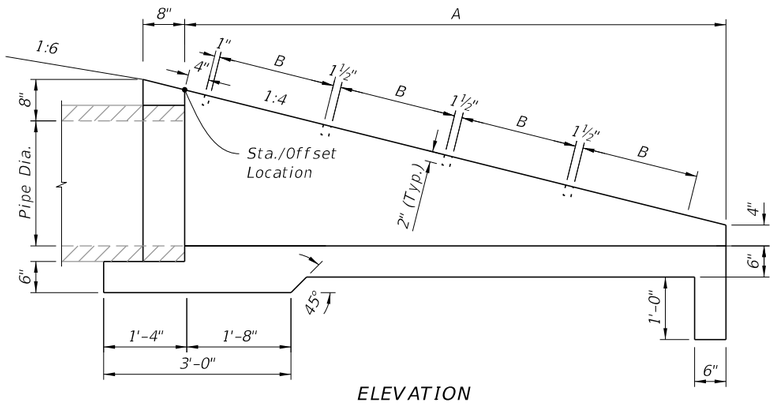
LEGEND:

H = Horizontal Bars

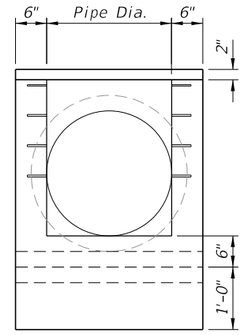
V = Vertical Bars

B = Bent Bars

D = Dowels or Diagonal Bars

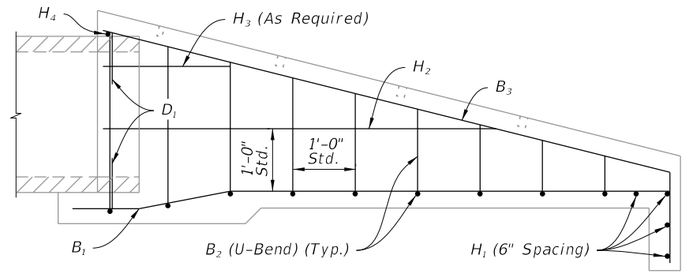


ELEVATION



END VIEW

DIMENSIONAL DETAIL



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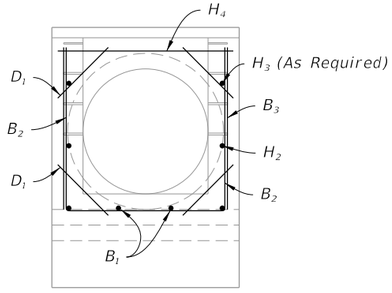

END VIEW

REINFORCING DETAIL

TABLE 2
DIMENSIONS AND QUANTITIES

	Pipe Dia.	A (Ft.)	B (Ft)	Class II Conc. (CY)	Reinf. Steel (lbs.)
Slope 1:4	15"	5.67	2.38	0.85	56
	18"	6.67	1.875	1.01	73
	24"	8.67	1.875	1.65	97
	30"	10.67	1.875	2.33	129

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DIMENSIONAL AND REINFORCING DETAILS

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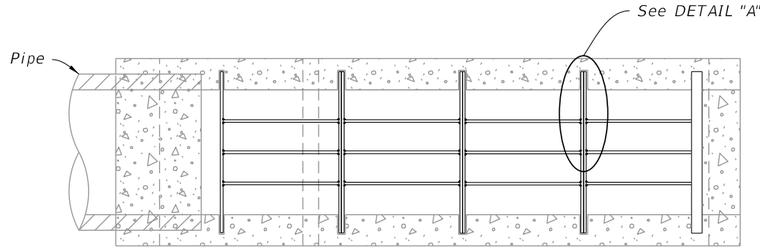
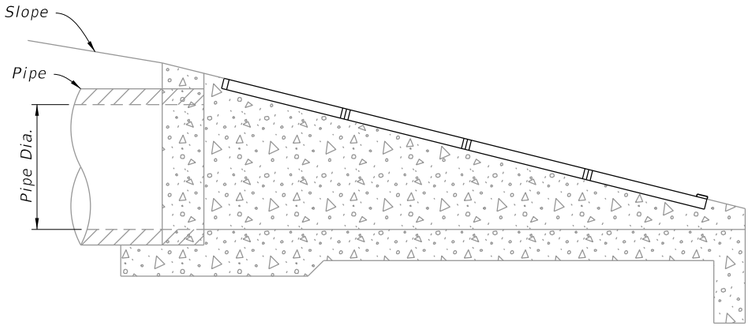


PLAN



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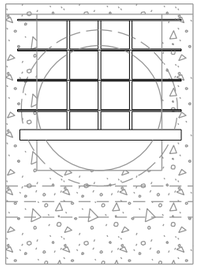
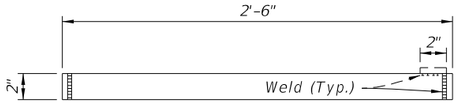
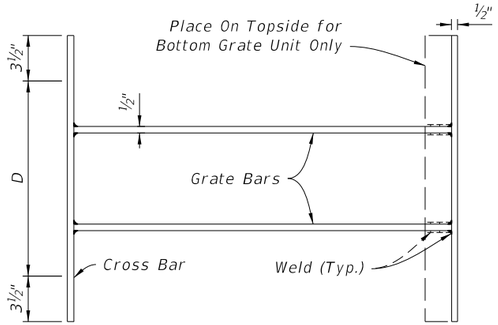


END VIEW



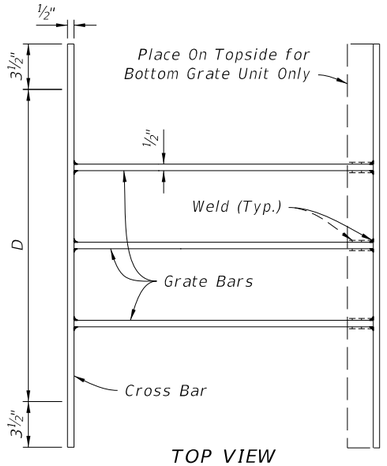
SIDE VIEW



TOP VIEW

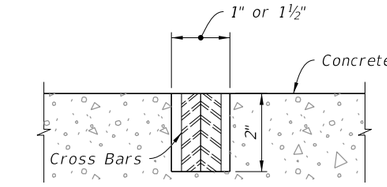
TYPE 1

SIDE VIEW

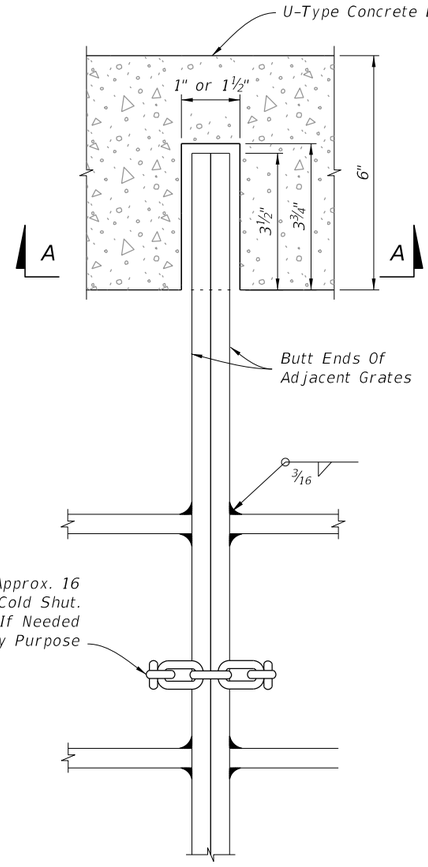


TOP VIEW

TYPE 2



SECTION A-A



GRATE, SEAT, WELD & CHAIN DETAIL

DETAIL "A"

NOTES:

1. Install grate bars evenly spaced across dimension D.

2. All bars and grate bars are ½" x 2".

TABLE 3
NUMBER OF GRATE BARS AND GRATES REQUIRED

Pipe Dia. D	Grate Bars Reqd.		Grate Wt. (lbs.)	Grate Reqd.		Total Grate Wt. (lbs.)
	Type No. 1	Type No. 2		Type No. 1	Type No. 2	
15"	2	0	28.93	2	0	57.86
18"	0	3	33.69	0	3	101.08
24"	0	4	43.63	0	4	174.52
30"	0	5	53.55	0	5	267.75

TYPE 1 AND TYPE 2 GRATE DETAILS

TYPE 1 AND TYPE 2 GRATE DETAILS

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