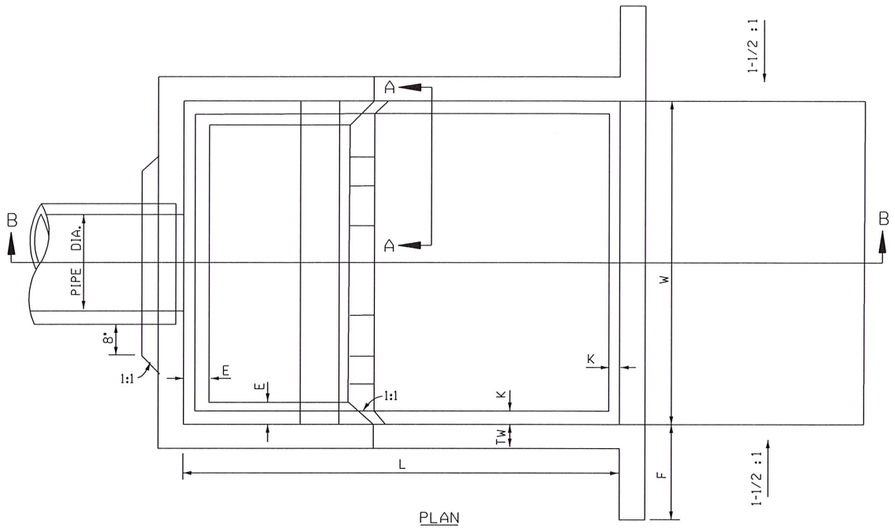
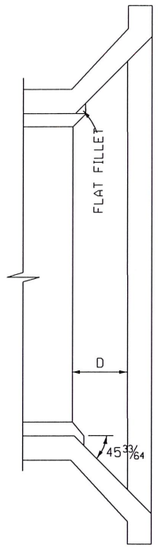
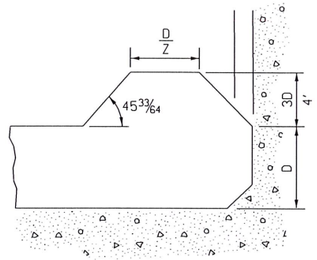
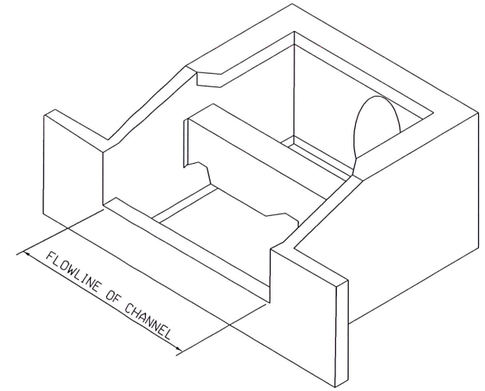


PLAN

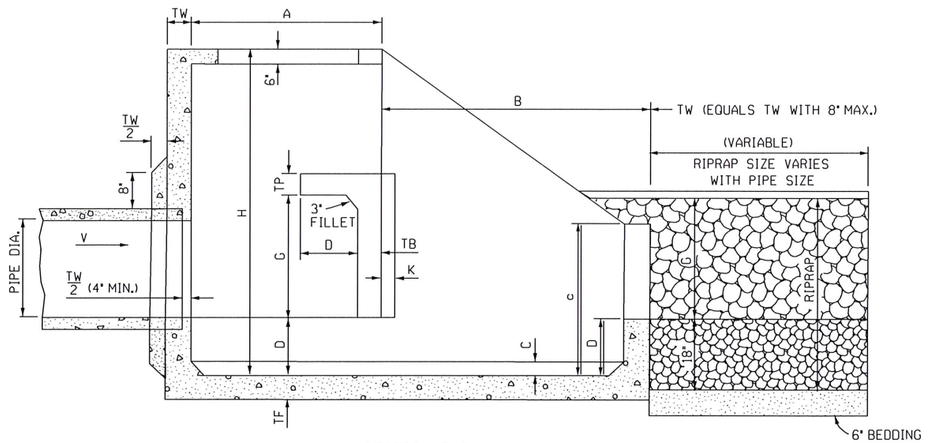




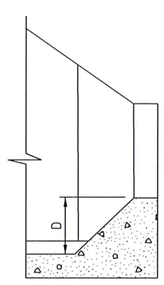
SECTION A-A



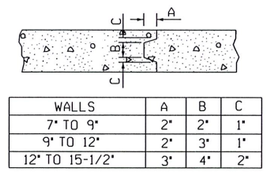
ISOMETRIC DRAWING



SECTION B-B



SECTION ALTERNATE
END SILL



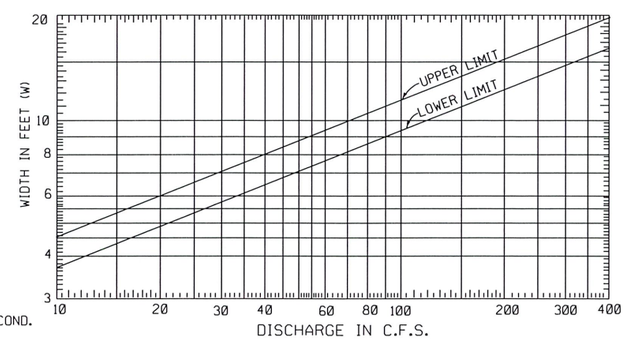
WALLS	A	B	C
7" TO 9"	2"	2"	1"
9" TO 12"	2"	3"	1"
12" TO 15-1/2"	3"	4"	2"

CONSTRUCTION JOINT DETAIL

STILLING BASIN DIMENSIONS

SUGGESTED PIPE SIZE		MAX. DIST. Q	FEET AND INCHES										INCHES					
DIA. (1)	AREA (S.F.) (2)	(3)	W (4)	H (5)	L (6)	A (7)	B (8)	C (9)	D (10)	E (11)	F (12)	G (13)	TW (14)	TF (15)	TB (16)	TP (17)	K (18)	SUGGESTED RIPRAP SIZE
18	1.77	21	5-6	4-3	7-4	3-3	4-1	2-4	0-11	0-6	1-6	2-1	6	6-1/2	6	6	3	SEE STATE STANDARDS AND SPECIFICATIONS
24	3.14	38	6-9	5-3	9-0	3-11	5-1	2-10	1-2	0-6	2-0	2-6	6	6-1/2	6	6	3	
30	4.91	59	8-0	6-3	10-8	4-7	6-1	3-4	1-4	0-8	2-6	3-0	6	6-1/2	7	7	3	
36	7.07	85	9-3	7-3	12-4	5-3	7-1	3-10	1-7	0-8	3-0	3-6	7	7-1/2	8	8	3	
42	9.62	115	10-6	8-0	14-0	6-0	8-0	4-5	1-9	0-10	3-0	3-11	8	8-1/2	9	8	4	
48	12.57	151	11-9	9-0	15-8	6-9	8-11	4-11	2-0	0-10	3-0	4-5	9	9-1/2	10	8	4	
54	15.90	191	13-0	9-9	17-4	7-4	10-0	5-5	2-2	1-0	3-0	4-11	10	10-1/2	10	8	4	
60	19.63	236	14-3	10-9	19-0	8-0	11-0	5-11	2-5	1-0	3-0	5-4	11	11-1/2	11	8	6	
72	28.27	339	16-6	12-3	22-0	9-3	12-9	6-11	2-9	1-3	3-0	6-2	12	12-1/2	12	8	6	

1. SUGGESTED PIPE WILL RUN FULL WHEN VELOCITY IS 12 FT. PER SECOND OR HALF FULL WHEN VELOCITY IS 24 FT. PER SECOND. SIZE MAY BE MODIFIED FOR OTHER VELOCITIES BY Q=AV, BUT RELATION BETWEEN Q AND BASIN DIMENSIONS SHOWN MUST BE MAINTAINED.
2. FOR DISCHARGES LESS THAN 21 CUBIC FEET PER SECOND, OBTAIN BASIN WIDTH FROM CURVE. OTHER DIMENSIONS PROPORTIONAL TO W; H=3W/4, L=4W/3, D=W/6, ETC.



DISCHARGE LIMITS

NOTES:

1. THE USE OF THIS BASIN IS LIMITED TO INSTALLATIONS WHERE THE VELOCITY AT THE ENTRANCE TO THE STILLING BASIN DOES NOT GREATLY EXCEED 30 FEET PER SECOND.
2. FROM THE MAXIMUM EXPECTED DISCHARGE, DETERMINE THE STILLING BASIN DIMENSIONS BY USING THE TABLE SHOWN. THE USE OF MULTIPLE UNITS SIDE BY SIDE MAY PROVE ECONOMICAL IN SOME CASES.
3. COMPUTE THE NECESSARY PIPE AREA FROM THE VELOCITY AND DISCHARGE. THE VALUES IN THE TABLE SHOWN, COLUMNS 1 AND 2, ARE SUGGESTED SIZES BASED ON A VELOCITY OF 12 FEET PER SECOND AND THE DESIRE THAT THE PIPE RUN FULL AT THE DISCHARGE GIVEN IN COLUMN 3. REGARDLESS OF THE PIPE SIZE CHOSEN, MAINTAIN THE RELATION BETWEEN DISCHARGE AND BASIN SIZE GIVEN IN THE TABLE. AN OPEN CHANNEL ENTRANCE MAY BE USED IN PLACE OF A PIPE. THE APPROACH CHANNEL SHOULD BE NARROWER THAN THE BASIN WITH INVERT ELEVATION THE SAME AS THE PIPE.
4. ALTHOUGH TAIL WATER IS NOT NECESSARY FOR SUCCESSFUL OPERATION, A MODERATE DEPTH OF TAIL WATER WILL IMPROVE THE PERFORMANCE. FOR BEST PERFORMANCE, SET THE BASIN SO THAT MAXIMUM TAIL WATER DOES NOT EXCEED D + G/2.
5. THE SUGGESTED SIZES FOR THE RIPRAP PROTECTIVE BLANKET IS GIVEN IN THE LAST COLUMN OF TABLE. MOST OF THE RIPRAP SHOULD CONSIST OF THE SIZE GIVEN OR LARGER.
6. THE ENTRANCE PIPE OR CHANNEL MAY BE TILTED DOWNWARD ABOUT 15 33/64 WITHOUT AFFECTING PERFORMANCE ADVERSELY. FOR GREATER SLOPES, USE A HORIZONTAL OR SLOPING PIPE (UP TO 15 33/64), TWO OR MORE DIAMETERS LONG JUST UPSTREAM FROM THE STILLING BASIN. MAINTAIN PROPER ELEVATION OF INVERT AT ENTRANCE AS SHOWN ON THE DRAWING.
7. IF A HYDRAULIC JUMP IS EXPECTED TO FORM IN THE DOWNSTREAM END OF THE PIPE AND THE PIPE ENTRANCE IS SEALED BY INCOMING FLOW, INSTALL A VENT ABOUT ONE-SIXTH THE PIPE DIAMETER AT ANY CONVENIENT LOCATION UPSTREAM FROM THE JUMP.
8. ALTERNATE END SECTION WITH 45 33/64 WINGS IS SHOWN AND MAY BE USED TO REDUCE EROSION TENDENCIES.
9. STANDARD OBTAINED FROM BUREAU OF RECLAMATION ENGINEERING NOMOGRAPH NO. 25 - HYDRAULIC DESIGN OF STILLING BASINS AND ENERGY DISSIPATORS.
10. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY OF TULSA STANDARDS AND SPECIFICATIONS.
11. ALL EXPOSED SURFACES SHALL HAVE A CARBORUNDUM FINISH AND THIS SHALL BE INCLUDED IN THE BID.
12. ALL EXPOSED EDGES SHALL HAVE A 3/4" CHAMFER.
13. REINFORCING STEEL PATTERN TO BE DESIGNED BY THE ENGINEER.

HYDRAULIC DESIGN OF STILLING BASINS AND ENERGY DISSIPATORS

REVISION	BY	DATE

CITY ENGINEER

DESIGN MANAGER

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

STANDARD ENERGY DISSIPATOR

DATE: MARCH 2022 STD. 779

PATH NAME: /E1/PARTS/STD/DGN.STDS/779-STD-ENERGY-DISSIPATOR.DGN LFM 05/04/2012