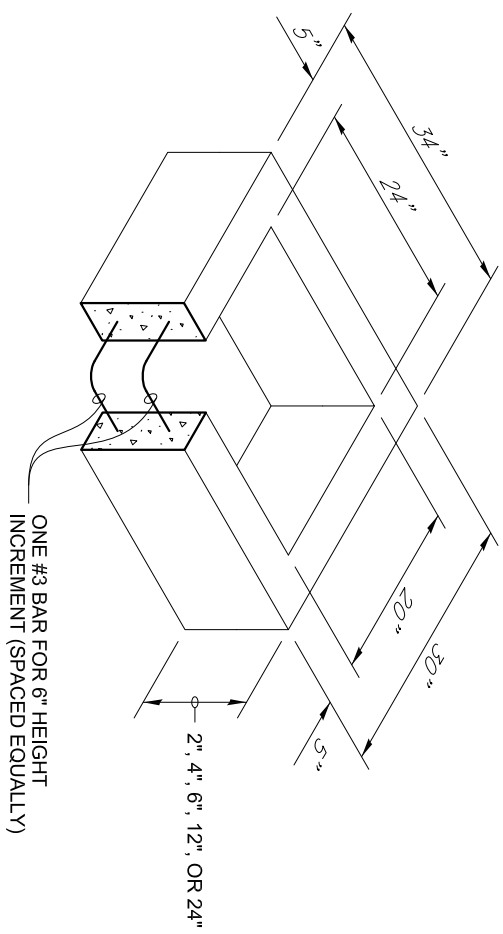


FRAME AND VANED GRATE

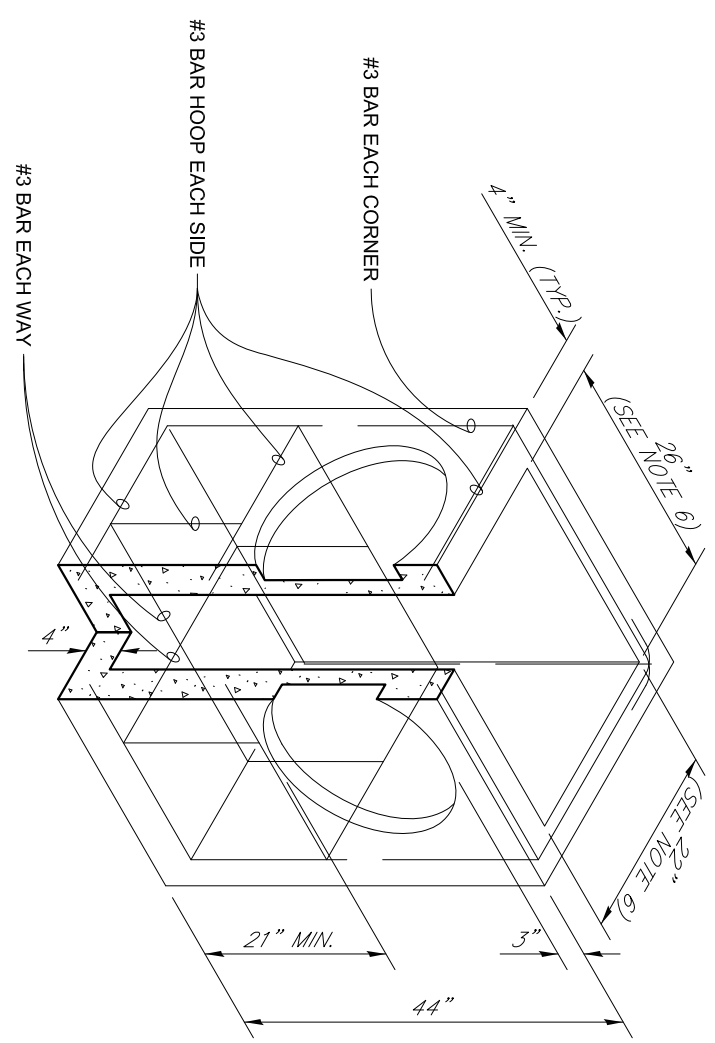
PIPE ALLOWANCES	
PIPE MATERIAL	MAXIMUM DIAMETER
REINFORCED OR PRECAST CONCRETE	12"
ALL METAL PIPE	15"
CSPIP* (STD. SPEC. 9-05.20)	12"
SPQR WALL PIP (STD. SPEC. 9-05.12(1))	15"
PROFE WALL PIP (STD. SPEC. 9-05.12(2))	15"

\* CORRUGATED POLYETHYLENE STORM SEWER PIPE

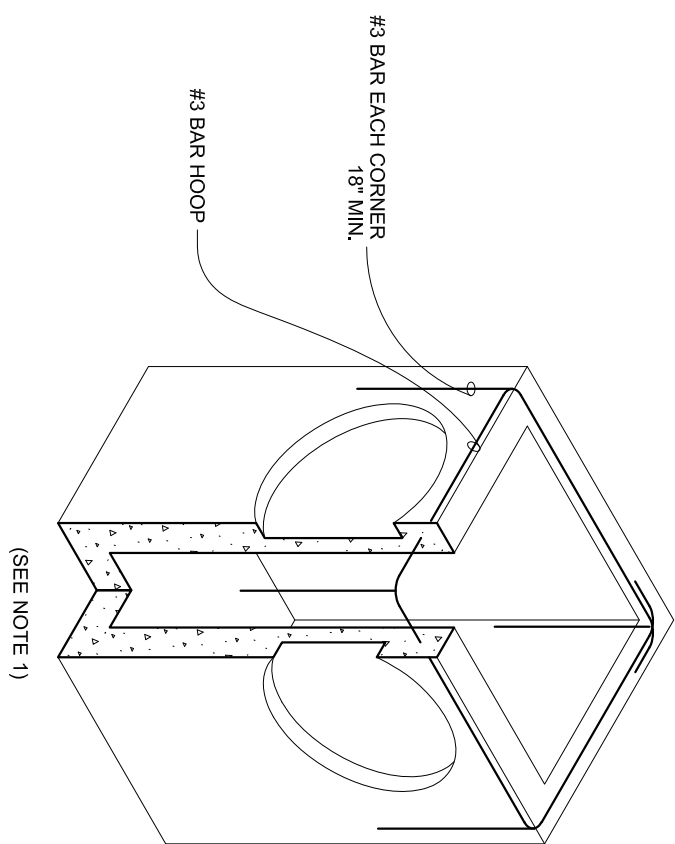


RECTANGULAR ADJUSTMENT SECTION

ONE #3 BAR FOR PRECAST (DEPENDENT SPACING EQUALITY)



PRECAST BASE SECTION



ALTERNATIVE PRECAST BASE SECTION

NOTES:

- As acceptable alternatives to the rebar shown in the PRECAST BASE SECTION, fibers (placed according to the Standard Specifications), or wire mesh having a minimum area of 0.12 square inches per foot shall be used with the minimum required rebar shown in the ALTERNATIVE PRECAST BASE SECTION. Wire mesh shall not be placed in the knockouts.
- The knockout diameter shall not be greater than 20". Knockouts shall have a wall thickness of 2" minimum to 2.5" maximum. Provide a 1.5" minimum gap between the knockout wall and the outside of the pipe. After the pipe is installed, fill the gap with joint mortar in accordance with Standard Specification 9-04.3.
- The maximum depth from the finished grade to the lowest pipe invert shall be 9".
- The frame and grate may be installed with the flange down, or integrally cast into the adjustment section with flange up.
- The Precast Base Section may have a rounded floor, and the walls may be sloped at a rate of 1:24 or steeper.
- The opening shall be measured at the top of the Precast Base Section.
- All pickup holes shall be grouted full after the basin has been placed.

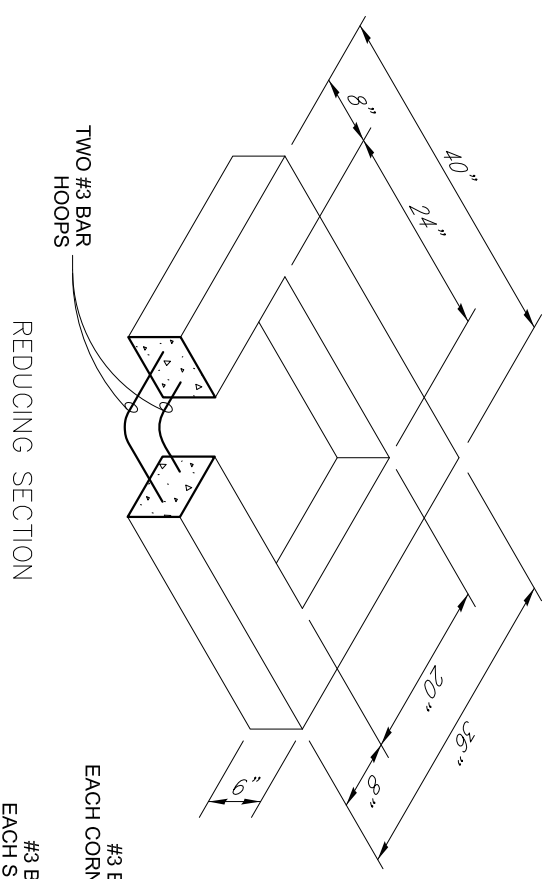
CATCH BASIN TYPE 1

NOTES:

- As acceptable alternatives to the rebar shown in the PRECAST BASE SECTION, fibers (placed according to the Standard Specifications), or wire mesh having a minimum area of 0.12 square inches per foot, shall be used with the minimum required rebar shown in the ALTERNATIVE PRECAST BASE SECTION. Wire mesh shall not be placed in the knockouts.
- The knockout shall not be greater than 26" in any direction. Knockouts shall have a wall thickness of 2" minimum to 2.5" maximum. Provide a 1.5" minimum gap between the knockout wall and the outside of the pipe. After the pipe is installed, fill the gap with joint mortar in accordance with Standard Specification 9-04.3.
- The maximum depth from the finished grade to the lowest pipe invert shall be 9".
- The frame and grate may be installed with the flange down or integrally cast into the adjustment section with flange up.
- The Precast Base Section may have a rounded floor, and the walls may be sloped at a rate of 1:24 or steeper.
- The opening shall be measured at the top of the Precast Base Section.
- All pickup holes shall be grouted full after the basin has been placed.

PIPE ALLOWANCES	
PIPE MATERIAL	MAXIMUM DIAMETER
REINFORCED OR PRECAST CONCRETE	18"
ALL METAL PIPE	21"
CSPIP* (STD. SPEC. 9-05.20)	18"
SPQR WALL PIP (STD. SPEC. 9-05.12(1))	21"
PROFE WALL PIP (STD. SPEC. 9-05.12(2))	21"

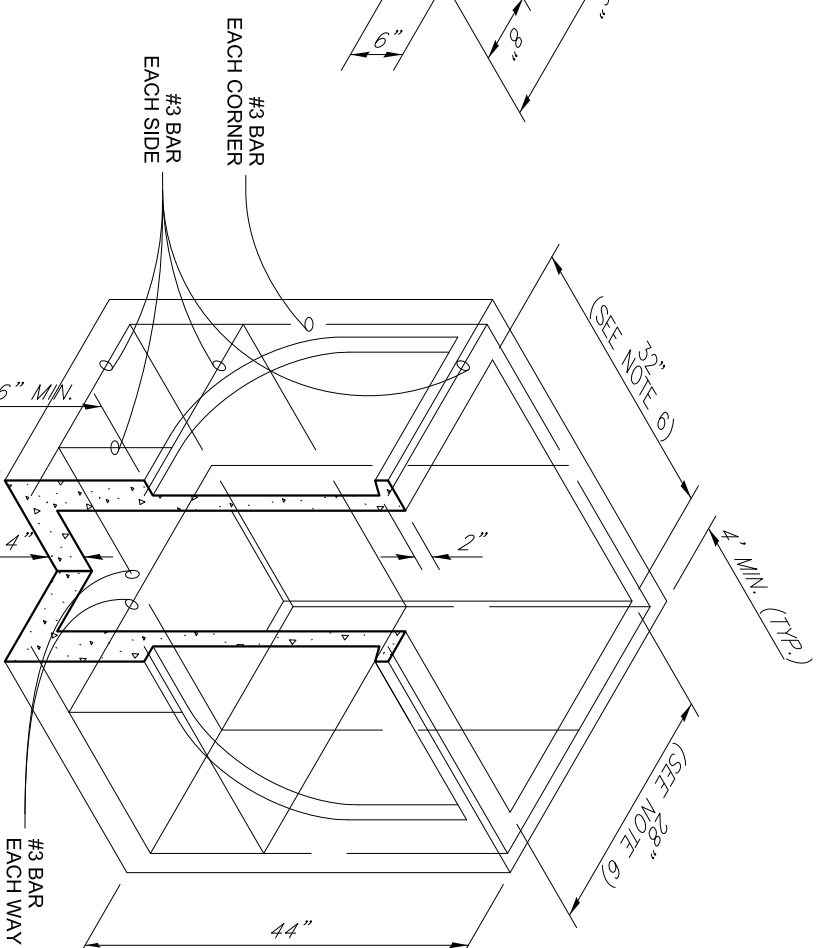
\* CORRUGATED POLYETHYLENE STORM SEWER PIPE



RECTANGULAR ADJUSTMENT SECTION

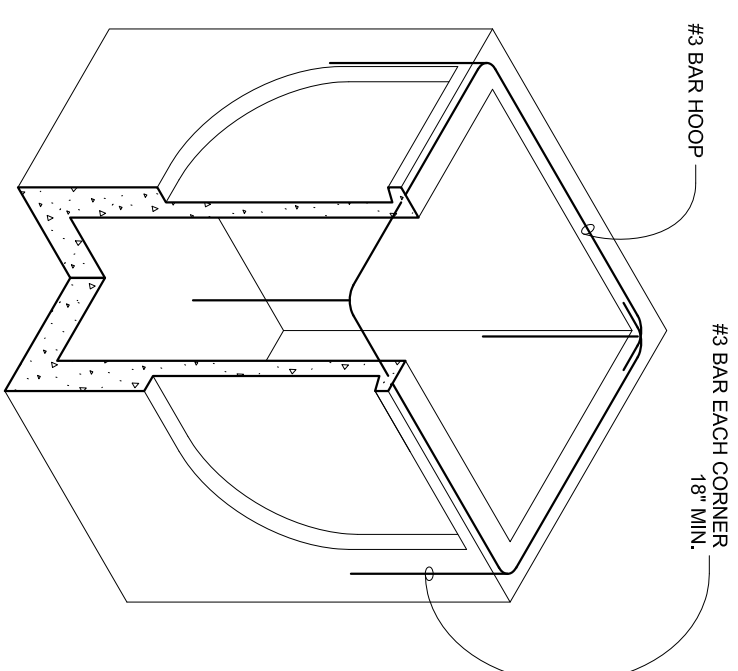
ONE #3 BAR FOR EACH HEIGHT INCREMENT SPACED EQUALLY

PRECAST BASE SECTION



ALTERNATIVE PRECAST BASE SECTION

CATCH BASIN TYPE 1L



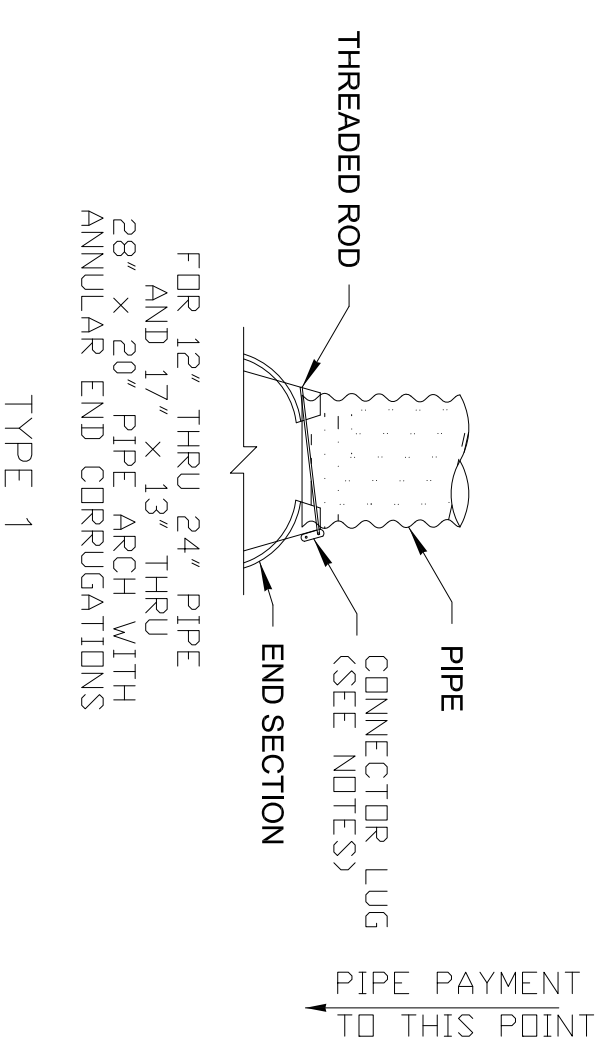
ALTERNATIVE PRECAST BASE SECTION

PIPE ARCH DIMENSION (INCHES)	THICKNESS (INCHES)	PIPE ARCH DIMENSIONS (INCHES)						END SECTION (SHV)
		A	B	H	L	W	T	
SPAN	RISE	STEEL	ALUM.	MAX.	MAX.	TOL. 1/2"	TOL. 3/8"	TOL. 2"
17	13	0.064	0.060	7	9	6	19	30
21	15	0.064	0.060	7	10	6	23	36
24	18	0.064	0.060	8	12	6	28	42
28	20	0.064	0.075	9	14	6	32	48
35	24	0.079	0.075	10	16	6	39	60
42	29	0.079	0.105	12	18	6	46	75
49	33	0.109	0.105	13	21	9	53	90
57	38	0.109	0.138	18	26	12	63	114
64	43	0.109	0.138	18	30	12	70	102
71	47	0.109	0.138	18	33	12	77	114
77	52	0.109	0.138	18	36	12	84	126
83	57	0.109	0.138	18	39	12	91	138

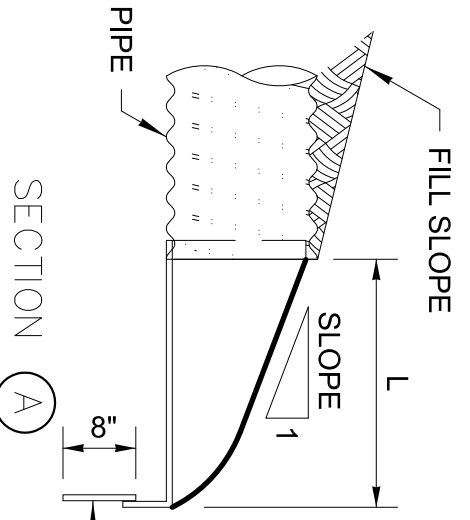
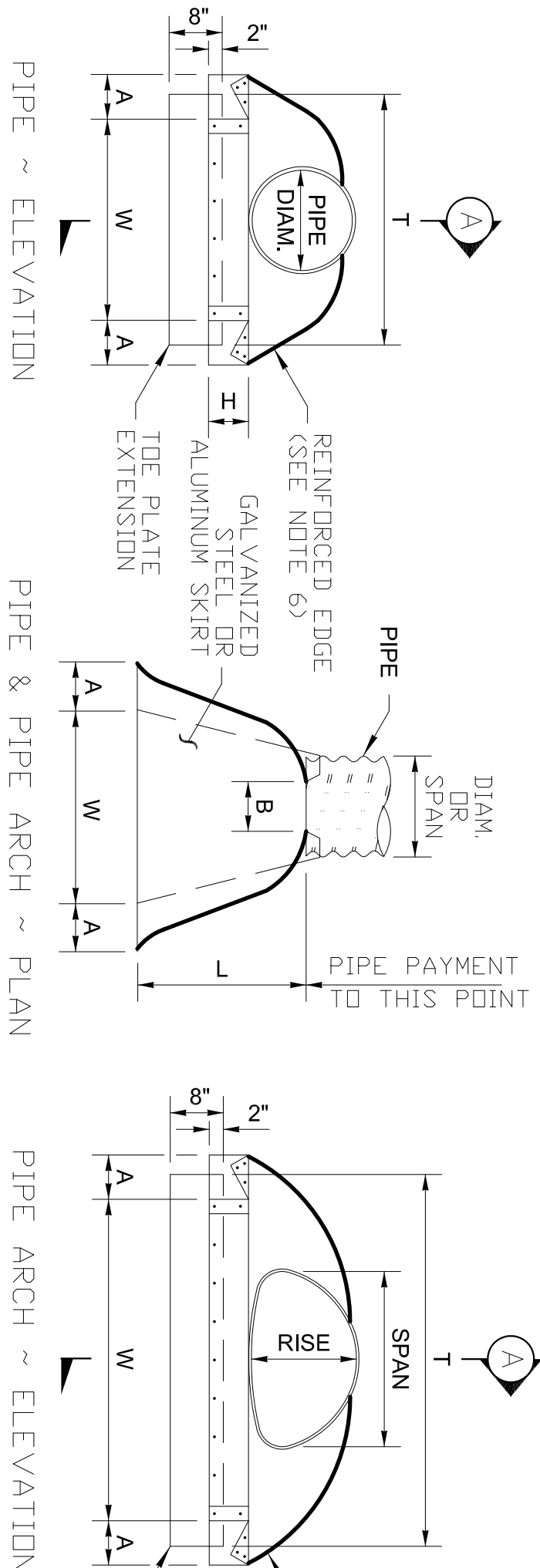
PIPE DIMENSION (INCHES)	THICKNESS (INCHES)	PIPE DIMENSIONS (INCHES)						END SECTION (SHV)
		A	B	H	L	W	T	
STEEL	ALUM.	MAX.	MAX.	TOL. 1/2"	TOL. 3/8"	TOL. 2"	TOL. 2"	
12	0.064	0.060	6	6	21	24	4	
15	0.064	0.060	7	8	6	26	30	
18	0.064	0.060	8	10	6	31	36	
21	0.064	0.060	9	12	6	36	42	
24	0.064	0.075	10	13	6	41	48	
30	0.079	0.075	12	16	8	51	60	
36	0.079	0.105	14	19	9	60	72	
42	0.109	0.105	16	22	11	69	84	
48	0.109	0.105	18	27	12	78	90	
54	0.109	0.138	18	33	12	84	102	
60	0.109	0.138	18	36	12	87	114	
66	0.109	0.138	18	39	12	87	120	
72	0.109	0.138	18	42	12	87	126	
78	0.109	0.138	18	45	12	87	132	
84	0.109	0.138	18	45	12	87	138	

NOTES:

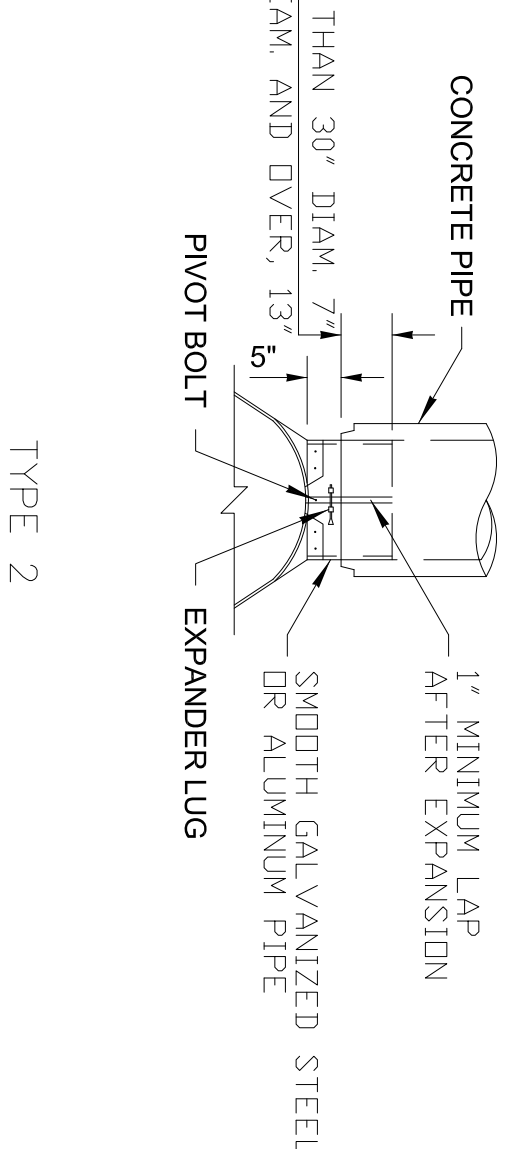
- SKIRT SECTIONS SHALL BE MADE IN ONE PIECE FOR ROUND PIPE WITH A DIAMETER OF 12" TO 24" INCLUSIVE AND FOR PIPE ARCHES WITH A RISE OF 15" TO 29" INCLUSIVE. SKIRT SECTIONS FOR LARGER SIZES OF PIPES MAY BE MULTIPLE PIECES IN CONFORMANCE WITH THE TABULATED VALUES SHOWN.
- MULTIPLE PANEL SKIRTS SHALL HAVE 2" LAP SEAMS TIGHTLY JOINED BY 3/8" STAINLESS STEEL RIVETS OR GALVANIZED BOLTS ON 6" MAX. CENTERS.



FOR 12" THRU 24" PIPE AND 10" THRU 30" ARCH WITH ANNULAR END CORUNDATIONS TYPE 1



FLARED END SECTIONS



TYPE 2

STORMWATER DETAILS

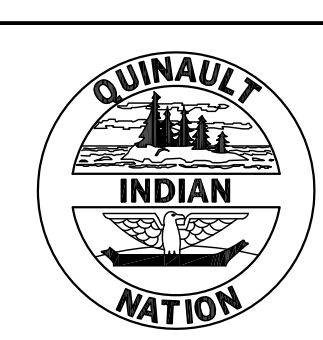
REVISION HISTORY:	

SHEET CONTENTS: STORMWATER DETAILS

DESIGNED BY:	BJM
DATE:	8/24/2012

PROJECT:	CAONE JOURNEY 2013 AND BEYOND
SCALE:	NIS
REVISION:	A, 1

**QUINAULT ENGINEERING**  
 14 WEST QUINAULT ST. TACOMA, WA 98402  
 (253) 270-0215 (425) 530-3500 FAX  
 WWW.QUINAULTENGINEERING.COM



CUSTOMER:	QUINAULT INDIAN NATION
LOCATION:	TAHOLA, WA
PLANS CONFORM TO FOLLOWING US DOT PUBLICATIONS:	B-5.20-01 B-5.40-01 B-10.00-00
CHEET	CEI.3
OF	C4