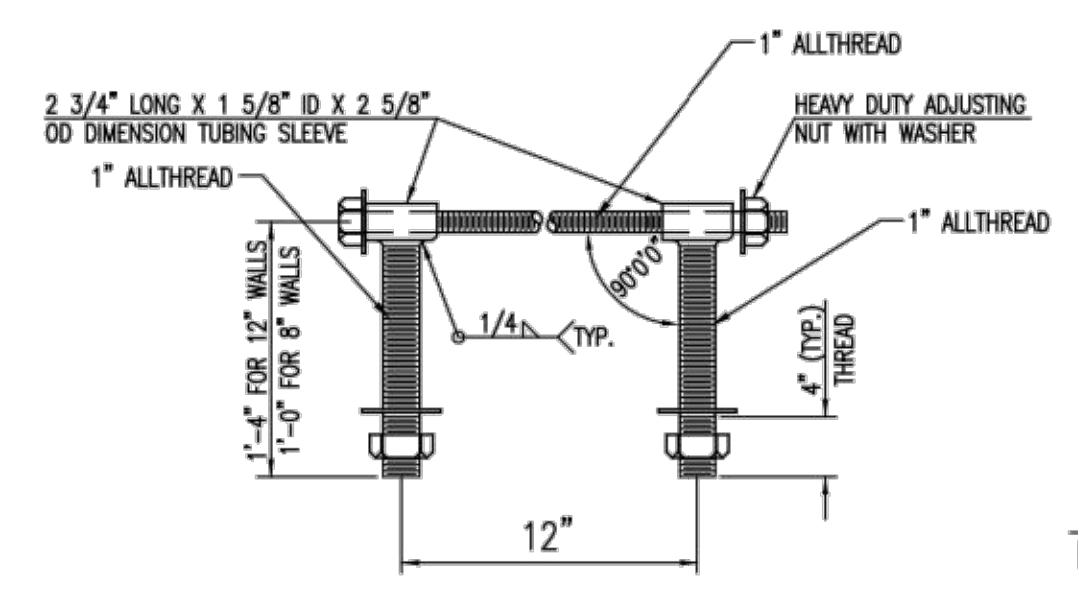
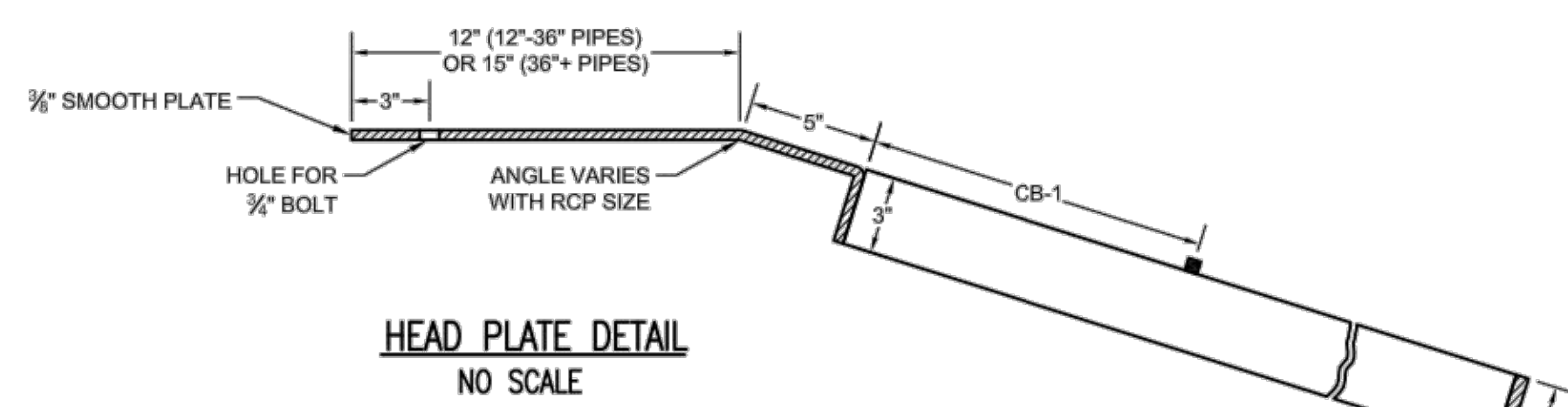
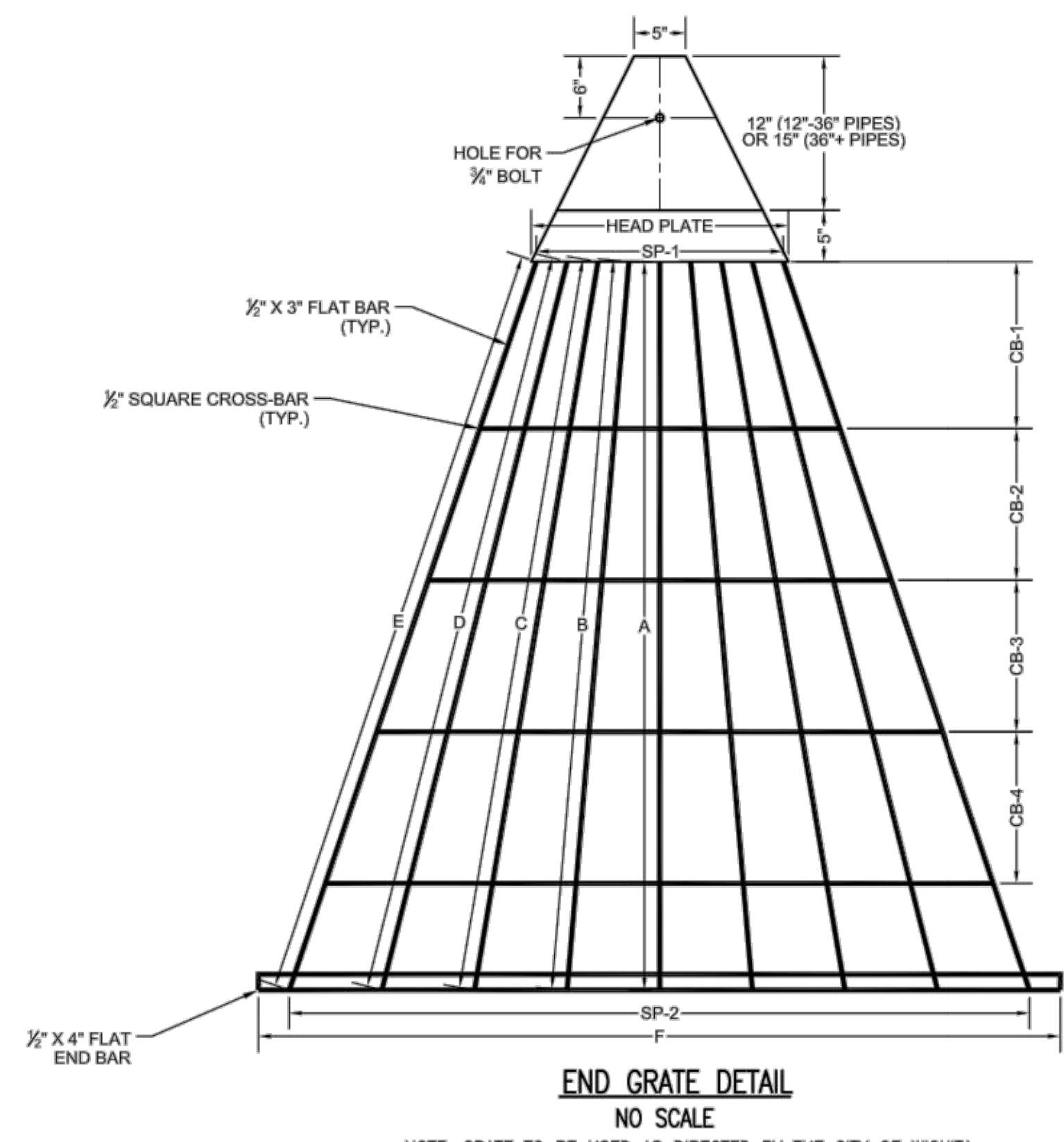


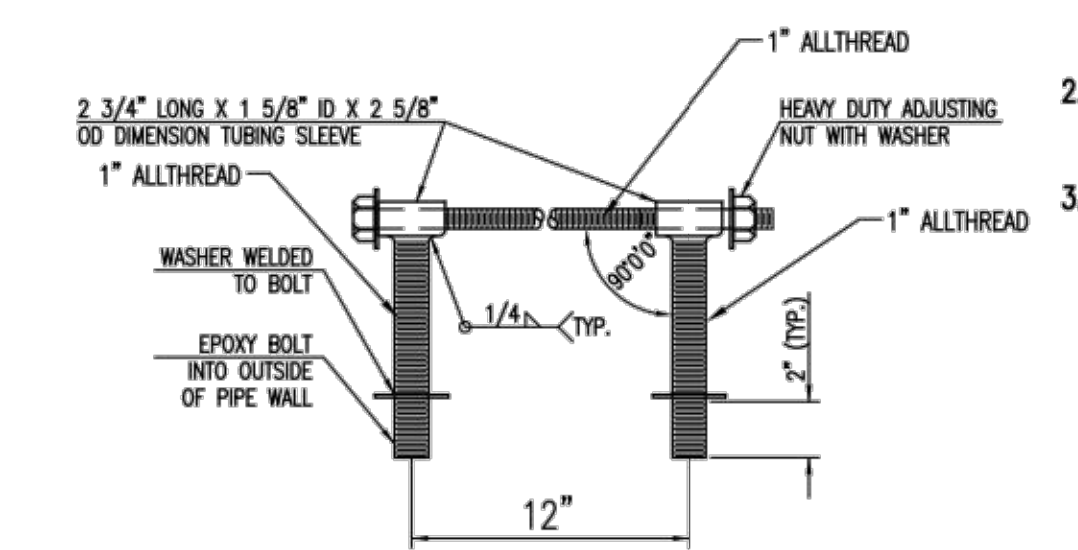
GRATE DIMENSIONS

PIPE SIZE	HEAD PLATE	A	B	C	D	E	F	CB-1	CB-2	CB-3	CB-4	SP-1	SP-2
12"	13"	19 1/4"	19 3/8"	-	-	-	27"	10 3/4"	-	-	-	3@4"	3@6"
15"	13"	23 1/2"	25 1/4"	-	-	-	34"	10 3/4"	-	-	-	3@4"	3@6"
18"	13"	25"	26 1/8"	-	-	-	40"	12 7/8"	-	-	-	3@4"	3@9"
24"	17"	41 1/2"	42 1/2"	43 1/2"	-	-	53"	12"	15"	-	-	4@4"	4@9"
30"	19"	51 1/2"	52 1/2"	53 1/2"	-	-	65"	16 1/4"	11 3/4"	12"	-	2@3"+3@4"	5@9"
36"	21"	60 1/2"	61 1/2"	62 1/2"	-	-	78"	18 5/8"	14 1/4"	16"	-	2@2"+4@4"	6@9"
42"	22"	65 1/2"	66 1/2"	67 3/8"	68 3/4"	-	86"	13 3/8"	12 5/8"	13"	11 3/4"	7@3"	7@9"
48"	25"	70 7/8"	71"	71 3/4"	73"	74 1/2"	90"	16 1/4"	14 3/4"	14 3/4"	14 3/4"	8@3"	8@9"
54"	26"	71 3/4"	73"	74 1/2"	74 3/4"	76 3/4"	96"	6 7/8"	20 7/8"	17 7/8"	15 5/8"	4@2 3/4"+5@3"	9@9"
60"	28"	61 1/8"	61 3/4"	62 3/4"	64 1/2"	66 5/8"	102"	12"	12"	11 1/2"	13"	2@2"+8@3"	10@9"



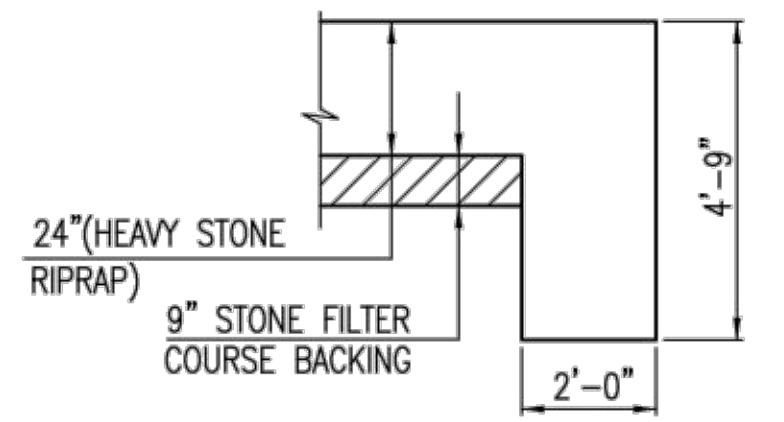
HEAVY DUTY (H.D.) COUPLER (>36")
NO SCALE

- NOTES
- BOLTS TO BE A-36 1 1/2" DIAMETER.
 - BOLTS, NUTS, WASHERS AND SLEEVES TO BE ZINC PLATED.
 - WASHERS TO BE 3 1/2" O.D. X 7 GAUGE.
 - SHIP WITH NUTS AND WASHERS PLACED ON BOLTS.



HEAVY DUTY (H.D.) COUPLER (<30")
NO SCALE

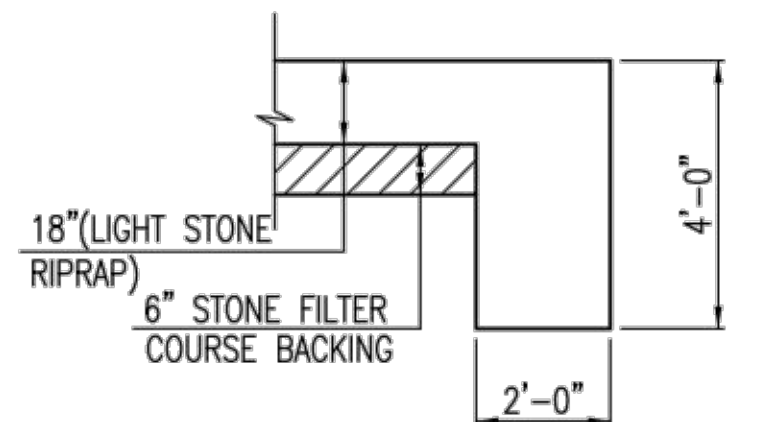
- NOTES
- BOLTS TO BE A-36 1 1/2" DIAMETER.
 - BOLTS, NUTS, WASHERS AND SLEEVES TO BE ZINC PLATED.
 - WASHERS TO BE 3 1/2" O.D. X 7 GAUGE.
 - SHIP WITH NUTS AND WASHERS PLACED ON BOLTS.



TYPICAL SECTION THRU TOEWALL
NO SCALE

- NOTES
- ALL RIPRAP FOR THIS PROJECT SHALL BE NATURAL STONE. NEITHER BROKEN CONCRETE, FABRIC ENVELOPE, NOR PREMIXED DRY PACKAGED CONCRETE BAG ALTERNATES WILL BE ALLOWED, UNLESS INDICATED OTHERWISE.
 - TOEWALLS SHALL BE INSTALLED ALONG ALL UNPROTECTED EDGES OF STONE RIPRAP.
 - GROUTING OF THE SURFACE OF THE RIPRAP SHALL NOT BE PERFORMED, UNLESS INDICATED OTHERWISE. GROUTING OF THE TOEWALLS SHALL BE PERFORMED PER CITY SPECIFICATIONS.

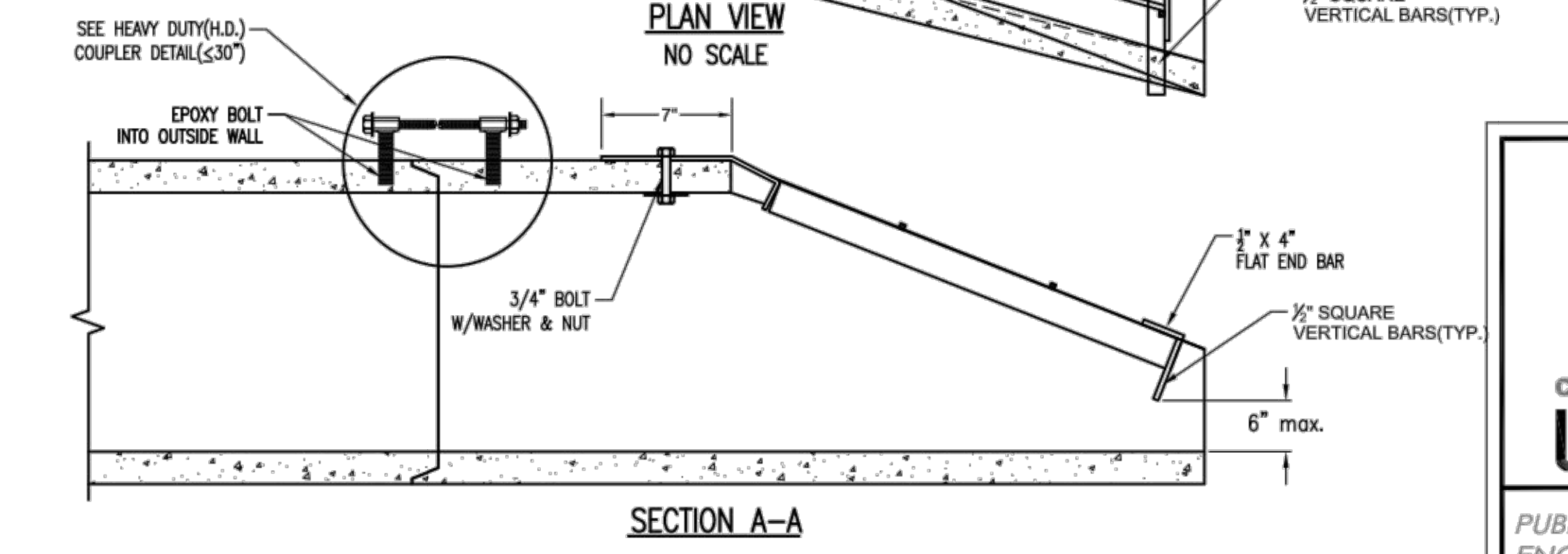
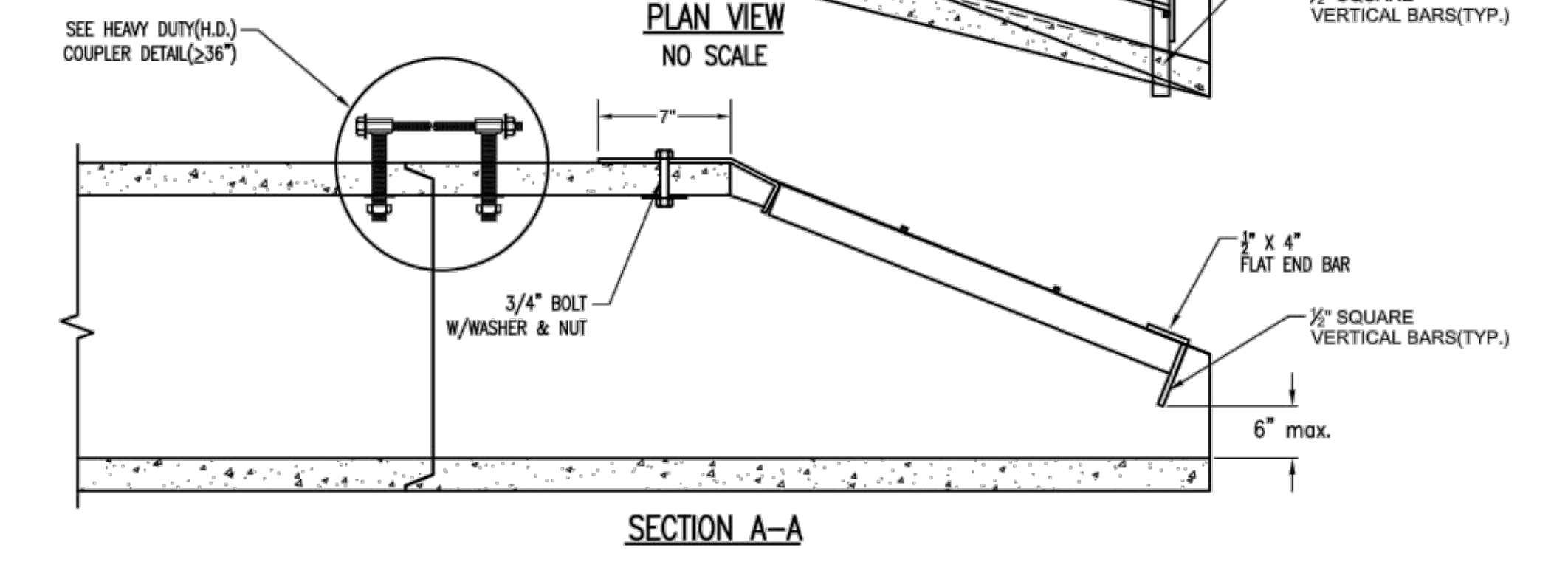
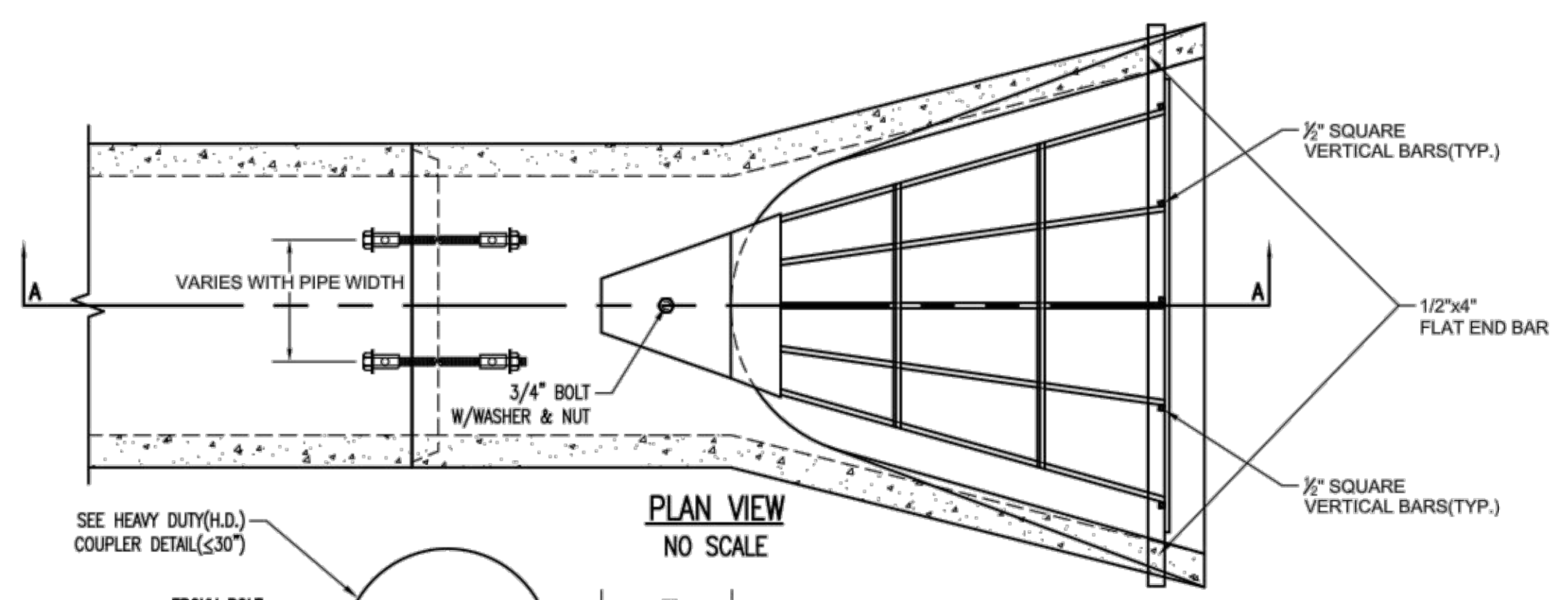
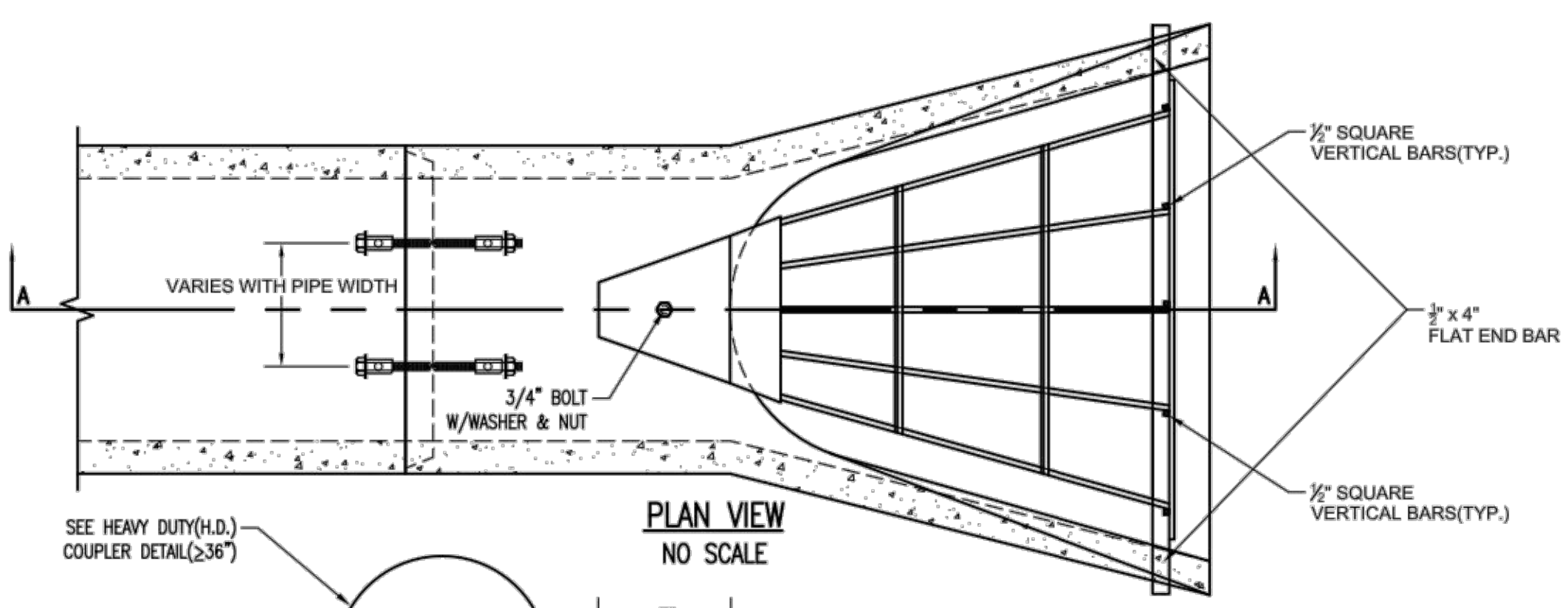
HEAVY STONE RIPRAP DETAILS



TYPICAL SECTION THRU TOEWALL
NO SCALE

- NOTES
- ALL RIPRAP FOR THIS PROJECT SHALL BE NATURAL STONE. NEITHER BROKEN CONCRETE, FABRIC ENVELOPE, NOR PREMIXED DRY PACKAGED CONCRETE BAG ALTERNATES WILL BE ALLOWED, UNLESS INDICATED OTHERWISE.
 - TOEWALLS SHALL BE INSTALLED ALONG ALL UNPROTECTED EDGES OF STONE RIPRAP.
 - GROUTING OF THE SURFACE OF THE RIPRAP SHALL NOT BE PERFORMED, UNLESS INDICATED OTHERWISE. GROUTING OF THE TOEWALLS SHALL BE PERFORMED PER CITY SPECIFICATIONS.

LIGHT STONE RIPRAP DETAILS



END SECTION, PIPE RESTRAINT COUPLER & END GRATE

CITY ENGINEER
GARY JANZEN, P.E.

PROJECT NUMBER	OCA NUMBER	DATE
		01/2015

CITY ENGINEER'S OFFICE
CITY HALL - SEVENTH FLOOR
455 NORTH MAIN STREET
WICHITA, KANSAS 67202-1620
(316) 268-4501

DESIGNER	DRAWN BY
SMM	TDA

PROJ. NO. G21D1997
SHEET 1997DDET

KAW VALLEY ENGINEERING

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WEST MACARTHUR ROAD
WICHITA, KANSAS 67217

STORM SEWER IMPROVEMENTS
END SECT., GRATE & COUPLER DETAIL SHEET