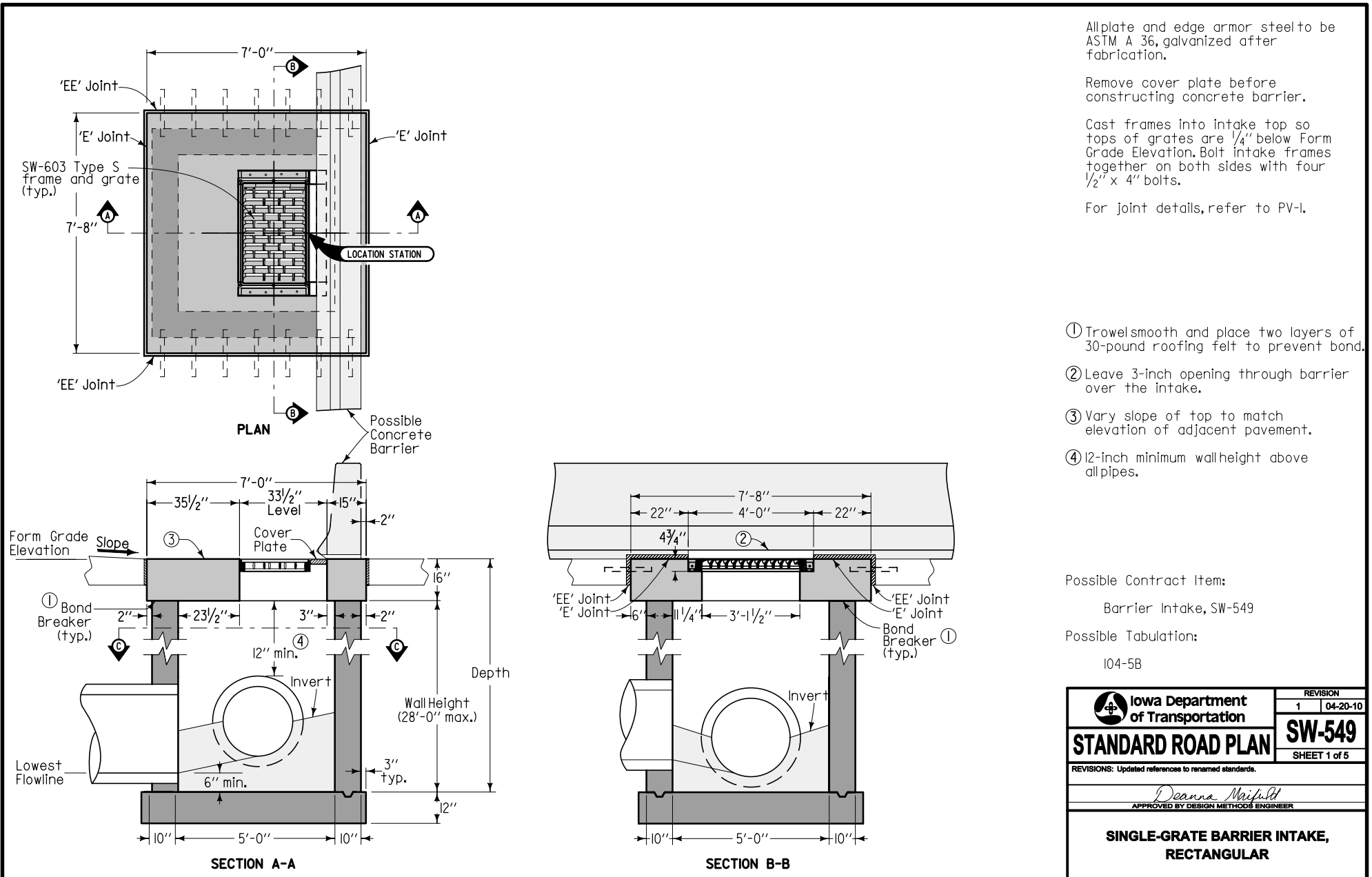




All plate and edge armor steel to be ASTM A 36, galvanized after fabrication.

Remove cover plate before constructing concrete barrier.

Cast frames into intake top so tops of grates are 1/4" below Form Grade Elevation. Bolt intake frames together on both sides with four 1/2" x 4" bolts.

For joint details, refer to PV-1.

- ① Trowel smooth and place two layers of 30-pound roofing felt to prevent bond.
- ② Leave 3-inch opening through barrier over the intake.
- ③ Vary slope of top to match elevation of adjacent pavement.
- ④ 12-inch minimum wall height above all pipes.

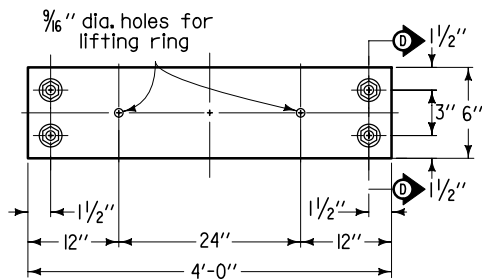
Possible Contract Item:

Barrier Intake, SW-549

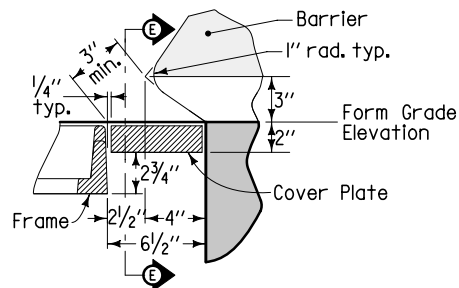
Possible Tabulation:

104-5B

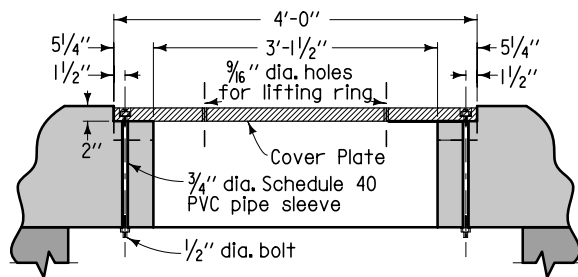
 Iowa Department of Transportation	REVISION	
	1	04-20-10
	STANDARD ROAD PLAN	
SW-549		
SHEET 1 of 5		
REVISIONS: Updated references to renamed standards.		
<i>Deanna Maiford</i>		
APPROVED BY DESIGN METHODS ENGINEER		
SINGLE-GRATE BARRIER INTAKE, RECTANGULAR		



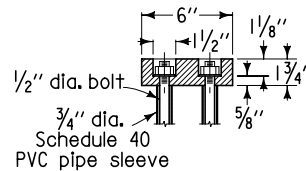
PLAN



PART SECTION A-A

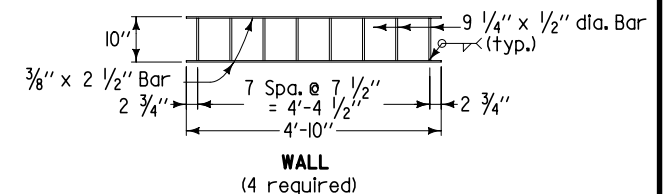
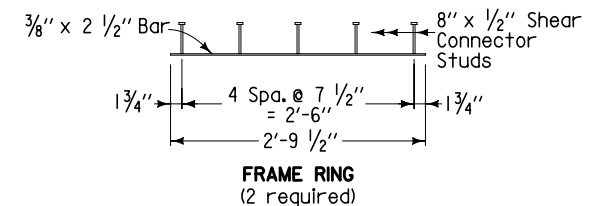


SECTION E-E



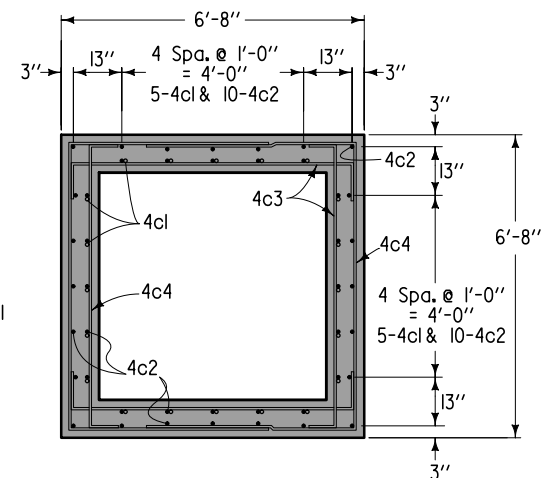
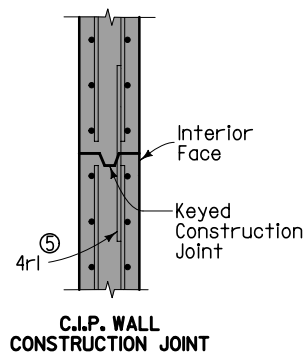
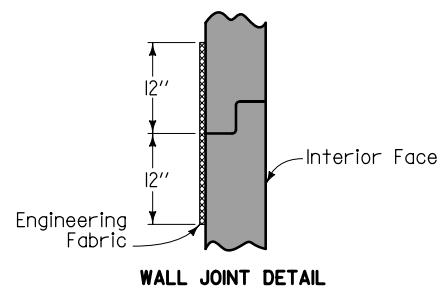
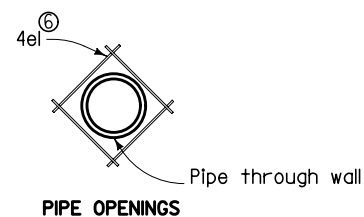
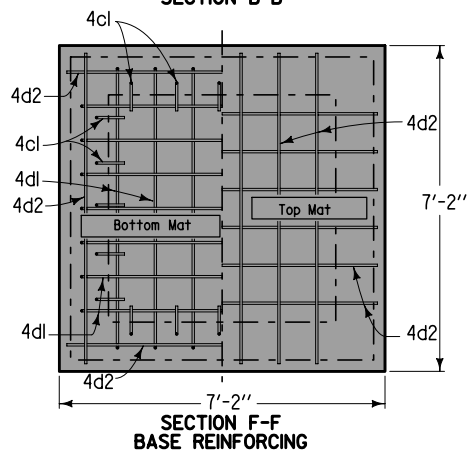
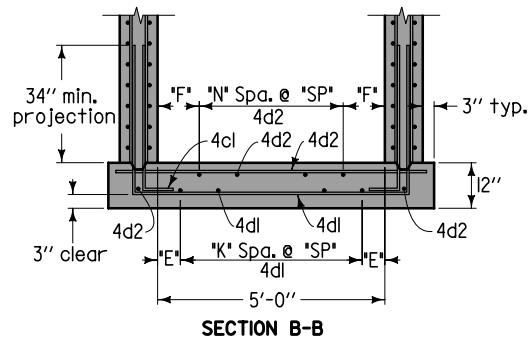
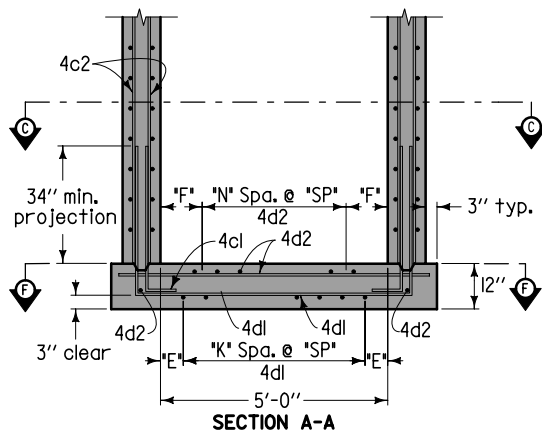
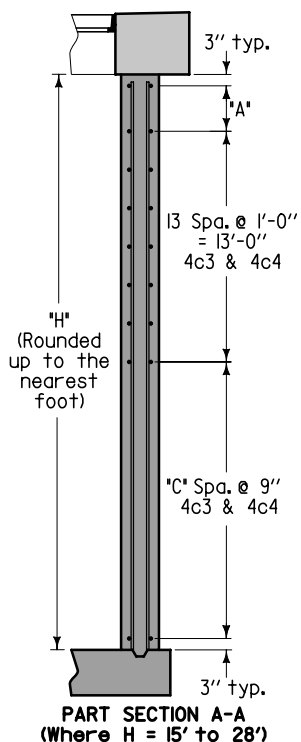
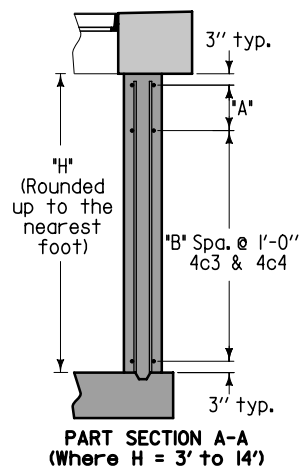
SECTION D-D

COVER PLATE



EDGE ARMOR

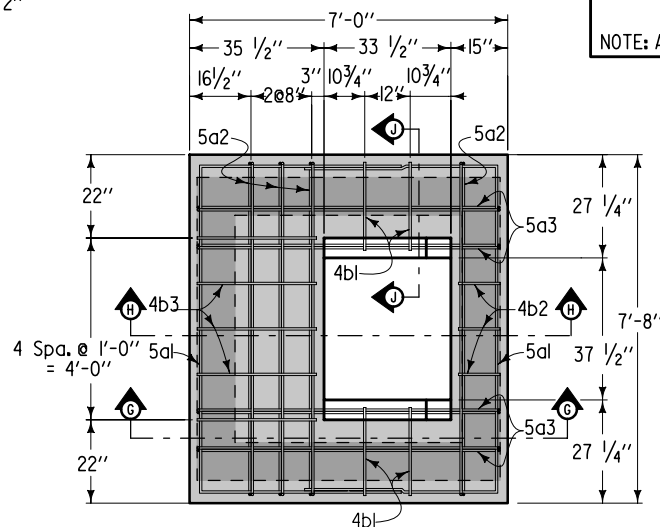
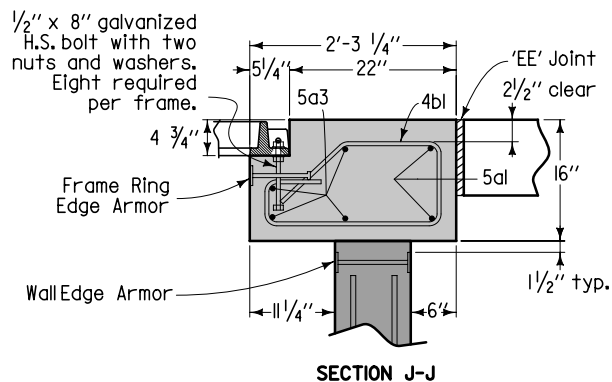
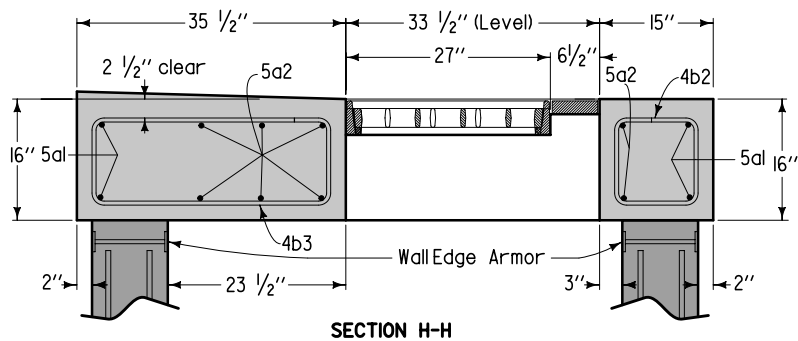
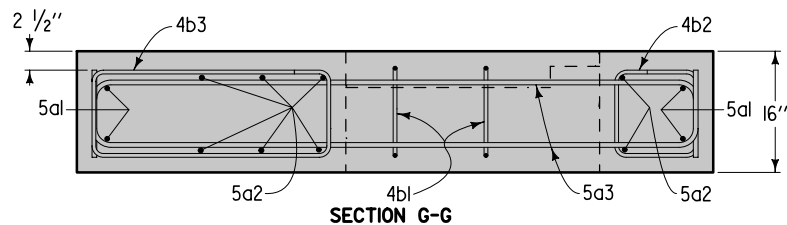
 Iowa Department of Transportation	REVISION 1 04-20-10	
	STANDARD ROAD PLAN	
REVISIONS: Updated references to renamed standards.		SW-549 SHEET 2 of 5
APPROVED BY DESIGN METHODS ENGINEER <i>Deanna Maifeld</i>		
SINGLE-GRATE BARRIER INTAKE, RECTANGULAR		



- ⑤ Install 4r1 x 3'-0" dowelbars at 12-inch spacing at all wall joints. Twenty-four 4r1 bars required per joint, total weight = 48 lbs.
- ⑥ 4el bar length to be pipe diameter plus 12 inches. Place 4el bar inside of vertical reinforcing. Shift main reinforcing bars as required for pipe entrance. Field cut bars to maintain 3-inch clearance from bottom and 2-inch clearance from face of walls. Eight 4el bars required per pipe entrance.

Iowa Department of Transportation STANDARD ROAD PLAN REVISIONS: Updated references to renamed standards. <i>Deanna Maifeld</i> APPROVED BY DESIGN METHODS ENGINEER	REVISION 1 04-20-10	
	SW-549 SHEET 3 of 5	
	SINGLE-GRATE BARRIER INTAKE, RECTANGULAR	

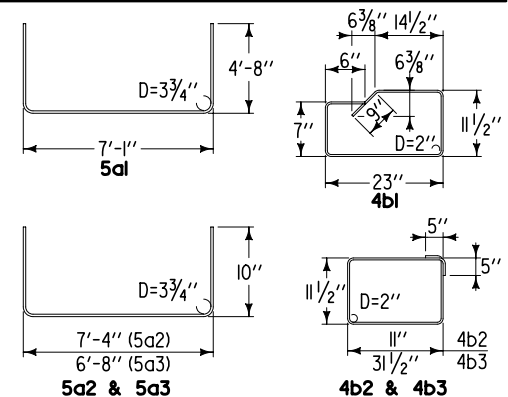
WALLS



LID

LID REINFORCING BAR LIST						
EPOXY-COATED						
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT (lb.)	
5a1	Lid, Exterior, Edge		4	16'-5	68	
5a2	Lid, Interior, Longitudinal		8	9'-0	75	
5a3	Lid, Interior, Transverse		8	8'-4	70	
4b1	Lid Hoop		4	5'-11	16	
4b2	Lid Hoop		3	4'-7	9	
4b3	Lid Hoop		5	8'-0	27	
EPOXY COATED REINFORCING STEEL - TOTAL						265

LID BENT BAR DETAILS



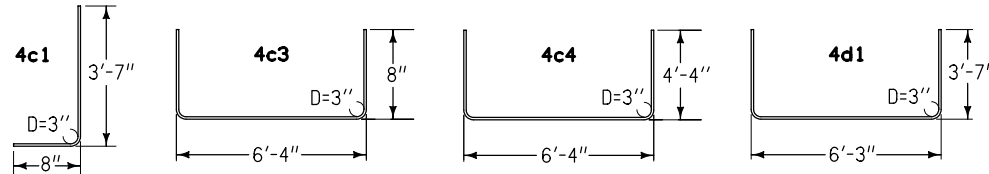
NOTE: ALL DIMENSIONS SHOWN OUT TO OUT. D = PIN DIAMETER

Iowa Department of Transportation STANDARD ROAD PLAN REVISIONS: Updated references to renamed standards. <i>Deanna Maifeld</i> APPROVED BY DESIGN METHODS ENGINEER SINGLE-GRADE BARRIER INTAKE, RECTANGULAR	REVISION 1 04-20-10	
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VARIABLE DIMENSIONS AND QUANTITIES

Dimensions					Bar List																Quantities								
⑦	⑧				4c1		4c2		4c3 ⑨				4c4 ⑨				4d1				4d2				Concrete - Cu. Yds.				Steel ⑩
					NO.	L	NO.	L	No. of Spaces		NO.	L	No. of Spaces		NO.	L	SP	"K"	NO.	L	SP	"N"	NO.	L	BASE	LID	WALLS	TOTAL	TOTAL LBS.
									"B"	"C"			"B"	"C"															
"H" (Ft.)	"A" (In.)	"E" (In.)	"F" (In.)																										
3	6	3"	7½"	20	4'-3"	--	--	2	--	16	7'-8"	2	--	8	15'-0"	9"	6	14	13'-5"	9"	5	16	6'-10"	1.9	2.2	2.2	6.3	682	
4	6	3"	7½"	20	4'-3"	44	3'-10"	3	--	20	7'-8"	3	--	10	15'-0"	9"	6	14	13'-5"	9"	5	16	6'-10"	1.9	2.2	2.9	7.0	835	
5	6	3"	7½"	20	4'-3"	44	4'-10"	4	--	24	7'-8"	4	--	12	15'-0"	9"	6	14	13'-5"	9"	5	16	6'-10"	1.9	2.2	3.6	7.7	905	
6	6	3"	7½"	20	4'-3"	44	5'-10"	5	--	28	7'-8"	5	--	14	15'-0"	9"	6	14	13'-5"	9"	5	16	6'-10"	1.9	2.2	4.3	8.4	974	
7	6	3"	7½"	20	4'-3"	44	6'-10"	6	--	32	7'-8"	6	--	16	15'-0"	9"	6	14	13'-5"	9"	5	16	6'-10"	1.9	2.2	5.0	9.1	1,045	
8	6	3"	7½"	20	4'-3"	44	7'-10"	7	--	36	7'-8"	7	--	18	15'-0"	9"	6	14	13'-5"	9"	5	16	6'-10"	1.9	2.2	5.8	9.9	1,114	
9	6	3"	7½"	20	4'-3"	44	8'-10"	8	--	40	7'-8"	8	--	20	15'-0"	9"	6	14	13'-5"	9"	5	16	6'-10"	1.9	2.2	6.5	10.6	1,185	
10	6	3"	7½"	20	4'-3"	44	9'-10"	9	--	44	7'-8"	9	--	22	15'-0"	9"	6	14	13'-5"	9"	5	16	6'-10"	1.9	2.2	7.2	11.3	1,254	
11	6	2"	6"	20	4'-3"	44	10'-10"	10	--	48	7'-8"	10	--	24	15'-0"	8"	7	16	13'-5"	8"	6	18	6'-10"	1.9	2.2	7.9	12.0	1,351	
12	6	2"	6"	20	4'-3"	44	11'-10"	11	--	52	7'-8"	11	--	26	15'-0"	8"	7	16	13'-5"	8"	6	18	6'-10"	1.9	2.2	8.6	12.7	1,422	
13	6	2"	6"	20	4'-3"	44	12'-10"	12	--	56	7'-8"	12	--	28	15'-0"	8"	7	16	13'-5"	8"	6	18	6'-10"	1.9	2.2	9.4	13.5	1,492	
14	6	2"	6"	20	4'-3"	44	13'-10"	13	--	60	7'-8"	13	--	30	15'-0"	8"	7	16	13'-5"	8"	6	18	6'-10"	1.9	2.2	10.1	14.2	1,562	
15	9	2"	6"	20	4'-3"	44	14'-10"	13	1	64	7'-8"	13	1	32	15'-0"	8"	7	16	13'-5"	8"	6	18	6'-10"	1.9	2.2	10.8	14.9	1,632	
16	12	2"	6"	20	4'-3"	44	15'-10"	13	2	68	7'-8"	13	2	34	15'-0"	8"	7	16	13'-5"	8"	6	18	6'-10"	1.9	2.2	11.5	15.6	1,701	
17	6	2"	6"	20	4'-3"	44	16'-10"	13	4	76	7'-8"	13	4	38	15'-0"	8"	7	16	13'-5"	8"	6	18	6'-10"	1.9	2.2	12.2	16.3	1,812	
18	9	2"	6"	20	4'-3"	44	17'-10"	13	5	80	7'-8"	13	5	40	15'-0"	8"	7	16	13'-5"	8"	6	18	6'-10"	1.9	2.2	13.0	17.1	1,882	
19	12	2"	6"	20	4'-3"	44	18'-10"	13	6	84	7'-8"	13	6	42	15'-0"	8"	7	16	13'-5"	8"	6	18	6'-10"	1.9	2.2	13.7	17.8	1,952	
20	6	2"	6"	20	4'-3"	44	19'-10"	13	8	92	7'-8"	13	8	46	15'-0"	8"	7	16	13'-5"	8"	6	18	6'-10"	1.9	2.2	14.4	18.5	2,062	
21	9	2"	6"	20	4'-3"	44	20'-10"	13	9	96	7'-8"	13	9	48	15'-0"	8"	7	16	13'-5"	8"	6	18	6'-10"	1.9	2.2	15.1	19.2	2,132	
22	12	2"	6"	20	4'-3"	44	21'-10"	13	10	100	7'-8"	13	10	50	15'-0"	8"	7	16	13'-5"	8"	6	18	6'-10"	1.9	2.2	15.8	19.9	2,202	
23	6	2"	6"	20	4'-3"	44	22'-10"	13	12	108	7'-8"	13	12	54	15'-0"	8"	7	16	13'-5"	8"	6	18	6'-10"	1.9	2.2	16.6	20.7	2,312	
24	9	2"	5½"	20	4'-3"	44	23'-10"	13	13	112	7'-8"	13	13	56	15'-0"	7"	8	18	13'-5"	7"	7	20	6'-10"	1.9	2.2	17.3	21.4	2,410	
25	12	2"	5½"	20	4'-3"	44	24'-10"	13	14	116	7'-8"	13	14	58	15'-0"	7"	8	18	13'-5"	7"	7	20	6'-10"	1.9	2.2	18.0	22.1	2,479	
26	6	2"	5½"	20	4'-3"	44	25'-10"	13	16	124	7'-8"	13	16	62	15'-0"	7"	8	18	13'-5"	7"	7	20	6'-10"	1.9	2.2	18.7	22.8	2,589	
27	9	2"	5½"	20	4'-3"	44	26'-10"	13	17	128	7'-8"	13	17	64	15'-0"	7"	8	18	13'-5"	7"	7	20	6'-10"	1.9	2.2	19.4	23.5	2,660	
28	12	2"	5½"	20	4'-3"	44	27'-10"	13	18	132	7'-8"	13	18	66	15'-0"	7"	8	18	13'-5"	7"	7	20	6'-10"	1.9	2.2	20.2	24.3	2,729	

BENT BAR DETAILS



NOTE: ALL DIMENSIONS SHOWN OUT TO OUT. D = PIN DIAMETER

- ⑦ A = First bar spacing at top of wall. Minimum spacing is 3 inches. Maximum spacing is 12 inches. Adjust as necessary.
- ⑧ See Section A-A on sheet 2 for spacing.
- ⑨ Quantity includes 265 lbs. for lid.

Iowa Department of Transportation STANDARD ROAD PLAN REVISIONS: Updated references to renamed standards. <i>Deanna Maifeld</i> APPROVED BY DESIGN METHODS ENGINEER SINGLE-GRADE BARRIER INTAKE, RECTANGULAR	REVISION 1 04-20-10	
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	SHEET 5 of 5	
	(Empty space for additional revisions)	