

PLAN VIEW (SHALLOW)

- ① Trowel smooth and place 2 layers of 30 lb. roofing felt to prevent bond.
- ② Cast frame into intake top. See Standard Road Plan RA-66D for frame and grate details.
- ③ Top elevation of grate shall be 1/4" below Form Grade Elevation.
- ④ Possible subdrain. See plans for location and elevation. See Standard Road Plan RF-19C for connection details.
- ⑤ 36" maximum concrete pipe.
- ⑥ Oversized hole for pipe opening to be field grouted. See Standard Road Plan RA-56.
- ⑦ Intake base may be cast in place or precast. If precast, the base and first wall section may be cast separately with a keyway or as one unit.
- ⑧ If intake base is precast, it shall be placed on a 6" bed of sand. This bedding shall be compacted and provide uniform support for the entire area of the base and shall extend 12" outside the edge of the base.
- ⑨ Slope of top shall vary to match elevation of adjacent pavement.

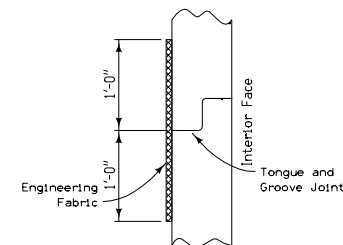
Remove cover plate before constructing concrete barrier.

Shallow intake option:
 H = 3'-0" to 15'-0"
 7' barrel diameter

Deep intake option:
 H = 15'-0" to 28'-0"
 4' and 7' barrel diameters

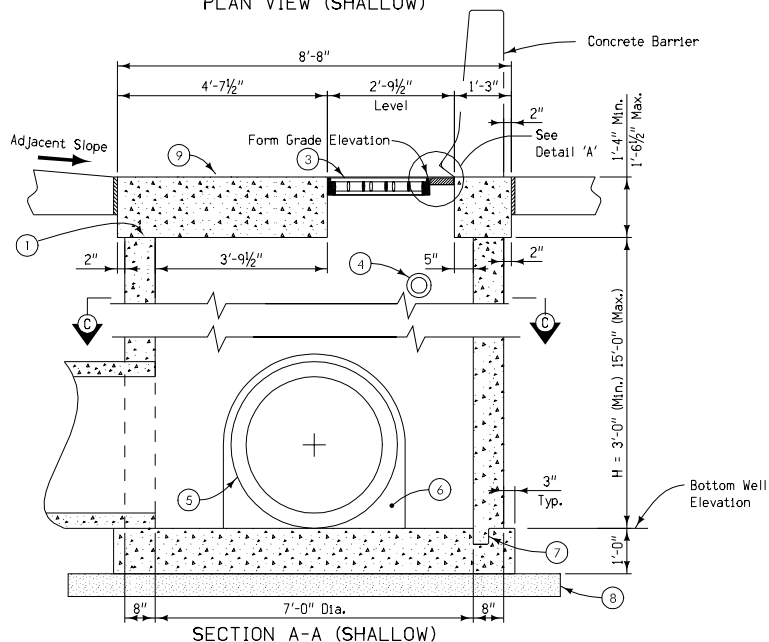
Steps, when specified, shall meet the requirements of ASTM C478. The top step shall be located a maximum of 28" below the form grade elevation.

Contract Items:
 Barrier Intake, RA-48B
 Tabulation: 104-5B

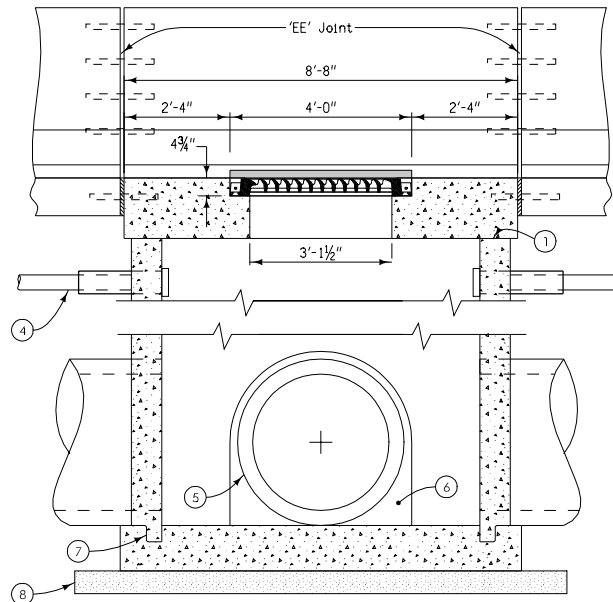


WALL JOINT DETAIL

For joint details, see Standard Road Plans RH-50, RH-51 and RH-52.



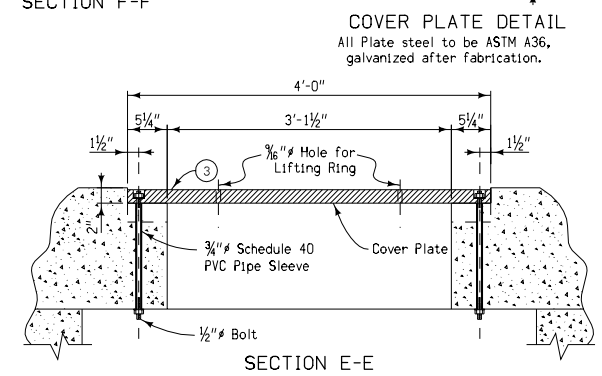
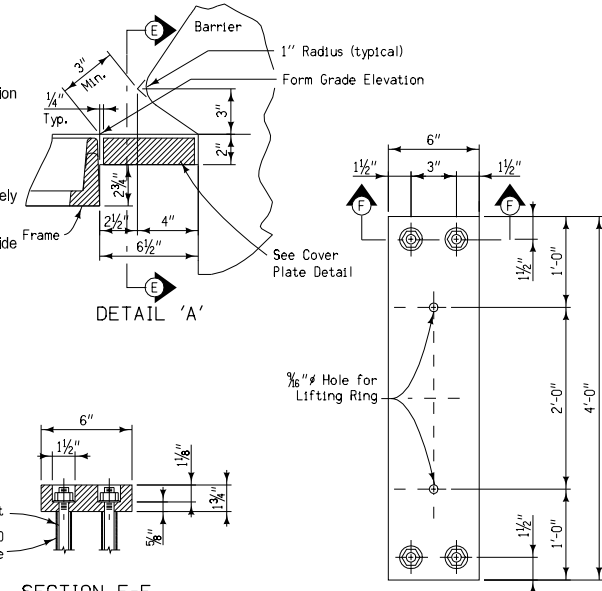
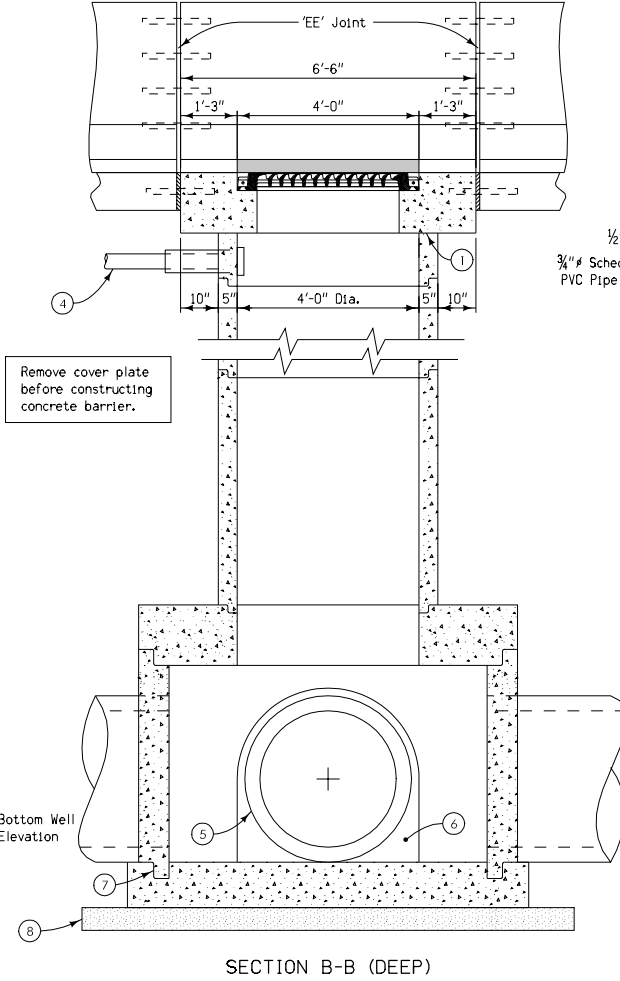
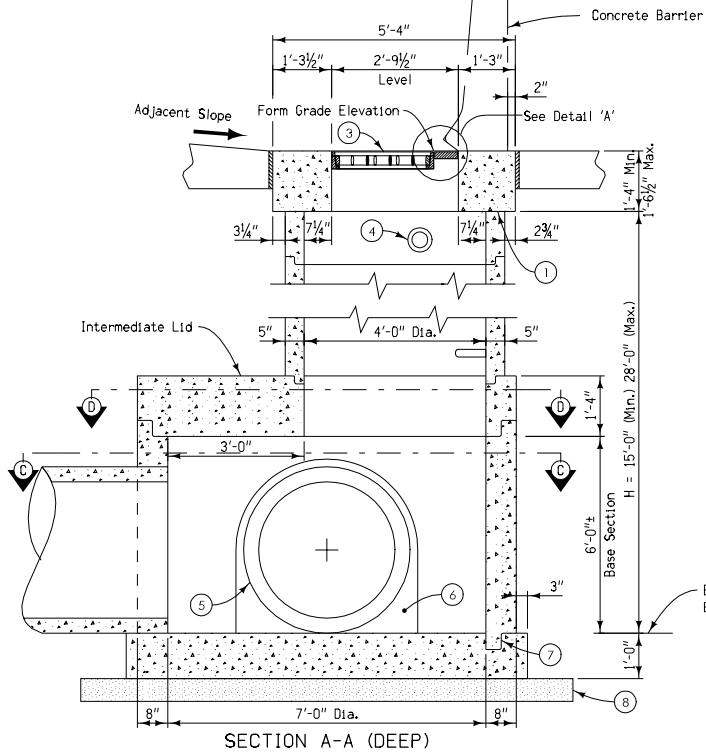
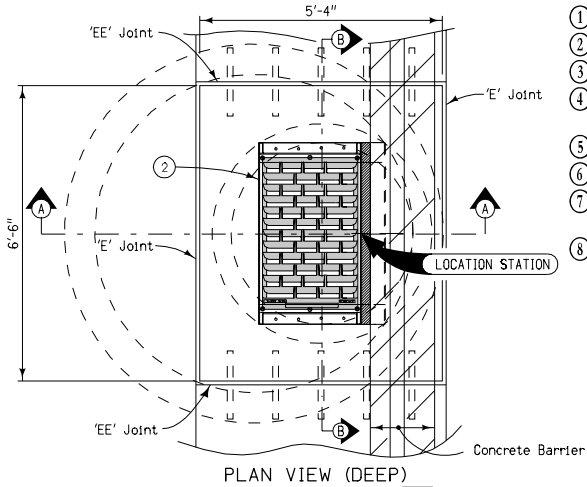
SECTION A-A (SHALLOW)



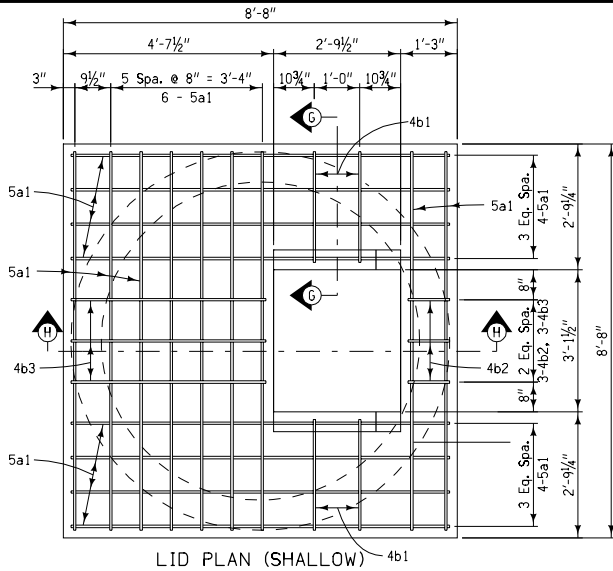
SECTION B-B (SHALLOW)

	REVISION
	NEW 10-17-06
STANDARD ROAD PLAN	RA-48B
REVISIONS: Replaces paren-number standards with one multi-page standard.	SHEET 1 of 5
<i>Deanna Mufeld</i> APPROVED BY DESIGN METHODS ENGINEER	
SINGLE GRATE BARRIER INTAKE, CIRCULAR	

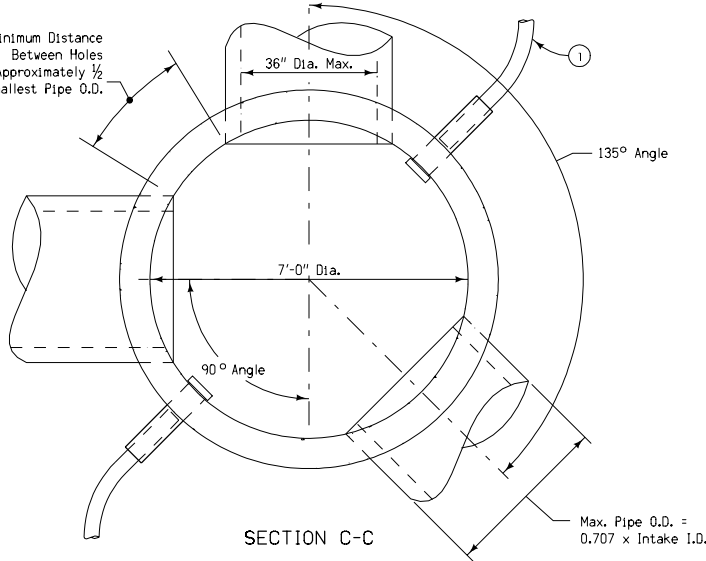
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- ③ Top elevation of grate and cover plate shall be $\frac{1}{4}$ " below Form Grade Elevation.
- ④ Possible subdrain. See plans for location and elevation. See Standard Road Plan RF-19C for connection details.
- ⑤ 36" maximum concrete pipe.
- ⑥ Oversized hole for pipe opening to be field grouted. See Standard Road Plan RA-56.
- ⑦ Intake base may be cast in place or precast. If precast, the base and first wall section may be cast separately with a keyway or as one unit.
- ⑧ If intake base is precast, it shall be placed on a 6" bed of sand. This bedding shall be compacted and provide uniform support for the entire area of the base and shall extend 1'-0" outside the edge of base.



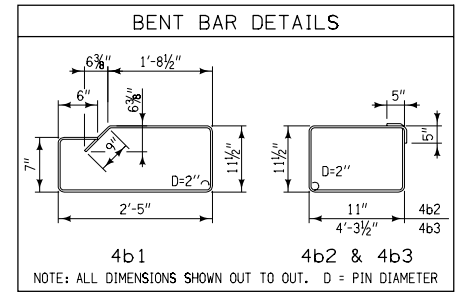
	REVISION
	NEW 10-17-06
STANDARD ROAD PLAN	RA-48B
REVISIONS: Replaces paren-number standards with one multi-page standard.	SHEET 2 of 5
<i>Deanna Mufford</i> APPROVED BY DESIGN METHODS ENGINEER	
SINGLE GRATE BARRIER INTAKE, CIRCULAR	



Minimum Distance
Between Holes
Approximately 1/2
of Smallest Pipe O.D.



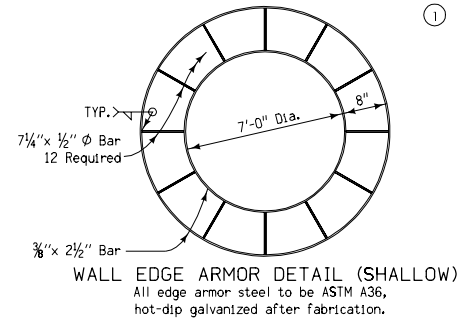
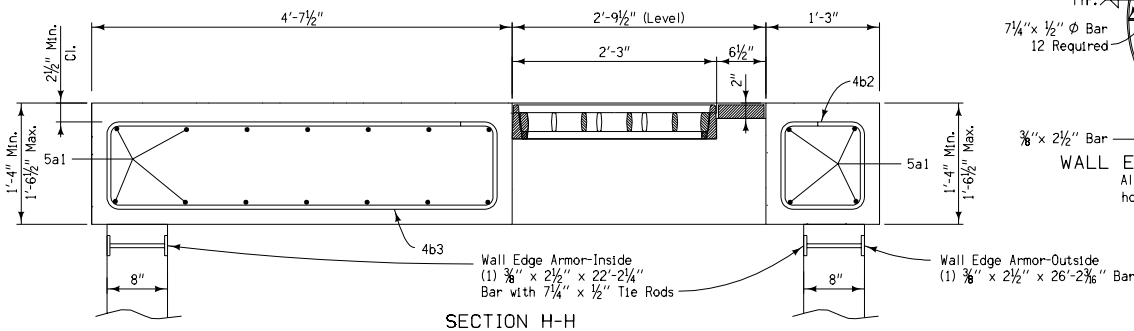
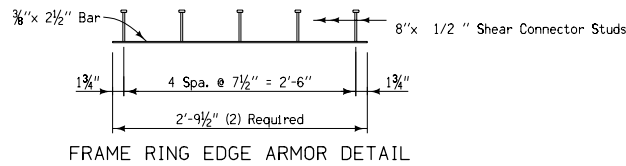
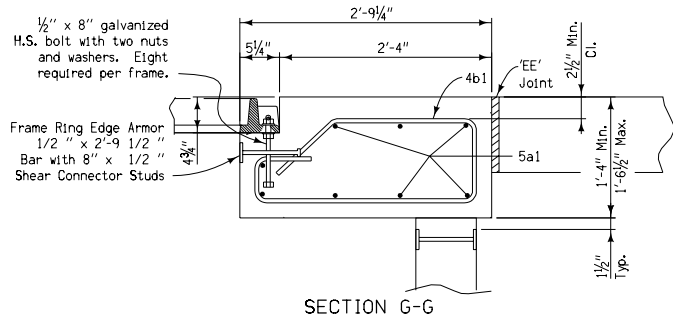
BILL OF REINFORCING STEEL					
ONE GRATE INTAKE LID - EPOXY COATED					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5a1	Lid, Longitudinal & Transverse	—	34	8'-4"	296
4b1	Lid Hoop	⌋	4	6'-11"	18
4b2	Lid Hoop	⌋	3	4'-7"	9
4b3	Lid Hoop	⌋	3	11'-4"	23
EPOXY COATED REINFORCING STEEL - TOTAL					346



QUANTITY SUMMARY FOR
ONE GRATE INTAKE LID

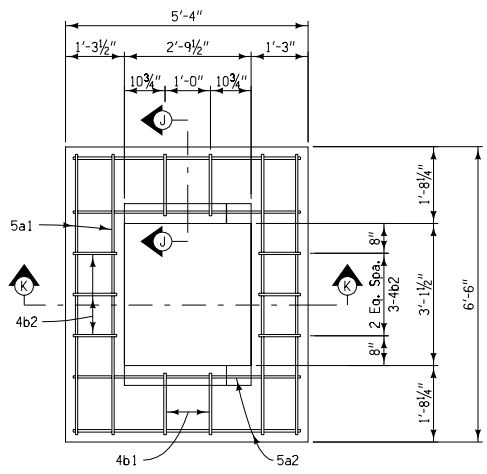
Concrete	3.2	CY
Epoxy Coated Reinforcing Steel	346	LB

* Based on Minimum thickness = 1'-4"

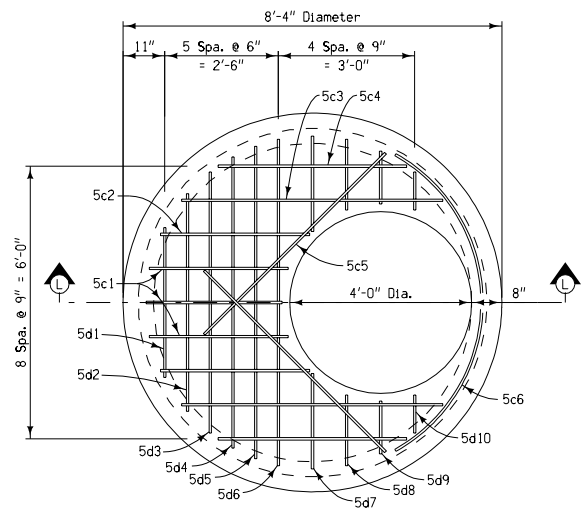


① Possible Subdrain. See Plans for location and elevation. See Standard Road Plan RF-19C for connection details.

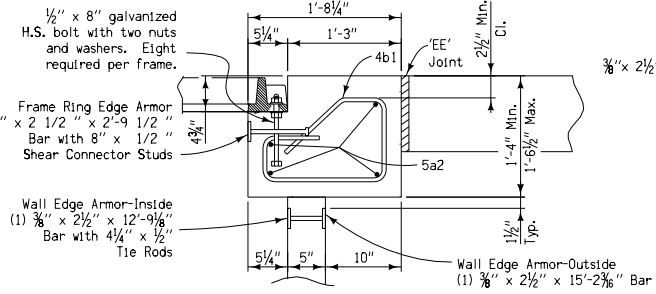
	REVISION
	NEW 10-17-06
STANDARD ROAD PLAN	RA-48B
REVISIONS: Replaces paren-number standards with one multi-page standard. Changed Headed Anchors to Shear Connector Studs	SHEET 3 of 5
<i>Deanna Marfield</i> APPROVED BY DESIGN METHODS ENGINEER	
SINGLE GRATE BARRIER INTAKE, CIRCULAR	



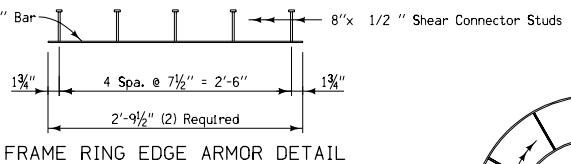
LID PLAN (DEEP)



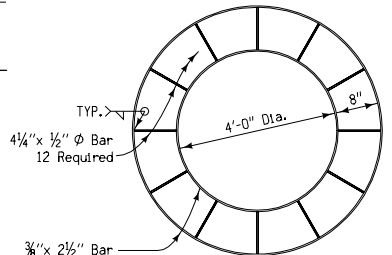
SECTION D-D (DEEP) INTERMEDIATE LID



SECTION J-J

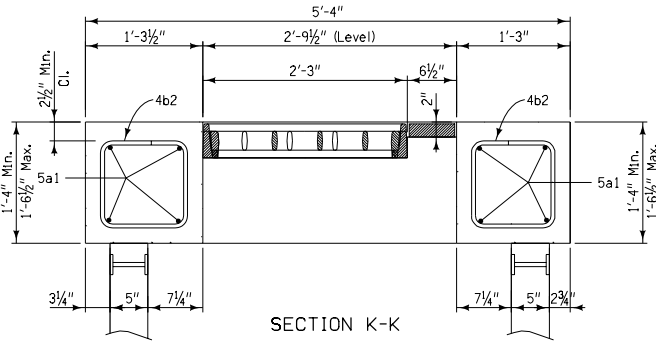


FRAME RING EDGE ARMOR DETAIL

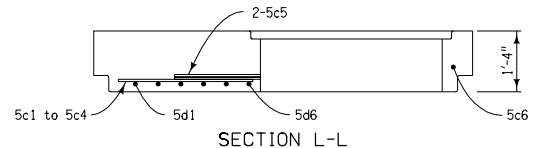


WALL EDGE ARMOR DETAIL (DEEP)

All edge armor steel to be ASTM A36, hot dip galvanized after fabrication.



SECTION K-K

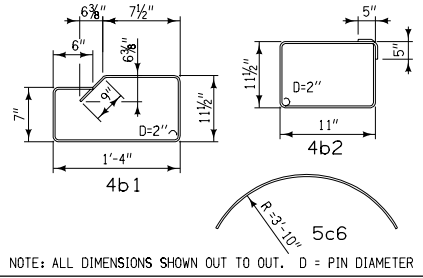


SECTION L-L

BILL OF REINFORCING STEEL

ONE GRATE INTAKE LIDS - EPOXY COATED					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5a1	Lid, Longitudinal	—	8	6'-2"	51
5a2	Lid, Transverse	—	8	5'-0"	42
4b1	Lid Hoop	□	4	4'-9"	13
4b2	Lid Hoop	□	6	4'-7"	18
5c1	Intermediate Lid	—	3	3'-0"	9
5c2	Intermediate Lid	—	2	3'-3"	7
5c3	Intermediate Lid	—	2	5'-9"	12
5c4	Intermediate Lid	—	2	4'-2"	9
5c5	Intermediate Lid	—	2	5'-8"	12
5c6	Intermediate Lid	—	1	8'-2"	9
5d1	Intermediate Lid	—	1	3'-5"	4
5d2	Intermediate Lid	—	1	4'-10"	5
5d3	Intermediate Lid	—	1	5'-9"	6
5d4	Intermediate Lid	—	1	6'-5"	7
5d5	Intermediate Lid	—	1	6'-10"	7
5d6	Intermediate Lid	—	1	7'-2"	7
5d7	Intermediate Lid	—	2	2'-1"	4
5d8	Intermediate Lid	—	2	1'-6"	3
5d9	Intermediate Lid	—	2	1'-2"	2
5d10	Intermediate Lid	—	2	0'-11"	2
EPOXY COATED REINFORCING STEEL - TOTAL					229

BENT BAR DETAILS



QUANTITY SUMMARY FOR ONE GRATE INTAKE LID

Concrete - Lid	1.2	CY
Concrete - Intermediate Lid	2.1	CY
Epoxy Coated Reinforcing Steel	229	LB

Iowa Department of Transportation

REVISION 10-17-06

STANDARD ROAD PLAN

RA-48B

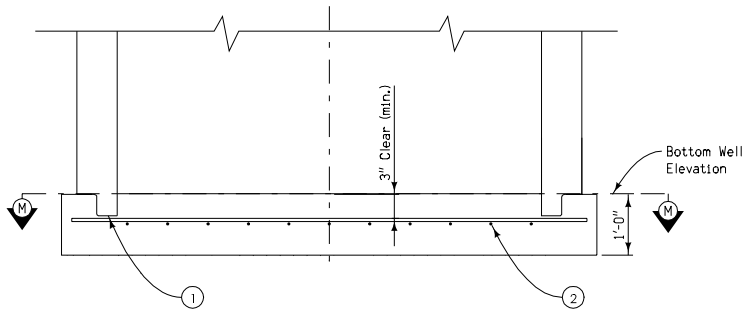
SHEET 4 of 5

REVISIONS: Replaces paren-number standards with one multi-page standard. Changed Headed Anchors to Shear Connector Studs.

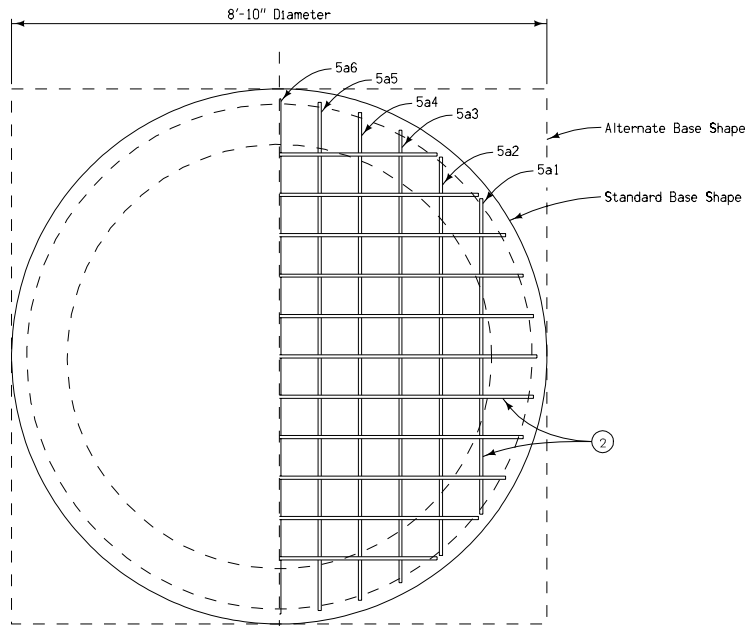
Deanna McFadden

APPROVED BY DESIGN METHODS ENGINEER

SINGLE GRATE BARRIER INTAKE, CIRCULAR



PART SECTION A-A



SECTION M-M
(BASE PLAN)

BILL OF REINFORCING STEEL

CIRCULAR INTAKE BASE - EPOXY COATED					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5a1	Base, Longit. & Transverse	=====	4	5'-3"	22
5a2	Base, Longit. & Transverse	=====	4	6'-7"	27
5a3	Base, Longit. & Transverse	=====	4	7'-6"	31
5a4	Base, Longit. & Transverse	=====	4	8'-0"	33
5a5	Base, Longit. & Transverse	=====	4	8'-4"	35
5a6	Base, Longit. & Transverse	=====	2	8'-6"	18
EPOXY COATED REINFORCING STEEL - TOTAL					166

- ① Intake base may be cast in place or precast. If precast, the base and first wall section may be cast separately with a keyway or as one unit.
- ② #5 at 8" centers each direction or equivalent welded wire fabric.

QUANTITY SUMMARY FOR
CIRCULAR INTAKE BASE

Concrete	2.3 CY *
Epoxy Coated Reinforcing Steel	166 LB *

* Based on Standard Base Shape

	REVISION
	NEW 10-17-06
STANDARD ROAD PLAN	RA-48B
	SHEET 5 of 5
<small>REVISIONS: Replaces paren-number standards with one multi-page standard.</small>	
 <small>APPROVED BY DESIGN METHODS ENGINEER</small>	
SINGLE GRATE BARRIER INTAKE, CIRCULAR	