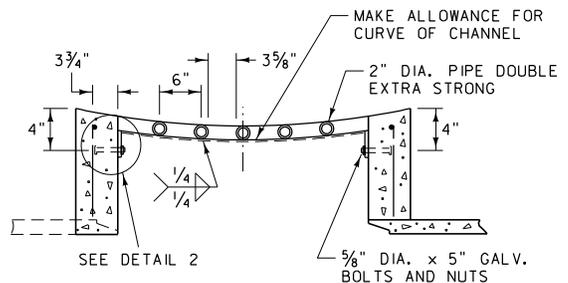
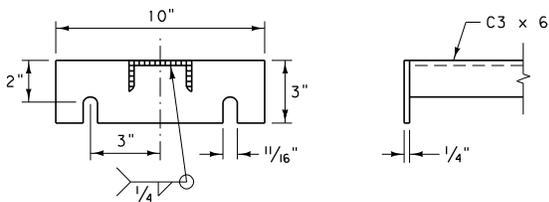
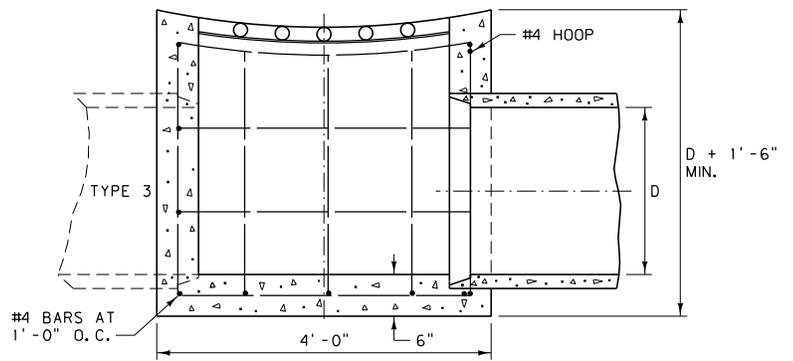
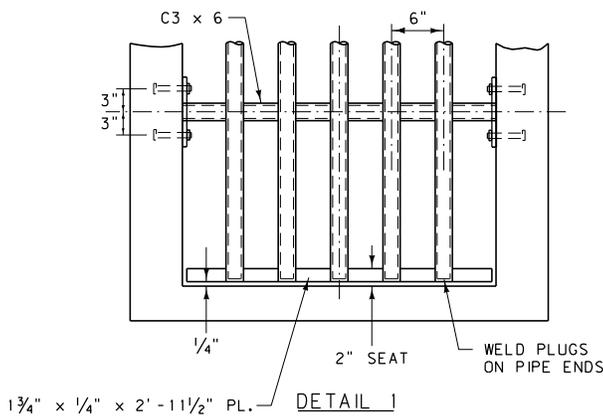
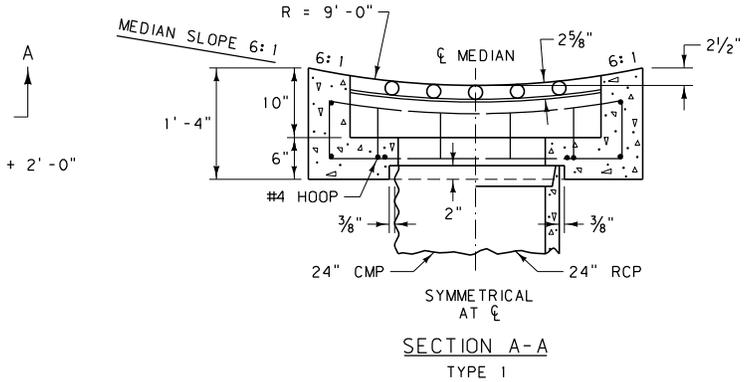


NOTE:
WHEN MEDIAN INLET COVER IS INSTALLED OVER PIPES LARGER THAN 36", WITHOUT ADEQUATE COVER TO PERMIT THE USE OF TYPE 1 INSTALLATION, PROVIDE A DETAIL OF THE INSTALLATION IN THE PLANS.



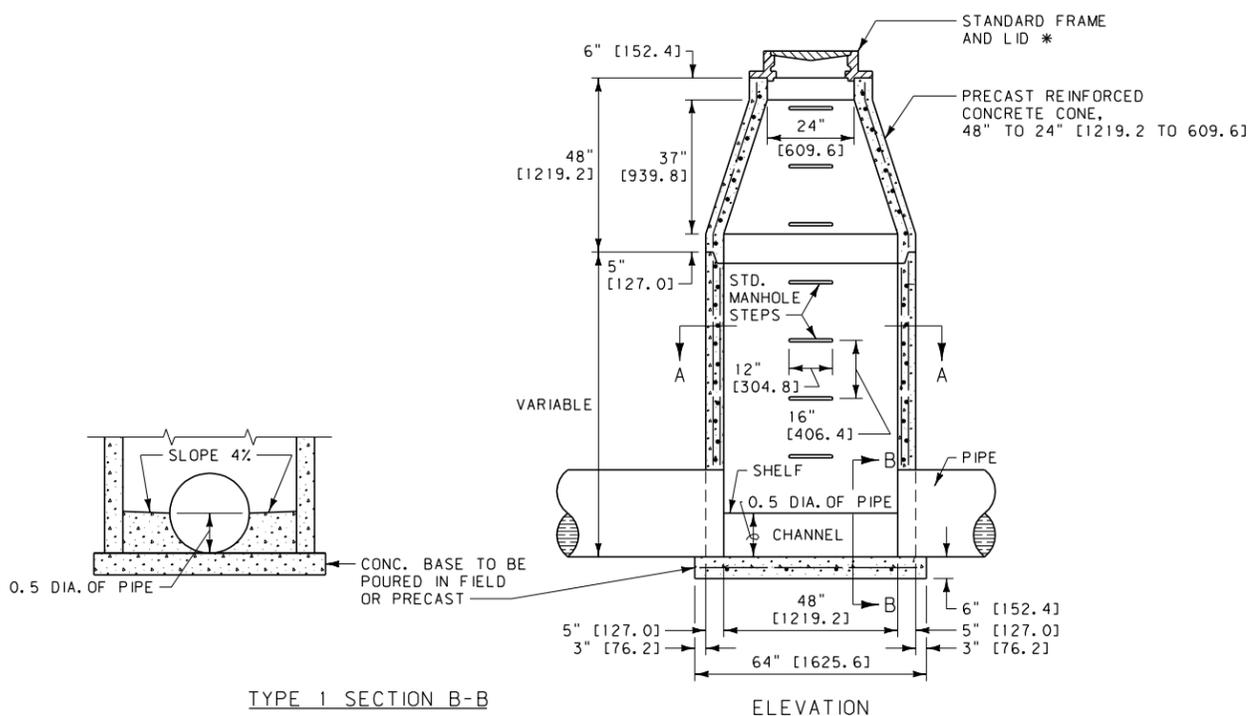
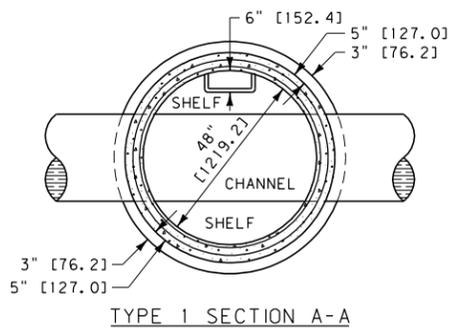
TYPE	GRATE AND REINFORCING STEEL (LB.) *		
	CMP AND RCP		
	24"	30"	36"
1	50	~	~
2	85	95	105
3	85 ⊗	95 ⊗	105 ⊗
GRATE	165	185	210

TYPE	CLASS "DD" CONC. OR EQUAL (C.Y.) *					
	24"		30"		36"	
	CMP	RCP	CMP	RCP	CMP	RCP
1	0.4	0.4	~	~	~	~
2	1.0	1.0	1.1	1.0	1.2	1.1
3	0.9 ⊗	0.9 ⊗	1.0 ⊗	0.9 ⊗	1.0 ⊗	0.9 ⊗

* QUANTITIES ARE FOR ESTIMATING PURPOSES ONLY.
⊗ TYPE 3 IS A SPECIAL CASE TO BE FIGURED FOR THE PARTICULAR INSTALLATION.

NOTE:
PAINT ALL EXPOSED METAL PARTS WITH ONE COAT OF ZINC RICH PAINT AND TWO COATS OF ALUMINUM PAINT IN ACCORDANCE WITH SECTION 710 OF THE STANDARD SPECIFICATIONS.

DETAILED DRAWING	
REFERENCE STANDARD SPEC. SECTION 604	DWG. NO. 604-00
MEDIAN INLET COVER	
EFFECTIVE: FEBRUARY 2005	
 MONTANA DEPARTMENT OF TRANSPORTATION <i>servicing you with pride</i>	

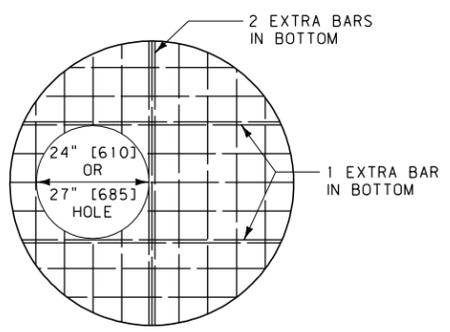


TYPE 1 MANHOLE

* MINIMUM WEIGHT FOR FRAME AND LID IS 400 LB [180 kg]. TOOL RING AND COVER TO A MACHINE FIT. A LIGHTER FRAME AND LID MAY BE USED IF APPROVED BY THE FACILITY OWNER RESPONSIBLE FOR MAINTENANCE OF THE MANHOLE.

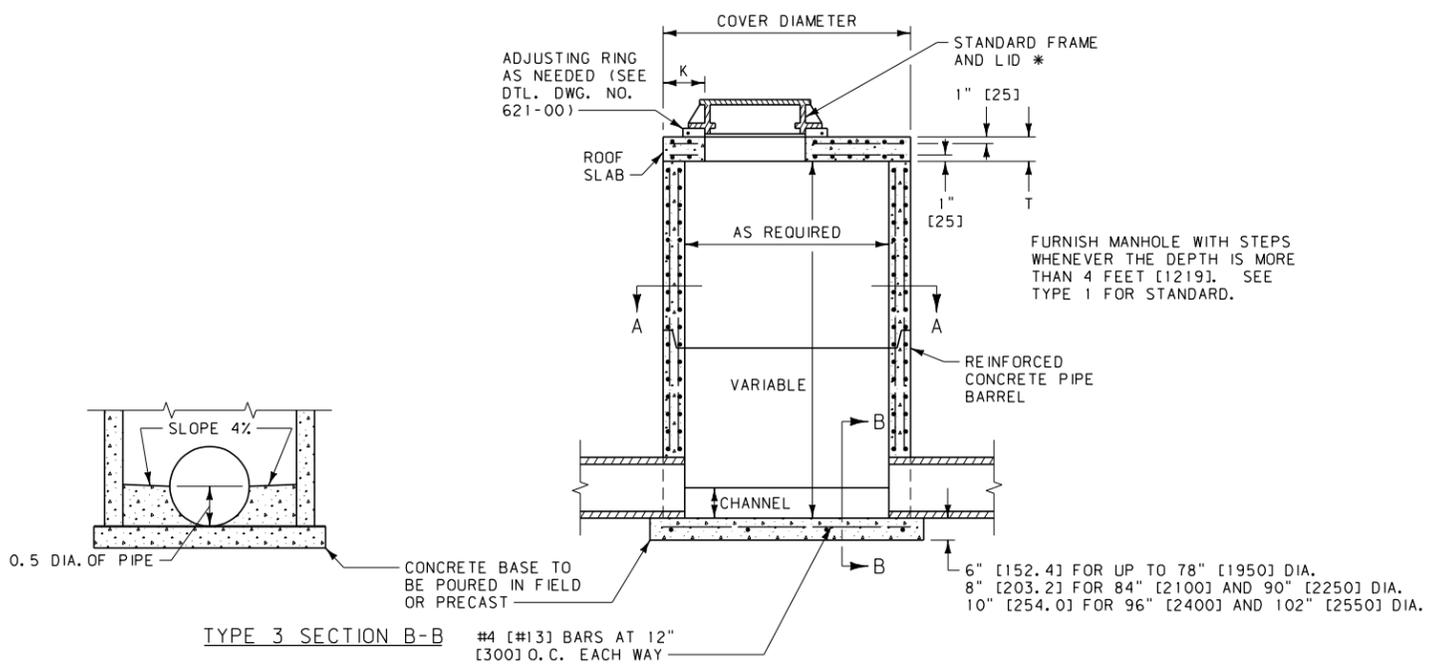
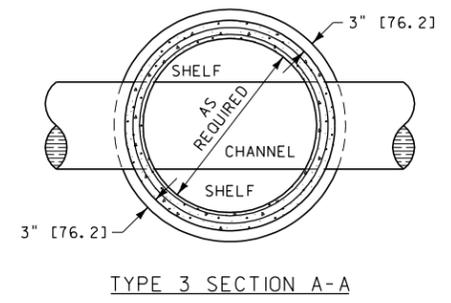
- NOTES:
- UPPER PART IS A CONE TO REDUCE DIAMETER FROM 48" TO 24" [1219.2 TO 609.6]. CUT BOTTOM OF LOWER SECTION SQUARE TO FIT BASE. GROUT JOINT BETWEEN BASE AND WALL. A GROUT CONSISTING OF ONE PART PORTLAND CEMENT AND TWO PARTS APPROVED SAND MAY BE USED; AN APPROVED PREMIXED GROUT, AVAILABLE COMMERCIALY, MAY BE USED.
 - CONFORM ALL MANHOLE CONSTRUCTION, EXCEPT FRAME, LID, AND BASE, TO AASHTO M 199 [199M]. THIS PROVIDES THAT REINFORCEMENT MAY BE MADE OF (1) COLD DRAWN STEEL WIRE- AASHTO M 32 [32M], (2) STEEL WIRE FABRIC- AASHTO M 55 [55M], OR (3) STEEL BARS- AASHTO M 31 [31M].
 - THE CONSTRUCTION AND REINFORCEMENT OF THE BASE FOR EACH TYPE MUST BE COMPATIBLE WITH THE CONDITIONS AND THE WEIGHT OF THE SUPER-STRUCTURE. AASHTO M 199 [199M] PROVIDES FOR 4000 PSI [27.6 MPa] CONCRETE. THE MIX CALLS FOR 6 SACKS OF CEMENT PER CUBIC YARD [335 kg/m³]. REINFORCEMENT SHOWN IS ILLUSTRATIVE ONLY. SEE AASHTO M 199 [199M].
 - THE ECCENTRIC CONE TRANSITION WILL BE PERMITTED WHEN ITS USE WILL BE AS GOOD OR BETTER THAN THE ONES SHOWN, OR IF IT IS MORE ADAPTABLE TO EXISTING CONDITIONS.
 - USE MANHOLE STEPS THAT ARE METALLIC AND COATED WITH COPOLYMER POLYPROPYLENE, OR AN APPROVED EQUAL. THE MINIMUM DESIGN LIVE LOAD FOR A SINGLE CONCENTRATED LOAD IS 300 POUNDS [135 kg].

TYPE 3 MANHOLE ROOF SLAB					
PIPE DIA.	SLAB DIA.	T	K	BOTTOM BARS	TOP BARS
48"	58"	6"	6"	#4 AT 6"	~
54"	65"	8"	6"	#4 AT 6"	~
60"	72"	8"	7"	#4 AT 6"	#3 AT 6"
66"	79"	8"	7"	#4 AT 6"	#3 AT 6"
72"	86"	8"	8"	#4 AT 6"	#3 AT 6"
78"	93"	8"	8"	#4 AT 4"	#4 AT 4"
84"	100"	8"	9"	#4 AT 4"	#4 AT 4"
90"	107"	8"	9"	#4 AT 4"	#4 AT 4"
96"	114"	8"	9"	#5 AT 4"	#4 AT 4"
102"	121"	8"	9"	#5 AT 4"	#4 AT 4"



TYPE 3 MANHOLE ROOF SLAB

NOTE: CENTER THE OPENING OVER THE ROOF SLAB FOR TYPE I, II, IV AND V INLETS ON 48" [1200] COMBINATION TYPE 3 MANHOLES.



TYPE 3 MANHOLE ROOF SLAB (METRIC)					
PIPE DIA.	SLAB DIA.	T	K	BOTTOM BARS	TOP BARS
1200	1473.2	152.4	152.4	#13 AT 150	~
1350	1651.0	203.2	152.4	#13 AT 150	~
1500	1828.8	203.2	177.8	#13 AT 150	#10 AT 150
1650	2006.6	203.2	177.8	#13 AT 150	#10 AT 150
1800	2184.4	203.2	203.2	#13 AT 150	#10 AT 150
1950	2362.2	203.2	203.2	#13 AT 100	#13 AT 100
2100	2540.0	203.2	228.6	#13 AT 100	#13 AT 100
2250	2717.8	203.2	228.6	#13 AT 100	#13 AT 100
2400	2895.6	203.2	228.6	#16 AT 100	#13 AT 100
2550	3073.4	203.2	228.6	#16 AT 100	#13 AT 100

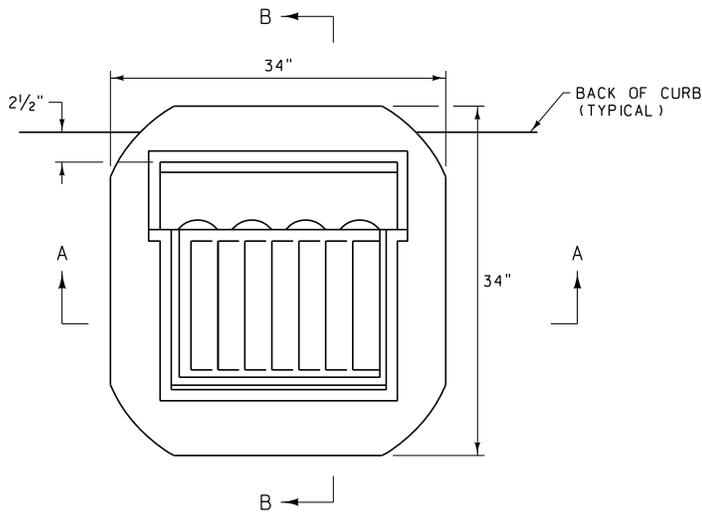
NOTE: ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED

DETAILED DRAWING
REFERENCE DWG. NO.
STANDARD SPEC. 604-02
SECTION 604.711

CONCRETE MANHOLE

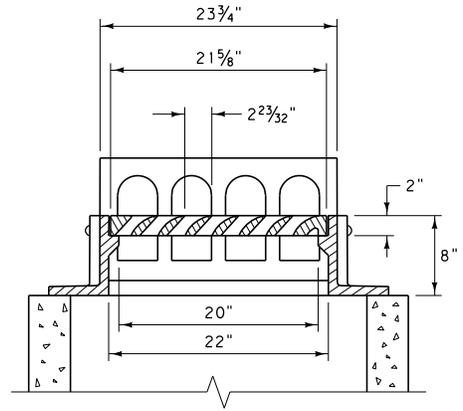
--REVISED--
MAY 2011
EFFECTIVE: FEBRUARY 2005
MDT MONTANA DEPARTMENT OF TRANSPORTATION

UNITS SHOWN IN BRACKETS [] ARE METRIC AND ARE IN MILLIMETERS (mm) UNLESS OTHER UNITS ARE SHOWN.

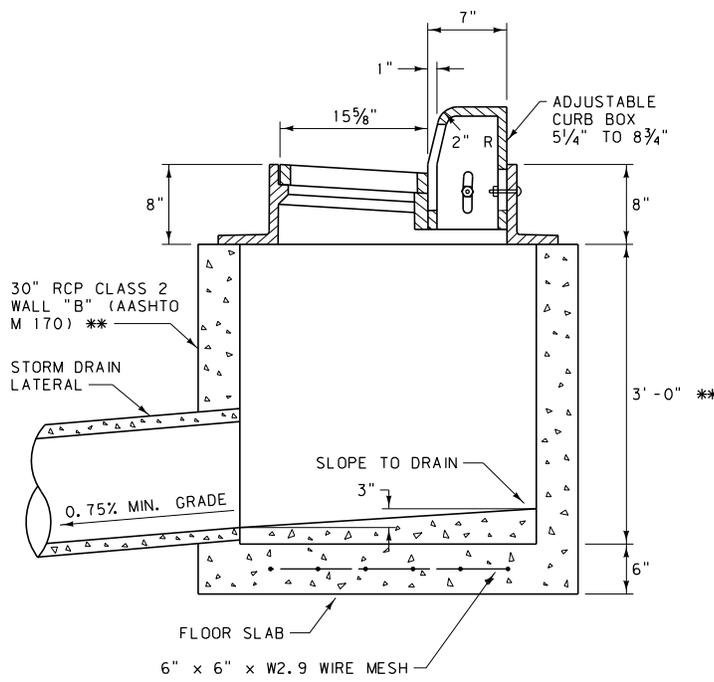


PLAN

NEENAH FOUNDRY R-3286-8V (JUNE 1992 REVISION), D & L FOUNDRY MODEL I-3559, OR APPROVED EQUAL (VANE STYLE)



SECTION A-A

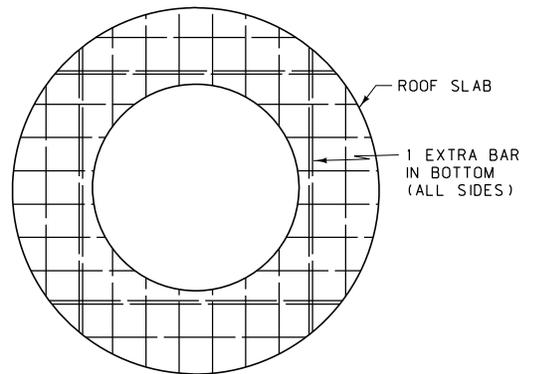
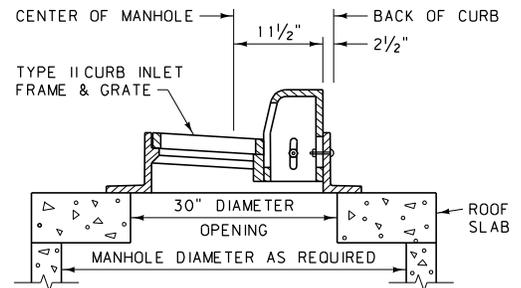


SECTION B-B

** STANDARD UNLESS OTHERWISE NOTED ON THE PLANS.

NOTE:
ALL CONCRETE IS CLASS "DD" OR APPROVED EQUAL.

COMBINATION



ROOF SLAB

SEE DETAILED DRAWING NO. 604-02 FOR DIAMETER, SLAB THICKNESS AND REINFORCING REQUIREMENTS FOR COMBINATION TYPE 3 MANHOLE, TYPE II CURB INLET.

DETAILED DRAWING

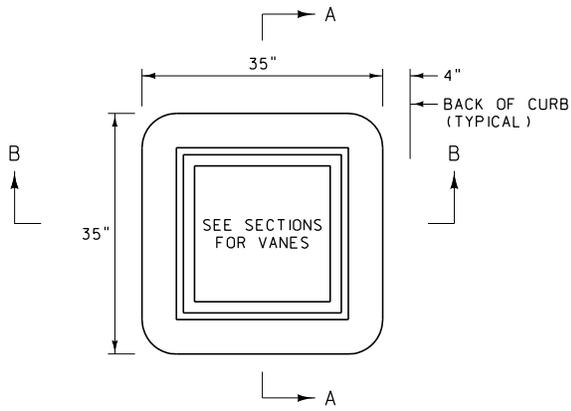
REFERENCE DWG. NO.
STANDARD SPEC. 604-03
SECTION 604

CURB INLET
TYPE II

-- REVISED --
January 2008

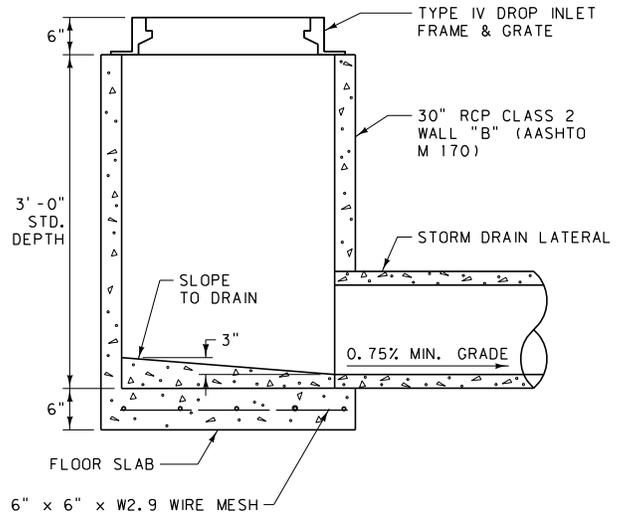
EFFECTIVE: FEBRUARY 2005

 MONTANA DEPARTMENT OF TRANSPORTATION
serving you with pride

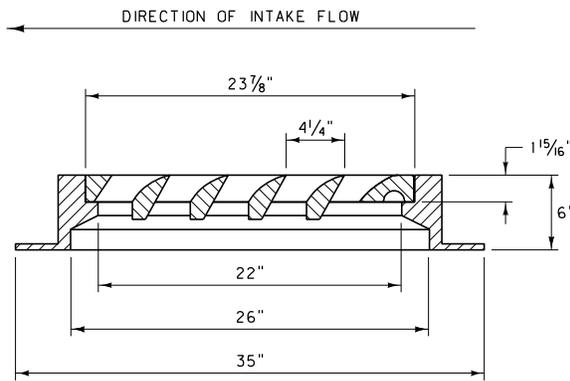


PLAN

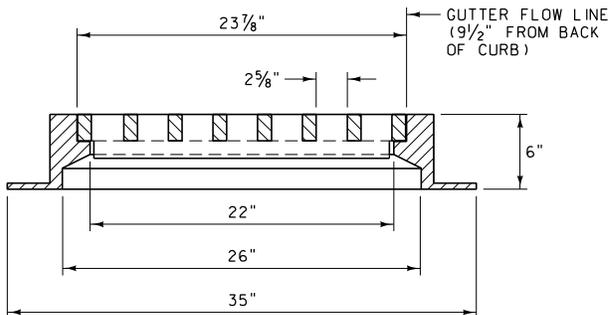
NEENAH CASTING R-3210-L (VANE STYLE), D & L FOUNDRY MODEL I-3425, OR APPROVED EQUAL



**SINGLE DROP INLET
TYPE IV**

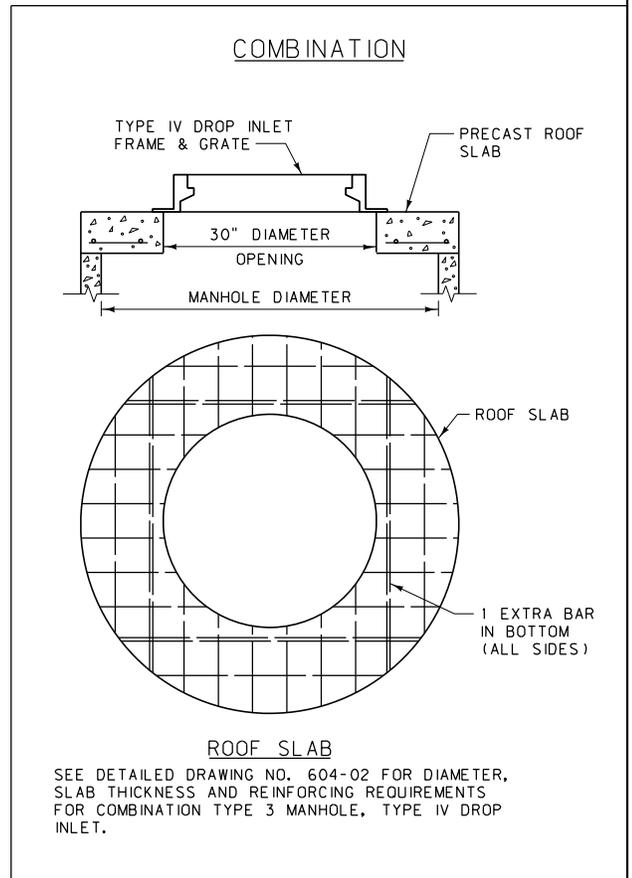


SECTION A-A

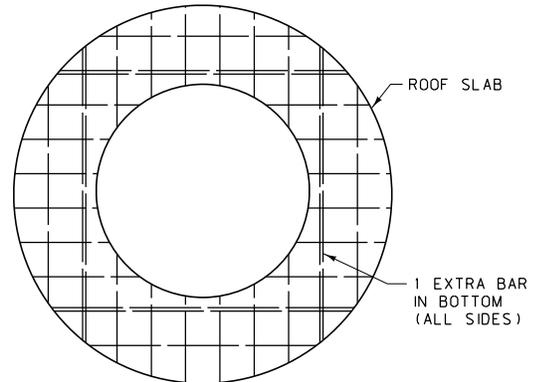
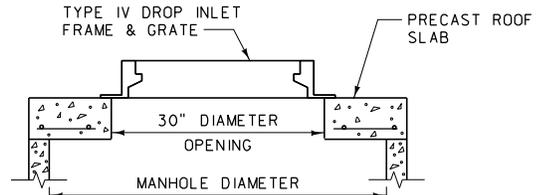


SECTION B-B

NOTE:
ALL CONCRETE IS CLASS "DD" OR APPROVED EQUAL.



COMBINATION



ROOF SLAB

SEE DETAILED DRAWING NO. 604-02 FOR DIAMETER, SLAB THICKNESS AND REINFORCING REQUIREMENTS FOR COMBINATION TYPE 3 MANHOLE, TYPE IV DROP INLET.

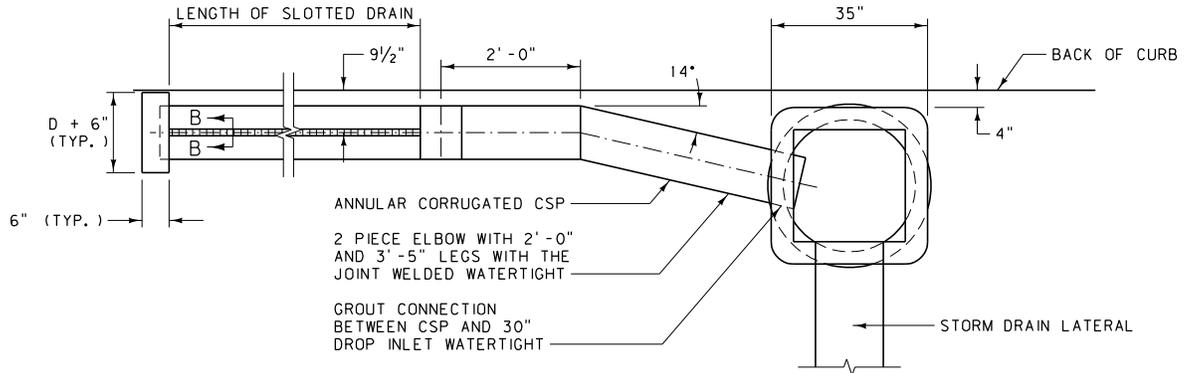
DETAILED DRAWING

REFERENCE STANDARD SPEC. SECTION 604	DWG. NO. 604-04
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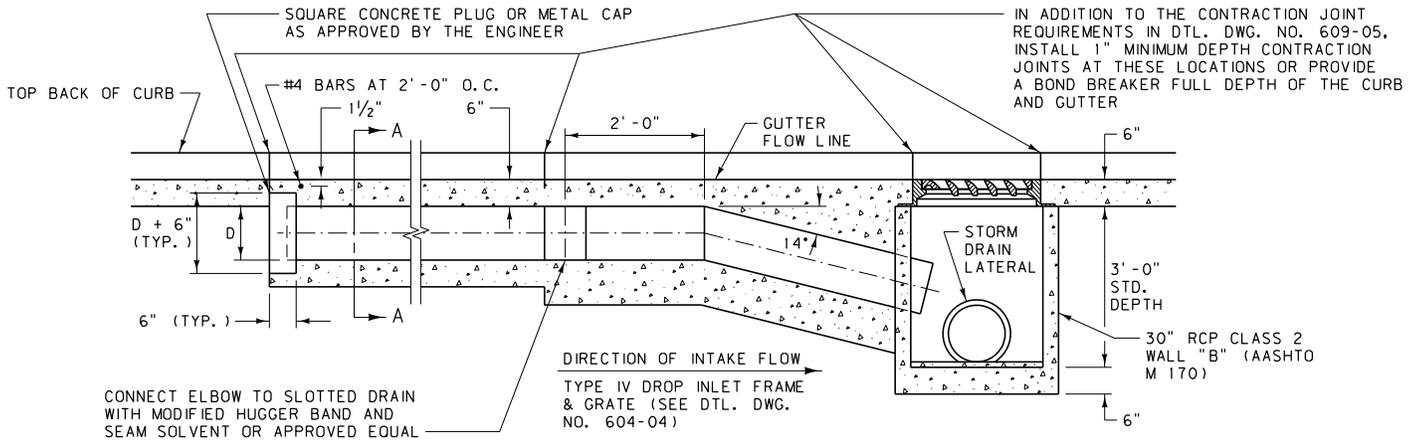
**DROP INLET
TYPE IV**

-- REVISED --
January 2008

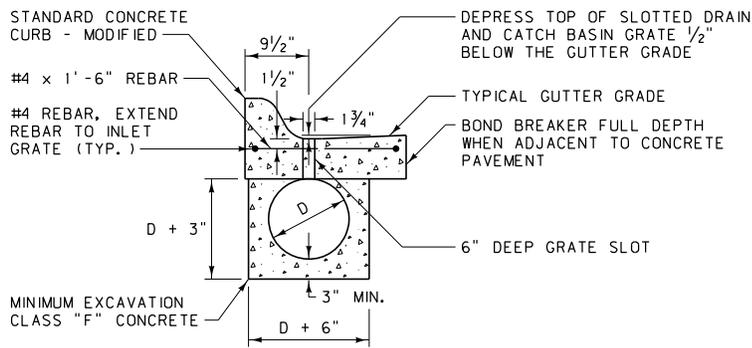
EFFECTIVE: FEBRUARY 2005
 MONTANA DEPARTMENT OF TRANSPORTATION
-serving you with pride



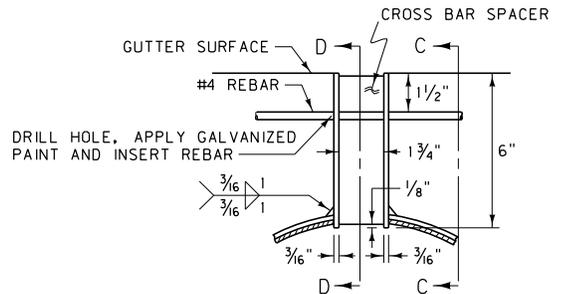
PLAN



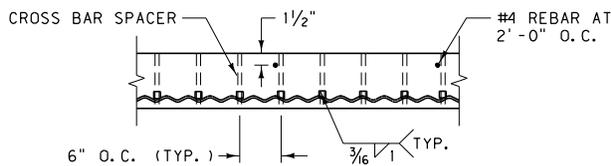
ELEVATION



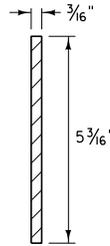
SECTION A-A



SECTION B-B
GRATE SLOT DETAIL



SECTION C-C
GRATE SLOT WELDING DETAIL



SECTION D-D
CROSS BAR SPACER

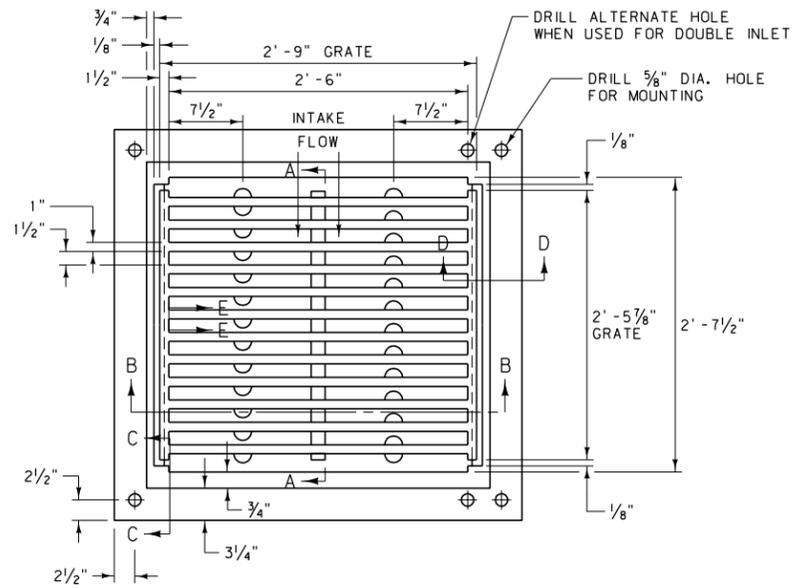
NOTES:

PAINT ALL WELDS AND OTHER NON-GALVANIZED PARTS, EXCEPT REBAR IN ACCORDANCE WITH STD. SPEC. SECTION 710.

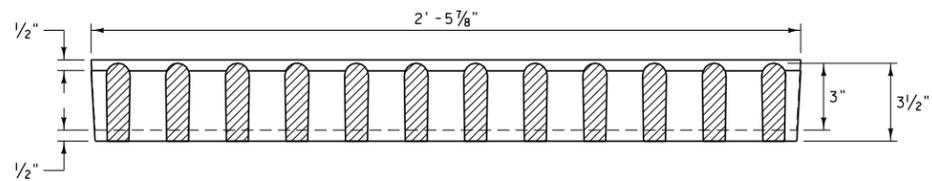
USE A 15 OR 30 POUND ROOFING FELT MATERIAL, OR OTHER PRODUCT AS APPROVED BY THE ENGINEER, FOR A BOND BREAKER.

DETAILED DRAWING	
REFERENCE STANDARD SPEC. SECTION 604	DWG. NO. 604-06
TYPE IV DROP INLET WITH SLOTTED DRAIN	

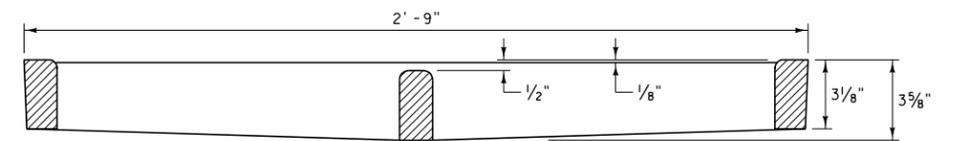
EFFECTIVE: FEBRUARY 2005



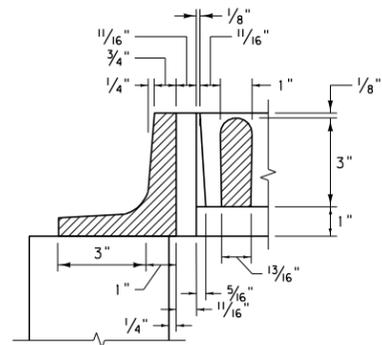
PLAN
NOTE: INSTALL GRATE WITH BARS PERPENDICULAR TO INTAKE FLOW



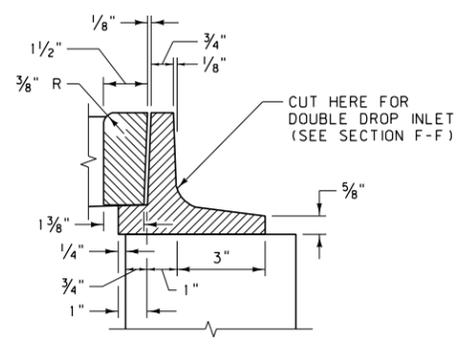
SECTION A-A
GRATE



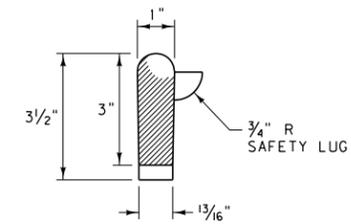
SECTION B-B
GRATE



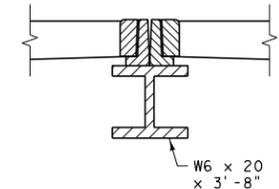
SECTION C-C



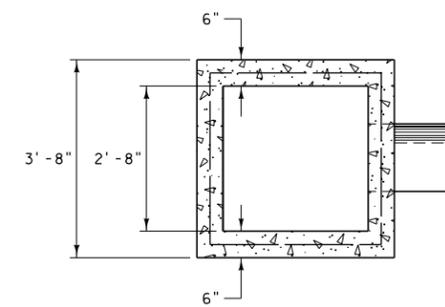
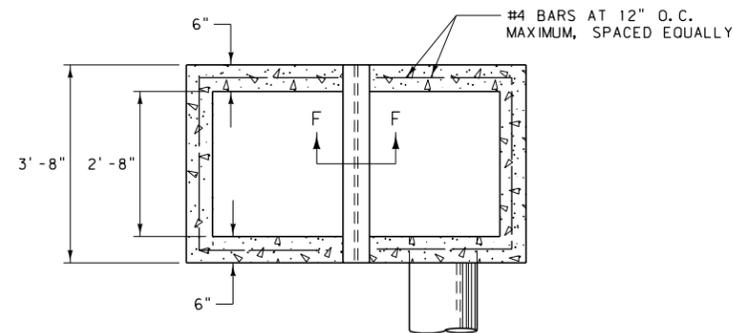
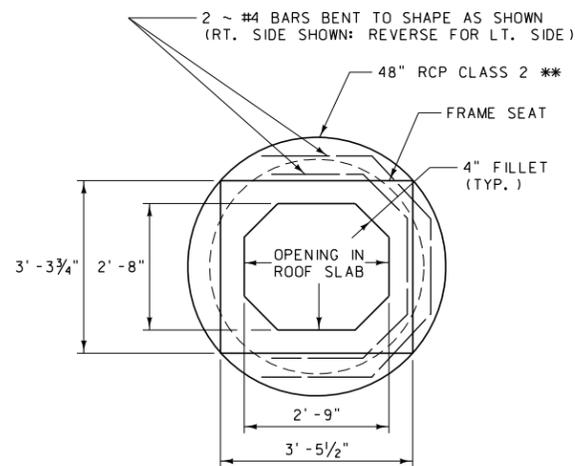
SECTION D-D



SECTION E-E

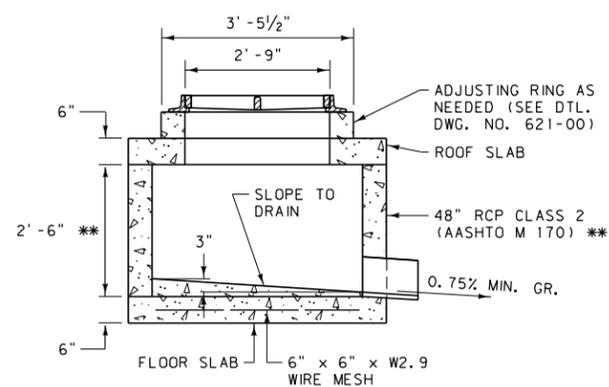


SECTION F-F
(FOR DOUBLE INLET)

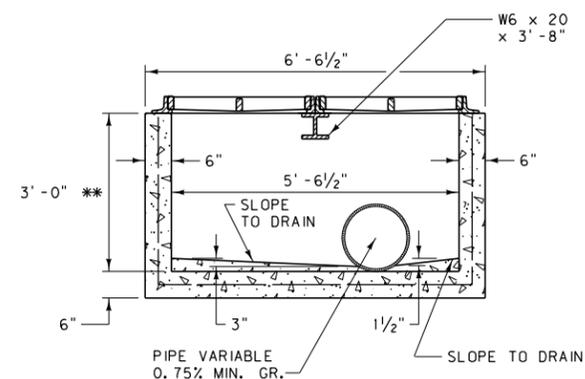


QUANTITIES *		
	CONCRETE	REINF. STL.
TYPE I	0.45 C. Y.	40 LB.
TYPE II	1.5 C. Y.	145 LB.
TYPE III	1.0 C. Y.	90 LB.

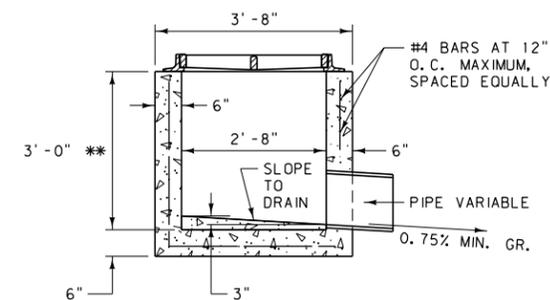
* FOR ESTIMATING PURPOSES ONLY



ROUND, SINGLE DROP INLET
TYPE I



DOUBLE DROP INLET
TYPE II



SINGLE DROP INLET
TYPE III

NOTES:

- USE TYPE I, TYPE II AND TYPE III DROP INLETS IN SAG LOCATIONS ONLY.
- ALL CONCRETE IS CLASS "DD" OR APPROVED EQUAL.
- SEE PLANS FOR DETAILS AND QUANTITIES.
- ** STANDARD UNLESS OTHERWISE NOTED ON PLANS.

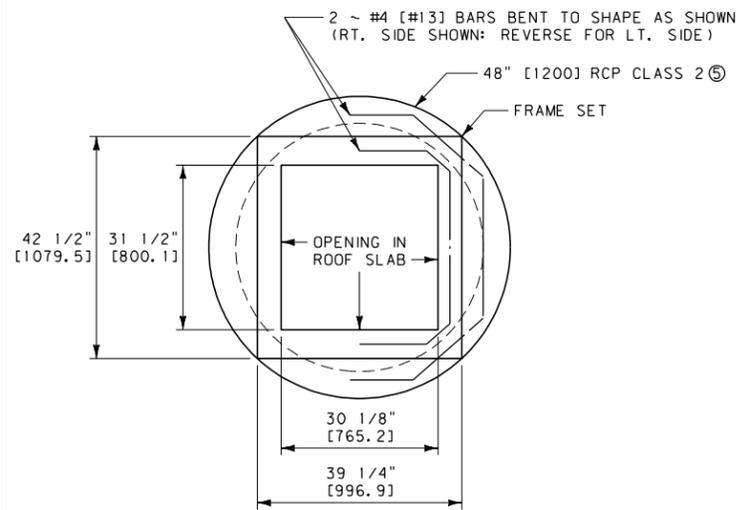
DETAILED DRAWING	
REFERENCE STANDARD SPEC. SECTION 604	DWG. NO. 604-14

DROP INLETS

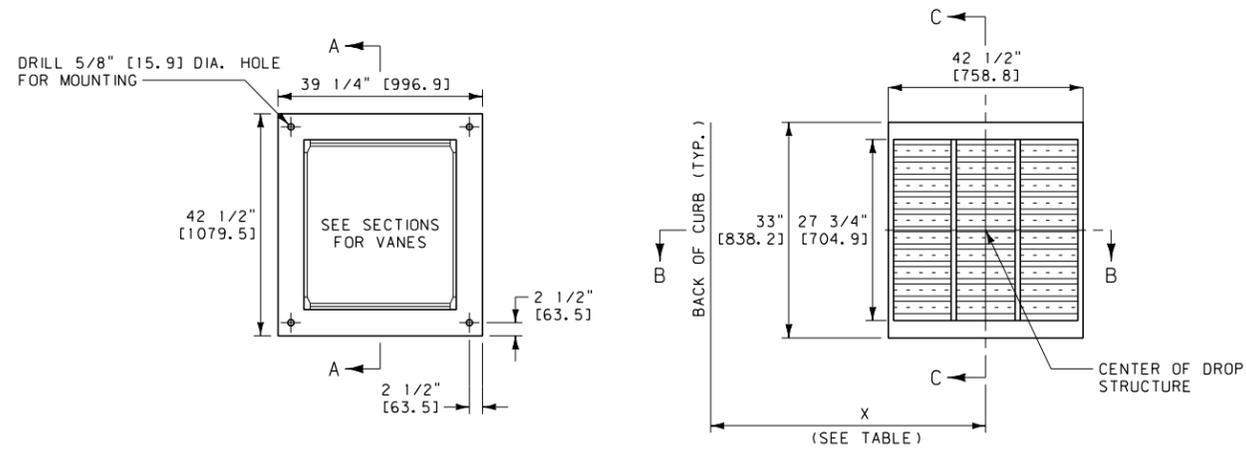
-- REVISED --
January 2008

EFFECTIVE: FEBRUARY 2005

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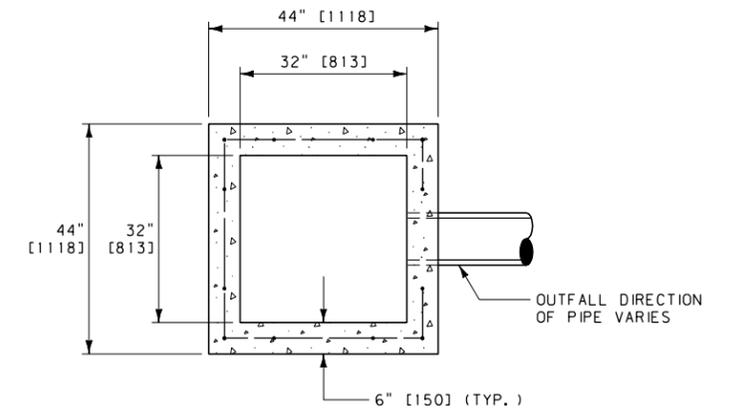
TOP VIEW



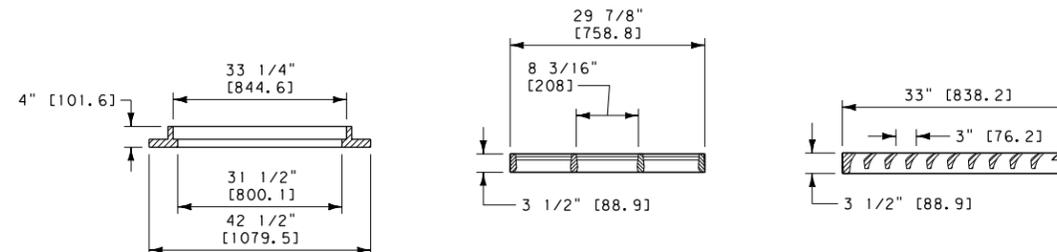
PLAN

GRATE

D & L FOUNDRY MODEL 1-3420V (VANE STYLE),
NEENAH CASTING R-3540, OR APPROVED EQUAL



TOP VIEW



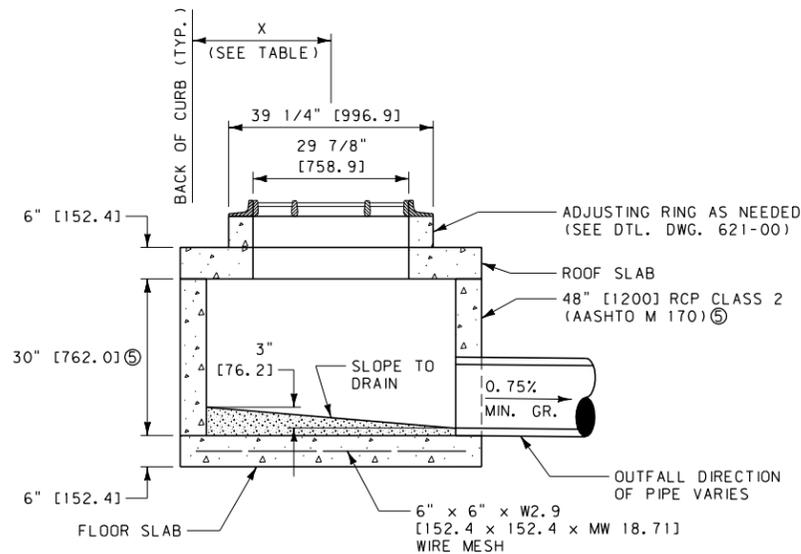
SECTION A-A

SECTION B-B

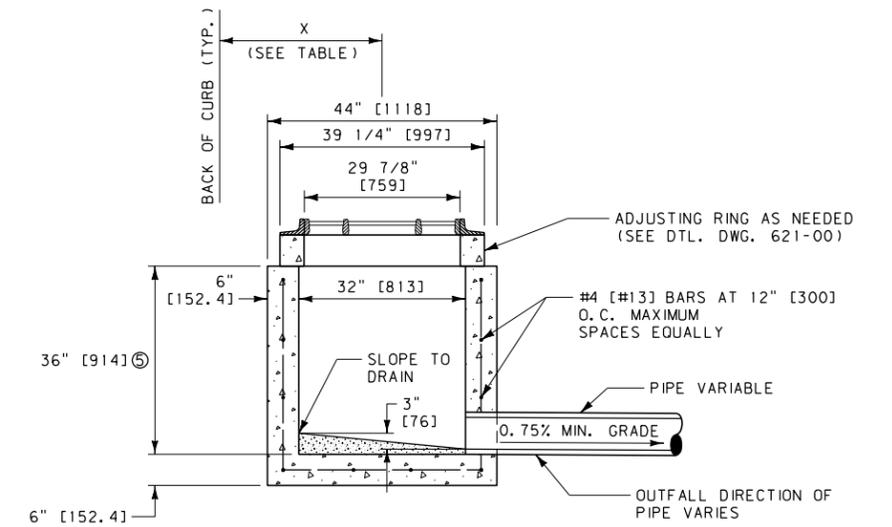
SECTION C-C

STRUCTURE OFFSET FROM BACK OF CURB

GRATE TYPE	X
NEENAH R-3540	25 3/16" [640.0]
D & L FOUNDRY I-3420 V	24 1/32" [619.4]



TYPE V DROP INLET
WITH FRAME AND GRATE



TYPE VI DROP INLET
WITH FRAME AND GRATE

NOTES:

- ① ALL CONCRETE IS CLASS "DD" OR APPROVED EQUAL.
- ② SEE PLANS FOR LOCATIONS AND QUANTITIES.
- ③ PLAN STATION AND OFFSET FOR THE TYPE V & VI DROP INLETS IS BASED ON D & L FOUNDRY GRATE I-3420V.
- ④ SET ALL FINAL INLET GRATE ELEVATIONS TO ENSURE THAT POSITIVE DRAINAGE IS PROVIDED FROM THE FLOWLINE OF THE CURB AND GUTTER SECTION INTO THE INLET.
- ⑤ STANDARD UNLESS OTHERWISE NOTED ON PLANS.
- ⑥ WHEN USED AS A COMBINATION M.H. AND THE DEPTH IS GREATER THAN 4 FEET [1.2 m], OFFSET THE ACCESS HOLE/GRATE OVER THE M.H. STEPS.

UNITS SHOWN IN BRACKETS [] ARE METRIC AND ARE IN MILLIMETERS (mm) UNLESS OTHER UNITS ARE SHOWN.

DETAILED DRAWING	
REFERENCE	DWG. NO.
STANDARD SPEC.	604-016
SECTION 604	

DROP INLET STRUCTURE
TYPE V AND VI

EFFECTIVE: MAY 2011

MDT MONTANA DEPARTMENT OF TRANSPORTATION