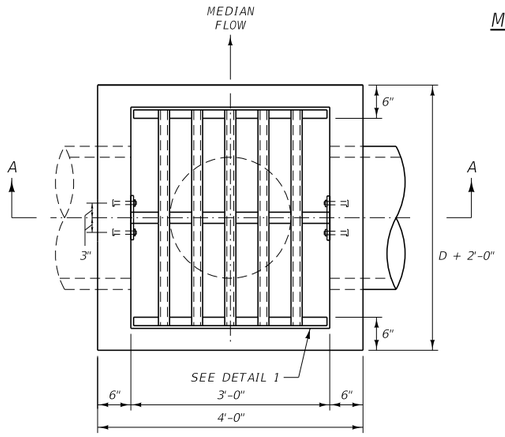
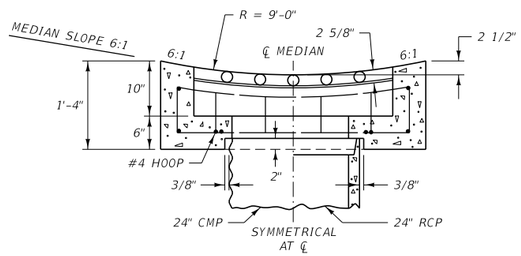
MEDIAN INLET



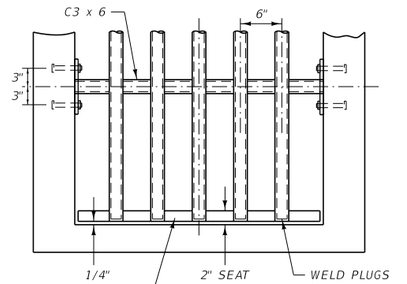
PLAN VIEW

TYPICAL FOR TYPES 1, 2 AND 3

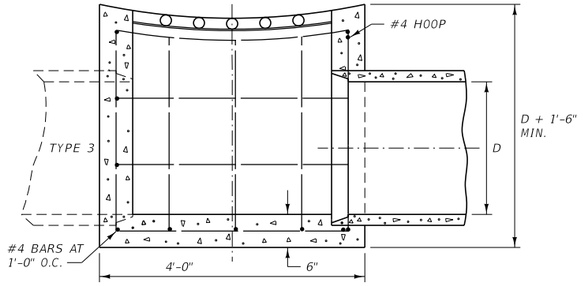


SECTION A-A

TYPE 1

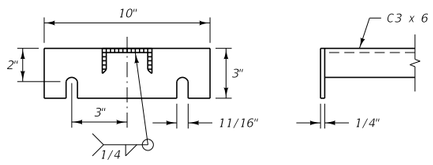


DETAIL 1

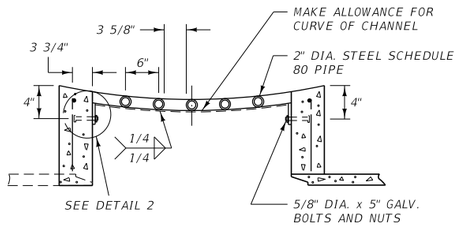


SECTION A-A

TYPE 2 HAS 1 PIPE CONNECTION
TYPE 3 HAS 2 PIPE CONNECTIONS



DETAIL 2



COVER DETAIL

TYPES 2 & 3

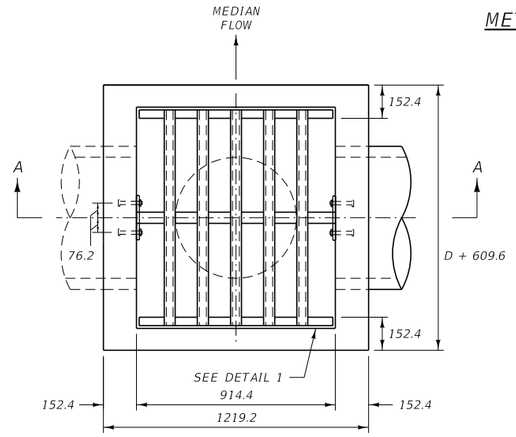
GRATE AND REINFORCING STEEL (LB.) *			
TYPE	CMP AND RCP		
	24"	30"	36"
1	50	~	~
2	85	95	105
3	85 Ⓧ	95 Ⓧ	105 Ⓧ
GRATE	165	185	210

CLASS GENERAL CONCRETE OR EQUAL (C.Y.) *						
TYPE	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.

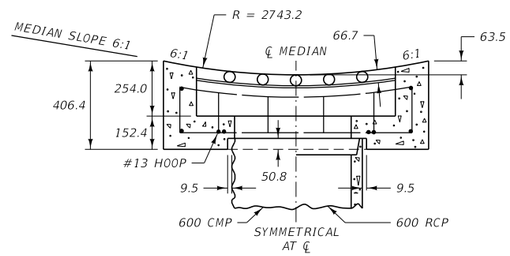
NOTE:
1. PAINT ALL EXPOSED METAL PARTS WITH ONE COAT OF ZINC RICH PAINT AND TWO COATS OF ALUMINUM PAINT PER SECTION 710.
2. WHEN MEDIAN INLET COVER IS INSTALLED OVER PIPES LARGER THAN 36", WITHOUT ADEQUATE COVER TO PERMIT THE USE OF TYPE 1 INSTALLATION, PROVIDE A DETAIL OF THE INSTALLATION IN THE PLANS.

METRIC MEDIAN INLET



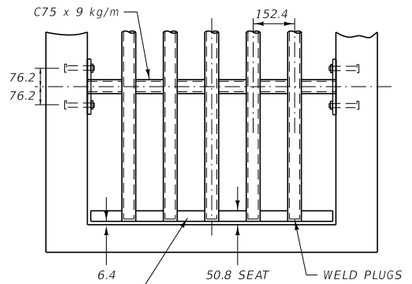
PLAN VIEW

TYPICAL FOR TYPES 1, 2 AND 3

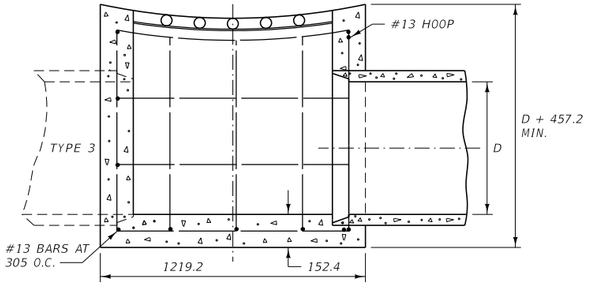


SECTION A-A

TYPE 1

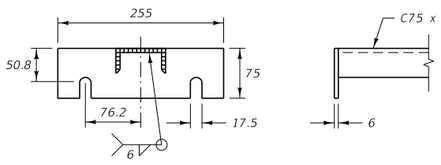


DETAIL 1

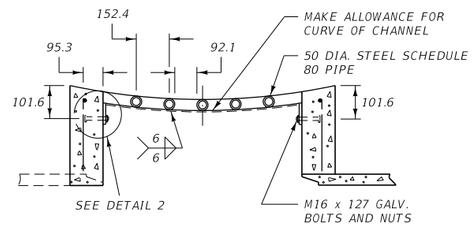


SECTION A-A

TYPE 2 HAS 1 PIPE CONNECTION
TYPE 3 HAS 2 PIPE CONNECTIONS



DETAIL 2



COVER DETAIL

TYPES 2 & 3

GRATE AND REINFORCING STEEL (kg) *			
TYPE	CMP AND RCP		
	600 mm	750 mm	900 mm
1	22.7	~	~
2	38.6	43.1	47.6
3	38.6 Ⓧ	43.1 Ⓧ	47.6 Ⓧ
GRATE	74.8	83.9	95.3

CLASS GENERAL CONCRETE OR EQUAL (CUBIC METERS) *						
TYPE	600 mm		750 mm		900 mm	
	CMP	RCP	CMP	RCP	CMP	RCP
1	0.31	0.31	~	~	~	~
2	0.76	0.76	0.84	0.76	0.92	0.84
3	0.69 Ⓧ	0.69 Ⓧ	0.76 Ⓧ	0.69 Ⓧ	0.76 Ⓧ	0.69 Ⓧ

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

NOTE:
1. PAINT ALL EXPOSED METAL PARTS WITH ONE COAT OF ZINC RICH PAINT AND TWO COATS OF ALUMINUM PAINT PER SECTION 710.
2. WHEN MEDIAN INLET COVER IS INSTALLED OVER PIPES LARGER THAN 900 mm, WITHOUT ADEQUATE COVER TO PERMIT THE USE OF TYPE 1 INSTALLATION, PROVIDE A DETAIL OF THE INSTALLATION IN THE PLANS.

ALL DIMENSIONS ARE MILLIMETERS (mm) UNLESS OTHERWISE NOTED.

DETAILED DRAWING

REFERENCE
STANDARD SPEC.
SECTION 604, 710

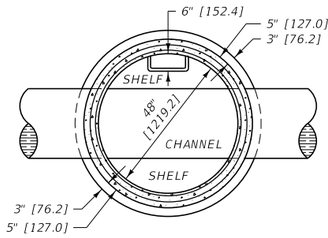
DWG. NO.
604-00

MEDIAN INLET

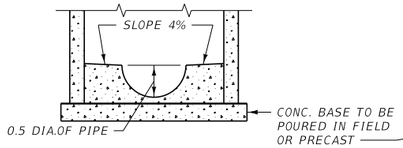
--REVISED--
JANUARY 2018

EFFECTIVE: SEPTEMBER 2014

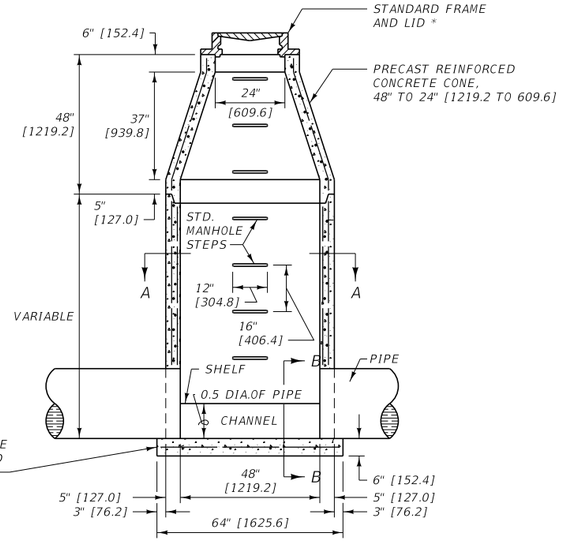
MDT MONTANA DEPARTMENT OF TRANSPORTATION



TYPE 1 SECTION A-A



TYPE 1 SECTION B-B



ELEVATION

TYPE 1 MANHOLE

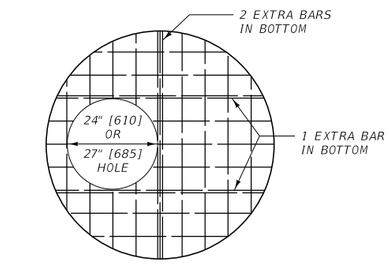
* MINIMUM WEIGHT FOR FRAME AND LID IS 400 LB [180 kg]. TOOL RING AND COVER TO A MACHINE FIT. A LIGHTER FRAME AND LID MAY BE USED IF APPROVED BY THE FACILITY OWNER RESPONSIBLE FOR MAINTENANCE OF THE MANHOLE.

NOTES:

1. 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 COMMERCIALLY, MAY BE USED.
2. 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].
3. 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].
4. 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.
5. 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

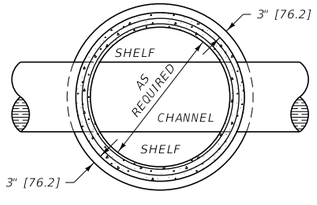
PIPE DIA.	SLAB DIA.	T	K	BOTTOM BARS	TOP BARS
48"	58"	6"	6"	#4 AT 6"	~
54"	65"	8"	6"	#4 AT 6"	~
60"	72"	8"	7"	#4 AT 6"	#3 AT 6"
66"	79"	8"	7"	#4 AT 6"	#3 AT 6"
72"	86"	8"	8"	#4 AT 6"	#3 AT 6"
78"	93"	8"	8"	#4 AT 4"	#4 AT 4"
84"	100"	8"	9"	#4 AT 4"	#4 AT 4"
90"	107"	8"	9"	#4 AT 4"	#4 AT 4"
96"	114"	8"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



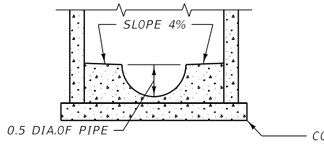
TYPE 3 MANHOLE ROOF SLAB

NOTE:

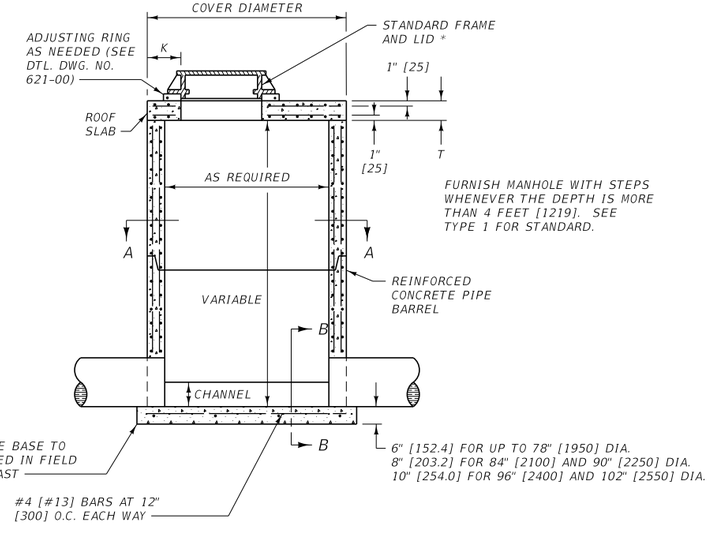
CENTER THE OPENING OVER THE ROOF SLAB FOR TYPE I, II, IV AND V INLETS ON 48" [1200] COMBINATION TYPE 3 MANHOLES.



TYPE 3 SECTION A-A



TYPE 3 SECTION B-B



TYPE 3 MANHOLE

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

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

DETAILED DRAWING

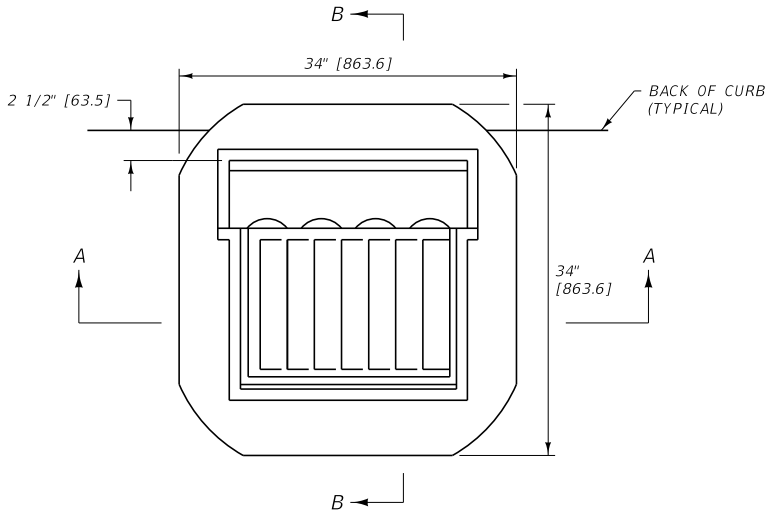
REFERENCE STANDARD SPEC. SECTION 604,711

DWG. NO. 604-02

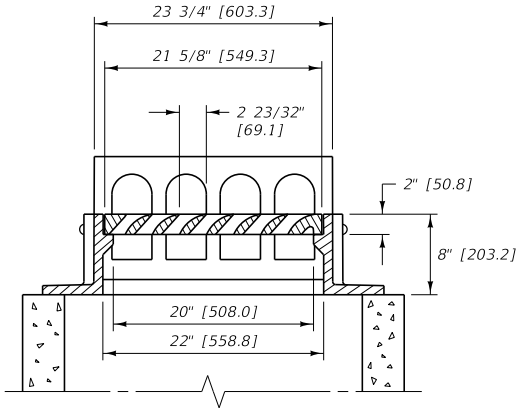
CONCRETE MANHOLE

EFFECTIVE: SEPTEMBER 2014

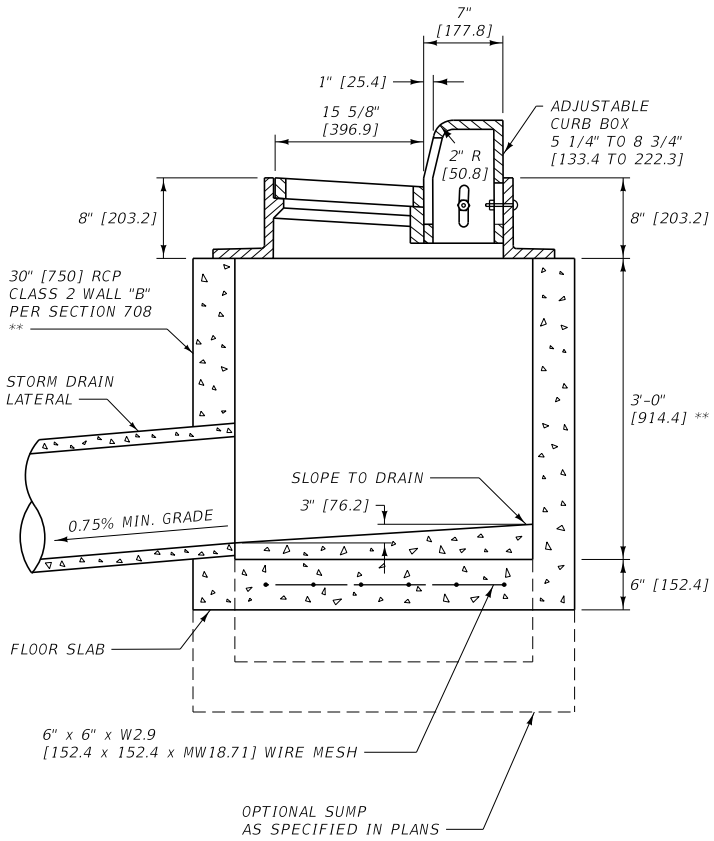
MDT MONTANA DEPARTMENT OF TRANSPORTATION



PLAN



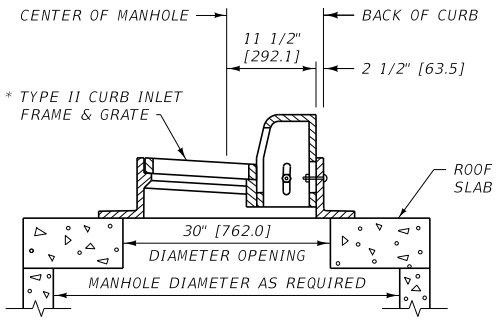
SECTION A-A

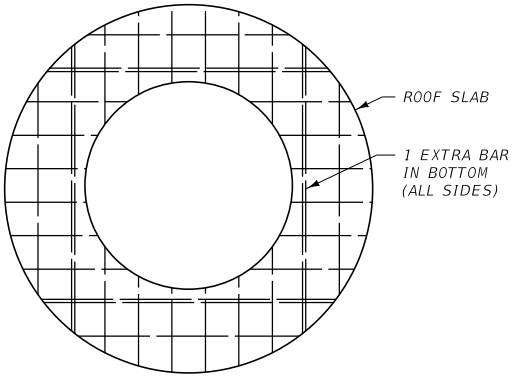


SECTION B-B

** STANDARD UNLESS OTHERWISE NOTED ON THE PLANS.

COMBINATION





ROOF SLAB

SEE DETAILED DRAWING NO. 604-02 FOR DIAMETER, SLAB THICKNESS AND REINFORCING REQUIREMENTS FOR COMBINATION TYPE 3 MANHOLE, DO NOT USE TYPE II COMBINATION INLETS FOR MANHOLE DEPTHS GREATER THAN 4 FEET [1.2 m].

NOTES: ALL CONCRETE IS CLASS GENERAL OR APPROVED EQUAL.

* SEE QUALIFIED PRODUCTS LIST FOR APPROVED GRATES.

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

DETAILED DRAWING

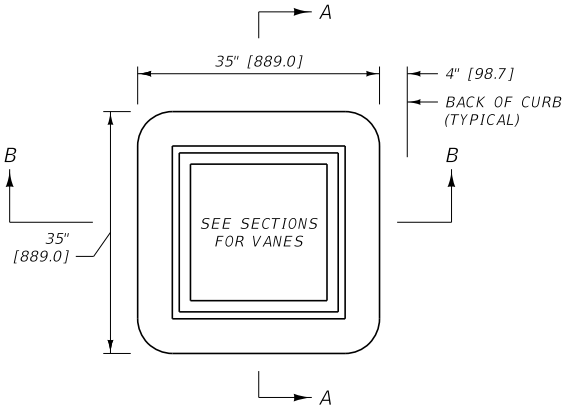
REFERENCE
STANDARD SPEC.
SECTION 604, 708

DWG. NO.
604-03

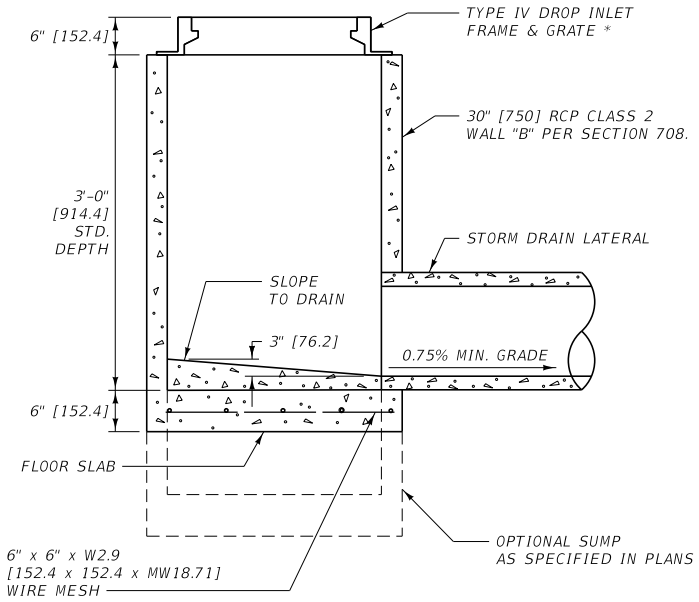
CURB INLET
TYPE II

EFFECTIVE: SEPTEMBER 2014

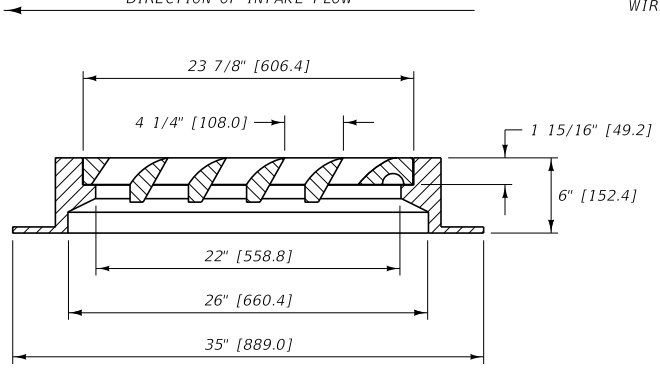
MDT MONTANA DEPARTMENT OF TRANSPORTATION



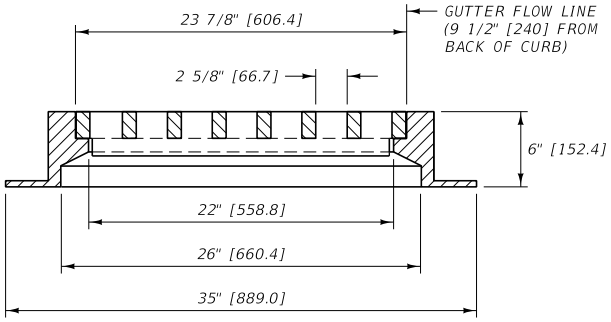
PLAN



SINGLE DROP INLET
TYPE IV *

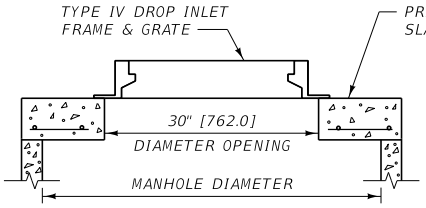


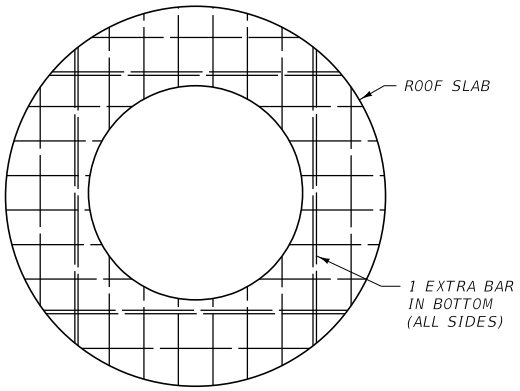
SECTION A-A



SECTION B-B

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. WHEN COMBINATION MANHOLE DEPTHS ARE GREATER THAN 4 FEET [1.2 m], OFFSET THE ACCESS HOLE OVER THE MANHOLE STEPS.

NOTE:
ALL CONCRETE IS CLASS GENERAL OR APPROVED EQUAL.

* SEE QUALIFIED PRODUCTS LIST FOR APPROVED GRATES.

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

DETAILED DRAWING

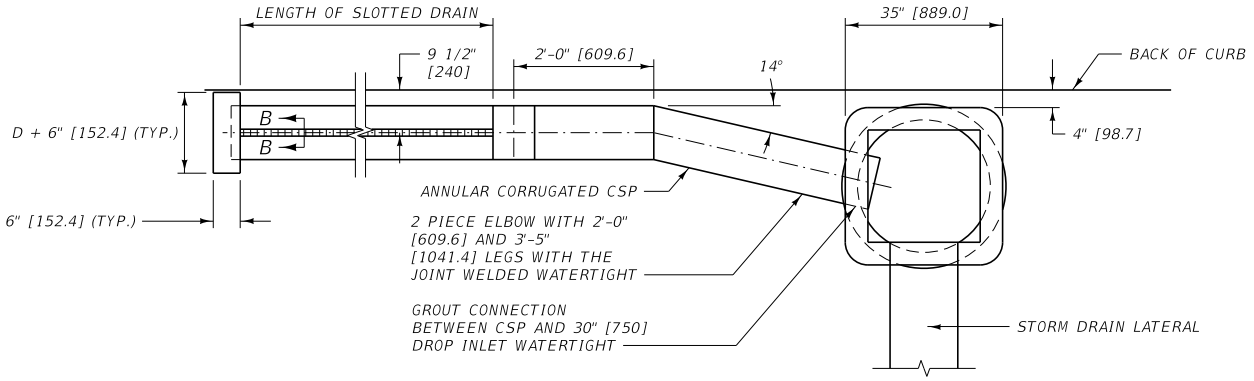
REFERENCE
STANDARD SPEC.
SECTION 604, 708

DWG. NO.
604-04

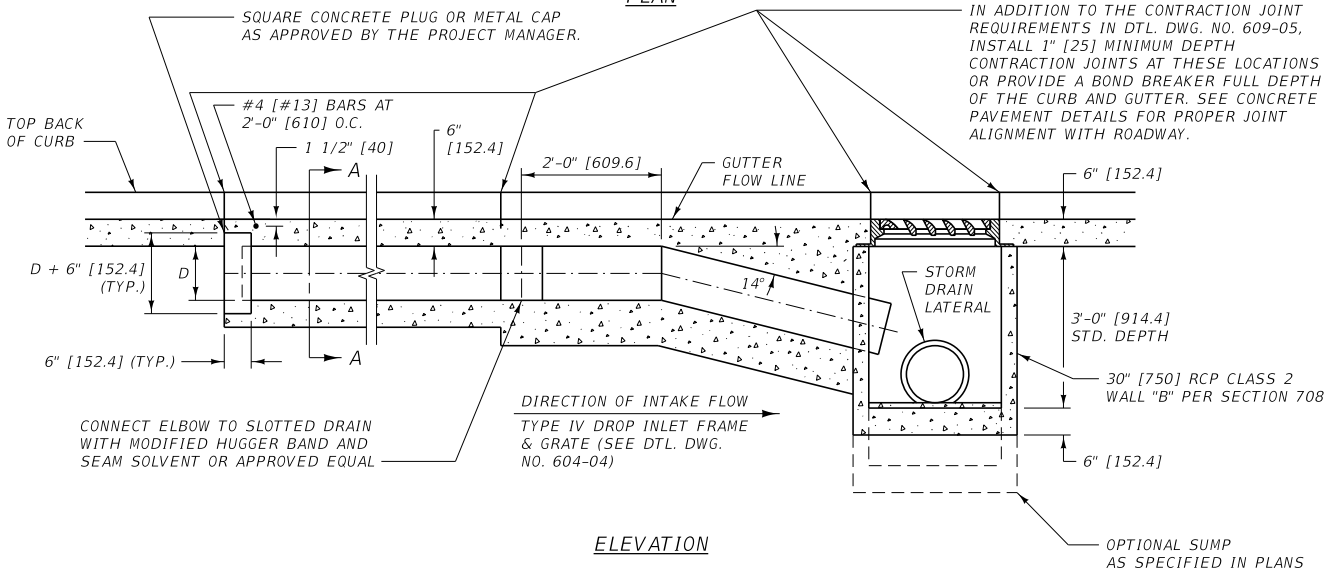
DROP INLET
TYPE IV

EFFECTIVE: SEPTEMBER 2014

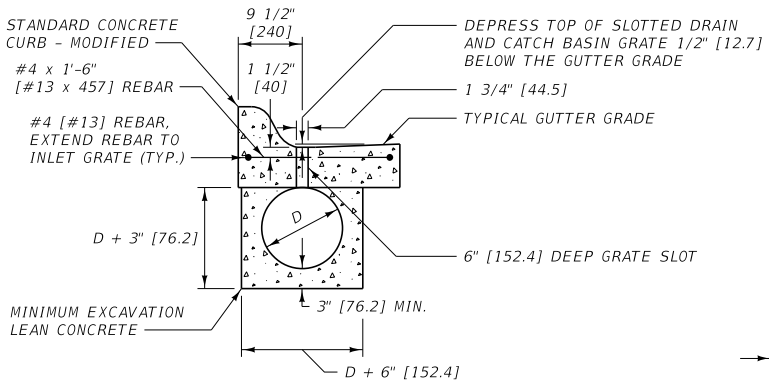
MDT MONTANA DEPARTMENT OF TRANSPORTATION



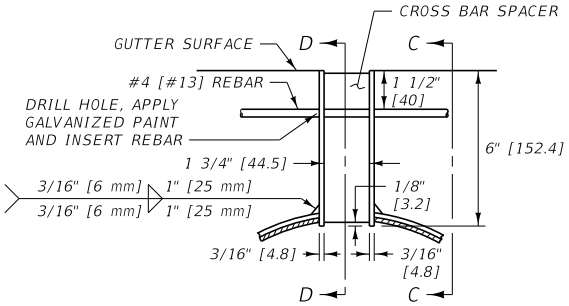
PLAN



ELEVATION

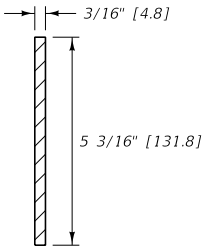


SECTION A-A



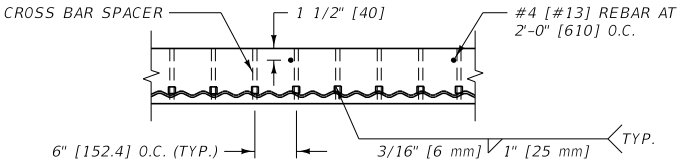
SECTION B-B

GRATE SLOT DETAIL



SECTION D-D

CROSS BAR SPACER



SECTION C-C

GRATE SLOT WELDING DETAIL

NOTES:

1. PAINT ALL WELDS AND OTHER NON-GALVANIZED PARTS, EXCEPT REBAR, WITH ONE COAT OF ZINC RICH PAINT AND TWO COATS OF ALUMINUM PAINT PER SECTION 710.
2. USE A 15 OR 30 POUND [6.8 OR 13.6 KILOGRAM] ROOFING FELT MATERIAL, OR OTHER PRODUCT AS APPROVED BY THE PROJECT MANAGER, FOR A BOND BREAKER.

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

DETAILED DRAWING

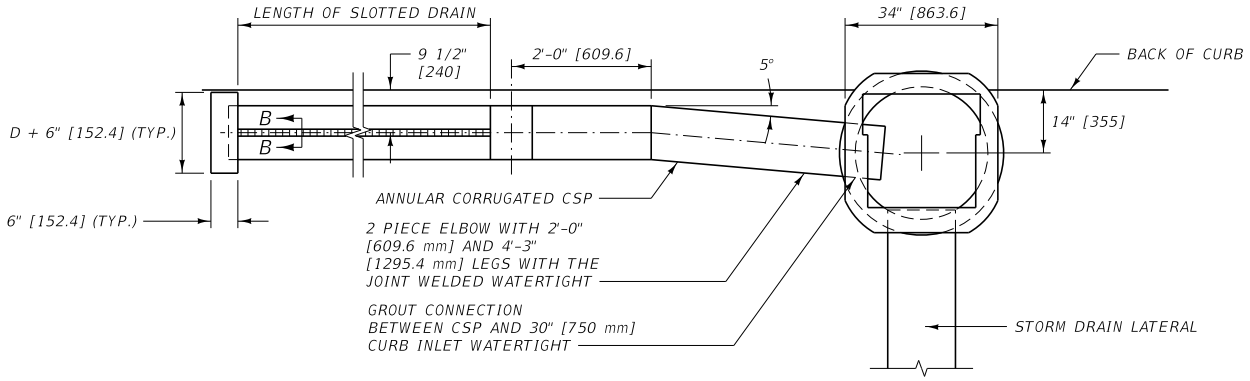
REFERENCE STANDARD SPEC. SECTION 604, 708, 710

DWG. NO. 604-06

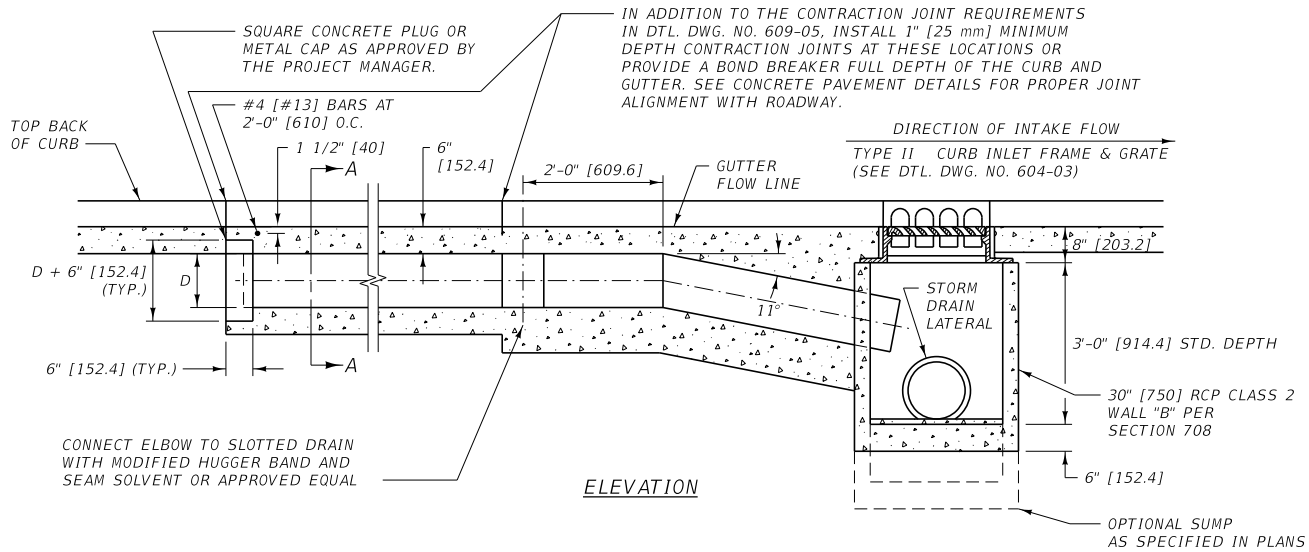
TYPE IV DROP INLET WITH SLOTTED DRAIN

EFFECTIVE: SEPTEMBER 2014

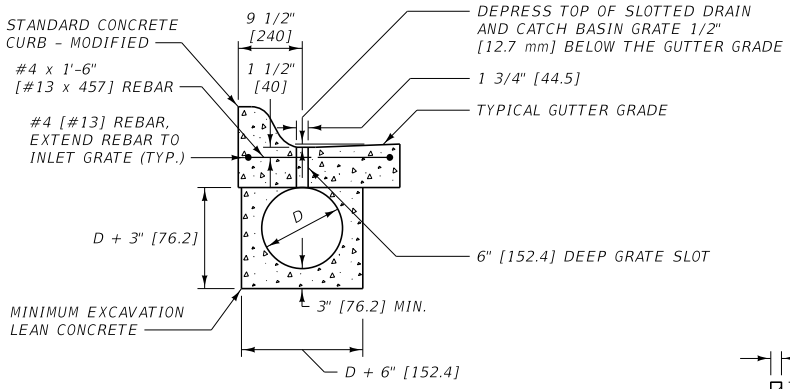
MDT MONTANA DEPARTMENT OF TRANSPORTATION



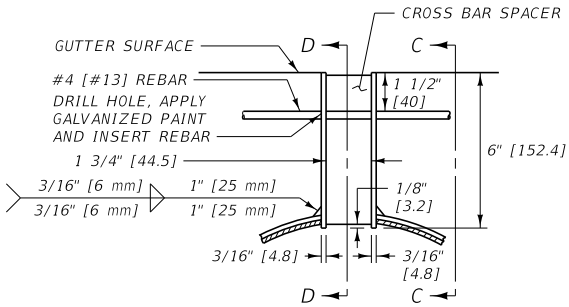
PLAN



ELEVATION

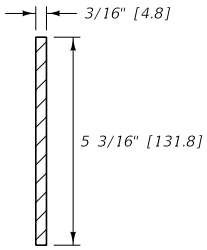


SECTION A-A



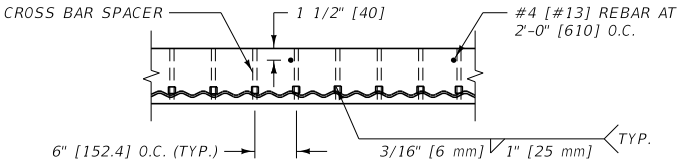
SECTION B-B

GRATE SLOT DETAIL



SECTION D-D

CROSS BAR SPACER



SECTION C-C

GRATE SLOT WELDING DETAIL

NOTES:

PAINT ALL WELDS AND OTHER NON-GALVANIZED PARTS WITH ONE COAT OF ZINC RICH PAINT AND TWO COATS OF ALUMINUM PAINT PER SECTION 710.

USE A 15 OR 30 POUND [6.8 OR 13.6 KILOGRAM] ROOFING FELT MATERIAL, OR OTHER PRODUCT AS APPROVED BY THE PROJECT MANAGER, FOR A BOND BREAKER.

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

DETAILED DRAWING

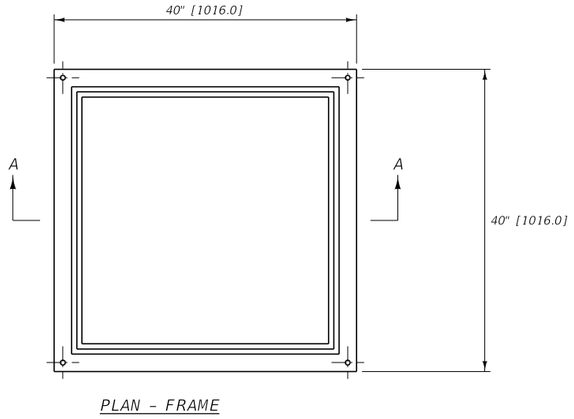
REFERENCE STANDARD SPEC. SECTION 604, 708, 710

DWG. NO. 604-08

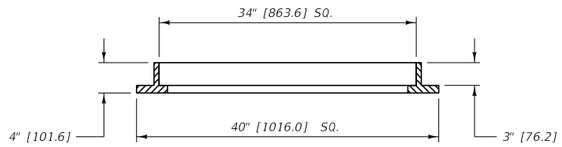
TYPE II CURB INLET WITH SLOTTED DRAIN

EFFECTIVE: SEPTEMBER 2014

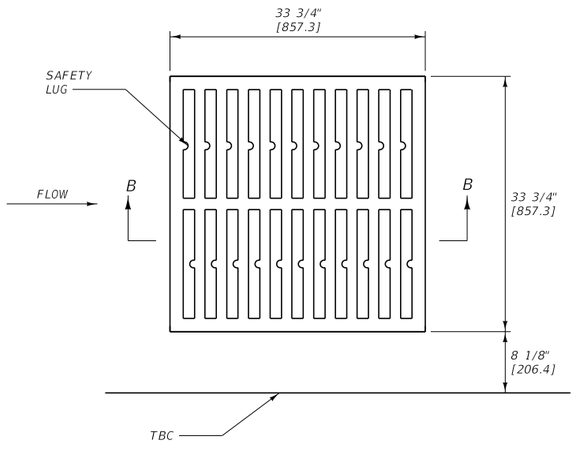
MDT MONTANA DEPARTMENT OF TRANSPORTATION

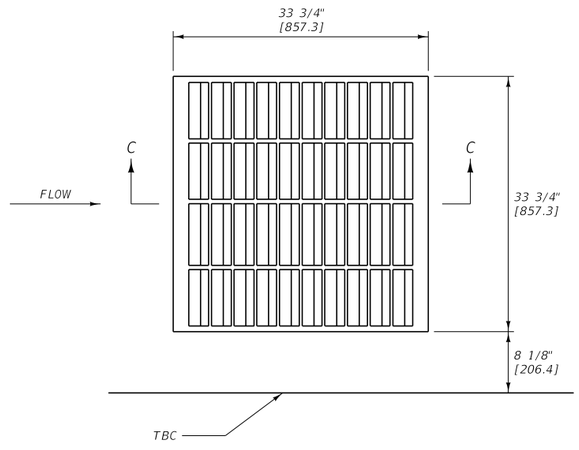


PLAN - FRAME

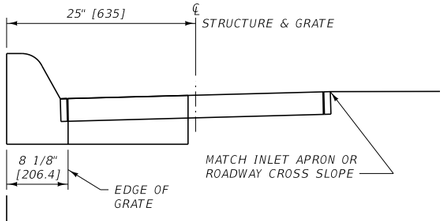


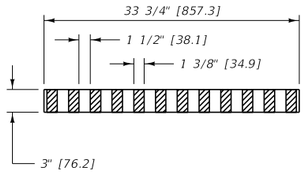
SECTION A-A



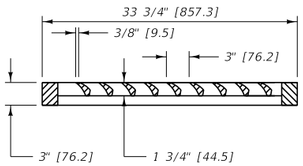


CURB TO GRATE

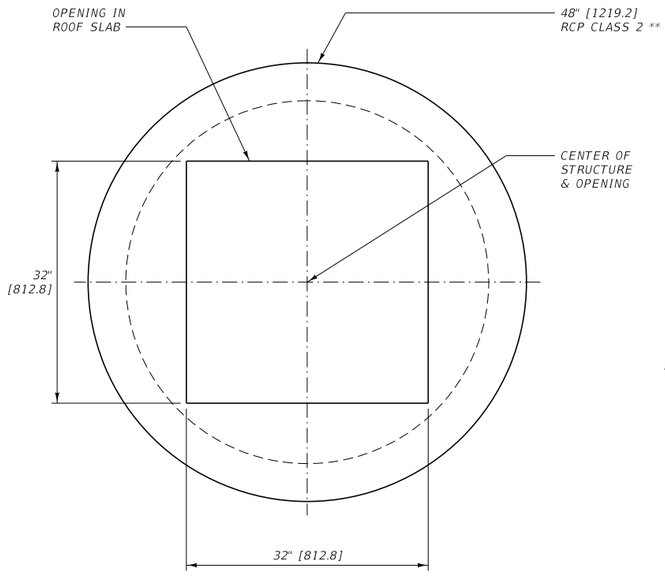




SECTION B-B
STRAIGHT BAR GRATE
TYPE I *

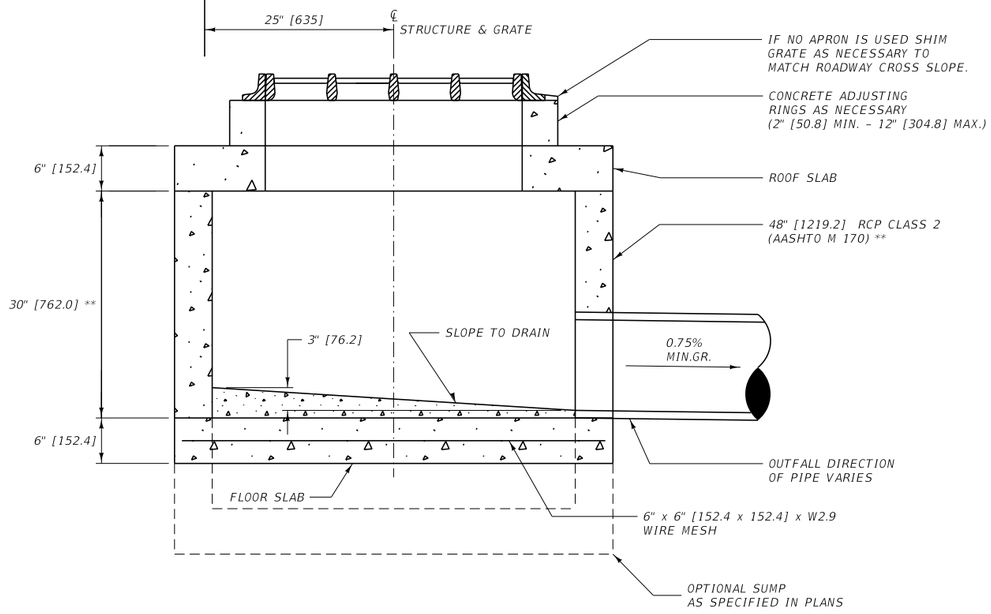


SECTION C-C
VANE STYLE GRATE
TYPE V *



ROOF SLAB

TYPE I AND V DROP INLET



SECTION VIEW

NOTES: ALL CONCRETE IS CLASS GENERAL OR APPROVED EQUAL.

SEE PLANS FOR LOCATIONS AND QUANTITIES.

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.

** STANDARD UNLESS OTHERWISE NOTED ON PLANS.

PLAN STATION AND OFFSET IS TO THE CENTER OF THE STRUCTURE.

TYPE I AND TYPE V GRATES ARE INTERCHANGEABLE WITH THE SAME FRAME AND HAVE THE ABILITY TO BE ROTATED 90 DEGREES IN ANY DIRECTION. INSTALL GRATE TO MATCH FLOW DIRECTION SHOWN.

PROVIDE SAFETY LUG ON STRAIGHT BAR GRATE BETWEEN EACH BAR.

* SEE QUALIFIED PRODUCTS LIST FOR APPROVED GRATES

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

DETAILED DRAWING

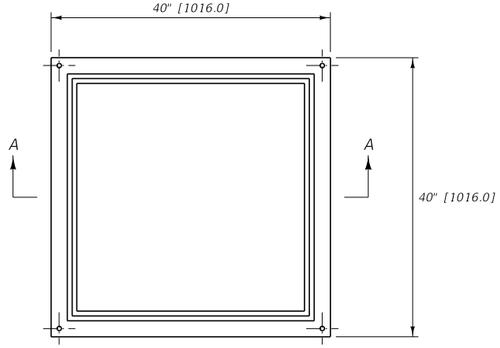
REFERENCE STANDARD SPEC. SECTION 604

DWG. NO. 604-14

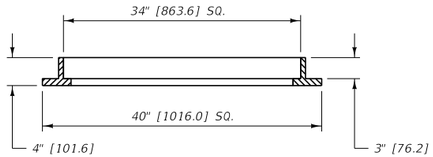
DROP INLETS TYPE I AND V

EFFECTIVE: SEPTEMBER 2014

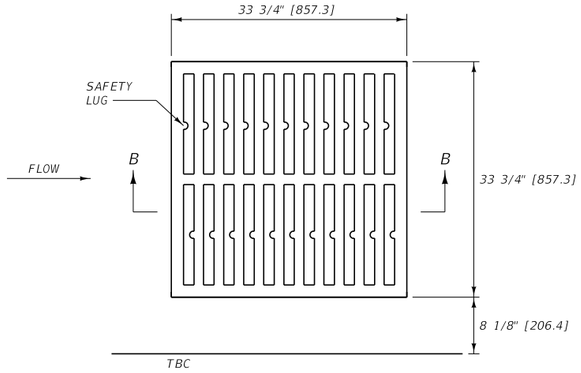
MDT MONTANA DEPARTMENT OF TRANSPORTATION

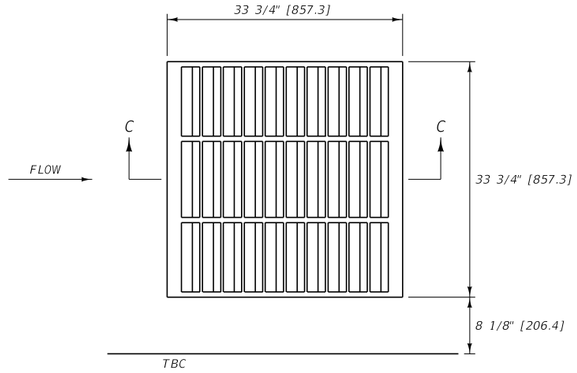


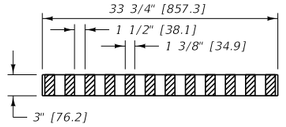
PLAN – FRAME



SECTION A–A



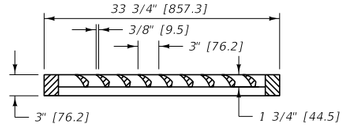




SECTION B–B

STRAIGHT BAR GRATE

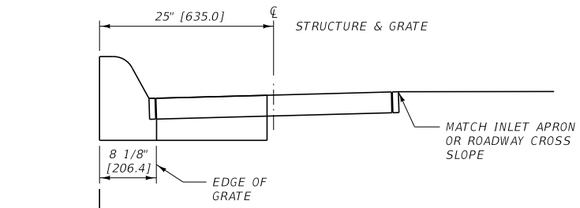
TYPE III *



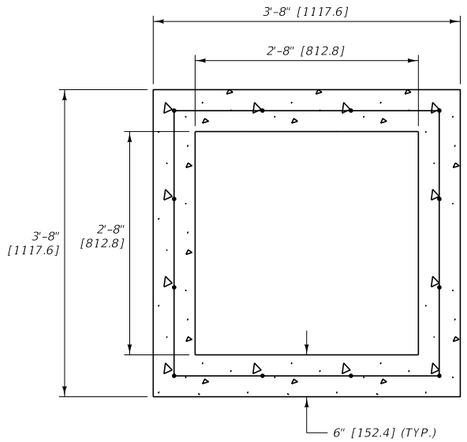
SECTION C–C

VANE STYLE GRATE

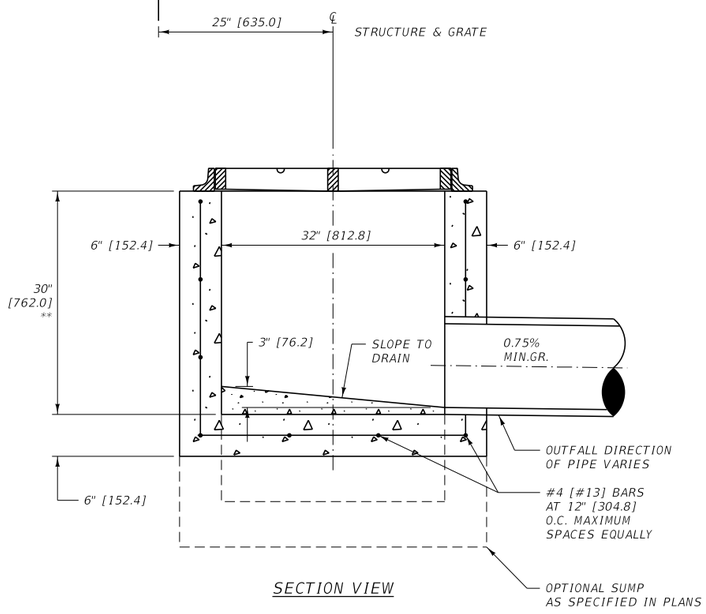
TYPE VI *



CURB TO GRATE



TOP VIEW



SECTION VIEW

TYPE III AND VI DROP INLET

NOTES: ALL CONCRETE IS CLASS GENERAL OR APPROVED EQUAL.

SEE PLANS FOR LOCATIONS AND QUANTITIES.

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.

** STANDARD UNLESS OTHERWISE NOTED ON PLANS.

PLAN STATION AND OFFSET IS TO THE CENTER OF THE STRUCTURE.

TYPE III AND TYPE VI GRATES ARE INTERCHANGEABLE WITH THE SAME FRAME AND HAVE THE ABILITY TO BE ROTATED 90 DEGREES IN ANY DIRECTION. INSTALL GRATE TO MATCH FLOW DIRECTION SHOWN.

PROVIDE SAFETY LUG ON STRAIGHT BAR GRATE BETWEEN EACH BAR.

* SEE QUALIFIED PRODUCTS LIST FOR APPROVED GRATES.

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

DETAILED DRAWING

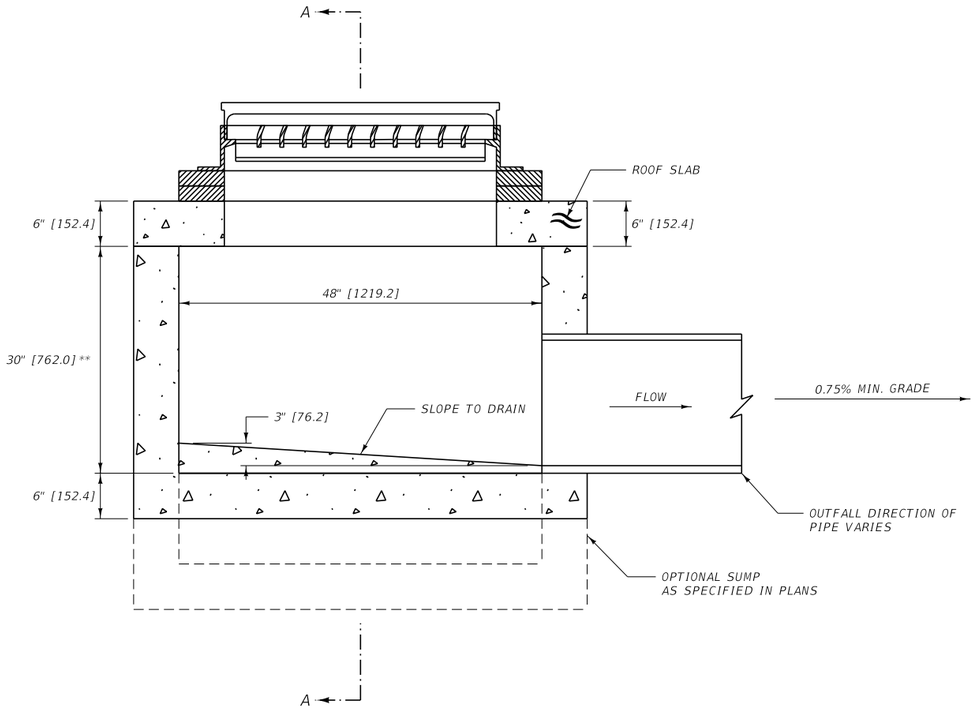
REFERENCE STANDARD SPEC. SECTION 604

DWG. NO. 604-16

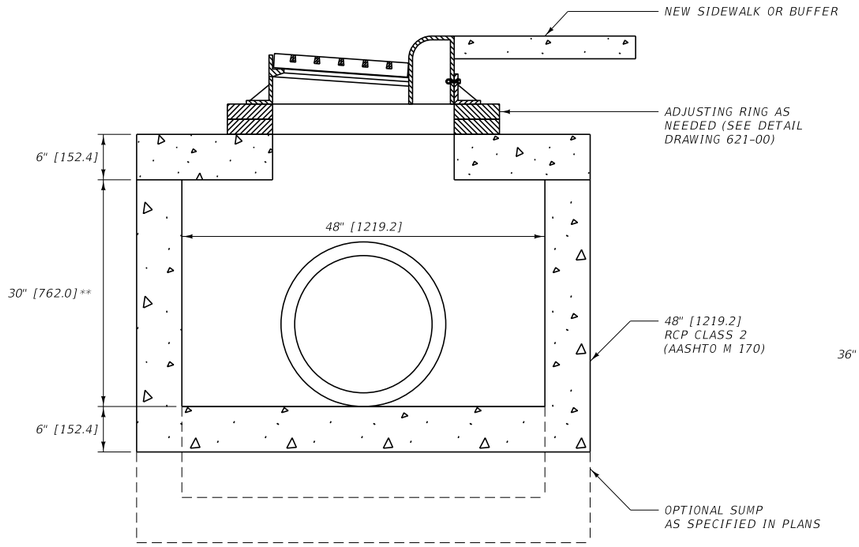
DROP INLETS TYPE III AND VI

EFFECTIVE: SEPTEMBER 2014

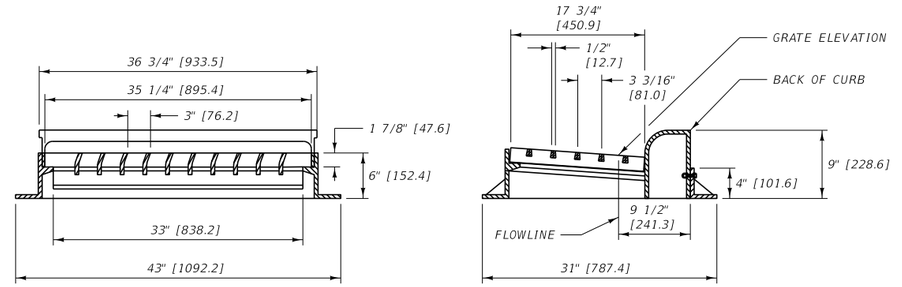
MDT MONTANA DEPARTMENT OF TRANSPORTATION



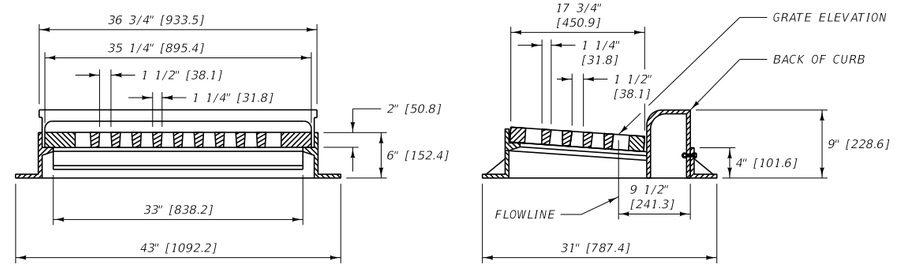
TYPE B CURB INLET



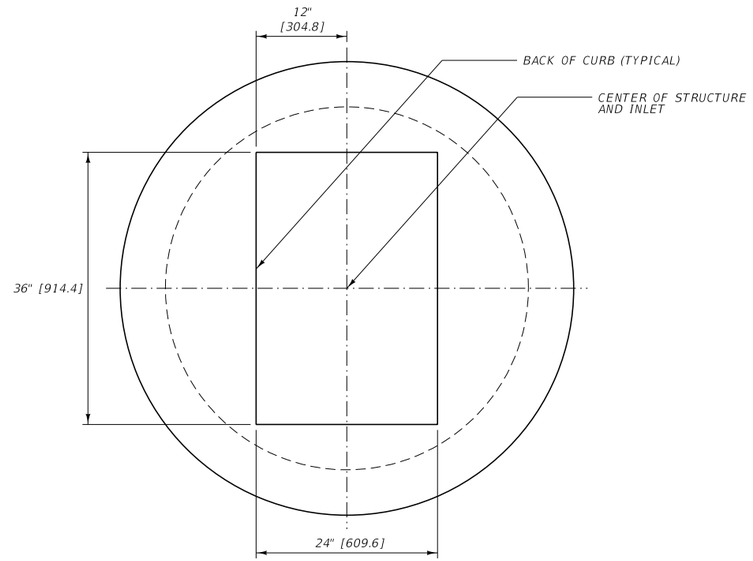
SECTION A-A



TYPE B
CURVED VANE STYLE *



TYPE A
STRAIGHT BAR STYLE *



ROOF SLAB

NOTE: SEE DETAIL DRAWING NO.604-02
FOR REINFORCING REQUIREMENTS

NOTES:

SEE PLANS FOR LOCATIONS AND QUANTITIES.

PLAN STATION AND OFFSET IS CENTER OF STRUCTURE.

** STANDARD UNLESS OTHERWISE NOTED ON PLANS.

SET ALL FINAL INLET GRATE ELEVATIONS TO
ENSURE THAT POSITIVE DRAINAGE IS PROVIDED.

WHEN USED AS A COMBINATION M.H. AND THE
DEPTH IS GREATER THAN 4' [1200], OFFSET
THE ACCESS HOLE/GRATE OVER THE M.H. STEPS.

* SEE QUALIFIED PRODUCTS LIST FOR APPROVED GRATES.

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

DETAILED DRAWING

REFERENCE STANDARD SPEC. SECTION 604

DWG. NO. 604-18

TYPE A AND B
CURB INLETS

EFFECTIVE: SEPTEMBER 2014

MDT MONTANA DEPARTMENT OF TRANSPORTATION