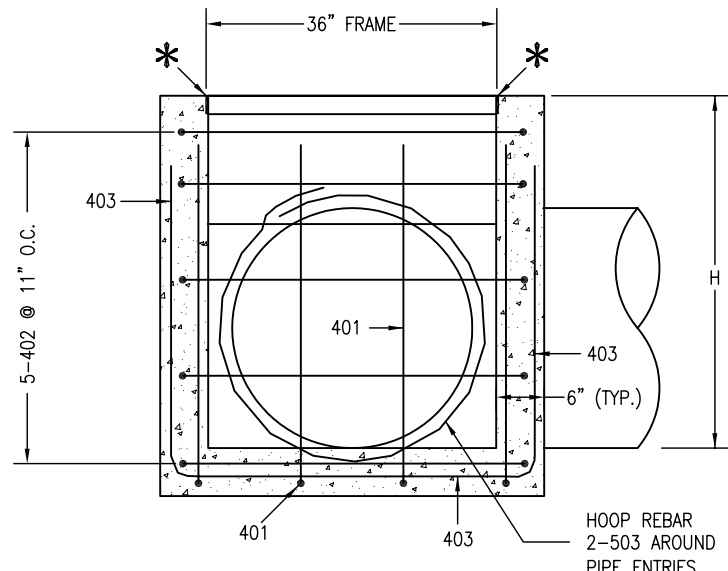
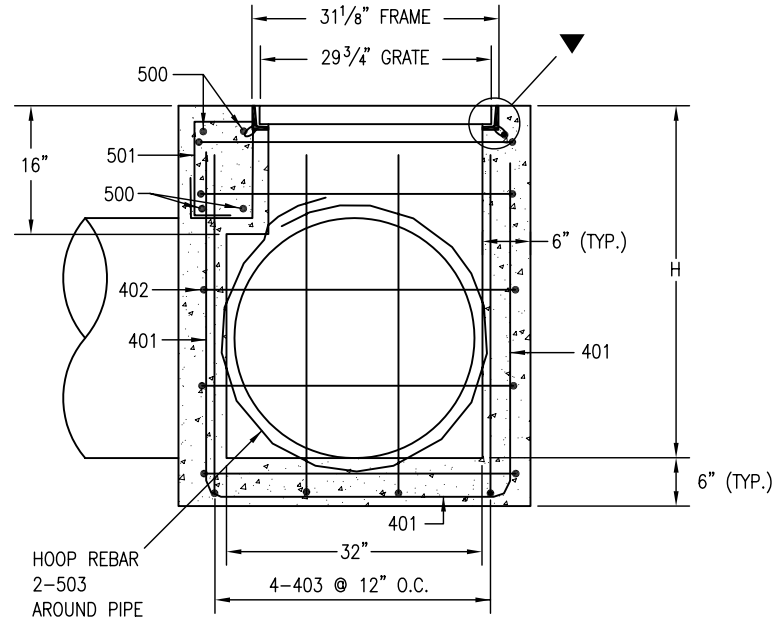


PLAN



SECTION A-A



SECTION B-B

**GENERAL NOTES**

1. FOR THE 32 INCH AND 36 INCH INSIDE INLET DIMENSIONS, THE ALLOWABLE PIPE I.D. IS 30 INCHES OR LESS. FOR THE 72 INCH INSIDE INLET DIMENSION, THE ALLOWABLE PIPE I.D. IS "H" MINUS 18 INCHES, OR LESS, UP TO A MAXIMUM OF 66 INCHES FOR "H" OF 7 FEET OR MORE.
2. ALL CONCRETE SHALL BE CLASS B.
3. INLET MAY BE CAST-IN-PLACE OR PRECAST.
4. REINFORCING BARS SHALL BE #4 UNLESS SHOWN OTHERWISE.
5. ALL REINFORCING BARS SHALL BE GRADE 40 AND EPOXY COATED. REINFORCING BARS SHALL HAVE A MINIMUM CLEARANCE OF 2 IN.
6. ALL EDGE DISTANCES NOT MARKED "CLEAR" ARE TO THE CENTERLINE OF THE BAR.
7. CUT OR BEND REINFORCING BARS AROUND PIPES AS REQUIRED.
8. STEPS SHALL BE REQUIRED WHEN THE INLET DEPTH "H" IS EQUAL TO OR GREATER THAN 4 FT. AND SHALL CONFORM TO AASHTO M 199.
9. THE INVERT OF THE BOX SHALL BE SLOPED TO DRAIN.
10. THE CONTRACTOR SHALL STAMP FLOW ARROWS INTO THE TOP SURFACE OF THE INLET BOX SIDEWALLS TO INDICATE THE DIRECTION OF RUNOFF. THE STAMPED ARROWS SHALL BE 6 IN. LONG, 1 IN. HIGH, AND 3/8 IN. DEEP. FOR INLETS IN SUMP CONDITIONS, THE STAMPED FLOW ARROWS SHALL INDICATE THE PREDOMINATE DIRECTION OF RUNOFF FLOW.

**LEGEND**

- ▼ GRATE TO BE INSTALLED DURING CONSTRUCTION OF THE BOX WITH THE VANE GRATE BOLTED IN PLACE TO THE FRAME.
- \* TO FACILITATE REMOVAL OF THE GRATE, PLACE PLYWOOD 3 IN. x 1/4 IN. x 31- 3/8 IN. ALONG EDGE OF THE GRATE AS SHOWN.
- ∅ FLOW ARROW STAMP IN DIRECTION OF FLOW (TYP.). FLOW →

Computer File Information	
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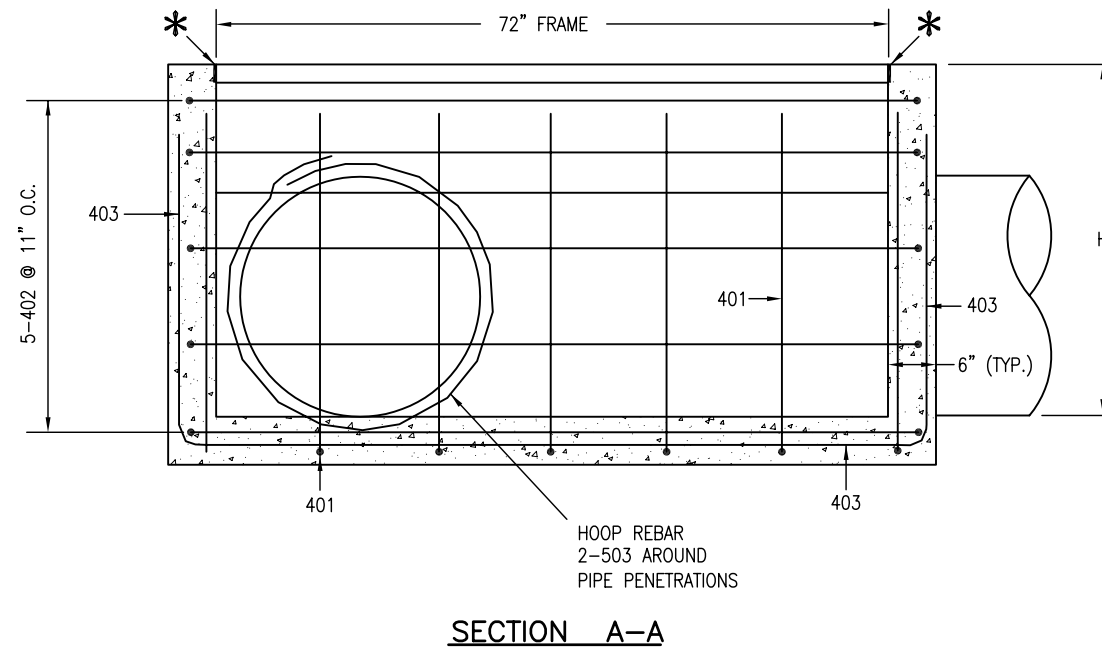
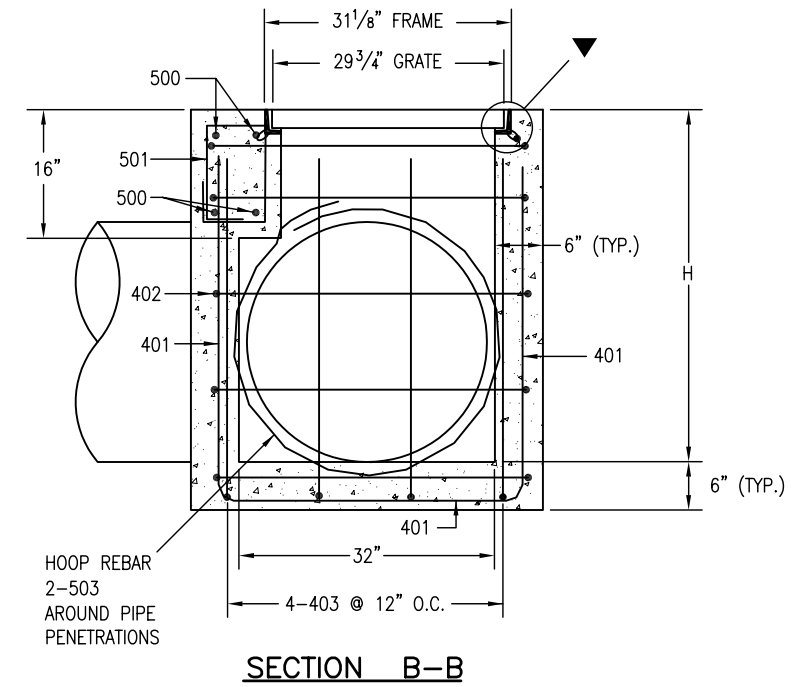
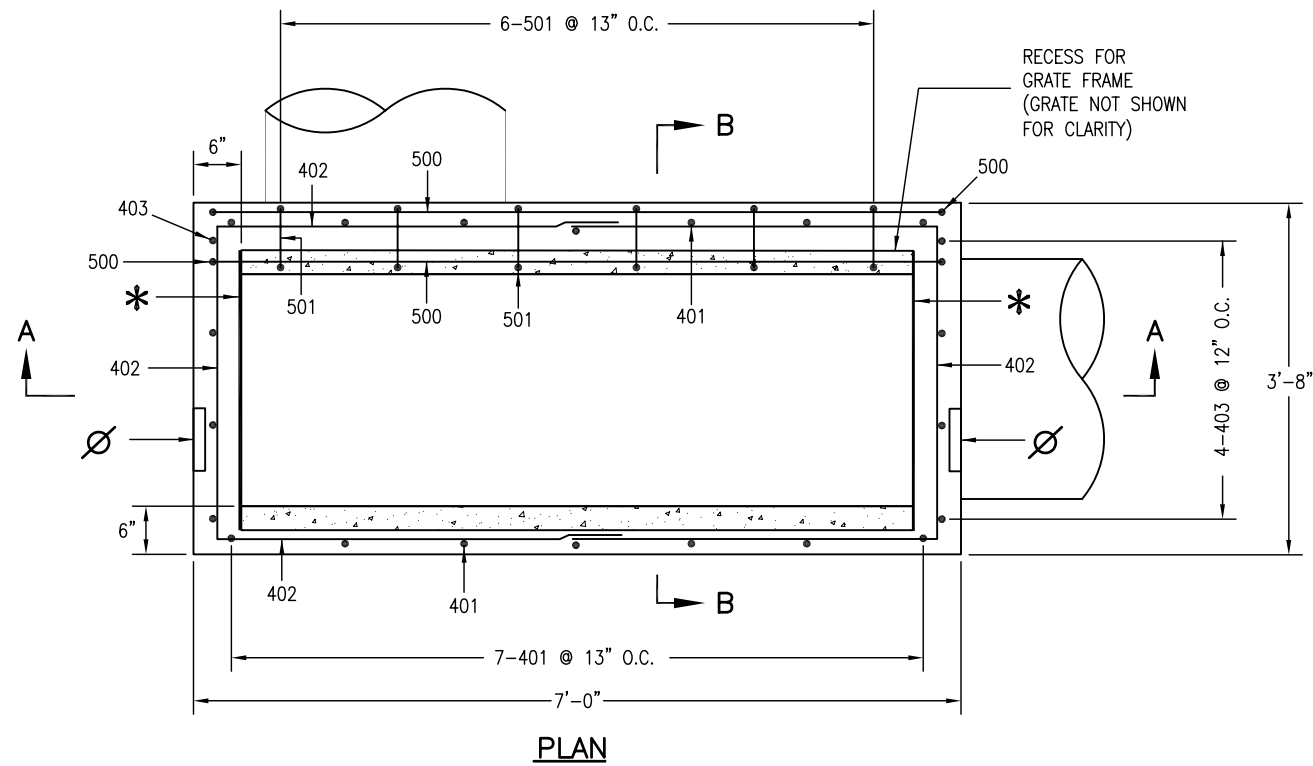
**VANE GRATE INLET**

Issued By: Project Development Branch on July 04, 2006

**STANDARD PLAN NO.**

**M-604-25**

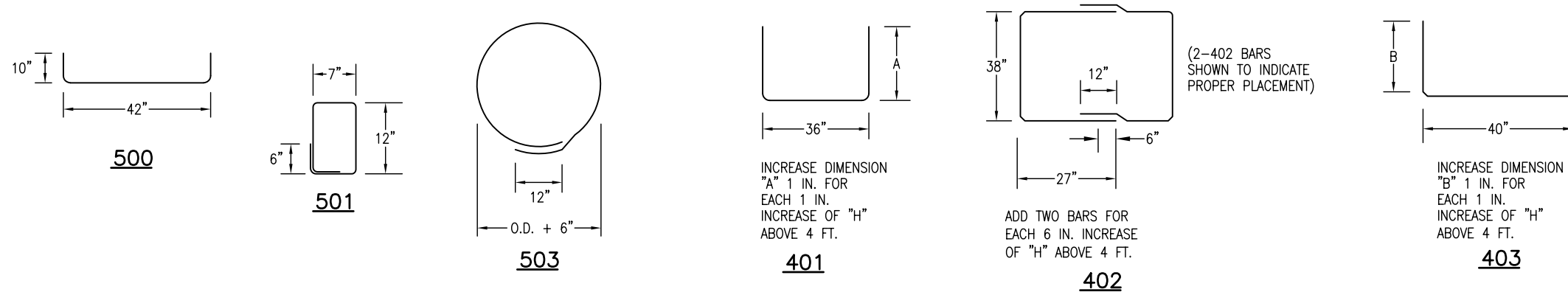
**Sheet No. 1 of 5**



**LEGEND**

- ▼ GRATE TO BE INSTALLED DURING CONSTRUCTION OF THE BOX WITH THE VANE GRATE BOLTED IN PLACE TO THE FRAME.
- \* TO FACILITATE REMOVAL OF THE GRATE, PLACE PLYWOOD 3 IN. x 1/4 IN. x 3/8 IN. ALONG EDGE OF THE GRATE AS SHOWN.
- ∅ FLOW ARROW STAMP IN DIRECTION OF FLOW (TYP.). FLOW →

<b>Computer File Information</b>	<b>Sheet Revisions</b>	<b>Colorado Department of Transportation</b>	<b>VANE GRATE INLET</b>	<b>STANDARD PLAN NO.</b>
Creation Date: 07/04/06 Initials: SJR	Date: _____ Comments: _____	4201 East Arkansas Avenue Denver, Colorado 80222 Phone: (303) 757-9083 Fax: (303) 757-9820	<div style="font-size: 2em; font-weight: bold; margin-bottom: 10px;">VANE GRATE INLET</div> Issued By: Project Development Branch on July 04, 2006	M-604-25
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CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	(R-X)	Project Development Branch SRJ/LTA		



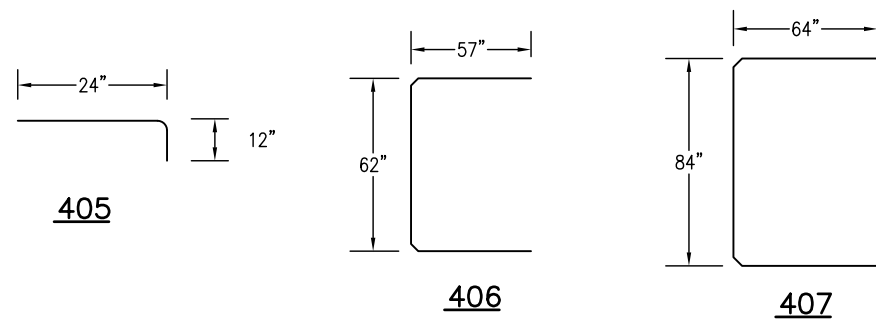
**36 IN. INLET BOX BENDING DIAGRAM**

**QUANTITIES FOR ONE 36 IN. INLET**

H	NUMBER OF STEPS REQUIRED	CONC. CU. YD.	STEEL LBS.
4'-0"	1	1.3	180
4'-6"	2	1.5	186
5'-0"	2	1.6	201
5'-6"	2	1.7	207
6'-0"	3	1.8	222
6'-6"	3	1.9	227
7'-0"	3	2.1	243
7'-6"	4	2.2	248
8'-0"	4	2.3	263
8'-6"	4	2.4	269
9'-0"	5	2.5	285
9'-6"	5	2.7	289
10'-0"	5	2.8	306
10'-6"	6	2.9	310
11'-0"	6	3.0	326
11'-6"	6	3.1	331

**NOTES**

1. CONCRETE QUANTITY INCLUDES VOLUME OCCUPIED BY PIPES.
2. REINFORCING STEEL QUANTITY ASSUMES TWO 503 HOOPS FOR EACH 24 IN. PIPE.
3. BARS NUMBERED IN 400 SERIES INDICATES #4 SIZE BAR. BARS NUMBERED IN 500 SERIES INDICATES #5 SIZE BAR.
4. ALL REINFORCING BARS SHALL BE GRADE 40 AND EPOXY COATED.



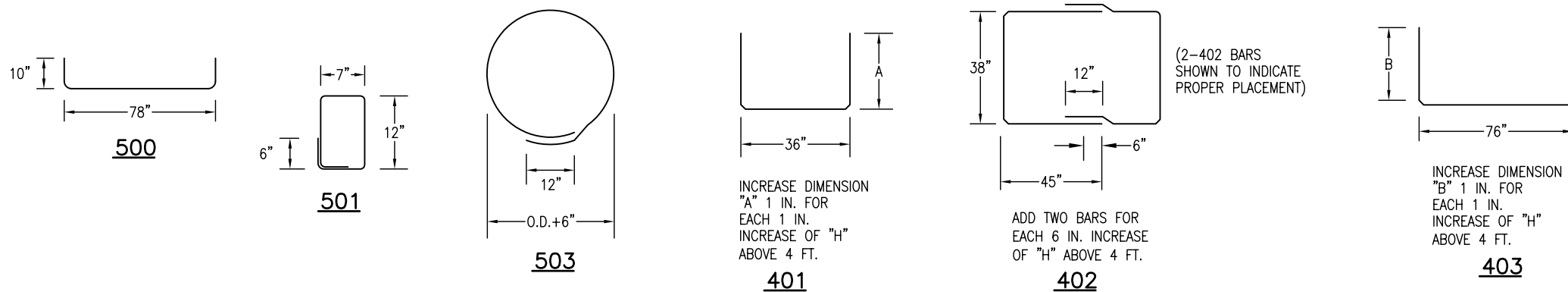
**INLET APRON BENDING DIAGRAM FOR 36 IN. INLET**

MARK	NO. REQ'D	LENGTH (EACH)
405	9	3'-0"
406	1	14'-8"
407	1	17'-8"

**BAR LIST FOR CONCRETE APRON**  
(FOR INFORMATION ONLY)

MARK	NO. REQ'D	HEIGHT "A"	HEIGHT "B"	LENGTH (EACH)
500	4			5'-2"
501	3			4'-2"
503	4			10'-5"
401	4	3'-10"		10'-8"
402	10			7'-8"
403	4		4'-0"	11'-4"

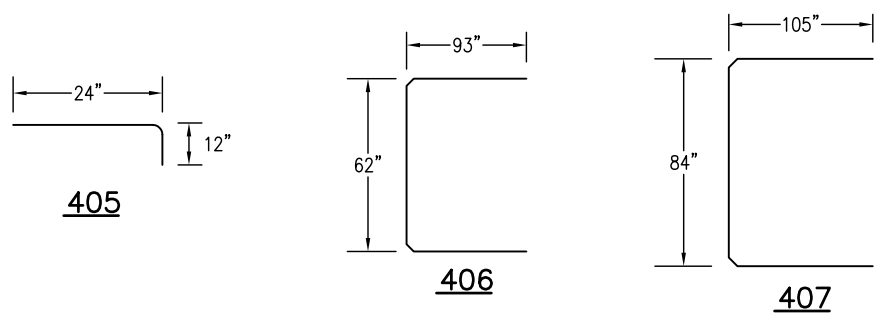
**BAR LIST FOR H = 4'-0" 36 IN. INLET**



**72 IN. INLET BOX BENDING DIAGRAM**

**QUANTITIES FOR ONE 72 IN. INLET**

H	NUMBER OF STEPS REQUIRED	CONC. CU. YD.	STEEL LBS.
4'-0"	1	2.1	253
4'-6"	2	2.3	260
5'-0"	2	2.4	282
5'-6"	2	2.6	289
6'-0"	3	2.8	310
6'-6"	3	3.0	318
7'-0"	3	3.2	339
7'-6"	4	3.3	346
8'-0"	4	3.5	369
8'-6"	4	3.7	376
9'-0"	5	3.9	397
9'-6"	5	4.1	405
10'-0"	5	4.2	426
10'-6"	6	4.4	433
11'-0"	6	4.6	455
11'-6"	6	4.8	462




**INLET APRON BENDING DIAGRAM FOR 72 IN. INLET**

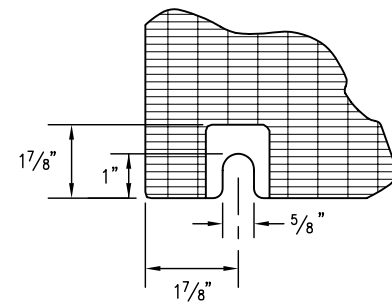
MARK	NO. REQ'D	LENGTH (EACH)
405	13	3'-0"
406	1	20'-8"
407	1	24'-6"

**BAR LIST FOR CONCRETE APRON**  
(FOR INFORMATION ONLY)

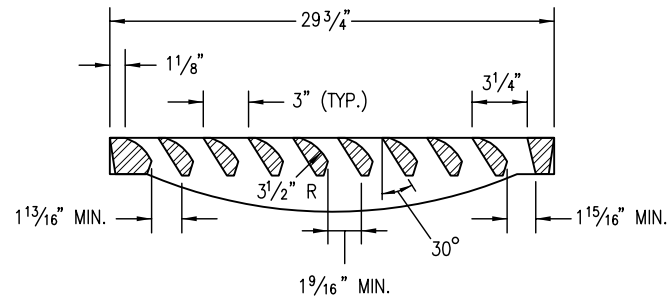
MARK	NO. REQ'D	HEIGHT "A"	HEIGHT "B"	LENGTH (EACH)
500	4			8'-2"
501	6			4'-2"
503	4			10'-5"
401	7	3'-10"		10'-8"
402	10			10'-8"
403	4		4'-0"	14'-4"

**BAR LIST FOR H = 4'-0" 72 IN. INLET**

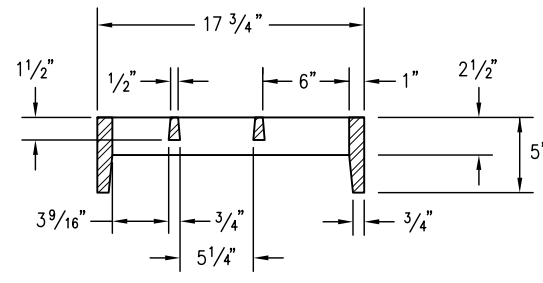
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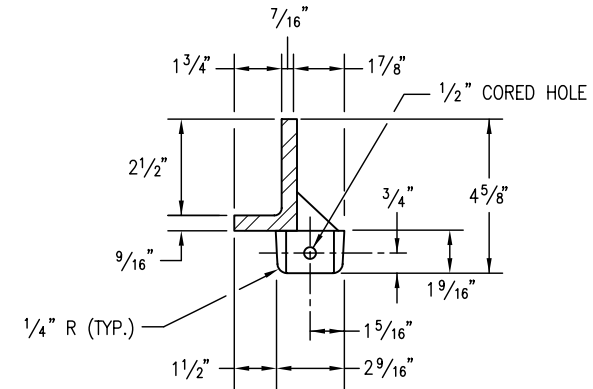
**DETAIL A**  
**BOLT SLOT AT CORNER (TYP.)**



**SECTION A-A**

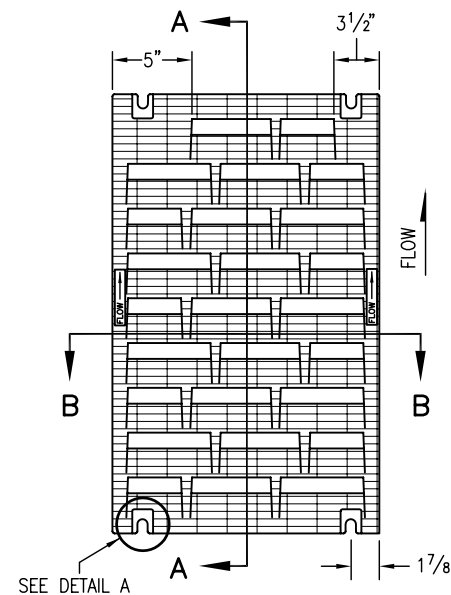


**SECTION B-B**

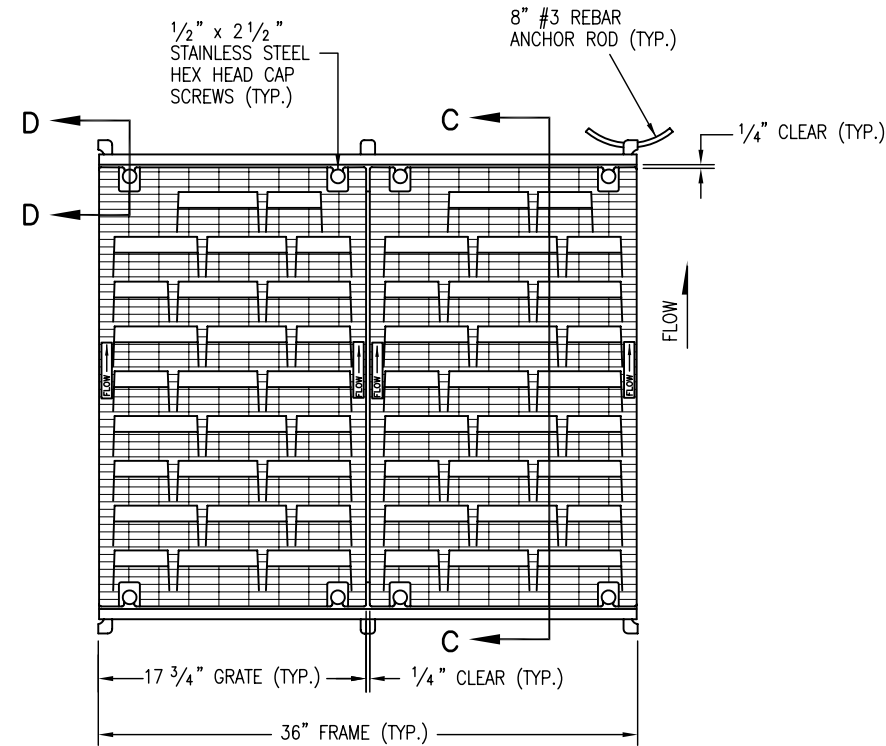


**DETAIL B**

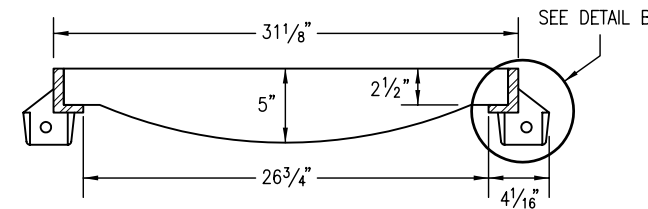
- NOTES**
1. FREE OPEN AREA: 190 SQ. IN./GRATE.
  2. MATERIAL: CAST GRAY IRON ASTM A-48 CLASS 35B.
  3. FINISH: NO PAINT.
  4. WEIGHT: GRATE 170 LBS. EACH; FRAME 29 LBS. EACH.
  5. ALL REINFORCING BARS SHALL BE EPOXY COATED.



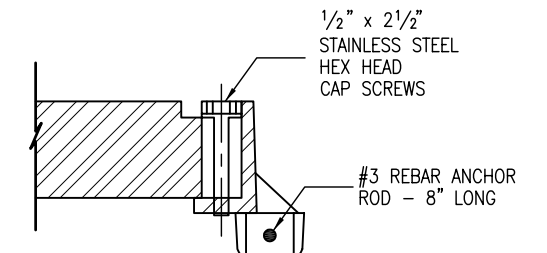
**GRATE PLAN**



**MULTIPLE GRATE WITH FRAME PLAN**



**SECTION C-C**



**SECTION D-D**

**Computer File Information**

Creation Date: 07/04/06 Initials: SJR  
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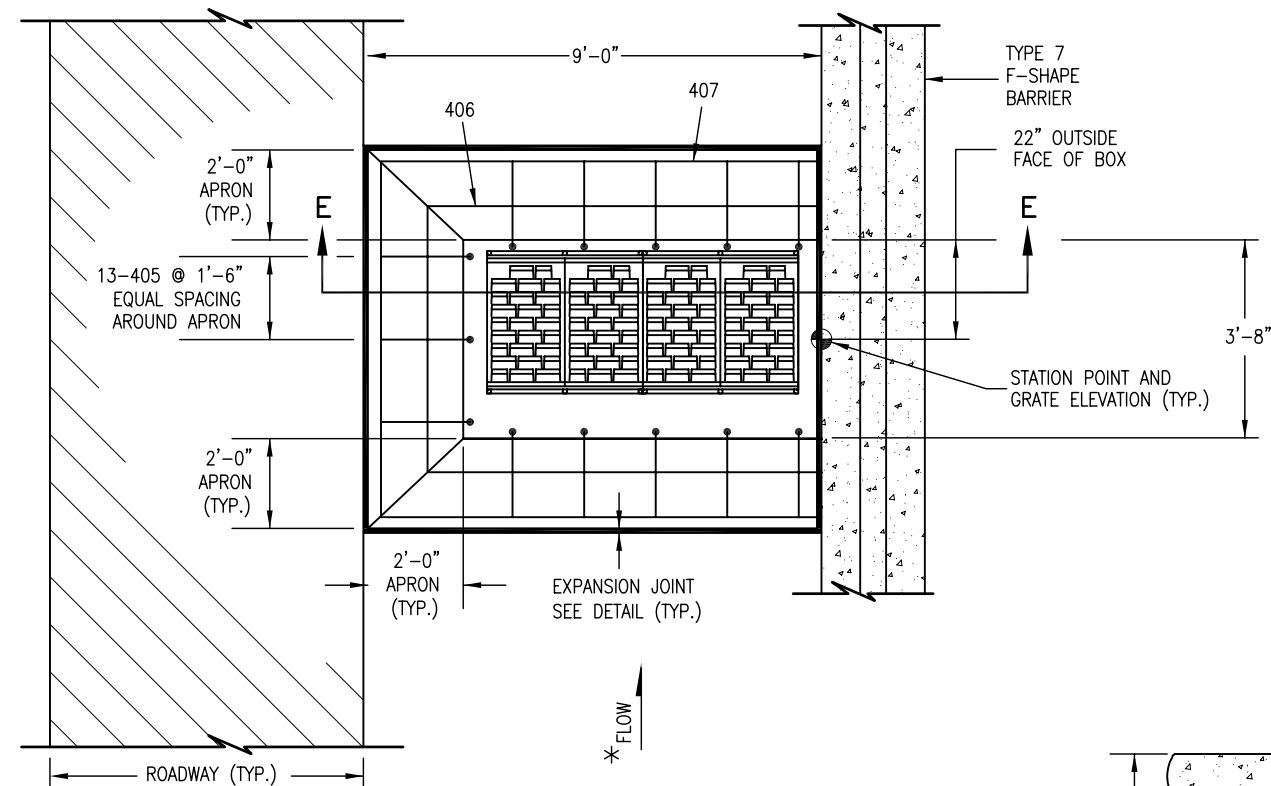
**VANE GRATE INLET**

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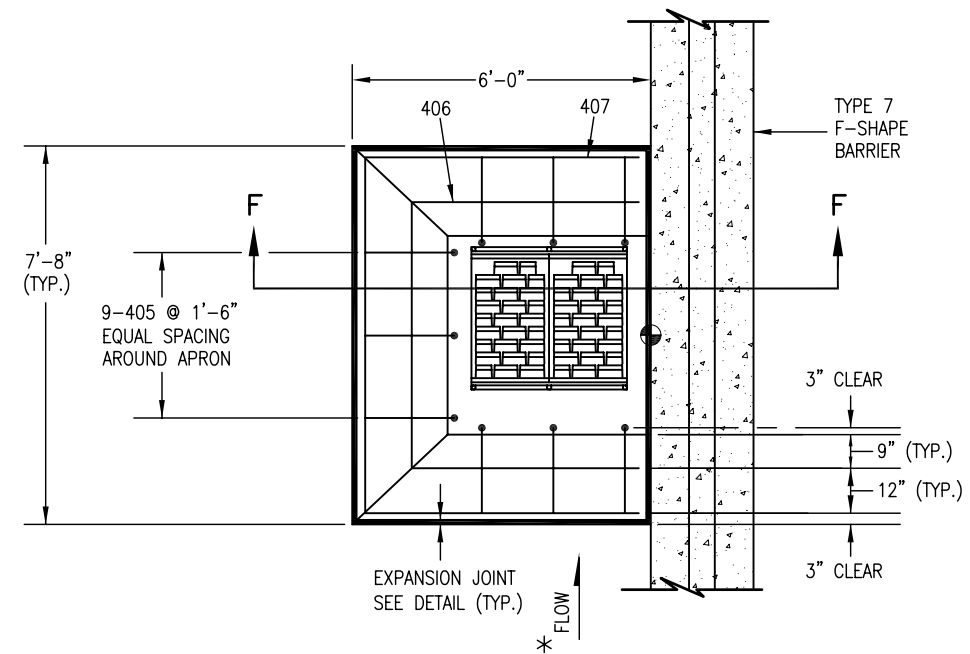
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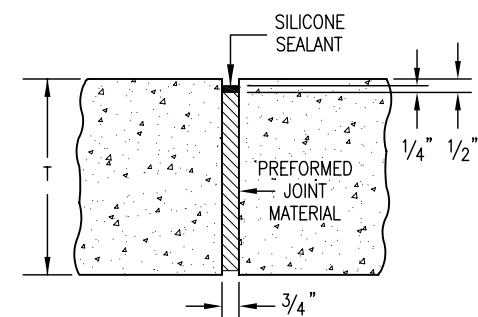
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CONCRETE APRON FOR 72 IN. INLET

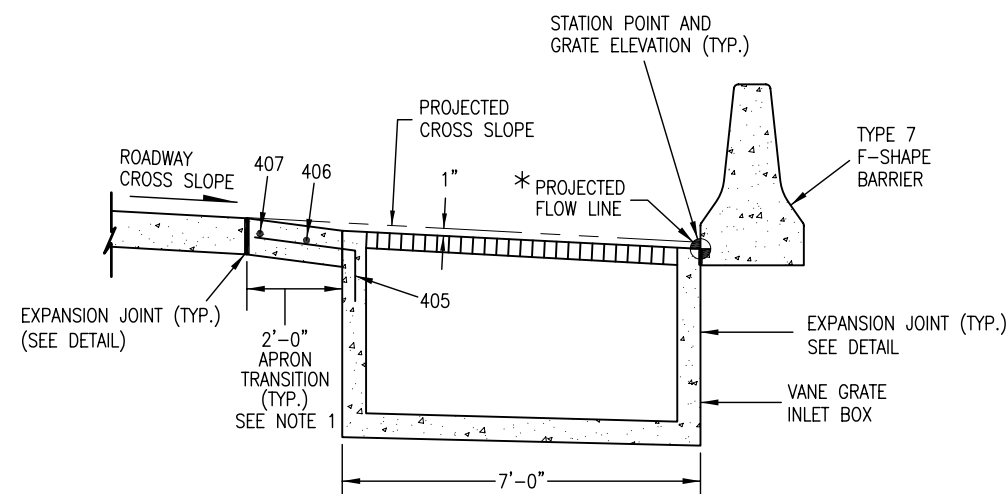


CONCRETE APRON FOR 36 IN. INLET

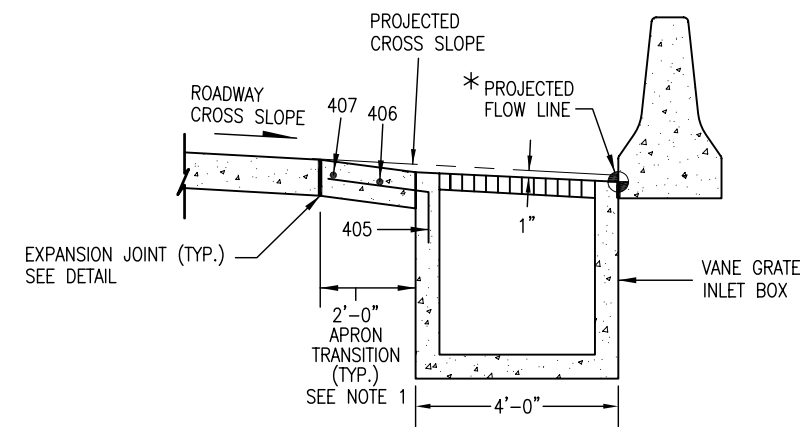


EXPANSION JOINT (TYP.)

- NOTES**
1. A 2 FT. CONCRETE TRANSITION APRON SHALL BE CONSTRUCTED AS SHOWN AND SHALL BE KEYED INTO THE INLET.
  2. CONCRETE APRON SHALL BE THE SAME THICKNESS AND TYPE AS THE SURROUNDING CONCRETE.
  3. THE COST OF THE CONCRETE APRON SHALL BE INCLUDED THE COST OF THE INLET.
- \* IF THE INLET IS OFFSET FROM THE BARRIER, SLOPE THE APRON ADJACENT TO THE BARRIER TO DIRECT FLOW TOWARD THE GRATE.



SECTION E-E



SECTION F-F

**Computer File Information**

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