

REVISIONS								
NO.	DATE	BY	NO.	DATE	BY	NO.	DATE	BY

SCALES SHOWN ARE FOR 11" X 17" PRINTS ONLY

CADD FILE NAME: 605-28_0423.DGN

DRAWING DATE: MARCH, 2023

IDAHO TRANSPORTATION DEPARTMENT

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BOISE IDAHO



ORIGINAL SIGNED BY: MONICA CRIDER

HIGHWAY DESIGN ENGINEER

STANDARD DRAWING

VANE GRATE INLET

ENGLISH

STANDARD DRAWING NO. 605-28

SHEET 1 OF 3

ORIGINAL STORED AT: ITD, Headquarters 3311 West State Boise, Idaho

PROFESSIONAL ENGINEER

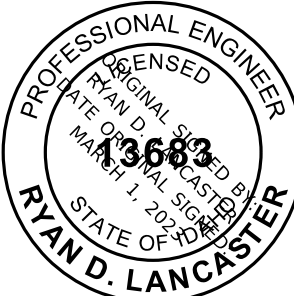
RYAN D. LANCASTER

REGISTERED

DATE ORIGINAL SIGNED BY: MARCH 1, 2022

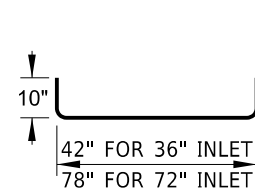
STATE OF IDAHO

3683

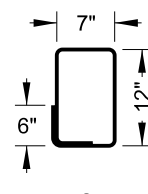


BAR	36 IN. INLET			72 IN. INLET				
	QTY.	HEIGHT A	HEIGHT B	LENGTH (EACH)	QTY.	HEIGHT A	HEIGHT B	LENGTH (EACH)
500	4			5'-2"	4			8'-2"
501	3			4'-2"	6			4'-2"
401	4	3'-10"		10'-8"	7	3'-10"		10'-8"
402	10			7'-8"	10			10'-8"
403	4		4'-0"	11'-4"	4		4'-0"	14'-4"

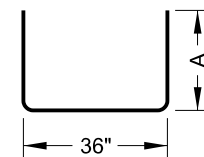
BAR LIST FOR H = 4 FT.
(SEE NOTE NO. 4)



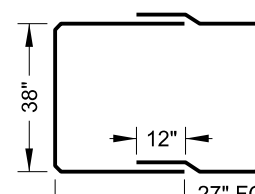
500



501

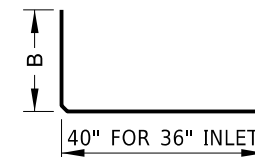


401



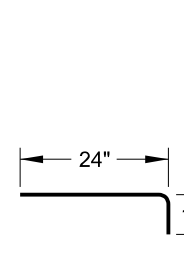
402

TWO 402 BARS SHOWN TO INDICATE CORRECT PLACEMENT

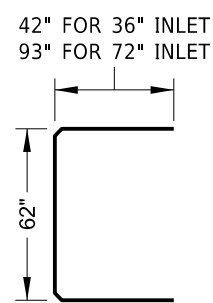


403

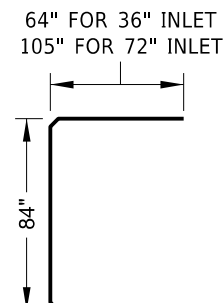
REINFORCEMENT DETAIL



405



406



407

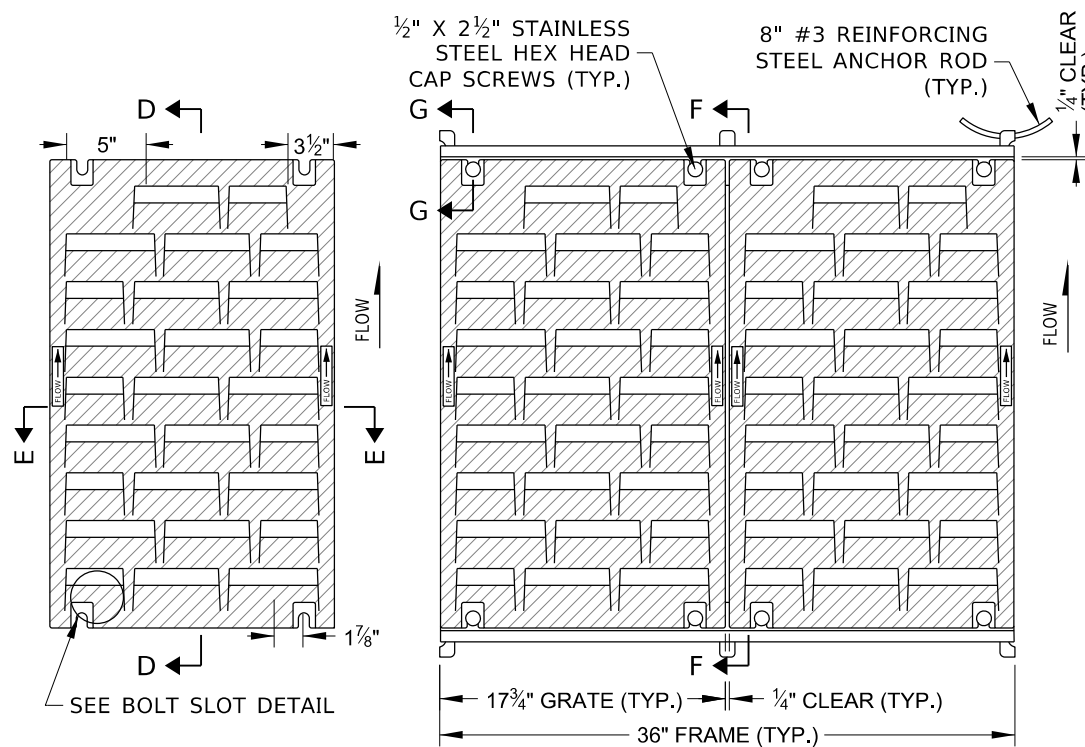
H	NO. OF STEPS	36 IN. INLET		72 IN. INLET	
		CONC. CU. YD.	STEEL LBS.	CONC. CU. YD.	STEEL LBS.
4'-0"	1	1.3	180	2.1	253
4'-6"	2	1.5	186	2.3	260
5'-0"	2	1.6	201	2.4	282
5'-6"	2	1.7	207	2.6	289
6'-0"	3	1.8	222	2.8	310
6'-6"	3	1.9	227	3.0	318
7'-0"	3	2.1	243	3.2	339
7'-6"	4	2.2	248	3.3	346
8'-0"	4	2.3	263	3.5	369
8'-6"	4	2.4	269	3.7	376
9'-0"	5	2.5	285	3.9	397
9'-6"	5	2.7	289	4.1	405
10'-0"	5	2.8	306	4.2	426
10'-6"	6	2.9	310	4.4	433
11'-0"	6	3.0	326	4.6	455
11'-6"	6	3.1	331	4.8	462

QUANTITIES FOR ONE INLET
(SEE NOTE NO. 4)

BAR	36 IN. INLET		72 IN. INLET	
	QTY.	LENGTH (EACH)	QTY.	LENGTH (EACH)
405	9	3'-0"	13	3'-0"
406	1	14'-8"	1	20'-8"
407	1	17'-8"	1	24'-6"

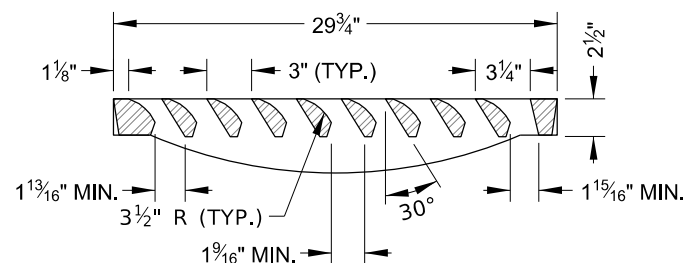
BAR LIST FOR CONCRETE APRON
(FOR INFORMATION ONLY)

INLET APRON REINFORCEMENT DETAIL

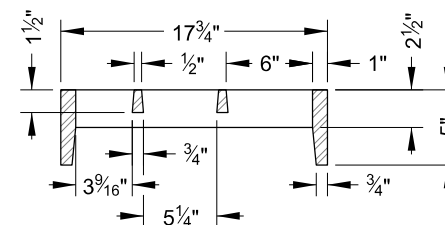


GRATE PLAN

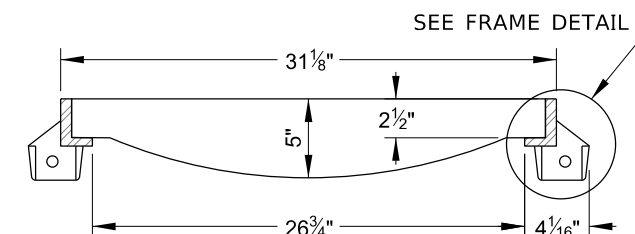
MULTIPLE GRATE WITH FRAME PLAN



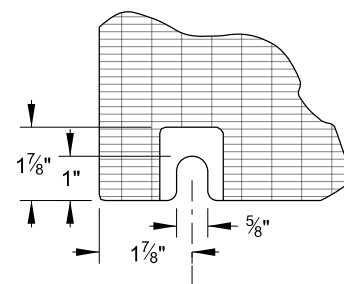
SECTION D-D



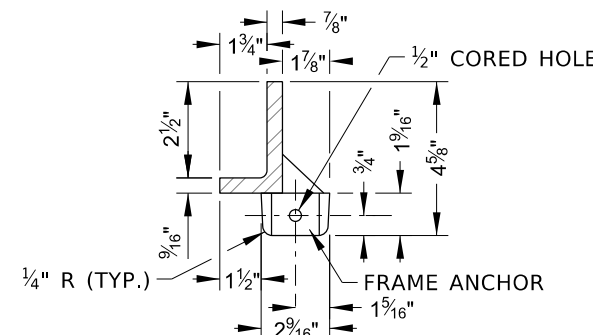
SECTION E-E



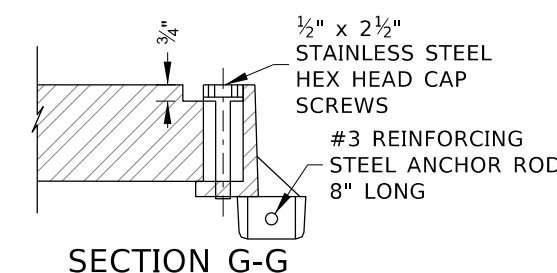
SECTION F-F



BOLT SLOT DETAIL

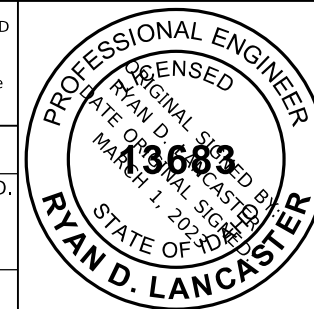


FRAME DETAIL



SECTION G-G

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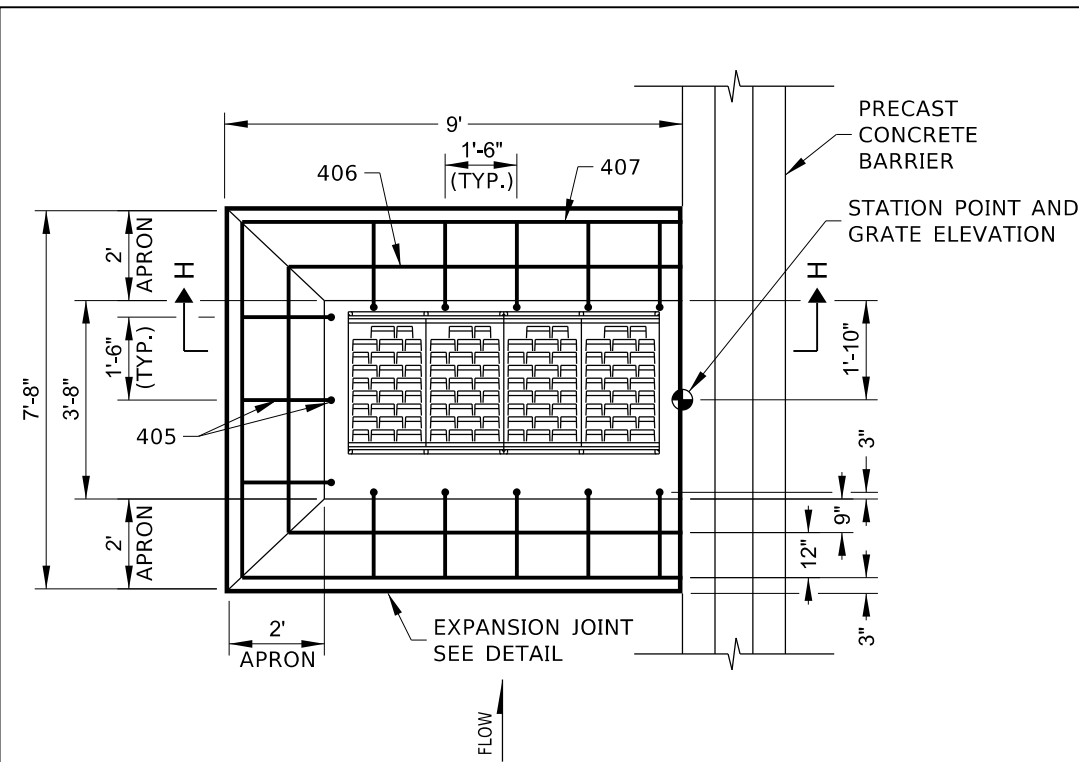
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BOISE IDAHO

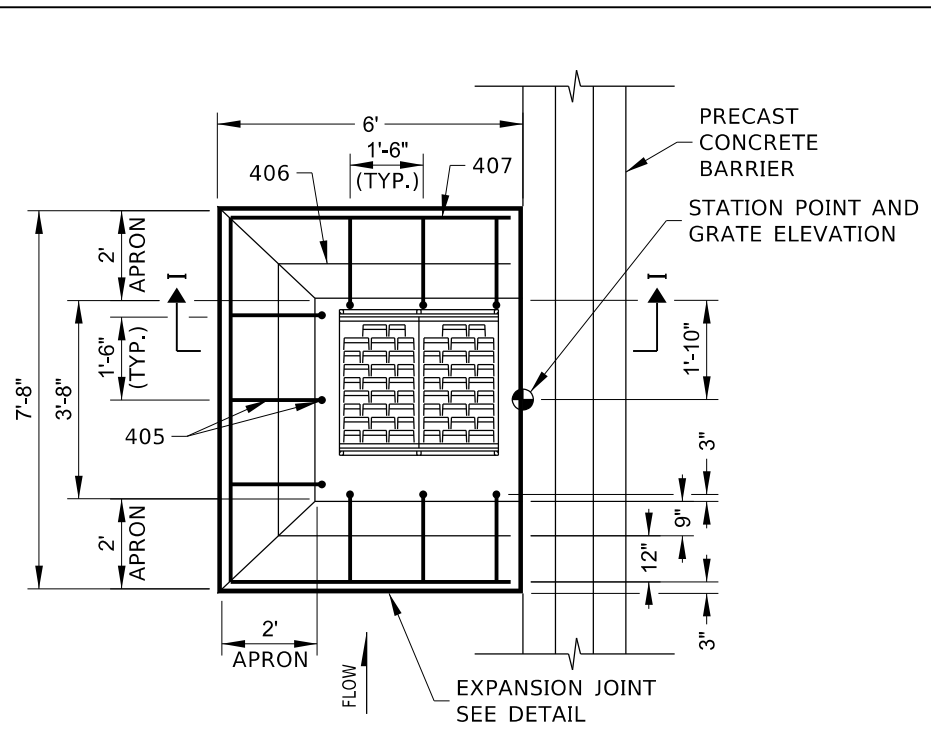
ORIGINAL SIGNED BY: MONICA CRIDER
HIGHWAY DESIGN ENGINEER

STANDARD DRAWING
VANE GRATE INLET

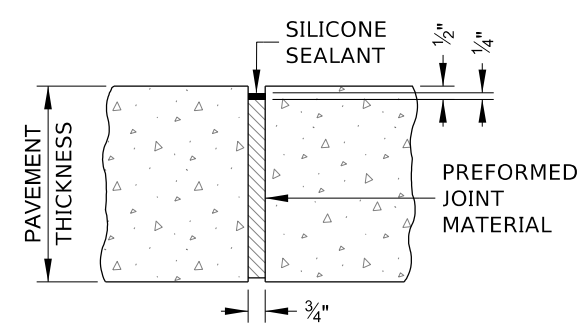
ENGLISH
STANDARD DRAWING NO. 605-28
SHEET 2 OF 3



CONCRETE APRON FOR 72 IN. INLET



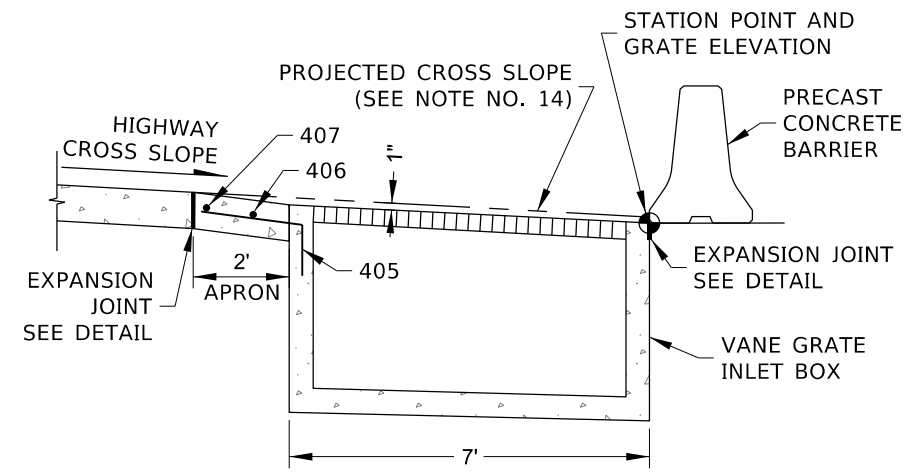
CONCRETE APRON FOR 36 IN. INLET



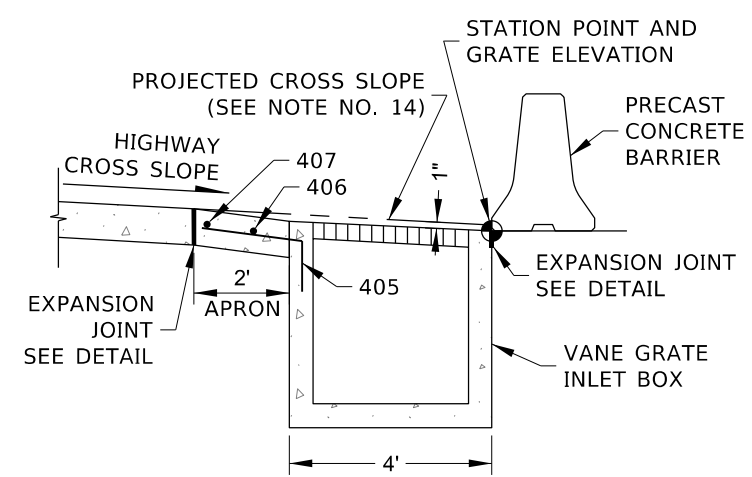
EXPANSION JOINT DETAIL

NOTES

1. PRECAST OR CAST-IN-PLACE THE INLET. WHEN PRECAST, FABRICATE IN ACCORDANCE WITH ASTM C913 AND PROVIDE SHOP DRAWING FOR APPROVAL PRIOR TO INSTALLATION.
2. USE CLASS 40AF CONCRETE. CONCRETE QUANTITIES INCLUDE THE VOLUME OCCUPIED BY PIPES.
3. USE GRADE 60 REINFORCING STEEL MEETING AASHTO M 31. BARS NUMBERED IN 400 SERIES INDICATES #4 SIZE BAR. BARS NUMBERED IN 500 SERIES INDICATES #5 SIZE BAR. ENSURE REINFORCING BARS HAVE 2" OF COVER. REINFORCING BAR DIMENSIONS ARE TO CENTERLINE OF THE BAR. CUT OR BEND REINFORCING BARS AROUND PIPES.
4. REINFORCING STEEL QUANTITIES SHOWN ARE FOR INLETS WITH H = 4 FT. WITH TWO 24 IN. PIPES. FOR OTHER SIZES, MAKE THE FOLLOWING MODIFICATIONS.
 - A. INCREASE REINFORCING STEEL DIMENSIONS A, B, OR BOTH BY 1 IN. FOR EACH 1 IN. INCREASE OF H ABOVE 4 FT.
 - B. ADD TWO 402 REINFORCING STEEL BARS FOR EACH 6 IN. INCREASE OF H ABOVE 4 FT.
5. CONSTRUCT THE FRAME WITH STEEL MEETING ASTM A36. ENSURE THE FINISHED TOP OF CONCRETE IS EVEN WITH THE ANGLE AND GRATE SURFACE. THE FRAME WEIGHT IS 12 LBS./FT.
6. INLET GRATE AND FRAME INFORMATION FOR EACH GRATE:
 - FREE OPEN AREA: 190 SQ. IN./GRATE
 - MATERIAL: CAST GRAY IRON ASTM A48 CLASS 35B
 - FINISH: NO PAINT
 - WEIGHT: GRATE 170 LBS. EACH
7. BOLT THE VANE GRATE TO THE FRAME.
8. TO FACILITATE REMOVAL OF THE GRATE, PLACE 31 3/8" X 3" X 1/4" PLYWOOD ALONG THE EDGE OF THE GRATE.
9. IN 3'-8" OR 4' INLET WALLS, USE 30" OR SMALLER I.D. PIPES. IN THE 7' INLET WALLS, USE PIPE I.D. WITH DIMENSION "H" MINUS 18", OR LESS, UP TO 66".
10. PIPES CAN ENTER OR EXIT THE INLET IN ANY DIRECTION. GROUT PIPE ENTRANCES AND EXITS.
11. INSTALL STEPS WHEN THE INLET DEPTH H IS 4' OR GREATER IN ACCORDANCE WITH AASHTO M 199.
12. ENSURE THE ELEVATION OF THE INLET PIPE IS HIGHER THAN THE ELEVATION OF THE OUTLET PIPE.
13. STAMP FLOW ARROWS INTO THE TOP SURFACE OF THE INLET BOX SIDEWALLS TO INDICATE THE DIRECTION OF FLOW. PROVIDE ARROWS THAT ARE 6" LONG, 1" WIDE, AND 3/8" DEEP.
14. CONSTRUCT CONCRETE TRANSITION APRON AND KEY THE APRON INTO THE INLET. MATCH THE APRON THICKNESS TO THE SURROUNDING CONCRETE PAVEMENT. IF THE INLET IS OFFSET FROM THE BARRIER, SLOPE THE APRON ADJACENT TO THE BARRIER TO DIRECT FLOW TOWARD THE GRATE.
15. DRAWING NOT TO SCALE.



SECTION H-H



SECTION I-I

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VANE GRATE INLET

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 STANDARD DRAWING NO.
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 SHEET 3 OF 3

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