

NOTES:

1. GRAY IRON CASTINGS PER AASHTO M 105, CLASS 30A. ALL MACHINE FINISH TO BE A.S.A. SPECIFICATIONS.
2. ROUGHNESS SYMBOL 250, TOLERANCE $-0/+1/16$ ".
3. THE WORD "WATER" IN 1" LETTERS TO BE CAST IN THE DEPRESSION SHOWN IN THE CENTER OF TOP OF COVER AND TO BE FLUSH WITH SURFACE OF COVER.

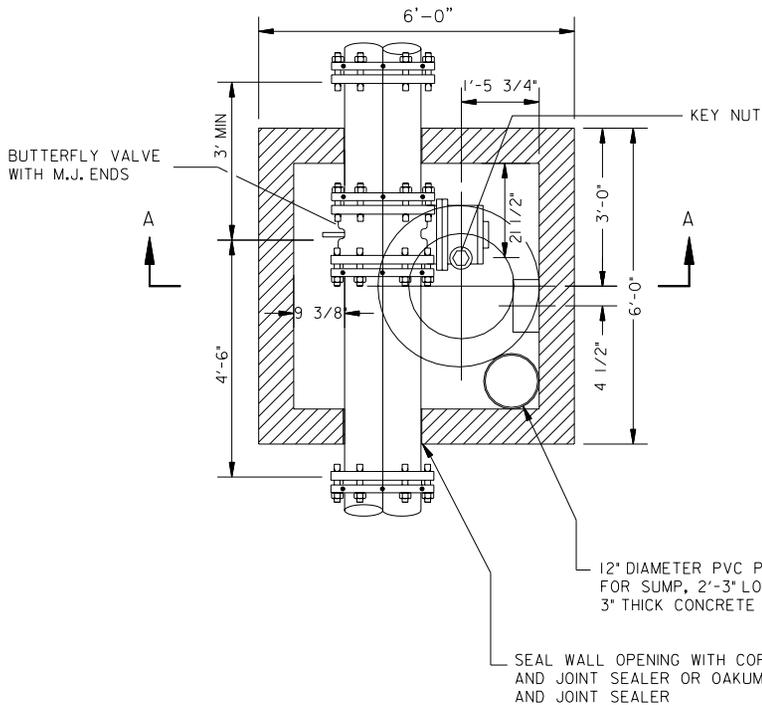
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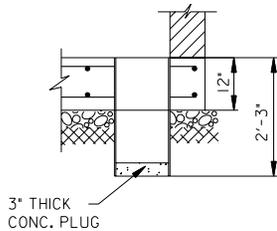
**DETAILS OF 24-INCH
CAST IRON COVER
(WATER)**

d. DISTRICT OF COLUMBIA
DEPARTMENT OF TRANSPORTATION

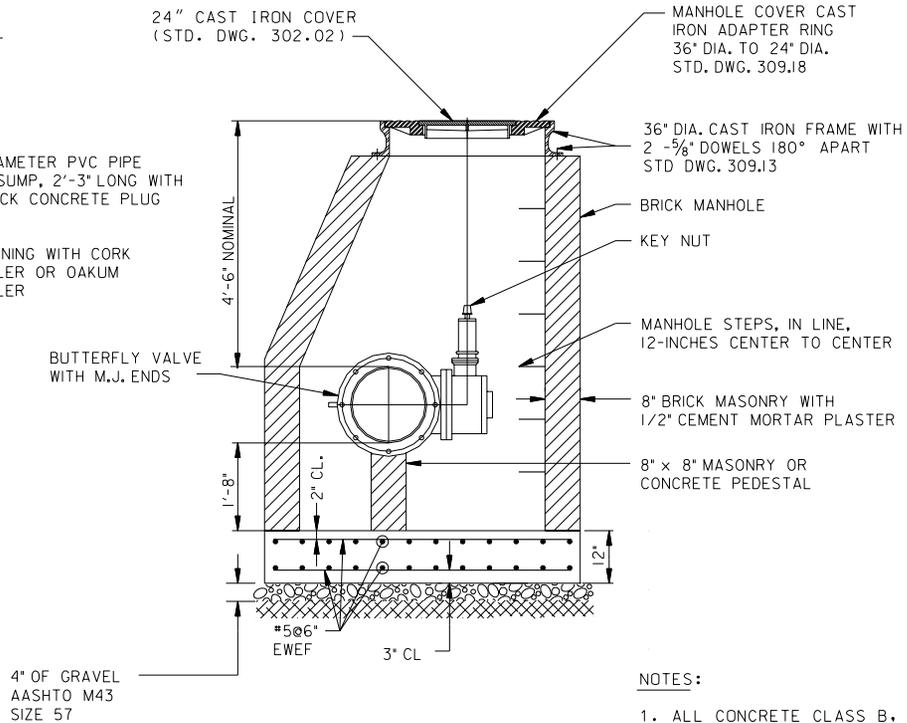
DWG. NO. 302.02



SECTIONAL PLAN



DETAIL-SUMP



SECTION A - A

NOTES:

1. ALL CONCRETE CLASS B, AIR ENTRAINED, TYPE II CEMENT
2. REINFORCING STEEL SHALL CONFORM TO AASHTO M31, GRADE 60.

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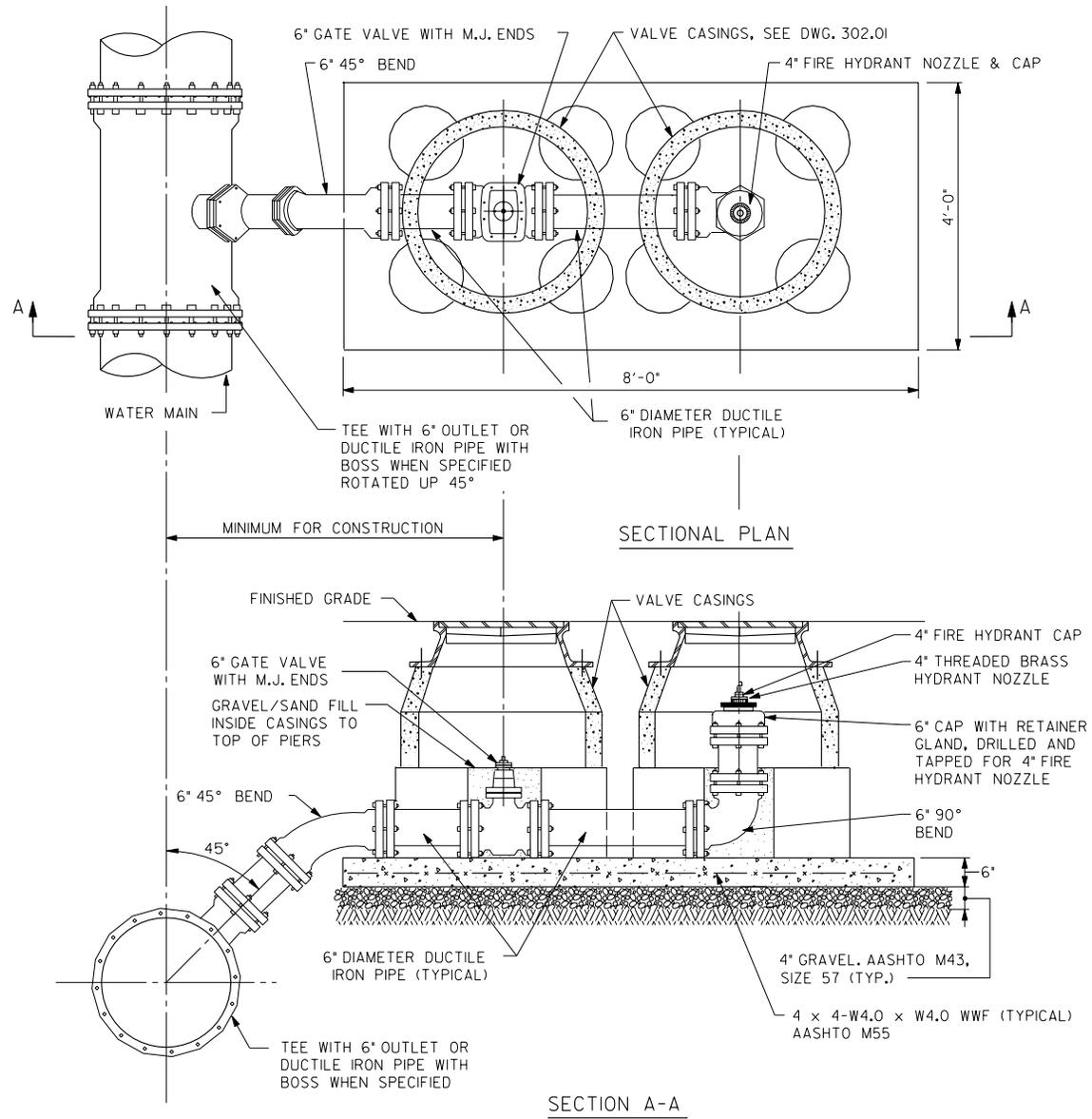
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BRICK MANHOLE FOR 16" BUTTERFLY VALVE

d.

DISTRICT OF COLUMBIA
DEPARTMENT OF TRANSPORTATION

DWG. NO. 304.01



NOTES:

1. ALL CONCRETE TO BE CLASS B, AIR ENTRAINED, TYPE II CEMENT.
2. ALL PIPE AND FITTING SHALL BE MECHANICAL JOINT WITH RETAINER GLANDS UTILIZED IN PLACE OF THE STANDARD GLANDS FOR RESTRAINT.
3. FOR 36", 42" AND 48" DIAMETER WATER MAINS USE MECHANICAL JOINT TEE AS FOLLOWS:
 - 36" X 8" TEE WITH 8" X 6" REDUCER
 - 42" X 12" TEE WITH A 12" X 6" REDUCER
 - 48" X 12" TEE WITH A 12" X 6" REDUCER
4. DUCTILE IRON PIPE WITH A 6" BOSSED OUTLET MAY BE USED INSTEAD OF A TEE ONLY WHEN APPROVED BY THE DISTRICT.
5. FOR WATER MAINS 36" AND LARGER AND FOR DEPTH OF COVER LESS THAN 4'-3", THE DESIGNER SHALL VERIFY THE VERTICAL DISTANCE REQUIRED FOR THE DETAIL TO BE CONSTRUCTED AS SHOWN AND MODIFY THE DETAIL AS REQUIRED, TO ASSURE ITS CONSTRUCTIBILITY.

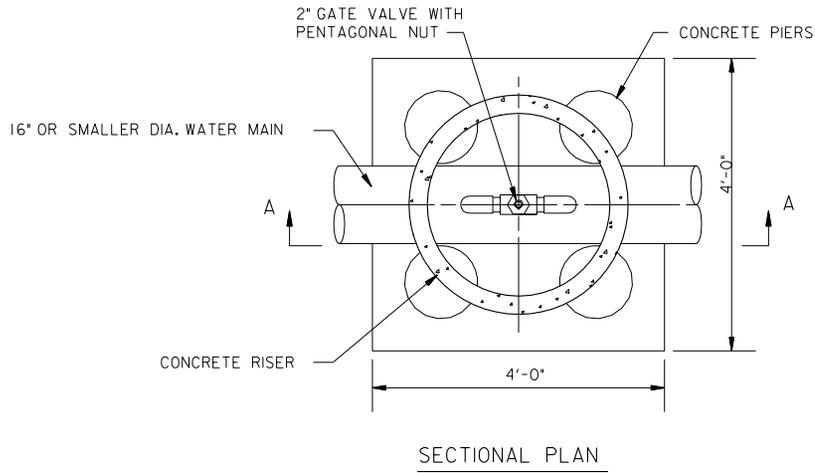
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6 INCH AIR BLOWOFF

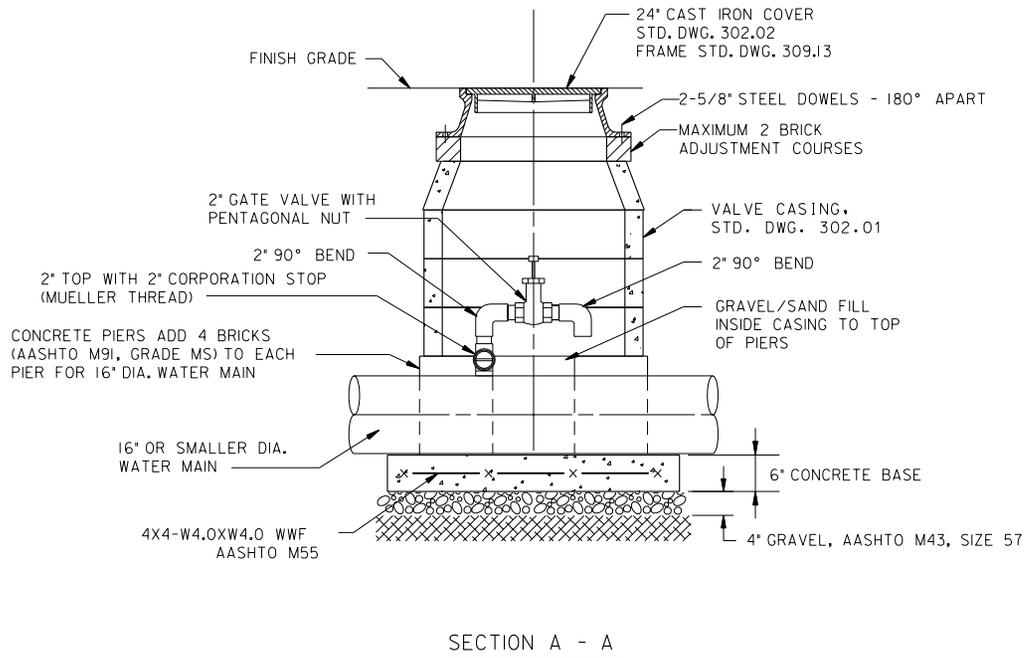
d. DISTRICT OF COLUMBIA
DEPARTMENT OF TRANSPORTATION

DWG. NO. 305.01



NOTES:

1. ALL CONCRETE CLASS B, AIR ENTRAINED, TYPE II CEMENT.
2. FITTINGS AND 2" PIPE TO BE BRASS.



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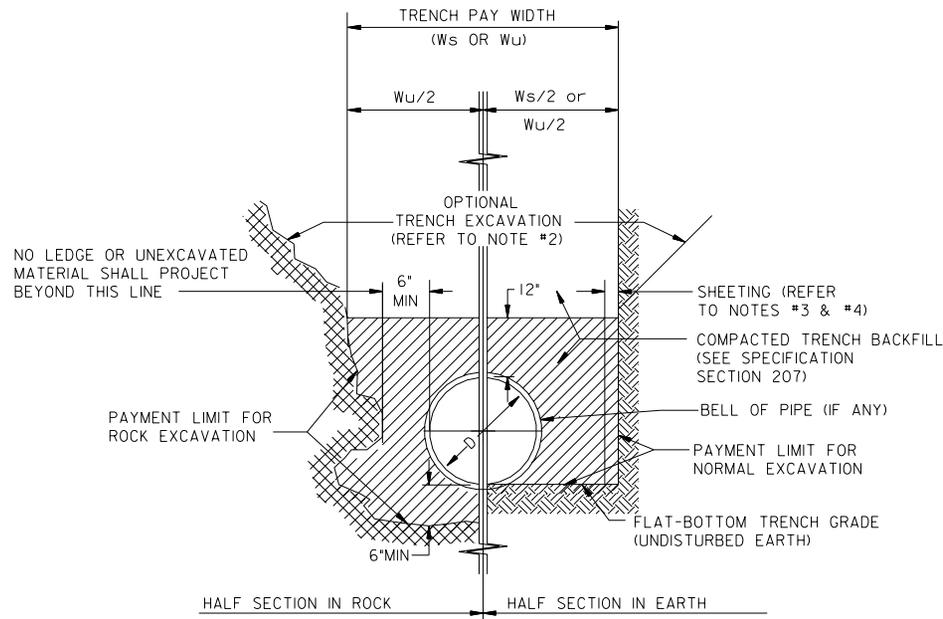
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2 INCH AIR BLOWOFF

d.

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DWG. NO. 305.04



PIPE DIAMETER D	TRENCH PAY WIDTH (Ws OR Wu)	
	SHEETED EXCAVATION Ws	UNSHEETED EXCAVATION Wu
8"	2' - 10"	2' - 4"
12"	3' - 2"	2' - 8"
16"	3' - 6"	3' - 0"
20"	3' - 10"	3' - 4"
24"	4' - 2"	3' - 8"
30"	4' - 8"	4' - 2"
36"	6' - 1"	5' - 7"
42"	6' - 7"	6' - 1"
48"	7' - 1"	6' - 7"

NOTES:

1. PIPE LAYING CONDITION TYPE 2A (TRENCH INSTALLATION) SHALL BE USED FOR ALL WATER MAIN CONSTRUCTION UNLESS OTHERWISE SPECIFIED OR SHOWN ON DRAWINGS.
2. TRENCHES MAY BE EXCAVATED WIDER THAN THE TRENCH PAY WIDTH (Ws OR Wu) ABOVE A LINE 1' - 0" FROM TOP OF PIPE, AT CONTRACTOR'S OPTION AND AT NO ADDITIONAL COST TO DDOT.
3. IF EXCAVATION BELOW NORMAL DEPTH OF WATER MAIN INSTALLATION (DEPTHS GREATER THAN 4.5 FEET) IS REQUIRED, EXCAVATION SUPPORT SHEETING MAY BE ORDERED OR TRENCH SHIELDS UTILIZED AT CONTRACTOR'S OPTION. COSTS UNDER THIS OPTION SHALL BE PART OF THE UNIT PRICE BID FOR EXCAVATION.
4. SHEETING, IF USED, SHALL BE REMOVED IN CONJUNCTION WITH THE BACKFILLING OPERATION UNLESS OTHERWISE SPECIFIED OR SHOWN ON DRAWINGS. HOWEVER, IF APPROVED IN WRITING, SHEETING MAY BE CUT-OFF AND LEFT IN PLACE BELOW A LINE 1' - 0" ABOVE THE TOP OF PIPE OR AS DIRECTED BY THE ENGINEER.

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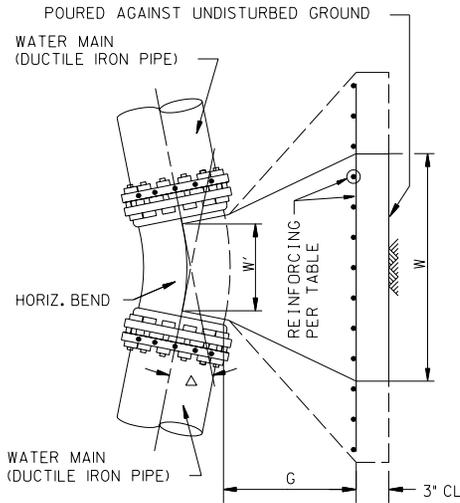
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DUCTILE IRON WATER/SEWER MAIN
PIPE LAYING CONDITION TYPE 2A
(TRENCH INSTALLATION)

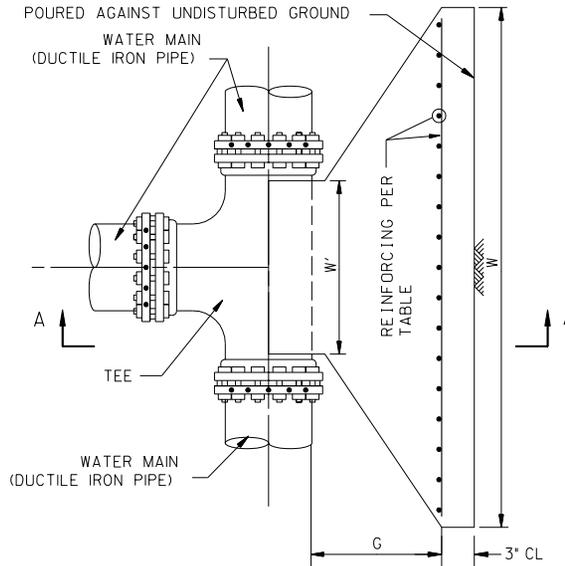
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 DEPARTMENT OF TRANSPORTATION

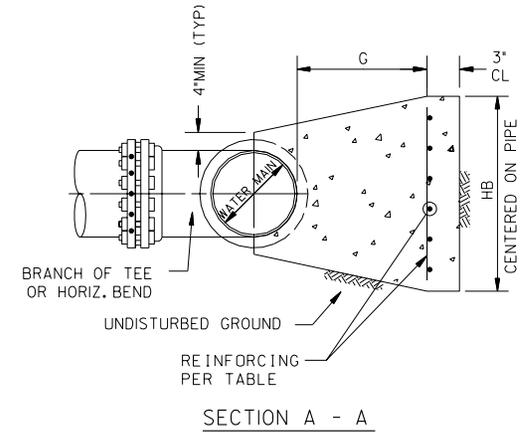
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SECTIONAL PLAN - BENDS



SECTIONAL PLAN - TEES



LEGEND

- Δ - ANGLE OF BEND
- HB - HEIGHT OF BLOCK
- W - WIDTH AGAINST UNDISTURBED GROUND
- W' - WIDTH AT FITTING
- G - DEPTH OF BLOCK
- E.W - EACH WAY

BRANCH OF TEE OR PIPE DIA	BEND TYPE	W	HB	W'	G	REINF. (E.W.)
6"	11.25°	1'-6"	1'-6"	0'-8"	1'-0"	#4 @12"
	22.5°	1'-9"	1'-6"	0'-8"	1'-0"	#4 @12"
	45°	2'-8"	2'-0"	0'-8"	1'-0"	#4 @12"
	90°	4'-6"	2'-3"	0'-10"	1'-0"	#5 @12"
8"	TEE	3'-0"	3'-0"	0'-10"	1'-0"	#5 @12"
	11.25°	1'-6"	1'-6"	0'-8"	1'-0"	#4 @12"
	22.5°	1'-9"	1'-6"	0'-8"	1'-0"	#4 @12"
	45°	2'-8"	2'-0"	0'-8"	1'-0"	#4 @12"
12"	90°	5'-0"	3'-9"	1'-0"	1'-6"	#6 @12"
	TEE	4'-0"	3'-6"	1'-4"	1'-0"	#5 @12"
	11.25°	2'-6"	2'-6"	1'-0"	1'-0"	#4 @12"
	22.5°	3'-6"	2'-6"	1'-0"	1'-3"	#4 @12"
	45°	7'-0"	4'-6"	1'-4"	1'-6"	#6 @12"
	90°	10'-0"	4'-6"	1'-4"	1'-6"	#6 @12"
	TEE	8'-6"	5'-0"	1'-4"	1'-6"	#6 @12"

NOTES:

1. ALL CONCRETE TO BE CLASS B, AIR ENTRAINED, TYPE II CEMENT.
2. REINFORCING STEEL SHALL CONFORM TO AASHTO M31, GRADE 60.
3. NOMINAL DEPTH OF COVER ON WATER MAIN IS FOUR FEET.
4. UNIT WEIGHT OF SOIL, 120 PCF.
5. DESIGN BASED ON $\theta = 30^\circ$ AND TEST PRESSURE = 195 PSI.
6. HB - HEIGHT OF BLOCK, W' - WIDTH AT FITTING AND W - WIDTH AGAINST UNDISTURBED GROUND SHOULD BE CENTERED ON PIPE AND FITTING.
7. FOR PIPE SIZE GREATER THAN 12", BLOCKS BEDDED IN SOILS WEAKER THAN $\theta = 30^\circ$, OR FOR MAINS WITH A TEST PRESSURE GREATER THAN 195 PSI, THE THRUST BLOCK MUST BE SPECIFICALLY DESIGNED FOR EACH APPLICATION.

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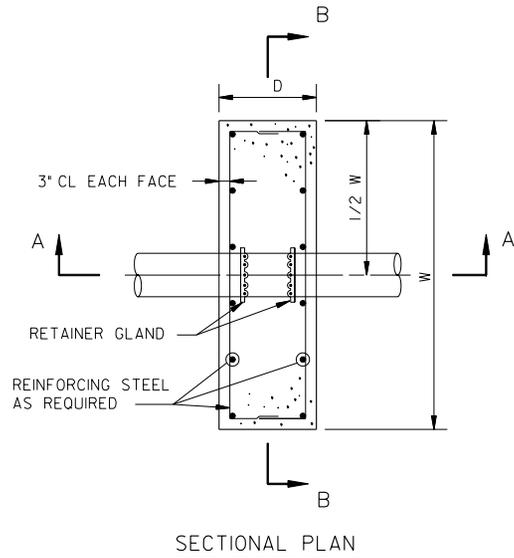
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CONCRETE THRUST BLOCK
FOR HORIZONTAL PIPE BEND & TEE
12" DIAMETER & SMALLER WATER MAINS

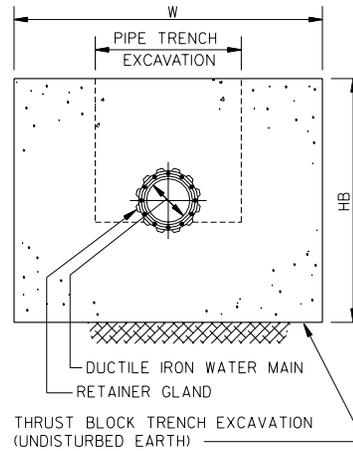


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DEPARTMENT OF TRANSPORTATION

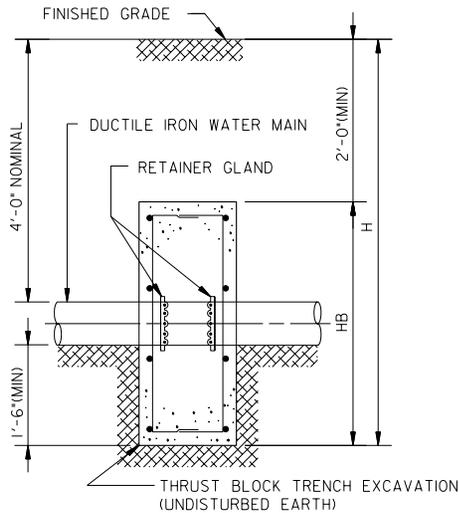
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SECTIONAL PLAN



SECTION B - B
REINFORCING STEEL NOT SHOWN FOR CLARITY



SECTION A - A

NOTES:

1. RETAINER GLANDS WITH DUCTILE IRON WEDGES IN COMBINATION WITH SPECIAL HEAT TREATED SET SCREWS. TORQUE PER MANUFACTURER INSTRUCTIONS.
2. ALL CONCRETE TO BE CLASS B, AIR ENTRAINED, TYPE II CEMENT.
3. REINFORCING STEEL SHALL CONFORM TO AASHTO M31, GRADE 60.
4. EXCAVATION BACKFILL, PER SPECIFICATIONS 207.
5. UNIT WEIGHT OF SOIL, 120 PCF.
6. NOMINAL DEPTH OF COVER ON WATER MAIN IS FOUR FEET.
7. DESIGN BASED ON $\theta=30^\circ$, AND TEST PRESSURE = 195 PSI.
8. FOR PIPE SIZE LARGER THAN 12", BLOCKS BEDDED IN SOILS WEAKER THAN $\theta=30^\circ$, OR FOR MAINS WITH A TEST PRESSURE GREATER THAN 195 PSI, THE THRUST BLOCK MUST BE SPECIFICALLY DESIGNED FOR EACH APPLICATION.

LEGEND

- W - WIDTH OF BLOCK
- HB - HEIGHT OF BLOCK
- D - DEPTH OF BLOCK
- H - HEIGHT FROM FINISHED GRADE TO BOTTOM OF BLOCK
- E.W.E.F. - EACH WAY EACH FACE

	PIPE SIZE	W	D	HB	H	REINF.(E.W.E.F.)
E-D-P	6"	4' - 7"	1' - 0"	3' - 7"	6' - 1"	#4 @12"
	8"	4' - 9"	1' - 6"	3' - 9"	6' - 3"	#4 @10"
	12"	5' - 0"	2' - 0"	5' - 0"	7' - 0"	#4 @ 8"
R-M-C-M-P	8" X 6"	3' - 8"	1' - 0"	3' - 2"	6' - 2"	#4 @12"
	12" X 8"	4' - 9"	1' - 6"	3' - 9"	6' - 6"	#4 @10"
	12" X 6"	4' - 9"	1' - 6"	3' - 9"	6' - 6"	#4 @10"

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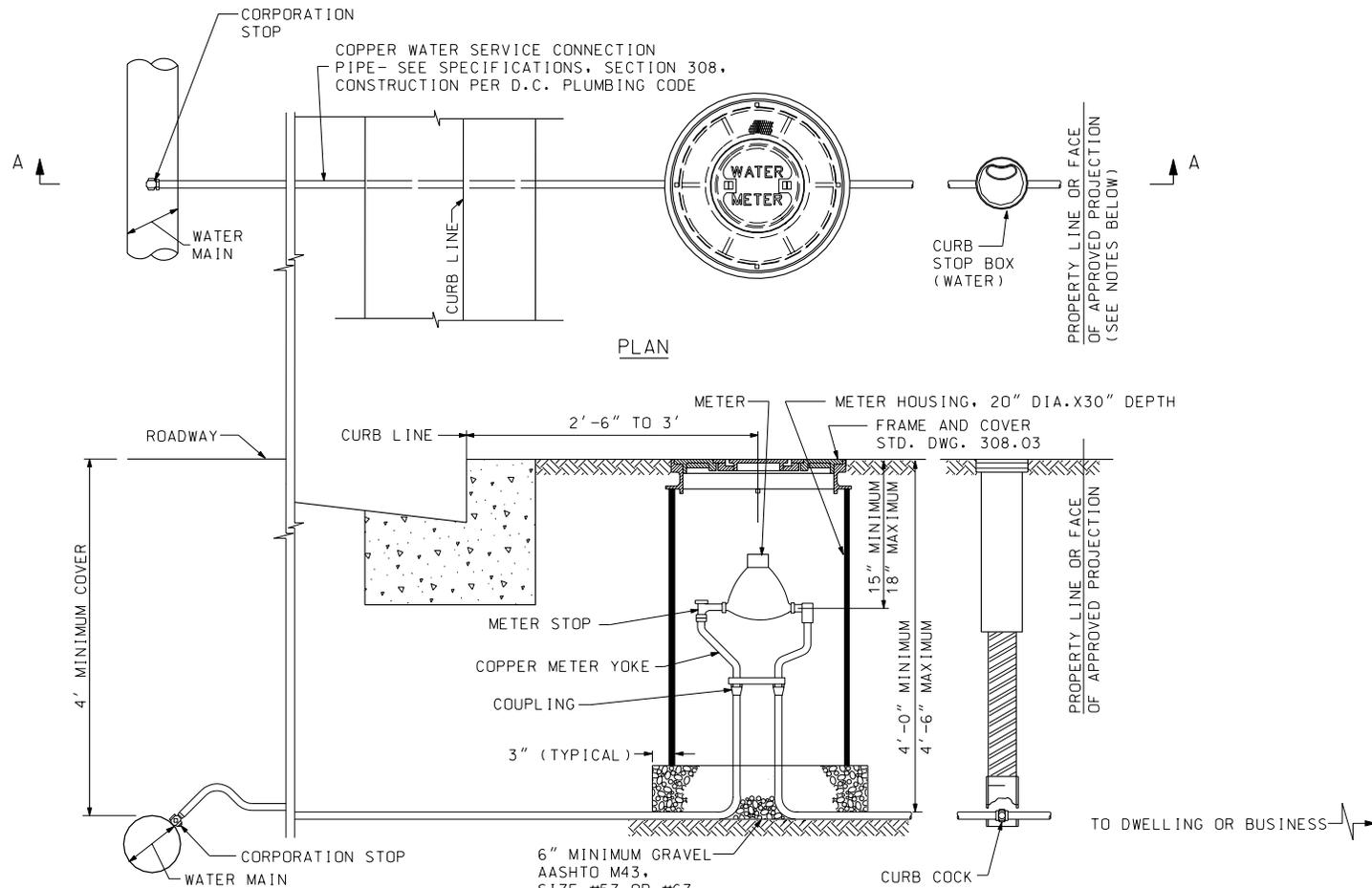
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IN-LINE THRUST BLOCK
12" DIAMETER & SMALLER
DUCTILE IRON WATER MAINS



DISTRICT OF COLUMBIA
DEPARTMENT OF TRANSPORTATION

DWG. NO. 306.02



NOTES:

1. 1 1/2" - 2" METER SETTER REQUIRES A METER VALVE ON EACH SIDE. (NOT SHOWN ON DETAIL)
2. IF THE BUILDING OR APPROVED PROJECTION IS AT OR EXTENDS BEYOND THE PROPERTY LINE, THE CURB STOP SHALL BE PLACED 18-INCHES FROM FACE OF BUILDING OR APPROVED PROJECTION.
3. FOR NEW BUILDING CONSTRUCTION ONLY (IF REQUIRED): THE FIRE SERVICE LINE SHALL INCLUDE A SHUTOFF VALVE INSTALLED INSIDE THE BUILDING.
4. FOR NEW BUILDING CONSTRUCTION ONLY (IF REQUIRED): THE DOMESTIC SERVICE LINE SHALL INCLUDE A PRESSURE REDUCING VALVE AND SHUT-OFF VALVE INSTALLED INSIDE THE BUILDING.

SECTION A-A

* 1" DOMESTIC METER SETTER SHOWN

DWG. 308.01, DC WATER SERVICE CONNECTIONS, FINAL UNCHANGED, 308-01.DGN
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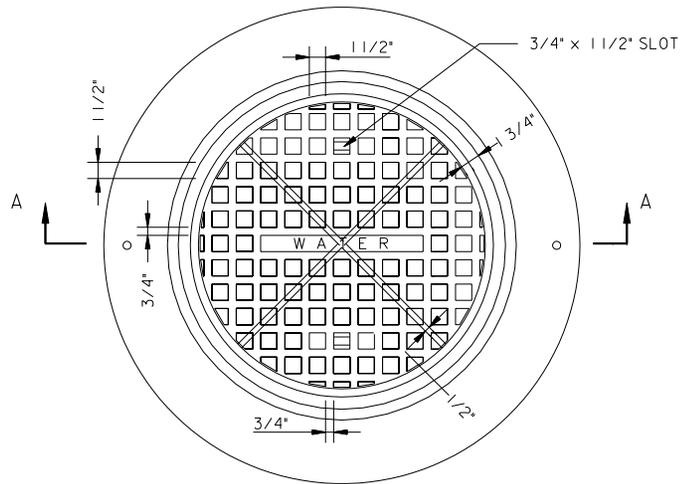
WATER SERVICE CONNECTIONS

1-INCH DIAMETER THRU
2-INCH DIAMETER

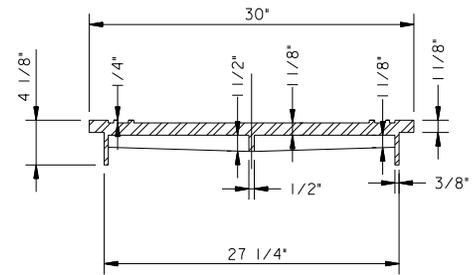
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DEPARTMENT OF TRANSPORTATION

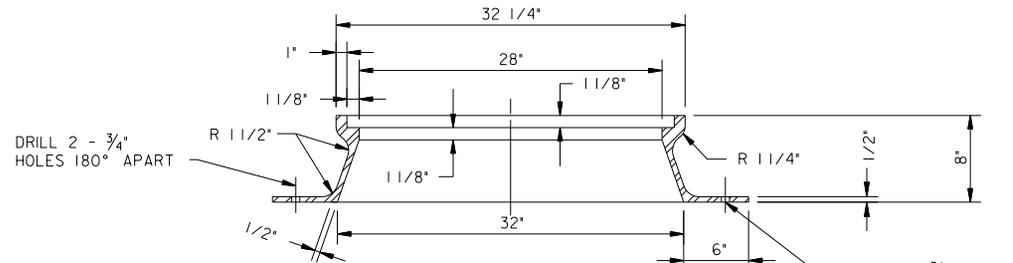
DWG. NO. 308.01



SECTIONAL PLAN



SECTION OF COVER



SECTION OF FRAME

SECTION A - A

NOTES:

1. GRAY IRON CASTINGS PER AASHTO M105, CLASS 30A OR 35.
2. ALL MACHINE FINISH TO BE A.S.A. SPECIFICATION, ROUGHNESS SYMBOL 250, TOLERANCE $-0'' +1/16''$.
3. THE WORD "WATER" IN 1" LETTERS SHALL BE CAST IN THE DEPRESSION SHOWN IN THE CENTER OF TOP OF COVER AND TO BE FLUSH WITH SURFACE OF COVER.

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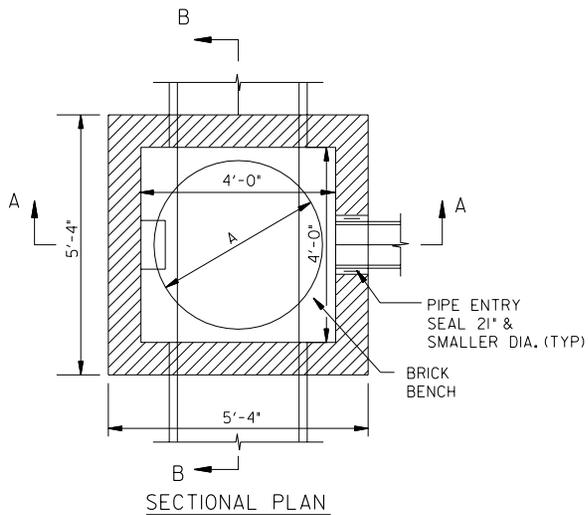
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**STANDARD 30" DIAMETER
 CAST IRON WATER METER FRAME AND COVER
 (ROADWAY USE)**

d.

DISTRICT OF COLUMBIA
 DEPARTMENT OF TRANSPORTATION

DWG. NO. **308.03**

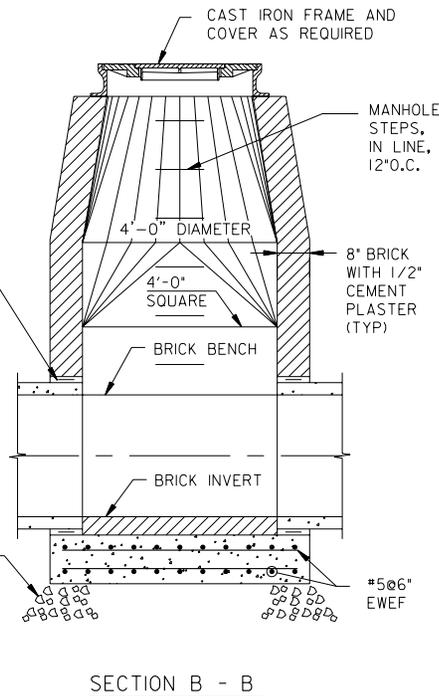
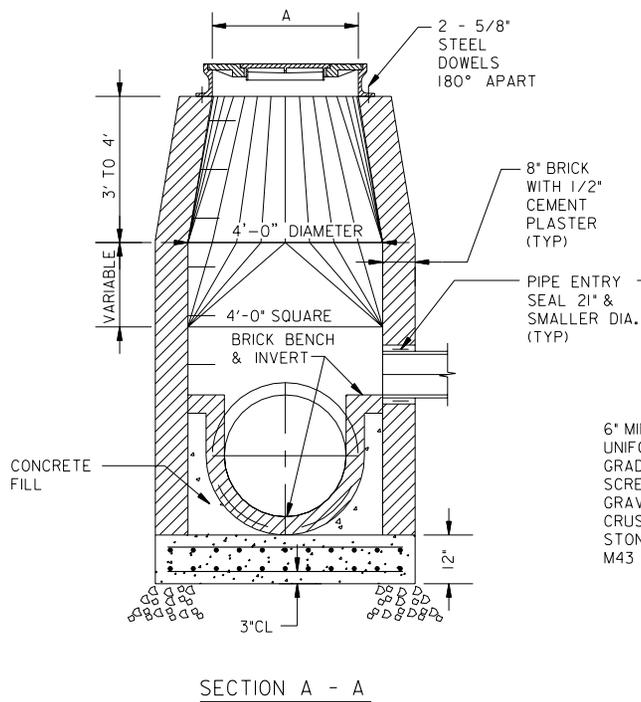


SEWER DIAMETER	FRAME DIAMETER (A)
10" THRU 21"	24"
24" THRU 36"	36"*

* IF SURFACE TO INVERT IS LESS THAN 15', A 36"X24" DIA. ADAPTER RING WITH 24" DIA. COVER SHALL BE USED.

NOTES:

1. ALL CONCRETE TO BE CLASS B, AIR ENTRAINED, TYPE II CEMENT.
2. REINFORCING STEEL SHALL CONFORM TO ASSHTO M31, GRADE 60.
3. WHEN THE MANHOLE DEPTH EXCEEDS 15 FEET, THE BRICK WALL THICKNESS SHALL BE INCREASED TO 12 INCHES BELOW THE 15 FOOT DEPTH.



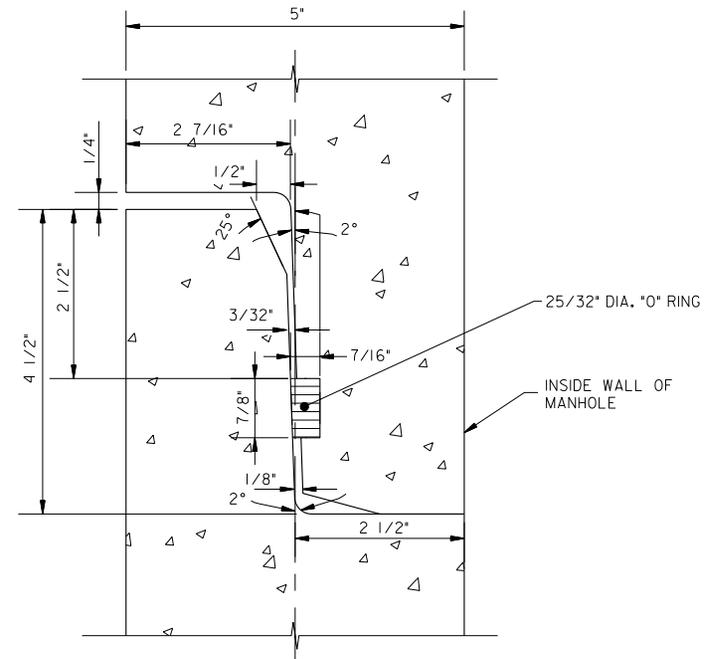
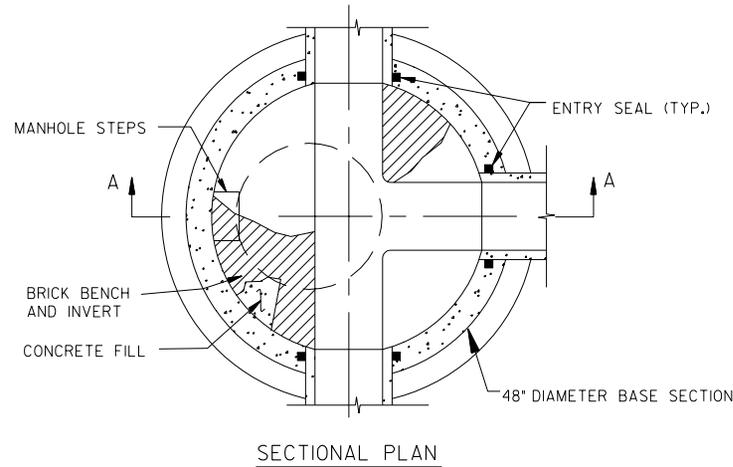
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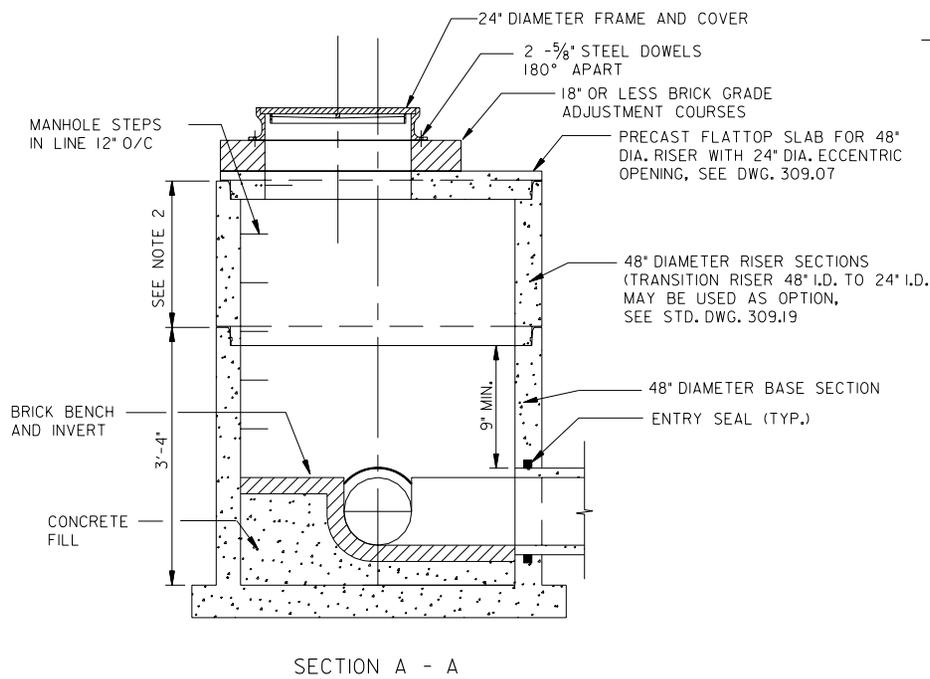
STANDARD BRICK MANHOLE
FOR NEW 10" THRU 36" DIAMETER SEWERS
(CAST IN PLACE CONCRETE BASE)

d. DISTRICT OF COLUMBIA
 DEPARTMENT OF TRANSPORTATION

DWG. NO. 309.01



PIPE RISER JOINT DETAIL
(48" DIAMETER RISER)



NOTES:

1. STRUCTURAL CALCULATIONS MUST BE SUBMITTED FOR APPROVAL PRIOR TO MANUFACTURE OF BASE AND TRANSITION SLABS.
2. 1', 2', 3' OR 4' OR A COMBINATION THEREOF AS NEEDED FOR GRADE ADJUSTMENT.
3. PROVIDE ENTRY SEALS ON SANITARY AND COMBINED SEWERS CONNECTIONS 24" AND SMALLER.
4. FOR CLARITY, REINFORCING NOT SHOWN.

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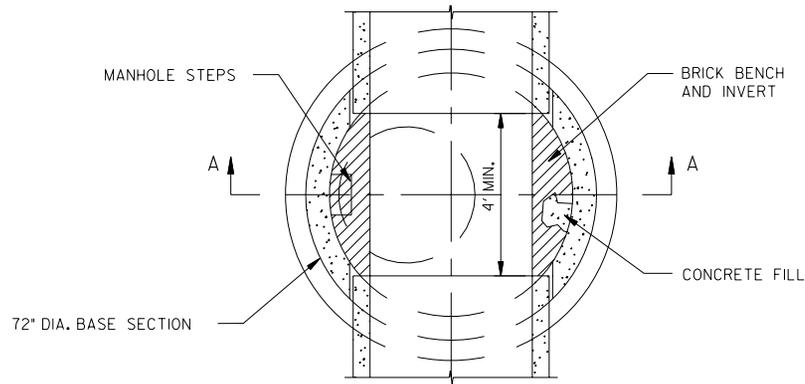
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PRECAST CONCRETE MANHOLE
FOR NEW 10" THRU 21" DIAMETER SEWERS
(48" DIAMETER PRECAST BASE)

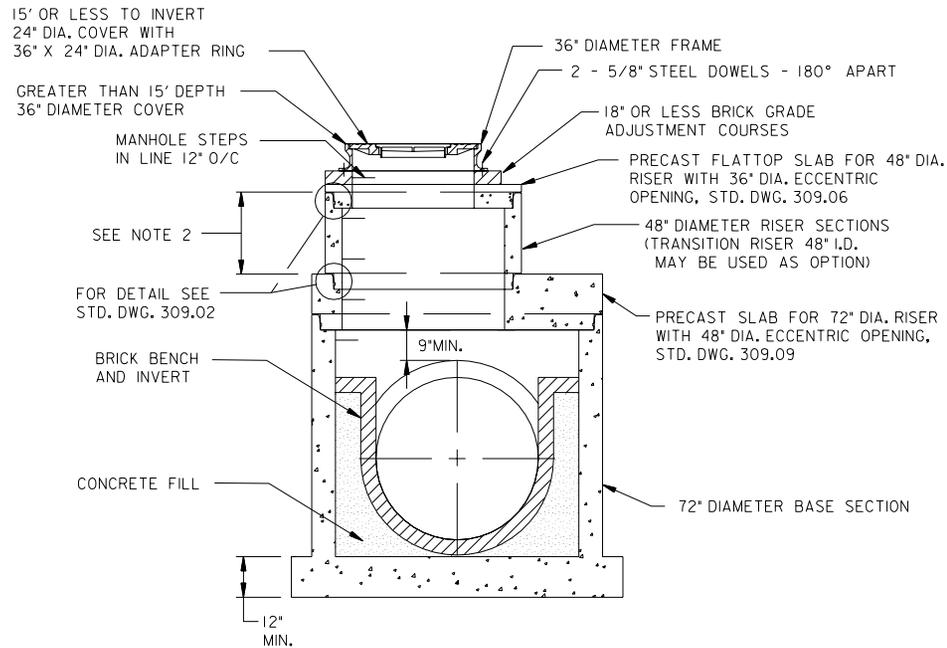
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DISTRICT OF COLUMBIA
DEPARTMENT OF TRANSPORTATION

DWG. NO. 309.02



SECTIONAL PLAN



SECTION A - A

NOTES:

- STRUCTURAL CALCULATIONS MUST BE SUBMITTED FOR APPROVAL PRIOR TO MANUFACTURE OF BASE AND TRANSITION SLABS.
- 1', 2', 3' OR 4' OR A COMBINATION THEREOF AS NEEDED FOR GRADE ADJUSTMENT.

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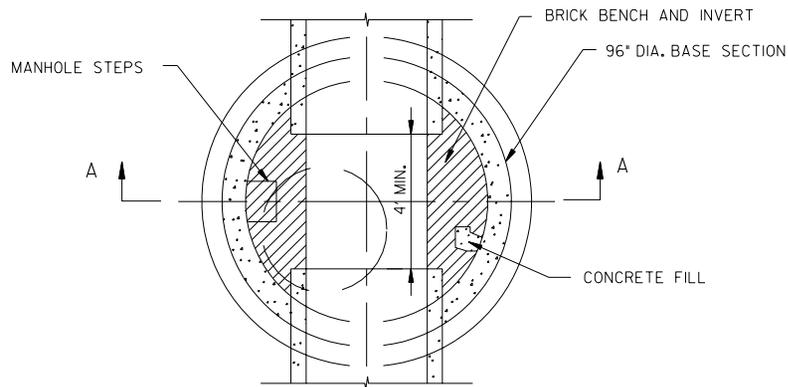
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PRECAST CONCRETE MANHOLE
FOR NEW 33" THRU 48" DIAMETER SEWERS
(72" DIAMETER PRECAST BASE)

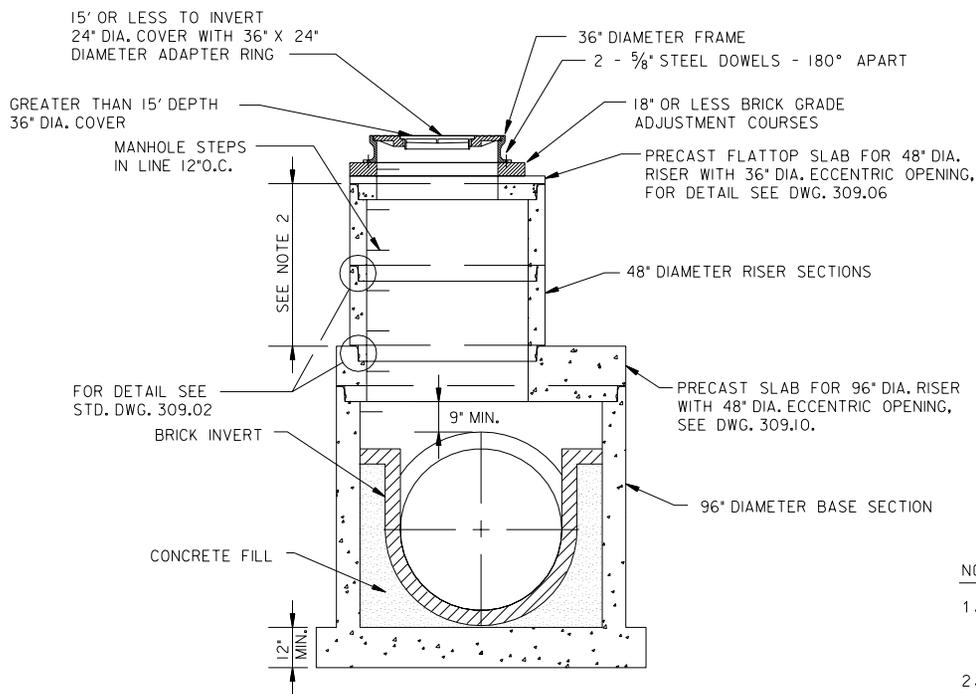
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DISTRICT OF COLUMBIA
 DEPARTMENT OF TRANSPORTATION

DWG. NO. 309.04



SECTIONAL PLAN



SECTION A - A

NOTES:

1. STRUCTURAL CALCULATIONS MUST BE SUBMITTED FOR APPROVAL PRIOR TO MANUFACTURE OF BASE AND TRANSITION SLABS.
2. 1', 2', 3' OR 4' OR A COMBINATION THEREOF AS NEEDED FOR GRADE ADJUSTMENT.

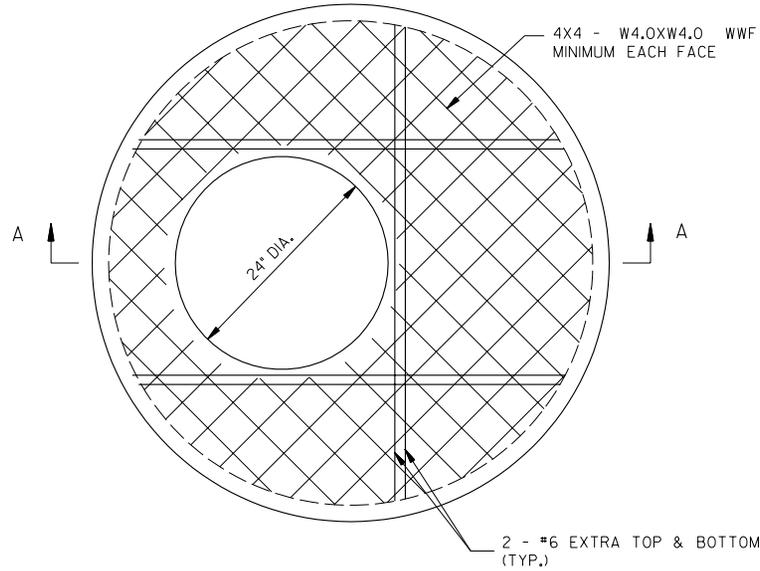
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ISSUED:		APPROVED:
REFERENCE		CHIEF TRANSPORTATION ENGINEER

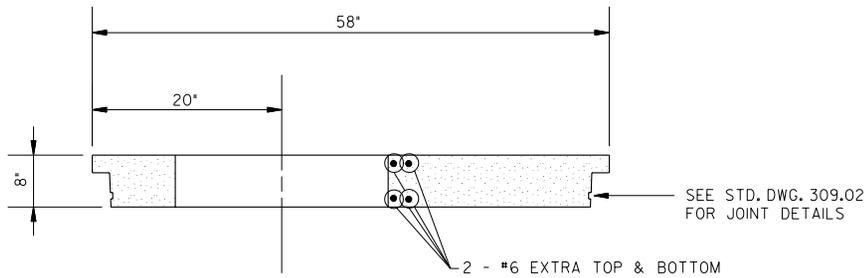
PRECAST CONCRETE MANHOLE
FOR NEW 54" THRU 60" DIAMETER SEWERS
(96" INSIDE DIAMETER PRECAST BASE)

d. DISTRICT OF COLUMBIA
 DEPARTMENT OF TRANSPORTATION

DWG. NO. 309.05



SECTIONAL PLAN



SECTION A - A

NOTES:

1. ALL CONCRETE TO BE CLASS B, AIR ENTRAINED, TYPE II CEMENT.
2. REINFORCING STEEL SHALL CONFORM TO AASHTO M31, GRADE 60.
3. WWF PER AASHTO M55.

P:\ASSETS\as\std\std\309.dwg Final UNCHANGED 309-07.DWG
 P:\ASSETS\as\std\std\309.dwg AT 08:15 PM
 Friday, April 03, 2009

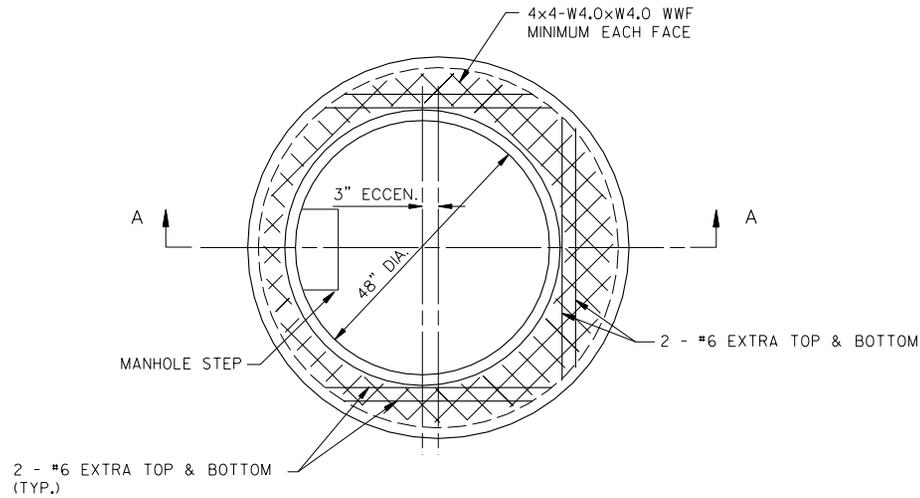
			RECOMMENDED: <i>[Signature]</i> DEPUTY CHIEF ENGINEER
DATE	APPR.		APPROVED: <i>[Signature]</i>
	REVISED		
ISSUED:			
	REFERENCE		CHIEF TRANSPORTATION ENGINEER

PRECAST FLAT TOP SLAB
FOR 48" DIAMETER MANHOLE RISER
WITH 24" DIAMETER ECCENTRIC OPENING

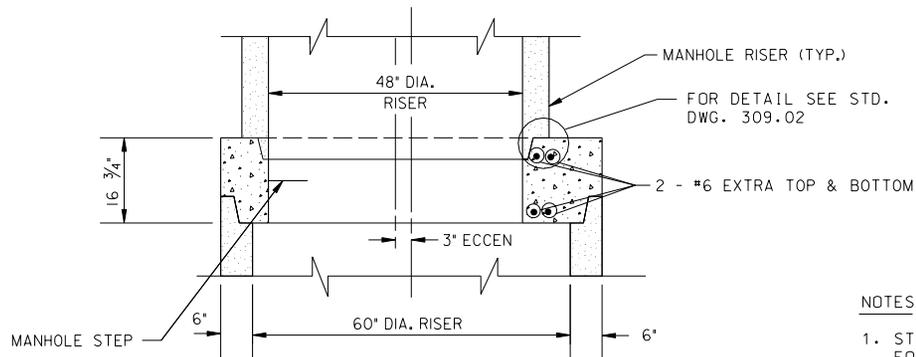


DISTRICT OF COLUMBIA
DEPARTMENT OF TRANSPORTATION

DWG. NO. 309.07



SECTIONAL PLAN



SECTION A - A

NOTES:

1. STRUCTURAL CALCULATIONS MUST BE SUBMITTED FOR APPROVAL PRIOR TO MANUFACTURE.
2. ALL CONCRETE TO BE CLASS B, AIR ENTRAINED, TYPE II CEMENT.
3. REINFORCING STEEL SHALL CONFORM TO AASHTO M31, GRADE 60.
4. WWF PER AASHTO M55.

P:\031516.dwg - 03/16/2009 11:54:15 AM - Final UNCHANGED 309-08.DWG
 Friday, April 03, 2009 11:54:15 AM

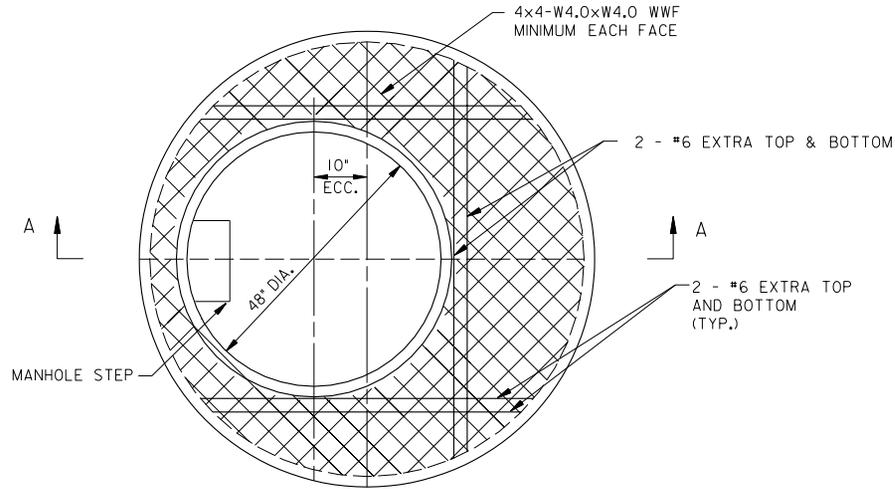
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DATE	APPR.		APPROVED: <i>[Signature]</i>
REVISED			CHIEF TRANSPORTATION ENGINEER
ISSUED:			
		REFERENCE	

PRECAST REDUCER SLAB
FOR 60" DIAMETER MANHOLE RISER
TO 48" DIAMETER ECCENTRIC RISER

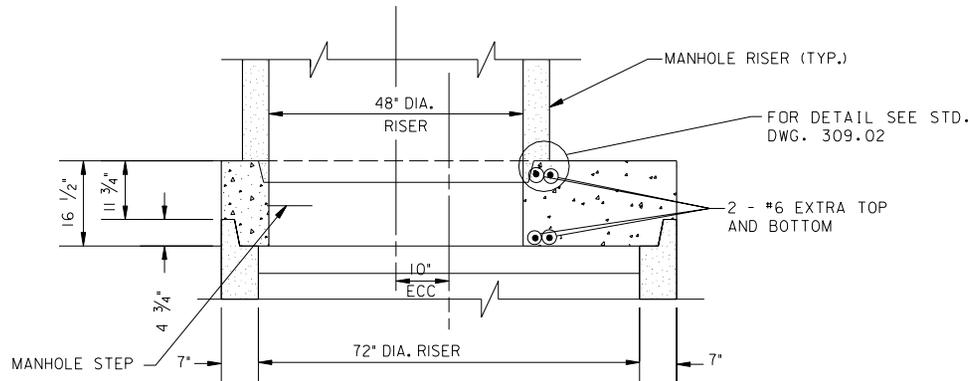


DISTRICT OF COLUMBIA
 DEPARTMENT OF TRANSPORTATION

DWG. NO. 309.08



SECTIONAL PLAN



SECTION A - A

NOTES:

1. STRUCTURAL CALCULATIONS MUST BE SUBMITTED FOR APPROVAL PRIOR TO MANUFACTURE.
2. ALL CONCRETE TO BE CLASS B, AIR ENTRAINED, TYPE II CEMENT.
3. REINFORCING STEEL SHALL CONFORM TO AASHTO M31, GRADE 60.
4. WWF PER AASHTO M55.

P:\031515.dwg: s141262.dwg: s141262.dwg: Final UNCHANGED: 309-09.DGN
 P:\031515.dwg: s141262.dwg: s141262.dwg: Final UNCHANGED: 309-09.DGN
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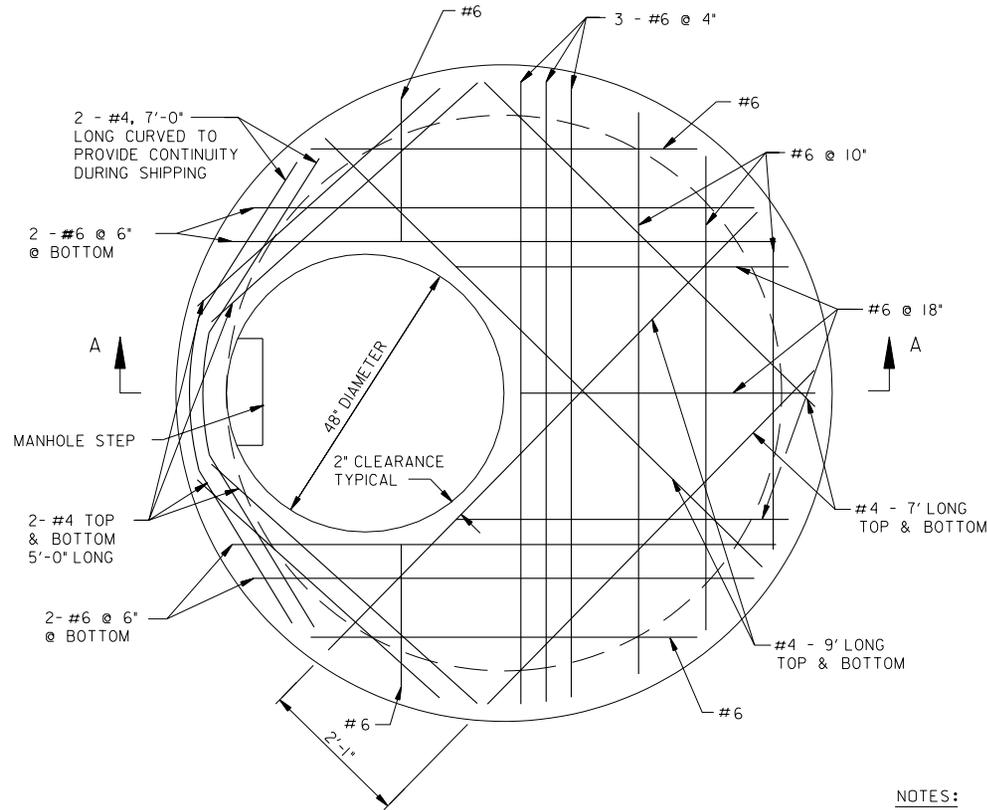
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DATE	APPR.		APPROVED: <i>[Signature]</i>
ISSUED:			
		REFERENCE	CHIEF TRANSPORTATION ENGINEER

PRECAST REDUCER SLAB
FOR 72" DIAMETER MANHOLE RISER
TO 48" DIAMETER ECCENTRIC RISER

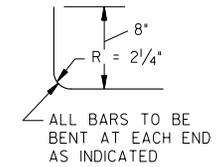
d.

DISTRICT OF COLUMBIA
 DEPARTMENT OF TRANSPORTATION

DWG. NO. 309.09



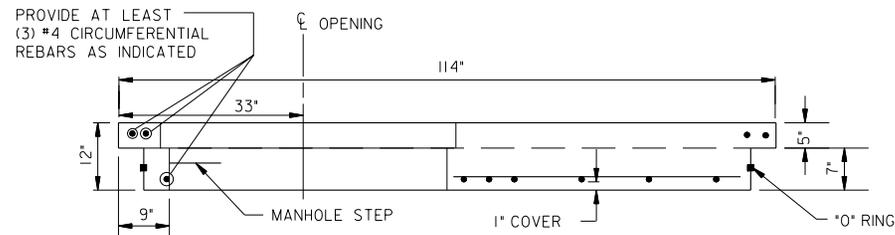
SECTIONAL PLAN



BAR BENDING DETAIL
NO SCALE

NOTES:

1. STRUCTURAL CALCULATIONS MUST BE SUBMITTED FOR APPROVAL PRIOR TO MANUFACTURE.



SECTION A-A

RECOMMENDED: *[Signature]*
DEPUTY CHIEF ENGINEER

APPROVED: *[Signature]*
CHIEF TRANSPORTATION ENGINEER

**PRECAST REDUCER SLAB
FOR 96" DIAMETER MANHOLE RISER
TO 48" DIAMETER ECCENTRIC RISER**

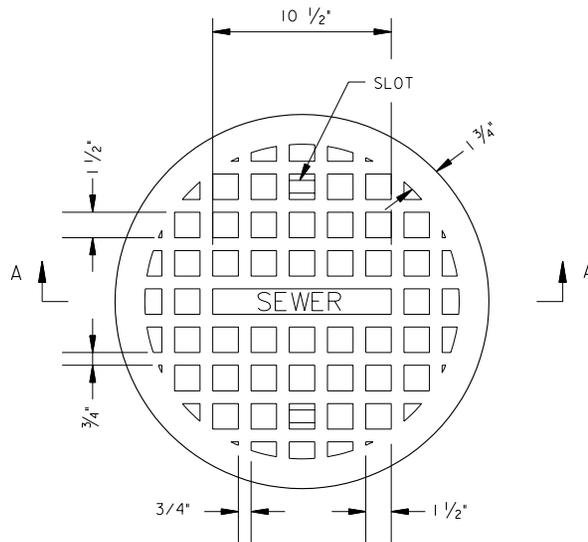


DISTRICT OF COLUMBIA
DEPARTMENT OF TRANSPORTATION

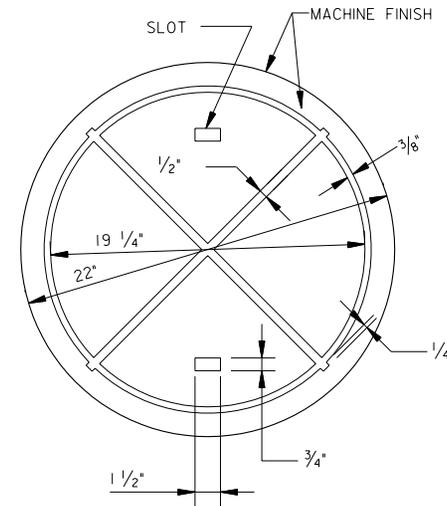
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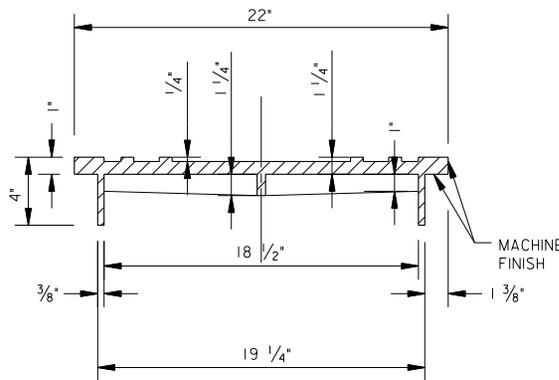
DATE	APPR.	REFERENCE
REVISED		
ISSUED:		



PLAN - COVER TOP



PLAN - COVER BOTTOM



SECTION A - A

NOTES:

1. GRAY IRON CASTINGS PER AASHTO M105, CLASS 30A.
2. ALL MACHINE FINISH TO BE A.S.A. SPECIFICATION, ROUGHNESS SYMBOL 250, TOLERANCE -0" +1/16".
3. THE WORD "SEWER" IN 1" LETTER SHALL BE CAST IN THE DEPRESSION SHOWN IN THE CENTER OF TOP OF COVER AND TO BE FLUSH WITH SURFACE OF COVER.

EN-0315, Vol. 04, Rev. 02, 2/10/03, Final UNCHANGED 309-11.DWG
 Friday, April 03, 2003 AT 09:15 PM

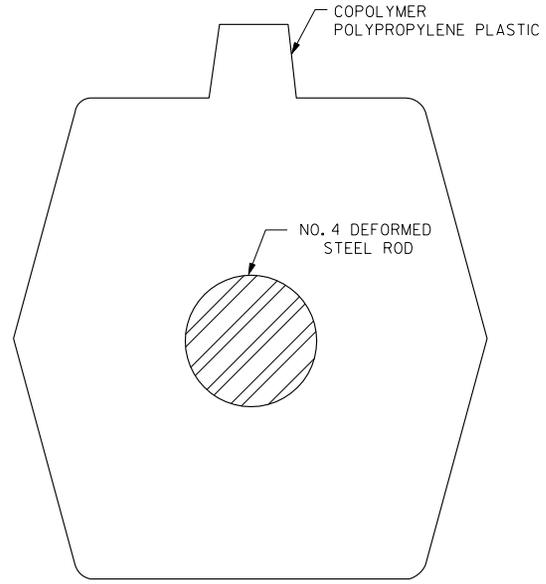
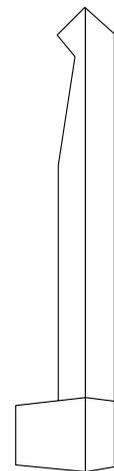
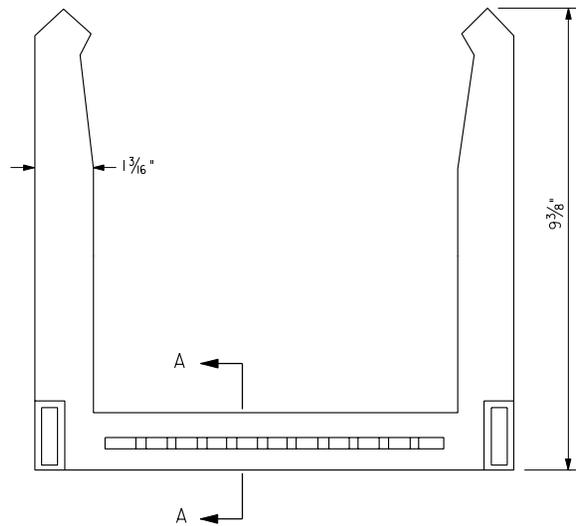
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DATE	APPR.		APPROVED: <i>[Signature]</i>
ISSUED:			CHIEF TRANSPORTATION ENGINEER
		REFERENCE	

**DETAILS OF 24-INCH
 CAST IRON MANHOLE COVER
 (SEWER)**

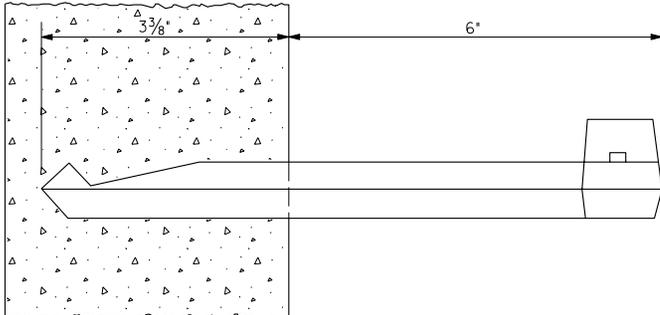
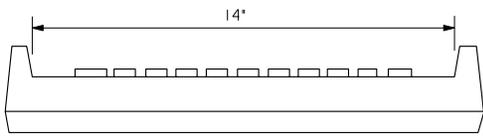
d.

DISTRICT OF COLUMBIA
 DEPARTMENT OF TRANSPORTATION

DWG. NO. **309.11**



SECTION A-A



- NOTES:
1. REFER TO DDOT STD. SPECIFICATIONS 309.04(C), 309.04(D) AND 821.07 FOR ADDITIONAL MANHOLE STEP DETAILS.
 2. STEPS SHALL BE PLACED INTO WET CONCRETE WALL DURING MANUFACTURE OR MORTARED INTO HOLES AFTER CONCRETE HAS SET.

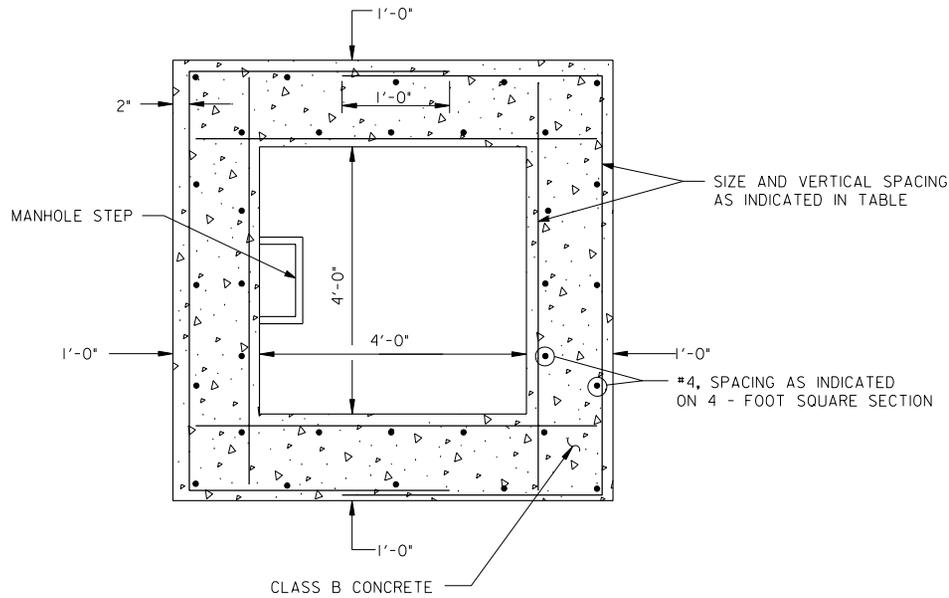
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			RECOMMENDED: <i>[Signature]</i> DEPUTY CHIEF ENGINEER
DATE	APPR.		APPROVED: <i>[Signature]</i>
ISSUED:			CHIEF TRANSPORTATION ENGINEER
		REFERENCE	

MANHOLE STEPS

d. DISTRICT OF COLUMBIA
DEPARTMENT OF TRANSPORTATION

DWG. NO. 309.14



DEPTH (FT.)	SIZE AND SPACING OF HORIZ. BARS
35	#5 @ 7 1/2"
30	#5 @ 12"
25	#5 @ 12"
20	#5 @ 12"
15	#5 @ 12"
10	#5 @ 12"

NOTES:

1. FOR DEPTHS GREATER THAN 20 FEET, SPECIAL FEATURES MAY BE REQUIRED SUCH AS PLATFORMS, INTERIOR MANHOLE COVERS, ENLARGED SECTION, ETC.
2. ALL VERTICAL BARS ARE #4, SPACED AS SHOWN ON SECTION.
3. ALL STEEL SHALL HAVE 2" COVER UNLESS OTHERWISE SPECIFIED.
4. ALL CONCRETE TO BE CLASS B, AIR ENTRAINED, TYPE II CEMENT.
5. REINFORCING STEEL SHALL CONFORM TO AASHTO M 31, GRADE 60.

P:\0315\04_04\0315_04_04.dwg, 2/20/03, 11:58 AM, Final UNCHANGED, 309-17.DWG
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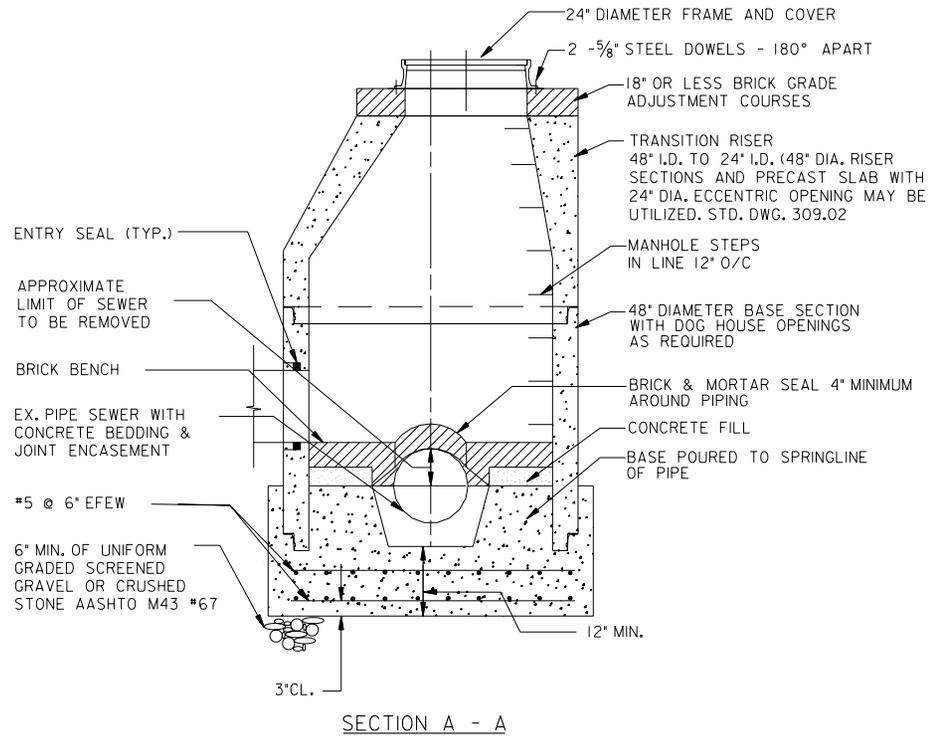
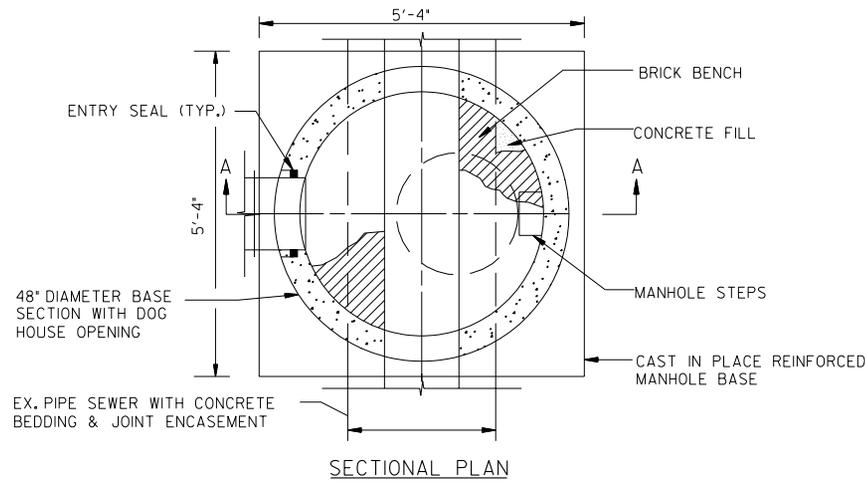
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DATE	APPR.	APPROVED: <i>[Signature]</i>
REVISED		CHIEF TRANSPORTATION ENGINEER
ISSUED:	REFERENCE	

**REINFORCED CONCRETE RISER
SECTION FOR MANHOLES**

d.

DISTRICT OF COLUMBIA
DEPARTMENT OF TRANSPORTATION

DWG. NO. 309.17



NOTES:

1. ALL CONCRETE TO BE CLASS B AIR ENTRAINED, TYPE II CEMENT.
2. ALL REINFORCEMENT PER AASHTO M31. GRADE 60.
3. FOR MANHOLES OVER EXISTING PVC SEWERS USE STANDARD DRAWING 309.02 INSTEAD OF THIS ONE. CUT EXISTING PVC SEWER AND RECONNECT ON EITHER SIDE OF MANHOLE.

PA-03375.dwg: s41442.dwg: 2/20/05: V:\Final\UNCHANGED\309-19.BDW
 Friday, April 03, 2005 AT 12:15 PM

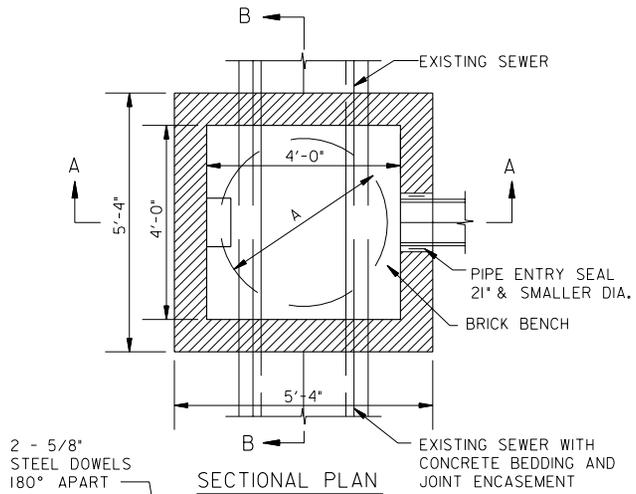
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DATE	APPR.		APPROVED: <i>[Signature]</i>
	REVISED		
ISSUED:			CHIEF TRANSPORTATION ENGINEER
	REFERENCE		

**PRECAST CONCRETE MANHOLE
 OVER EXISTING 10" THRU 21" DIAMETER SEWERS
 WITH CAST IN PLACE CONCRETE BASE**

d.

DISTRICT OF COLUMBIA
 DEPARTMENT OF TRANSPORTATION

DWG. NO. **309.19**

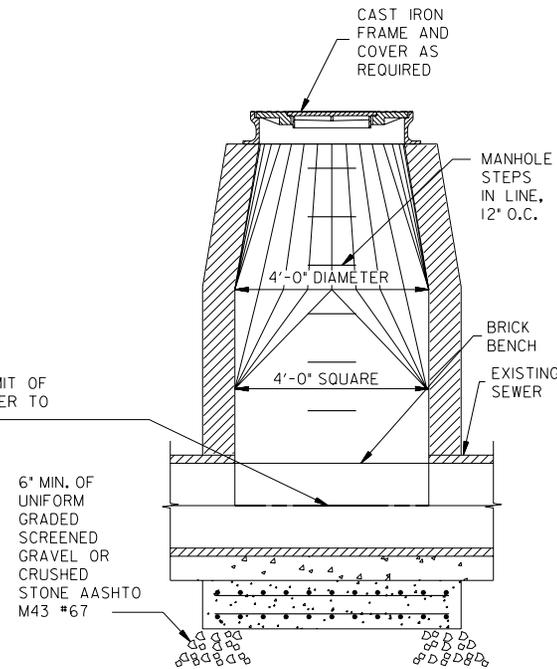
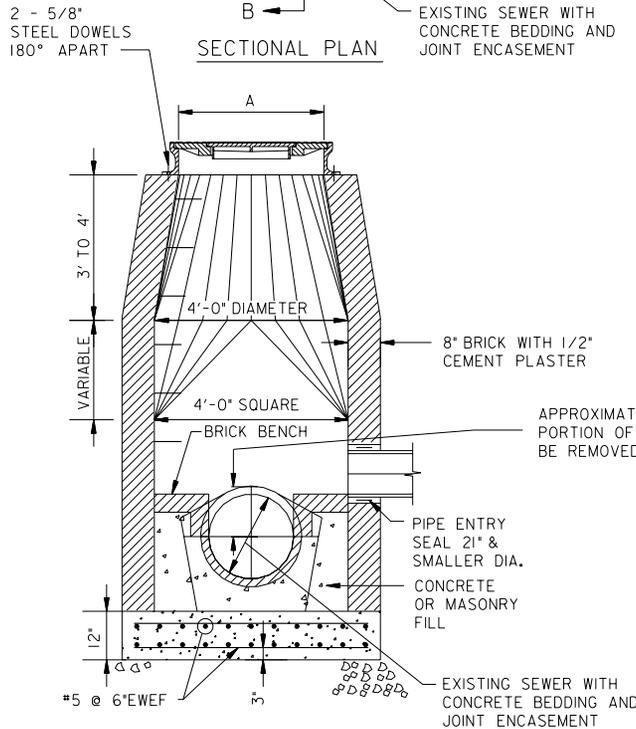


SEWER DIAMETER	FRAME DIAMETER (A)
10" THRU 21"	24"
24" THRU 36"	36" *

* IF SURFACE TO INVERT < 15', A 36"X24" DIA. ADAPTER RING WITH 24" DIA. COVER SHALL BE USED.

NOTES:

1. ALL CONCRETE TO BE CLASS B AIR ENTRAINED, TYPE II CEMENT.
2. REINFORCING STEEL SHALL CONFORM TO AASHTO M31, GRADE 60.
3. WHEN THE MANHOLE DEPTH EXCEEDS 15 FEET, THE BRICK WALL THICKNESS SHALL BE INCREASED TO 12 INCHES BELOW THE 15 FOOT DEPTH.



SECTION A - A

SECTION B - B

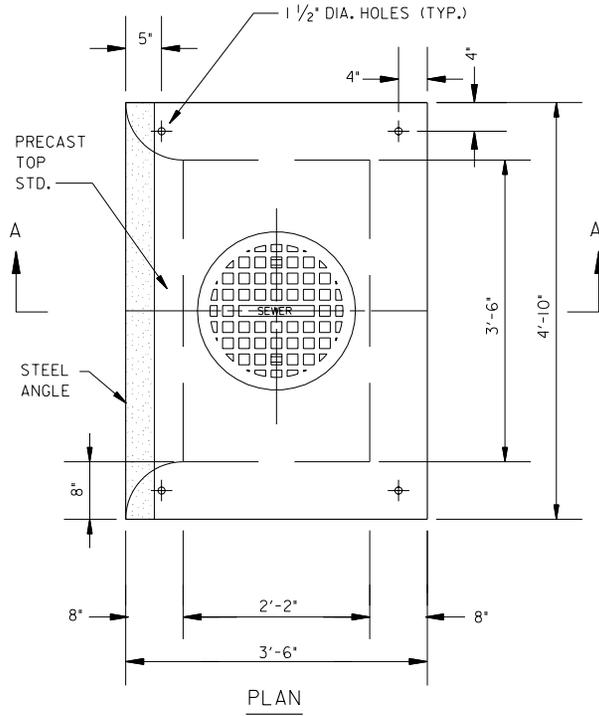
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ISSUED:		APPROVED:
REFERENCE		CHIEF TRANSPORTATION ENGINEER

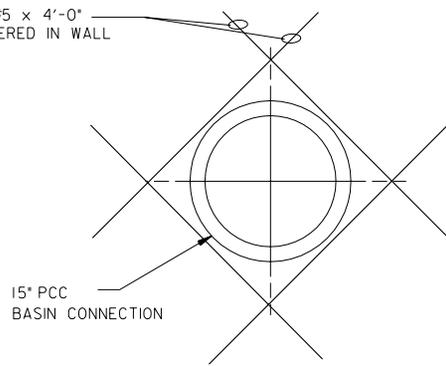
BRICK MANHOLE
FOR EXISTING 10" THRU 36" DIAMETER SEWERS
WITH CAST IN PLACE CONCRETE BASE

d. DISTRICT OF COLUMBIA
 DEPARTMENT OF TRANSPORTATION

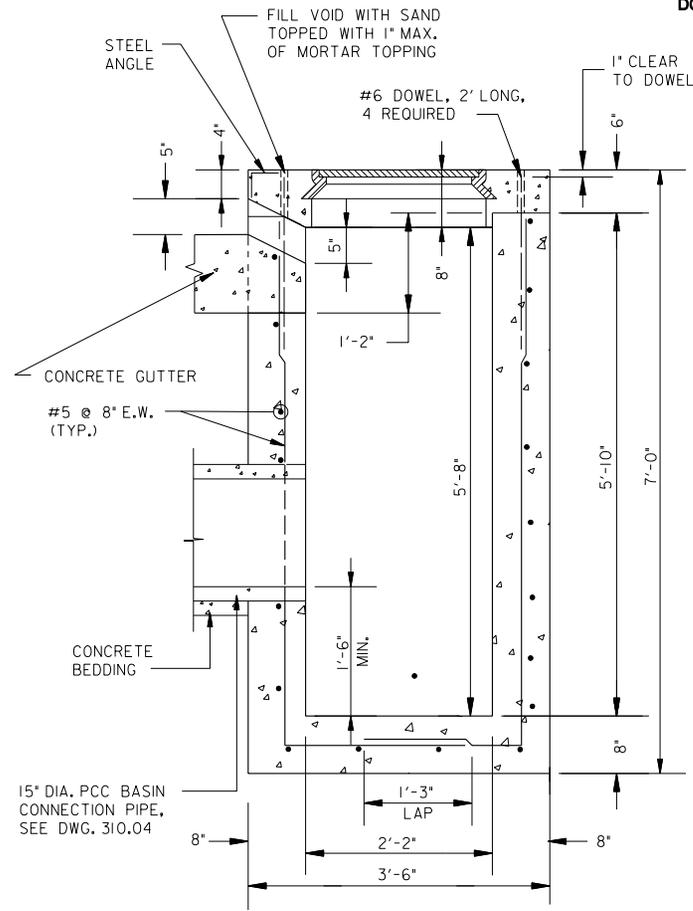
DWG. NO. 309.20



4 - #5 x 4'-0"
CENTERED IN WALL



ADDITIONAL REINFORCING
AT OPENING



15" DIA. PCC BASIN
CONNECTION PIPE,
SEE DWG. 310.04

SECTION A - A

NOTES:

1. SEE DDOT STANDARD SPECIFICATIONS, SECTION 310.04.
2. ALL CONCRETE TO BE CLASS B, AIR ENTRAINED, TYPE II CEMENT.
3. REINFORCING SHALL BE CENTERED IN WALLS AND BASE AND SHALL CONFORM TO AASHTO M31, GRADE 60.
4. SEE DDOT STANDARD DRAWING 310.06 FOR 8" PRECAST STANDARD CATCH BASIN TOP.

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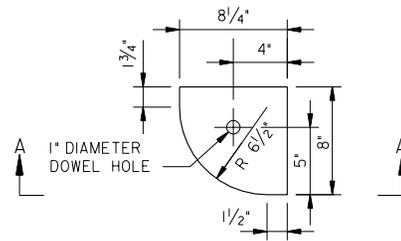
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CHIEF TRANSPORTATION ENGINEER

STANDARD CATCH BASIN

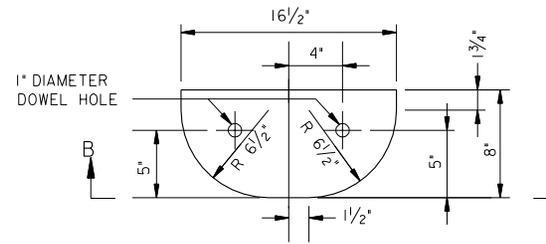
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DISTRICT OF COLUMBIA
DEPARTMENT OF TRANSPORTATION

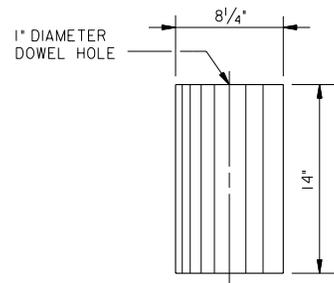
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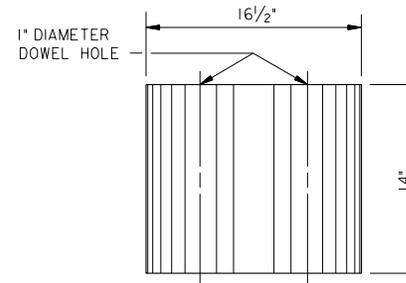
PLAN - CORNER CHEEK BLOCK



PLAN - SUPPORT CHEEK BLOCK



SECTION A - A



SECTION B - B

NOTES:

1. SEE DDOT STANDARD SPECIFICATIONS, SECTION 310.
2. CLASS B CONCRETE, AIR ENTRAINMENT, TYPE II CEMENT.
3. SEE DDOT STANDARD DRAWING 310.04 FOR SADDLE BLOCK DETAIL.

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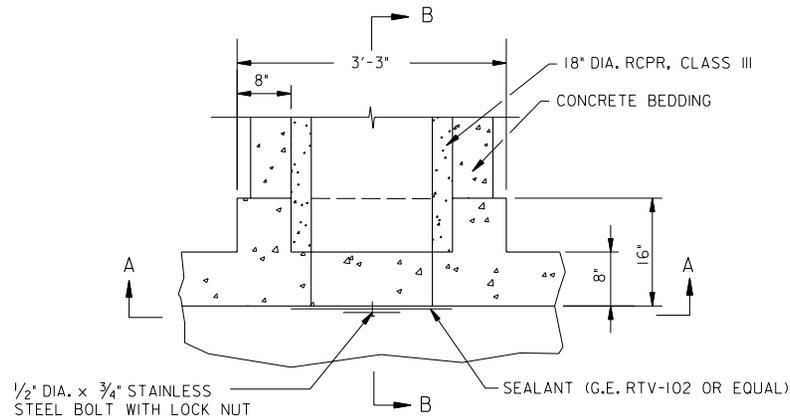
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DATE	APPR.		APPROVED: <i>[Signature]</i>
REVISED			CHIEF TRANSPORTATION ENGINEER
ISSUED:			
		REFERENCE	

DETAILS FOR CHEEK BLOCKS

d.

DISTRICT OF COLUMBIA
DEPARTMENT OF TRANSPORTATION

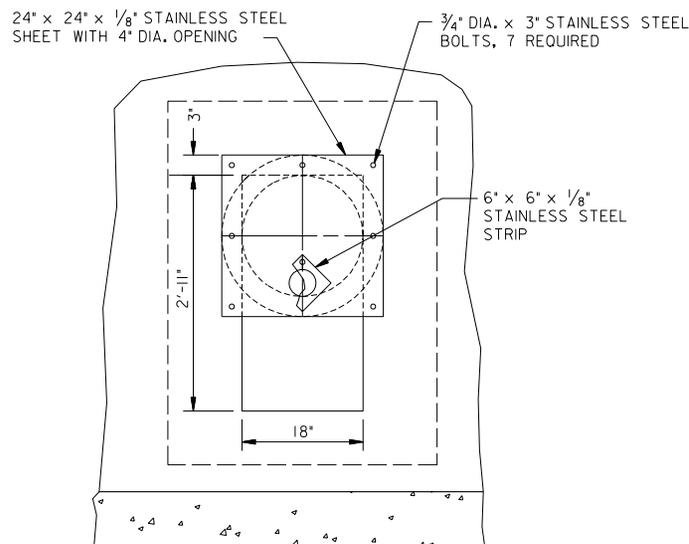
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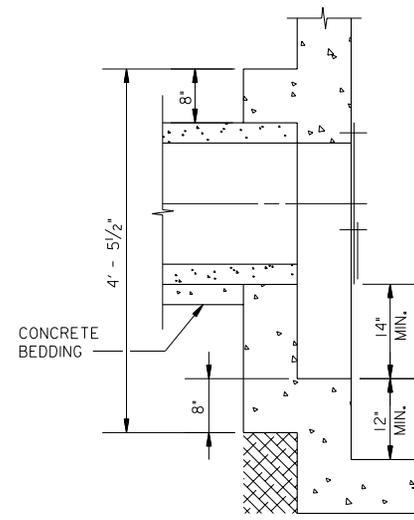
SECTIONAL PLAN

NOTES:

1. STAINLESS STEEL SHEET ASTM A666 (ANSI TYPE 304N).
2. STAINLESS STEEL BOLT AND NUTS ASTM A 193, (ANSI TYPE 304N).
3. WHEN THE CATCH BASIN CONNECTION PIPE IS NOT PERPENDICULAR TO THE CATCH BASIN WALL, THE WALL SHALL BE MODIFIED TO INSTALL WATER SEAL ON SAME ALIGNMENT AS THE CATCH BASIN PIPE.



SECTION A - A



SECTION B - B

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DATE	APPR.	RECOMMENDED:	<i>[Signature]</i> DEPUTY CHIEF ENGINEER
REVISED		APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
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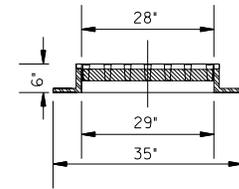
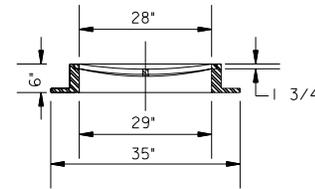
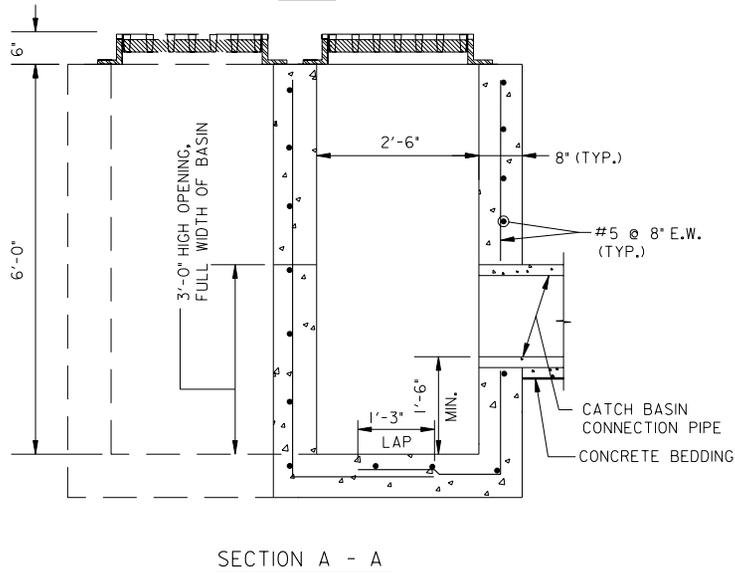
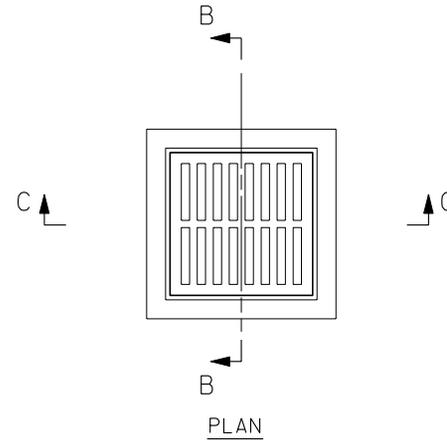
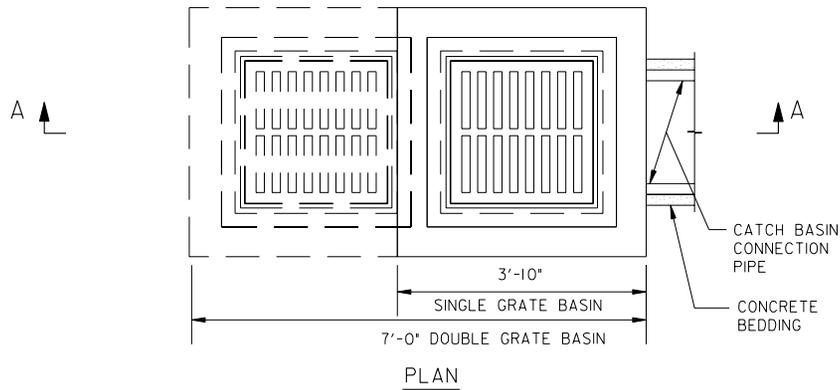
WATER SEAL
FOR 18" DIAMETER CATCH BASIN CONNECTION
(COMBINED SYSTEM ONLY)

d. DISTRICT OF COLUMBIA
 DEPARTMENT OF TRANSPORTATION

DWG. NO. 310.09

C.I. FRAME AND GRATE
NEENAH FOUNDRY R-3350

DC WASA DWG. S - 30.30



NOTES:

1. GRAY IRON CASTING PER ASSHTO M105, CLASS 30A.
2. ALL MACHINE FINISH TO BE A.S.A. SPECIFICATION, ROUGHNESS SYMBOL 250, TOLERANCE $-0 + 1/16"$.
3. ALL CONCRETE TO BE CLASS B, AIR ENTRAINED TYPE II CEMENT.
4. BASIN TO BE USED IN UNPAVED AREAS ONLY.
5. REINFORCING SHALL BE CENTERED IN WALL AND BASE AND SHALL CONFORM TO ASSHTO M31 GRADE 60.

PA-031516.dwg: s412462.dwg: 2/26/2005 11:57:11 AM: Final UNCHANGED 310-10.DWG
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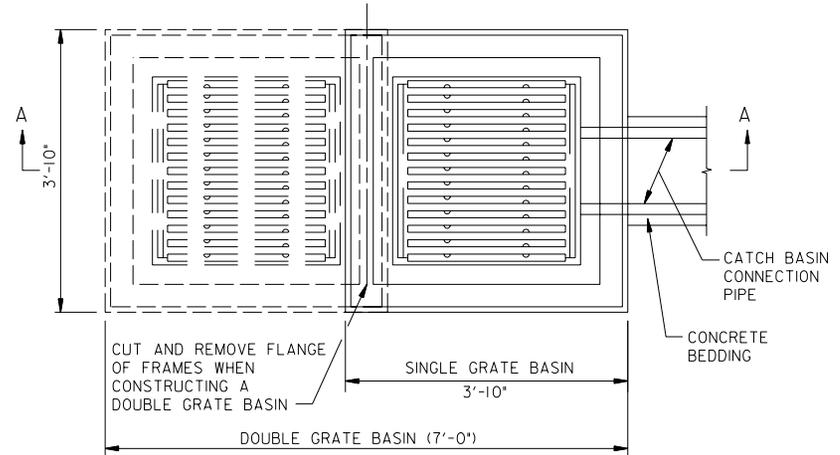
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DATE	APPR.		APPROVED: <i>[Signature]</i>
REVISED			
ISSUED:			
	REFERENCE		CHIEF TRANSPORTATION ENGINEER

**GRATE TYPE CATCH BASIN
FIELD INLET**

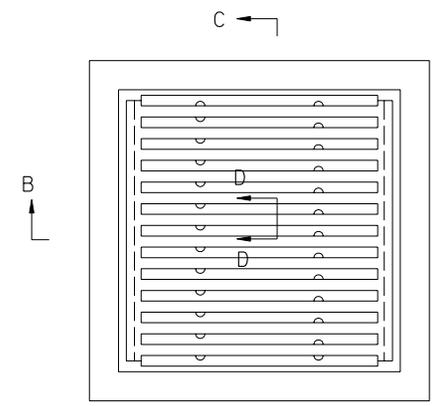
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DISTRICT OF COLUMBIA
DEPARTMENT OF TRANSPORTATION

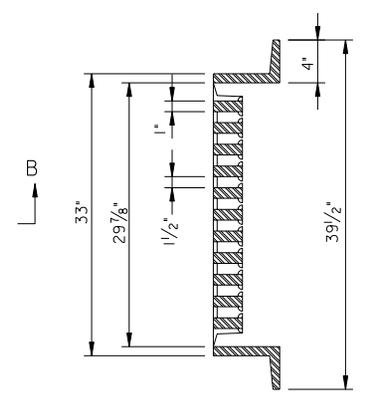
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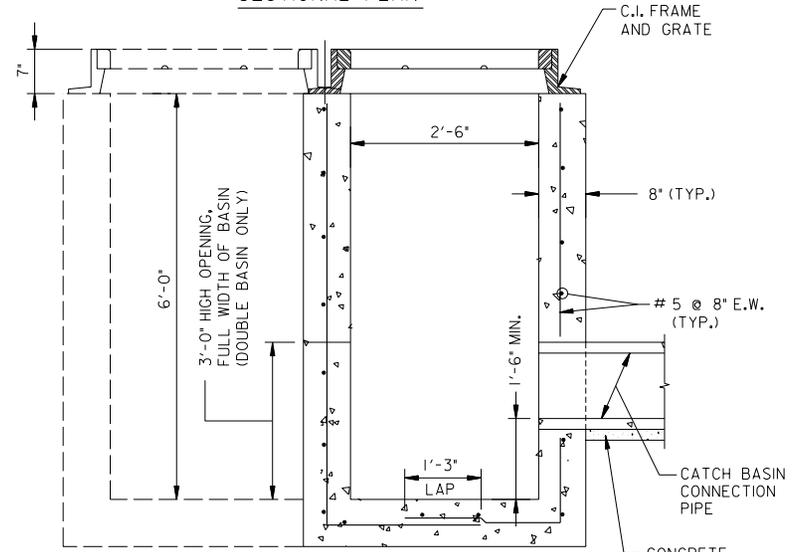
SECTIONAL PLAN



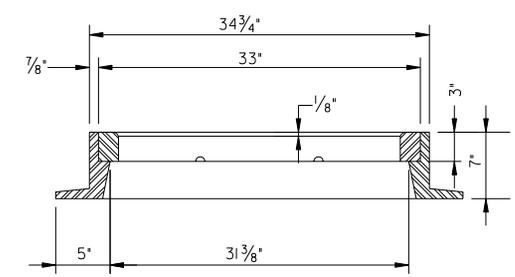
PLAN



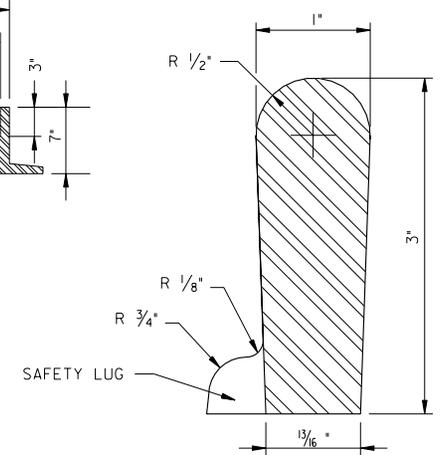
SECTION C - C



SECTION A - A



SECTION B - B



SECTION D - D

NOTES:

1. GRAY IRON CASTINGS PER AASHTO M105, CLASS 30A.
2. ALL MACHINE FINISH TO BE A.S.A. SPECIFICATION, ROUGHNESS SYMBOL 250, TOLERANCE - 0 + 1/16".
3. ALL CONCRETE TO BE CLASS B, AIR ENTRAINED, TYPE II CEMENT.
4. REINFORCING SHALL BE CENTERED IN WALL AND BASE AND SHALL CONFORM TO AASHTO M31 GRADE 60.

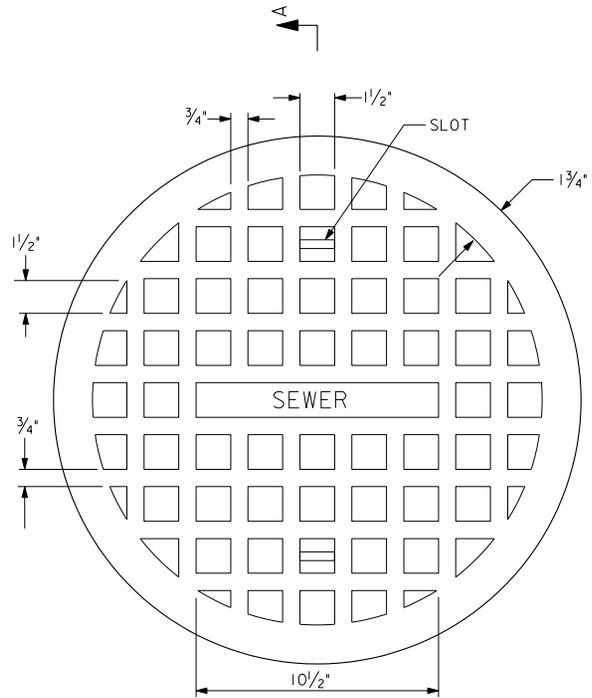
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REVISED		APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
ISSUED:		REFERENCE	

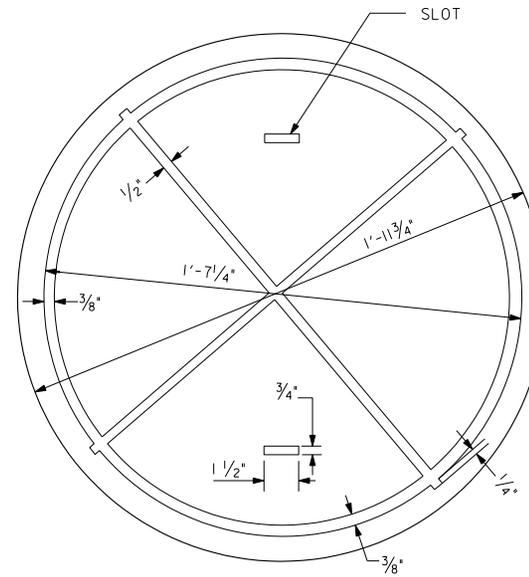
**GRATE TYPE CATCH BASIN
WITH SAFETY GRATE**

d. DISTRICT OF COLUMBIA
DEPARTMENT OF TRANSPORTATION

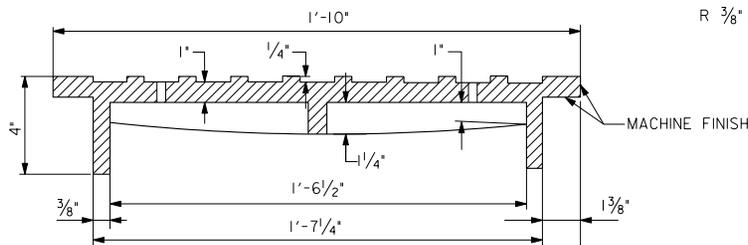
DWG. NO. 310.11



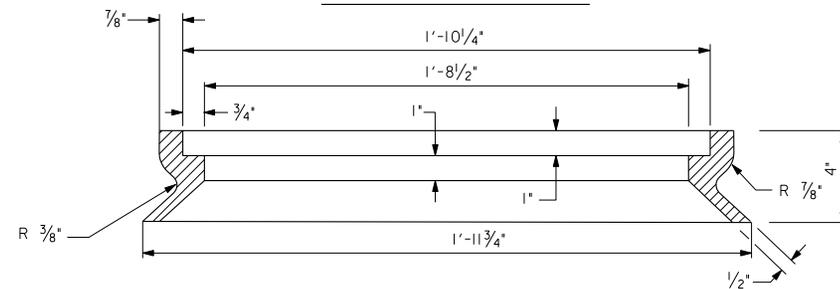
PLAN - COVER TOP



PLAN - COVER BOTTOM



SECTION A-A



SECTION OF FRAME

NOTES:

1. GRAY IRON CASTINGS PER AASHTO M105, CLASS 30A, OR 35.
2. ALL MACHINE FINISH TO BE A.S.A. SPECIFICATIONS, ROUGHNESS SYMBOL 250, TOLERANCE $-0^{+}1/16^{''}$.
3. THE WORD "SEWER" IN 1" LETTERS TO BE CAST IN THE DEPRESSION SHOWN IN THE CENTER OF TOP OF COVER AND TO BE FLUSH WITH SURFACE OF COVER.

EN-0315, Vol. 04-2005, 2nd Edition, Final UNCHANGED 3/0-13, 00N
 Filebox, April 03, 2005 AT 09:15 PM

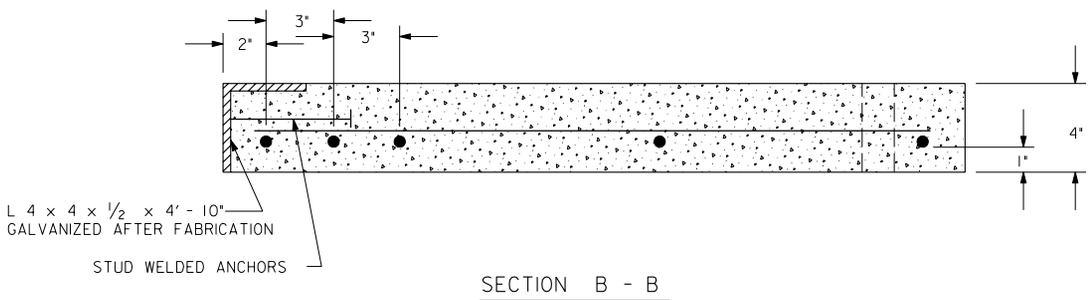
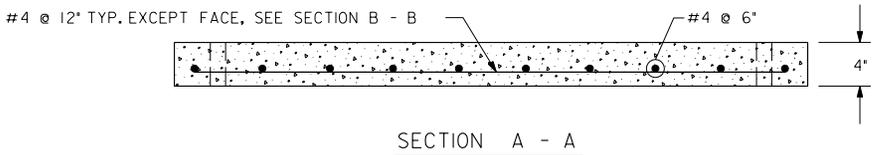
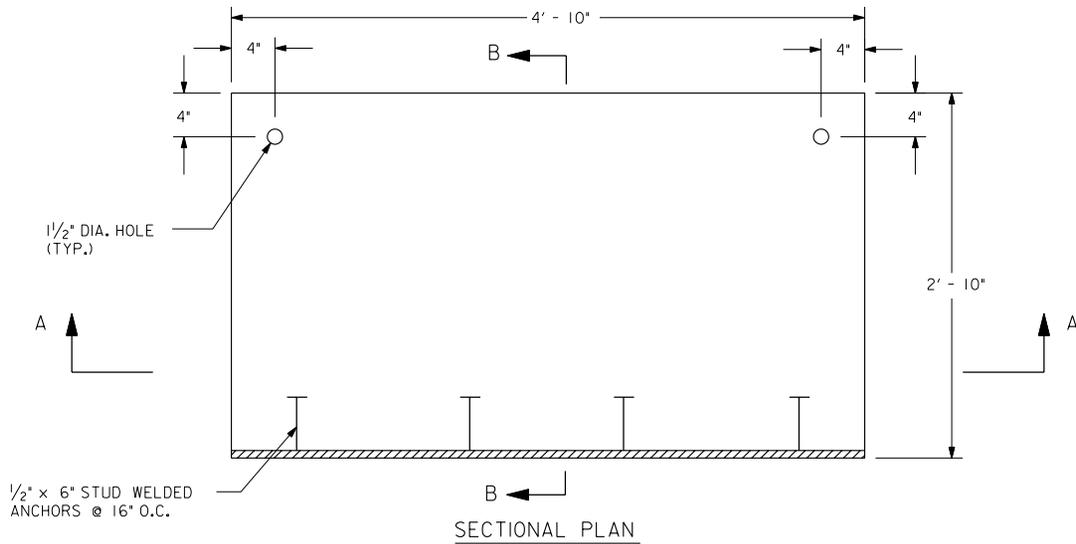
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REVISED		APPROVED:	<i>[Signature]</i> CHIEF TRANSPORTATION ENGINEER
ISSUED:		REFERENCE	

**DETAILS OF 24-INCH
 CAST IRON FRAME COVER
 (FOR SEWER BASIN TOP)**

d.

DISTRICT OF COLUMBIA
 DEPARTMENT OF TRANSPORTATION

DWG. NO. 310.13



NOTES:

1. ALL CONCRETE TO BE CLASS B, AIR ENTRAINED, TYPE II CEMENT.
2. REINFORCING STEEL #4 BARS, AASHTO M 31, GRADE 60.
3. STEEL ANGLE PER AASHTO M 160, GALVANIZED PER AASHTO M 111.
4. STUD ANCHORS SHALL BE LOW CARBON STEEL, AASHTO M 169, TYPE H4L NELSON HEADED ANCHORS WITH FLUXED ENDS, BY NELSON STUD WELDING COMPANY OR APPROVED EQUAL.

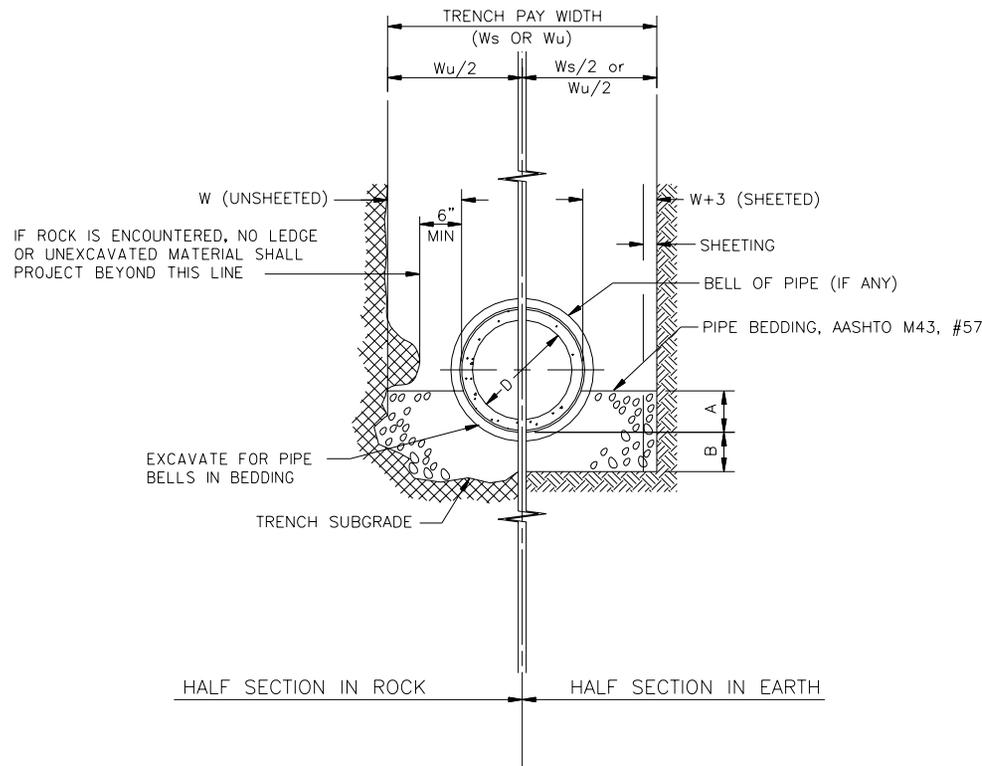
PA-031516.dwg: s4124202.dwg: Precast Catch Basin Elongation Top - 14.DWG
 P11000, APRIL 03, 2005 AT 09:15 PM

			RECOMMENDED: <i>[Signature]</i> DEPUTY CHIEF ENGINEER
DATE	APPR.		APPROVED: <i>[Signature]</i>
REVISED			CHIEF TRANSPORTATION ENGINEER
ISSUED:		REFERENCE	

**PRECAST CATCH BASIN
 ELONGATION TOP
 (TO BE UTILIZED FOR REPLACEMENT
 PURPOSES ONLY)**

d. DISTRICT OF COLUMBIA
 DEPARTMENT OF TRANSPORTATION

DWG. NO. 310.14



PIPE DIAMETER D	PIPE BEDDING DIMENSION		B		TRENCH PAY WIDTH	
	W	A	IN SOIL	IN ROCK	UNSHEETED Wu	SHEETED Ws
12"	12"	5"	3"	6"	3' - 4"	3' - 10"
15"	12"	5"	3"	6"	3' - 7"	4' - 1"
18"	12"	6"	3"	6"	3' - 11"	4' - 5"
21"	12"	7"	3"	6"	4' - 3"	4' - 9"
24"	12"	8"	3"	6"	4' - 6"	5' - 0"
27"	18"	8"	3"	6"	5' - 9"	6' - 3"
30"	18"	9"	4"	9"	6' - 1"	6' - 7"
33"	18"	10"	4"	9"	6' - 5"	6' - 11"
36"	18"	10"	4"	9"	6' - 8"	7' - 2"
42"	18"	13"	4"	9"	7' - 3"	7' - 9"
48"	24"	15"	4"	9"	8' - 10"	9' - 4"
54"	24"	16"	4"	9"	9' - 5"	9' - 11"
60"	24"	18"	4"	9"	10' - 0"	10' - 6"
66"	24"	20"	6"	12"	10' - 7"	11' - 1"
72"	24"	22"	6"	12"	11' - 2"	11' - 8"
78"	24"	23"	6"	12"	11' - 9"	12' - 3"
84"	24"	25"	6"	12"	12' - 4"	12' - 10"
90"	24"	27"	6"	12"	12' - 11"	13' - 5"
96"	24"	28"	6"	12"	13' - 6"	14' - 0"
102"	24"	30"	6"	12"	14' - 1"	14' - 7"
108"	24"	32"	6"	12"	14' - 8"	15' - 2"

NOTES:

1. IF THE VALUE OF W IS EXCEEDED BELOW A HORIZONTAL PLANE 1'-0" ABOVE TOP OF PIPE, SEE SPECIFICATION SECTION 207.05(A).
2. SHEETING, IF USED, SHALL BE REMOVED IN CONJUNCTION WITH THE BACKFILLING OPERATION UNLESS OTHERWISE SPECIFIED OR SHOWN ON DRAWING. HOWEVER, IF APPROVED IN WRITING, SHEETING MAY BE CUT-OFF AND LEFT IN PLACE BELOW A LINE 1'-0" ABOVE THE TOP OF THE PIPE OR AS DIRECTED BY THE ENGINEER.

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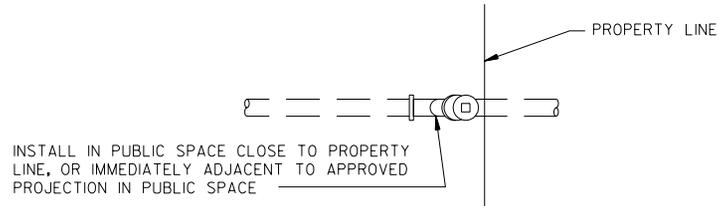
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DATE	APPR.		APPROVED: <i>[Signature]</i>
	REVISED		
ISSUED:			CHIEF TRANSPORTATION ENGINEER
		REFERENCE	

**CONCRETE SEWER PIPE
TRENCH LAYING CONDITION**

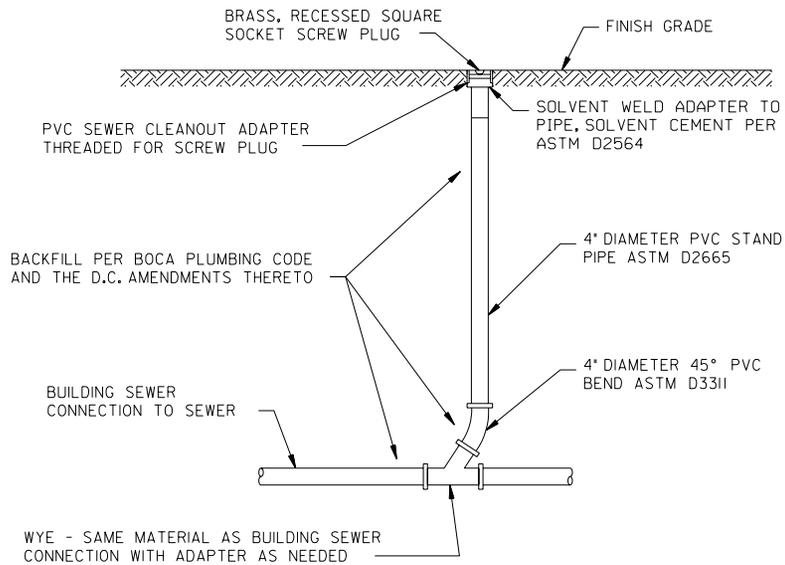
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DISTRICT OF COLUMBIA
DEPARTMENT OF TRANSPORTATION

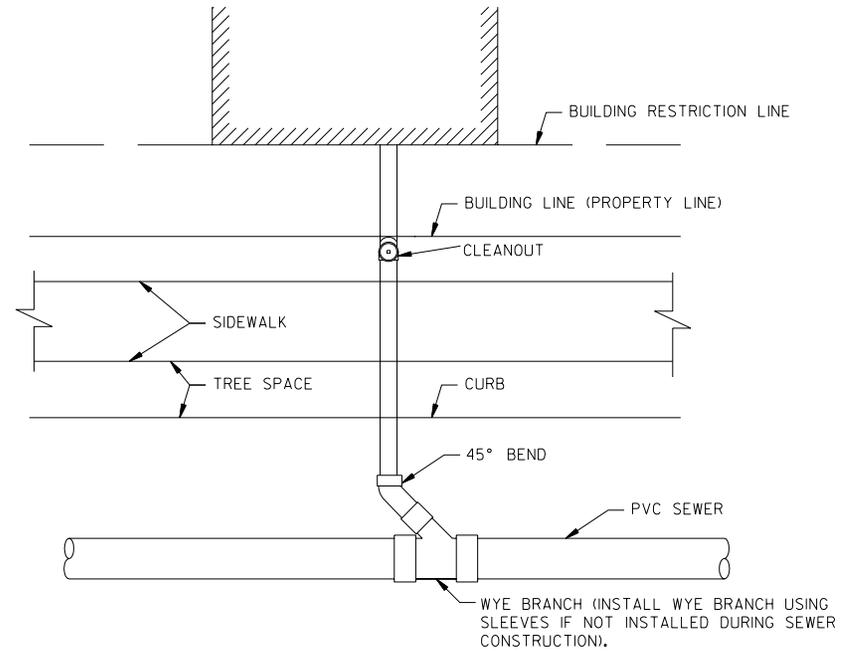
DWG. NO. 314.01



PLAN



ELEVATION



PLAN

NOTES:

1. MATERIALS AND WORKMANSHIP BETWEEN THE WYE BRANCH AND THE BUILDING MUST BE IN ACCORDANCE WITH D.C. PLUMBING CODE.
2. VERTICAL BENDS FOR GRADE (NOT SHOWN) MAY BE REQUIRED ON SEWER LATERAL.

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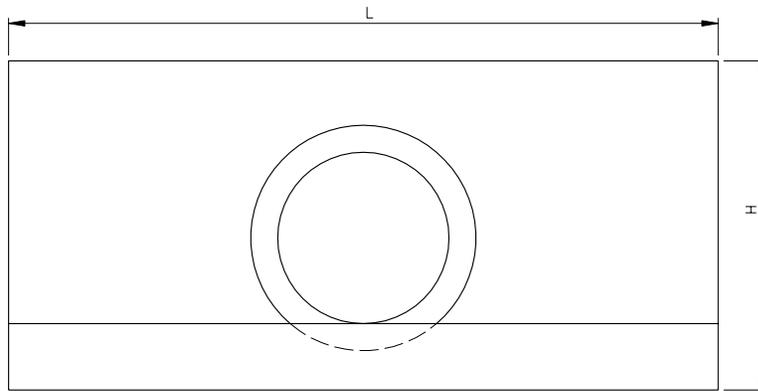
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DATE	APPR.		APPROVED: <i>[Signature]</i>
	REVISED		
ISSUED:			CHIEF TRANSPORTATION ENGINEER
		REFERENCE	

**SEWER LATERAL PLAN
(BUILDING CONNECTION TO PVC SEWER)**

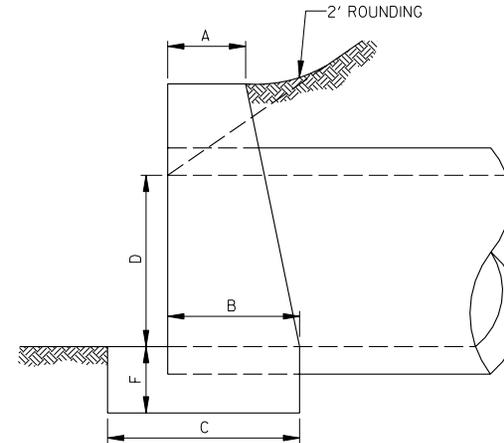
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DISTRICT OF COLUMBIA
DEPARTMENT OF TRANSPORTATION

DWG. NO. 316.01



FRONT ELEVATION



END ELEVATION

DIAMETER OF PIPE CULVERT (D)						
	12"	15"	18"	24"	30"	36"
A	0'-6"	0'-8"	0'-9"	0'-11"	1'-0"	1'-0"
B	0'-11"	1'-1 1/2"	1'-3"	1'-6"	1'-9"	2'-0"
C	1'-4"	1'-7"	1'-9"	2'-2"	2'-6"	2'-9"
F	0'-6"	0'-8"	0'-8"	0'-9"	0'-9"	0'-9"
H	2'-3"	2'-11"	3'-2"	3'-9"	4'-3"	4'-9"
L	4'-0"	5'-0"	6'-0"	8'-0"	10'-0"	12'-0"

SEE DWG. NO. 320.06
FOR STEEL REINFORCING

CUBIC YARDS CONCRETE						
CONC. PIPE	0.241	0.492	0.697	1.319	2.067	2.947
C. M. PIPE	0.257	0.521	0.739	1.398	2.198	3.146

PA-031516.dwg: as per Rev. 2, 2/20/05. Final UNCHANGED 320-02.DGN
 Friday, April 01, 2005 AT 10:16 PM

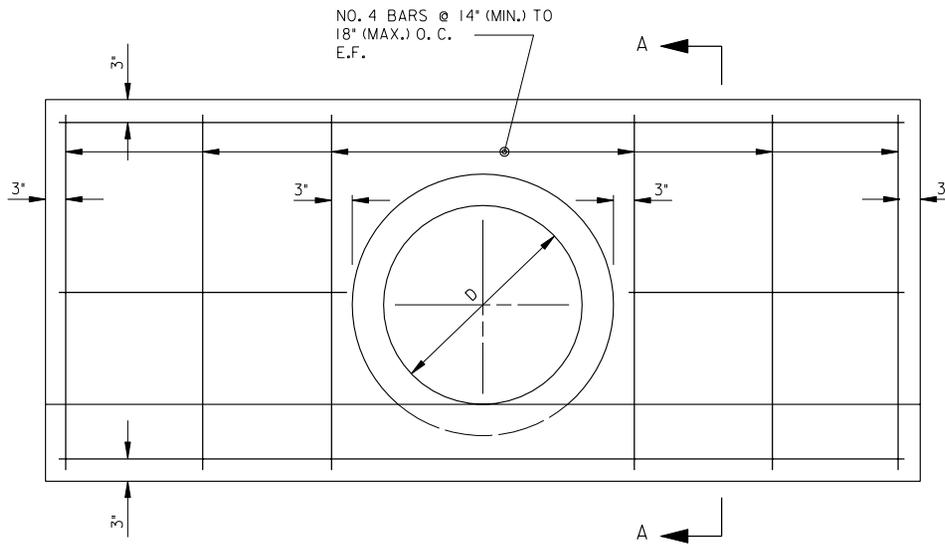
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REVISED		APPROVED: <i>[Signature]</i>
ISSUED:	REFERENCE	CHIEF TRANSPORTATION ENGINEER

**ENDWALLS
FOR 12" - 36" PIPE CULVERTS**

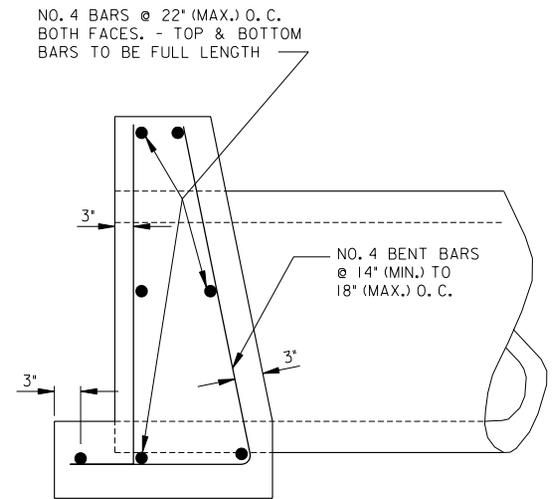
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DISTRICT OF COLUMBIA
DEPARTMENT OF TRANSPORTATION

DWG. NO. 320.02



ELEVATION



SECTION A-A

REINFORCEMENT IN PCC ENDWALLS

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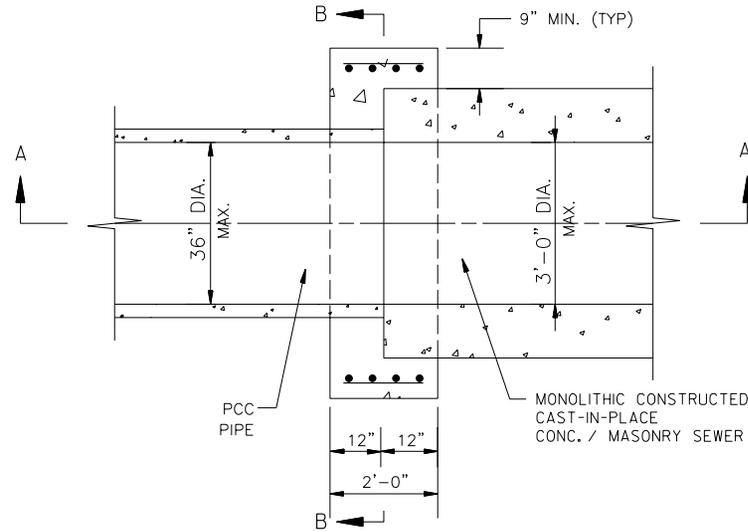
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DATE	APPR.		APPROVED: <i>[Signature]</i>
REVISED			CHIEF TRANSPORTATION ENGINEER
ISSUED:			
		REFERENCE	

**REINFORCEMENT IN
PCC ENDWALLS**

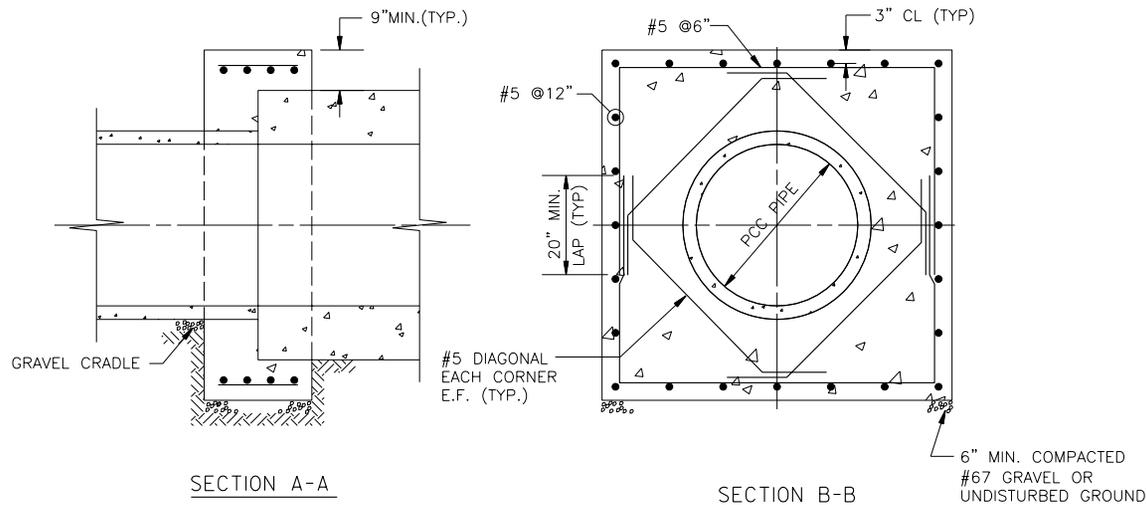
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DEPARTMENT OF TRANSPORTATION

DWG. NO. 320.06



SECTIONAL CONNECTION DETAIL



NOTE:

1. ALL CONCRETE TO BE CLASS B, AIR ENTRAINED, TYPE II CEMENT.
2. REINFORCING STEEL SHALL CONFORM TO AASHTO M31, GRADE 60.

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REVISED			CHIEF TRANSPORTATION ENGINEER
ISSUED:			
	REFERENCE		

REINFORCED CONCRETE PIPE COLLAR DETAIL 36" AND SMALLER DIAMETER

d.

DISTRICT OF COLUMBIA
DEPARTMENT OF TRANSPORTATION

DWG. NO. 323.01