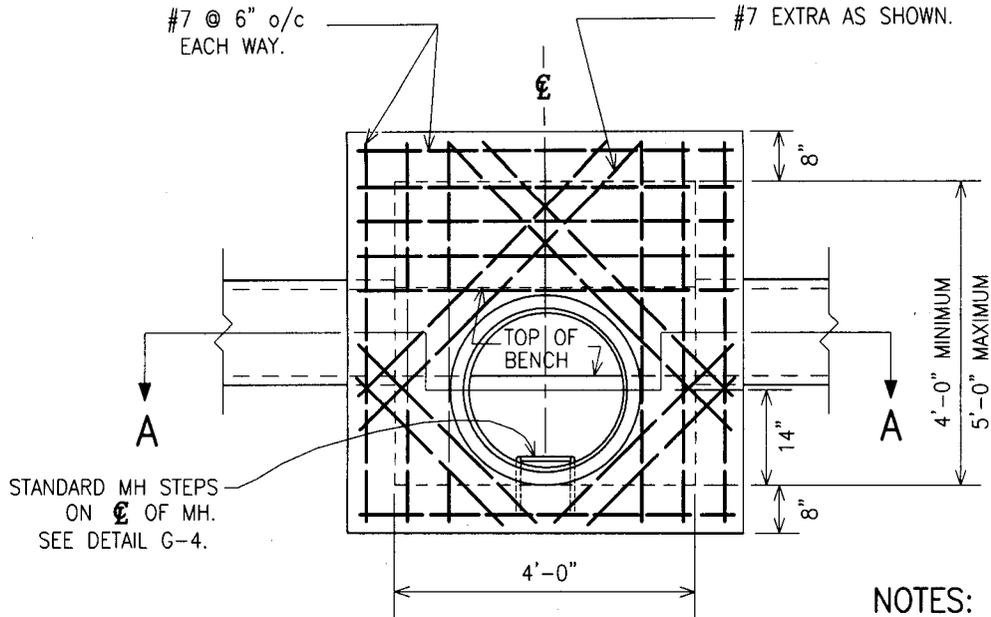


Sanitary Sewer Standard Details

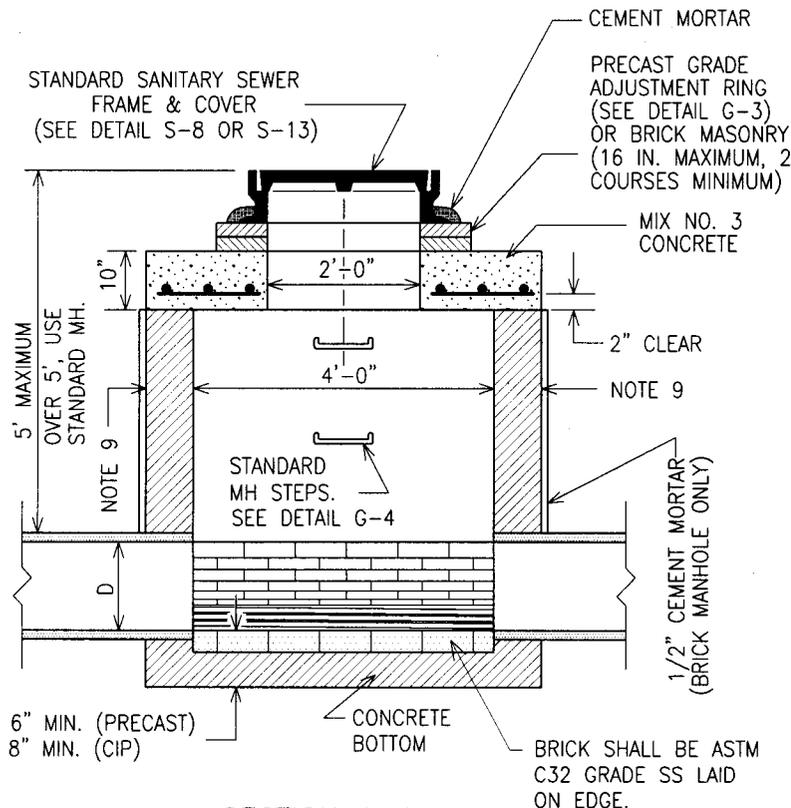
PLATE #	TITLE	SIGNATURE DATE	STD. SPECS. REFERENCE	COMMODITY CODE
S-1	Manhole	3/10/2005	1008	870000
S-2	Shallow Manhole	3/10/2005	1008	872190
S-3	Twin House Conn. Layout	3/18/2002	1007	-
S-4	Precast 48" San.MH	1/2/2007	1008	875000
S-5	60", 72" Precast San. MH	1/2/2007	1008	875000
S-6	Drop MH - Type A & B	3/18/2002	1008	880000, 881000
S-6A	Precast San.Drop MH	12/4/2001	1008	880000, 881000
S-7	Bedding/Gravity PVC Pipe	1/31/2007	1001	-
S-8	Heavy Traffic MH Fr.&Cvr	10/23/1997	1008	877000
S-8B	Sanitary MH Platen Cover - 1	9/12/2000	1008	877000
S-8C	Sanitary MH Platen Cover - 2	9/12/2000	1008	877000
S-12	Stack House Connections	10/23/1997	1007	-
S-12A	House Conn.@ Prop.Line	1/10/2007	1007	-
S-12B	Grinder Pump Conn@Hse.Conn.	1/2/2007	-	-
S-13	Watertight MH Fr.&Cvr	10/23/1997	1008	877000
S-14	Air Relief Valve Vault	3/18/2002	Special Provision	886000
S-15	Precast Doghouse Riser	5/15/2002	1008	-



PLAN

NOTES:

1. WALLS AND BOTTOM MUST BE BRICK OR PRECAST CONCRETE
2. INVERT AND BENCH MUST BE BRICK LAID ON EDGE.
3. BENCH FULL HEIGHT OF PIPE AS SHOWN FOR LINE MANHOLE.
4. DROP ACROSS MANHOLE ALONG FLOW LINE SHALL BE 0.1 FOOT MINIMUM.
5. FOR PIPE 42" AND LARGER IN HORIZONTAL DIAMETER, USE STORM DRAIN TYPE C MANHOLE - PLATE D-3.04. WHERE CENTER LINE OF HORIZONTAL CURVATURE EXCEEDS 4 FEET, USE BEND STRUCTURE - PLATE D-4.02.
6. SEE DETAIL S-4 FOR PRECAST ALTERNATIVE MANHOLE.
7. IN LOW, WET GROUND, WALLS MUST BE 12" THICK THROUGHOUT, AS DIRECTED.
8. REINFORCEMENT SHALL BE 2 LAYERS (1 LAYER IN BOTTOM SLAB) OF 4x4 W4.0 x W4.0 WELDED WIRE FABRIC. REINFORCEMENT COVER =
 1 1/2" IN PRECAST STRUCTURE
 2" IN CAST IN PLACE STRUCTURE
 3" AGAINST EARTH IN CIP STRUCTURE.
9. WALL THICKNESS =
 6" IN PRECAST STRUCTURE;
 8" IN CIP STRUCTURE.
10. FOR TERMINAL MANHOLE, OMIT BENCH. PROVIDE BRICK INVERT. DROP TO OUTLET MUST NOT EXCEED 0.3 FEET.



SECTION A-A



APPROVED
[Signature]
 DIRECTOR
[Signature]
 BUR. OF ENGINEERING/CONSTRUCTION
 3/10/05
 DATE

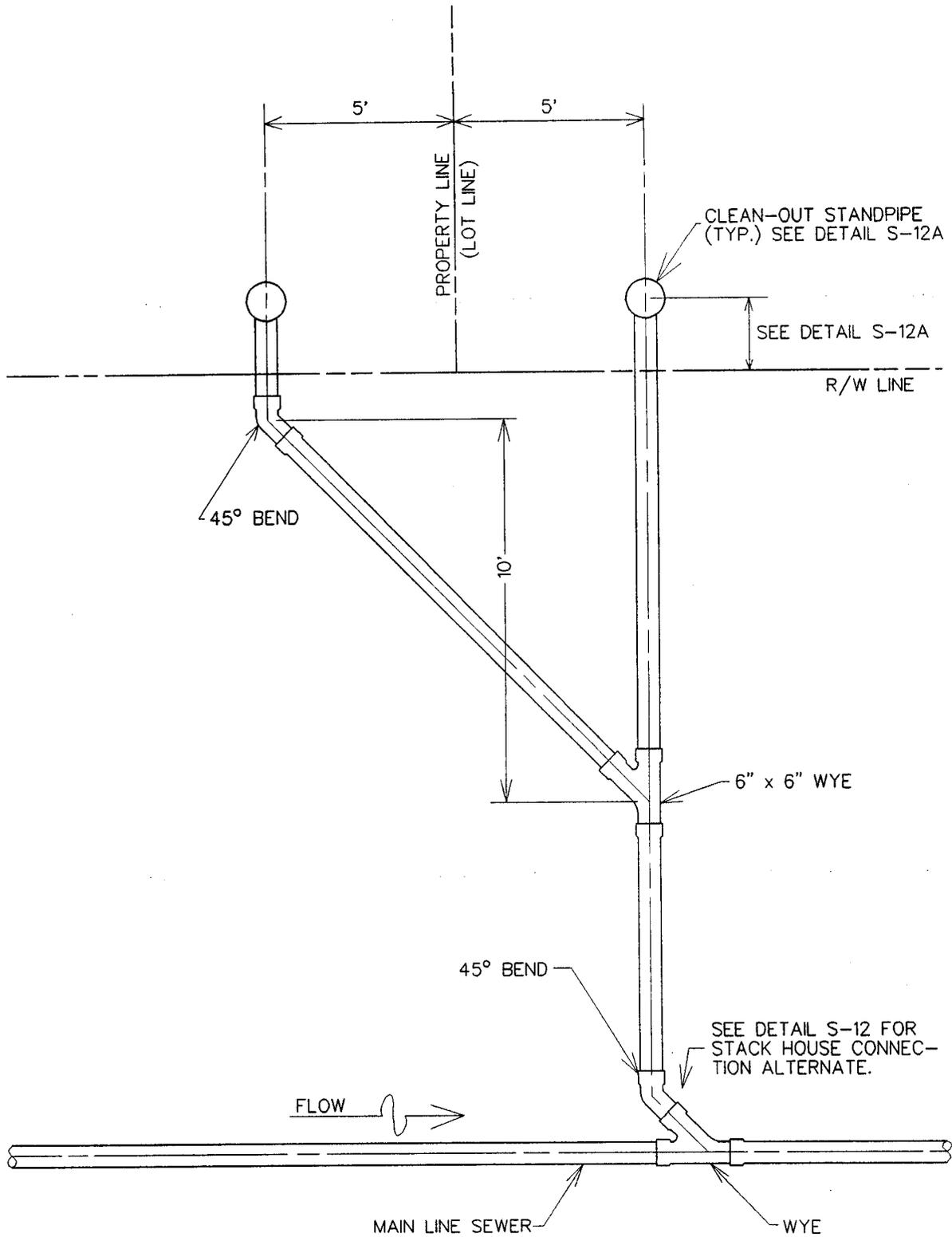
DEPARTMENT OF PUBLIC WORKS
 SANITARY SEWER DETAILS
SHALLOW MANHOLE
 (FOR PIPE 6" THRU 36"
 HORIZONTAL DIAMETER)

ISSUED: OCTOBER, 1977
 REVISED: JULY, 1985
 REVISED: JANUARY, 2005

PLATE

S-2

1/12/2005 11:52 AM S-02.DWG



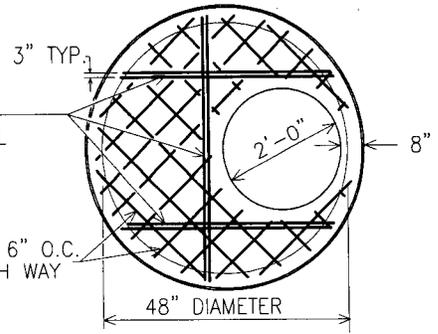
APPROVAL
William J. [Signature]
 DIRECTOR
 BUR. OF ENGINEERING/CONSTRUCTION
 3/18/02
 DATE

DEPARTMENT OF PUBLIC WORKS
 SANITARY SEWER DETAIL
**TWIN HOUSE
 CONNECTION LAYOUT**

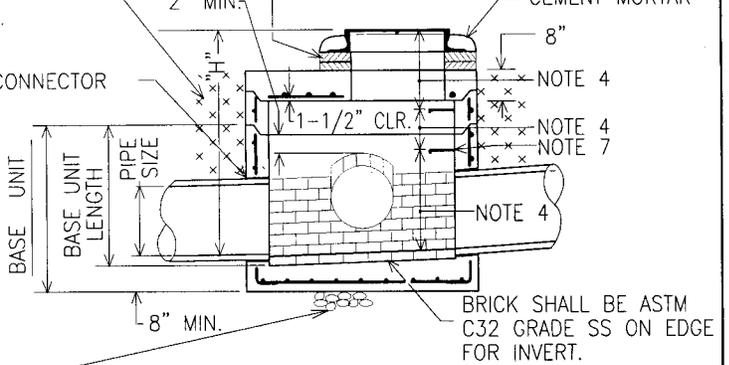
ISSUED: AUGUST, 1997
 REVISED: FEBRUARY, 2002
 REVISED:
 PLATE
S-3

SEPTEMBER 2000 D.L.S.

SLAB REINFORCING FOR
SHALLOW PRECAST MANHOLE A-3



PRECAST CONCRETE GRADE RINGS
(SEE STD. DETAIL G-3) OR BRICK
MASONRY (16 IN. MAXIMUM, 2
COURSES MINIMUM) CEMENT MORTAR

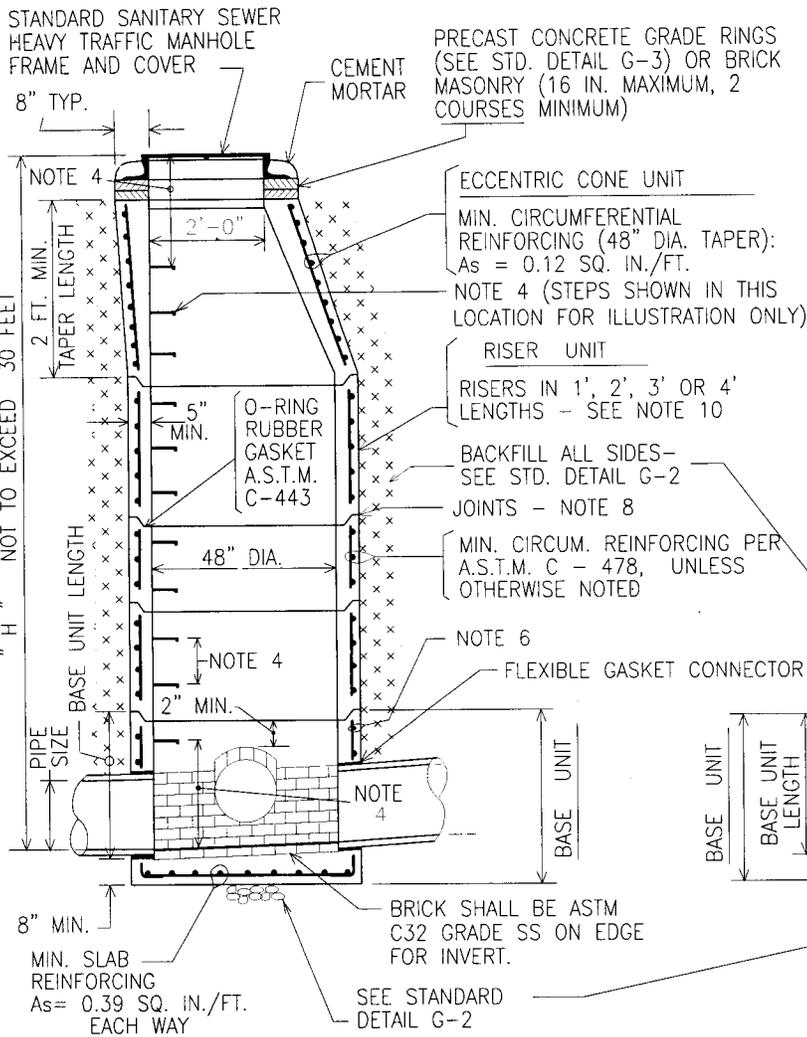


PRECAST MANHOLE A-3
48" SHALLOW

PIPE SIZE	BASE UNIT LENGTH - MIN.	MIN. (H), A-2 MAX. (H), A-3
8" TO 10" DIA.	2'	5'
12" TO 15" DIA.	3'	6'
18" TO 24" DIA.	4'	7'

NOTES :

- UNLESS OTHERWISE NOTED, MANHOLE TAPERS, RISERS AND BASES SHALL BE FURNISHED IN STRICT ACCORDANCE WITH A.S.T.M. DESIGNATION C-478 (LATEST) FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS".
- ALL CONCRETE SHALL BE 4,500 PSI COMPRESSIVE STRENGTH.
- REINFORCING FOR TYPE A-3 THE SAME AS FOR TYPE A-2.
- SEE STANDARD DETAIL PLATE G-4 FOR MANHOLE STEP SPECIFICATIONS, SPACING AND PLACEMENT. STEP LOCATION SHOWN IS FOR ILLUSTRATION ONLY. LOCATE STEPS 90° FROM MAIN FLOW CHANNEL WITHIN MANHOLE.
- A PRECAST MANHOLE SECTION MAY BE PLACED OVER EXISTING PIPE. SEE DETAIL FOR PRECAST MANHOLE "DOGHOUSE" RISER, STANDARD DETAIL PLATE S-15.
- MINIMUM CIRCUMFERENTIAL REINFORCEMENT PER A.S.T.M. C76 TABLE III WALL B FOR PIPE DIAMETERS GREATER THAN 18".
- USE A MINIMUM OF 1 MANHOLE STEP IN BASE UNIT.
- PRECAST MANHOLE RISER JOINTS: THE MANUFACTURER SHALL FORM MALE AND FEMALE ENDS OF JOINTS USING THEIR OWN DESIGN. THE JOINTS SHALL BE SEALED BY THE CONTRACTOR & MADE WATER-TIGHT USING THE MANUFACTURER'S RECOMMENDED ASTM OR AASHTO-APPROVED SEALANT.
- SEE STANDARD DETAIL PLATE G-3 FOR SPECIFICATIONS AND PLACEMENT OF PRECAST CONCRETE GRADE RINGS.
- USE LARGEST APPLICABLE RISER UNIT LENGTHS. USE A MAXIMUM OF ONE- 1' LENGTH RISER UNIT PER STRUCTURE, TO BE PLACED IMMEDIATELY BELOW ECCENTRIC CONE SECTION.



PRECAST MANHOLE A-2
48" STANDARD

STANDARD SANITARY SEWER
HEAVY TRAFFIC MANHOLE
FRAME AND COVER
8" TYP.

CEMENT
MORTAR

PRECAST CONCRETE GRADE RINGS
(SEE STD. DETAIL G-3) OR BRICK
MASONRY (16 IN. MAXIMUM, 2
COURSES MINIMUM)

NOTE 4

2' - 0"

2 FT. MIN.
TAPER LENGTH

ECCENTRIC CONE UNIT

MIN. CIRCUMFERENTIAL
REINFORCING (48" DIA. TAPER):
As = 0.12 SQ. IN./FT.

NOTE 4 (STEPS SHOWN IN THIS
LOCATION FOR ILLUSTRATION ONLY)

RISER UNIT

RISERS IN 1', 2', 3' OR 4'
LENGTHS - SEE NOTE 10

O-RING
RUBBER
GASKET
A.S.T.M.
C-443

5" MIN.

BACKFILL ALL SIDES-
SEE STD. DETAIL G-2

JOINTS - NOTE 8

MIN. CIRCUM. REINFORCING PER
A.S.T.M. C - 478, UNLESS
OTHERWISE NOTED

NOTE 6

FLEXIBLE GASKET CONNECTOR

NOTE 4

2" MIN.

48" DIA.

NOTE 4

PIPE SIZE

BASE UNIT

NOTE 4

8" MIN.

MIN. SLAB
REINFORCING
As = 0.39 SQ. IN./FT.
EACH WAY

SEE STANDARD
DETAIL G-2

BRICK SHALL BE ASTM
C32 GRADE SS ON EDGE
FOR INVERT.

APPROVAL

[Signature]

DIRECTOR

[Signature]

BUR. OF ENGINEERING/CONSTRUCTION

1-2-07

DATE

DEPARTMENT OF PUBLIC WORKS
SANITARY SEWER DETAILS

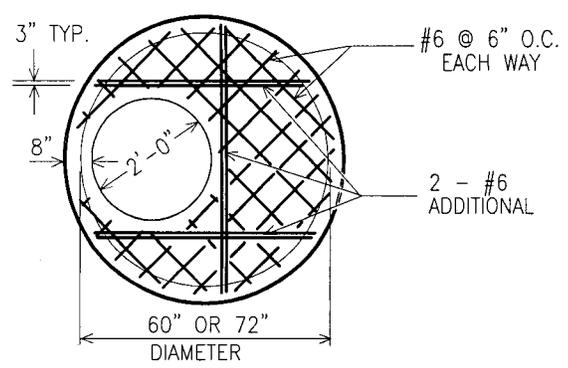
48" PRECAST SANITARY MANHOLE
(FOR PIPE 8" THRU 24" HORIZ. DIA.)

ISSUED: OCTOBER 1977
REVISED: SEPTEMBER 1991
REVISED: OCTOBER 2006

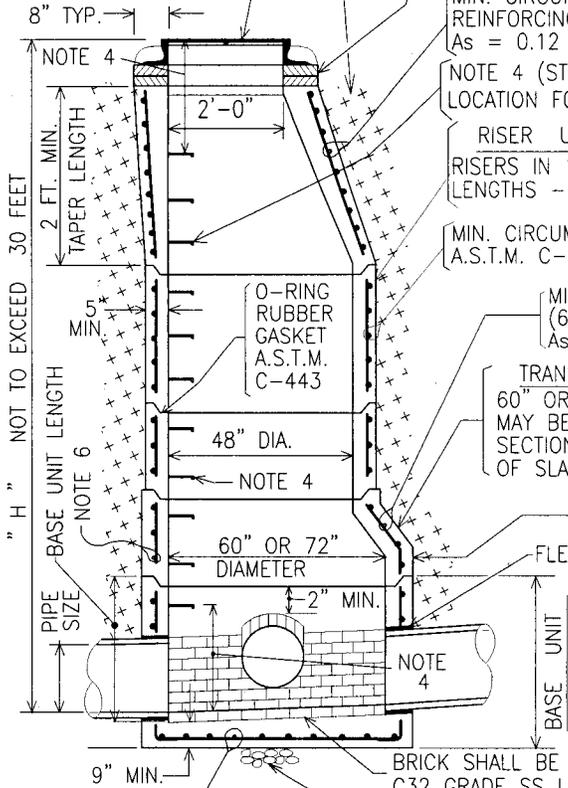
PLATE
S-4

BACKFILL ALL SIDES -
SEE STANDARD DETAIL G-2
STANDARD SANITARY SEWER
HEAVY TRAFFIC MANHOLE
FRAME AND COVER
CEMENT MORTAR

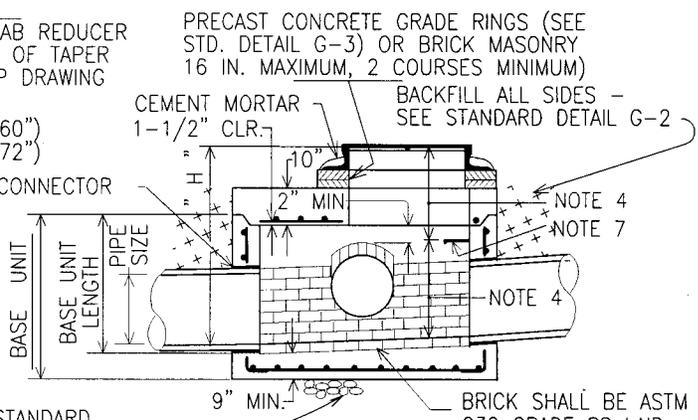
PRECAST CONCRETE GRADE RINGS (SEE
STD. DETAIL G-3) OR BRICK MASONRY
16 IN. MAXIMUM, 2 COURSES MINIMUM)



SLAB REINFORCING FOR
TYPE A-3 PRECAST MANHOLE



TYPE A-2
PRECAST MANHOLE



TYPE A-3
SHALLOW PRECAST MANHOLE

MIN. SLAB
REINFORCING
As = 0.39 SQ. IN./FT.
EACH WAY

MIN. CIRCUM. REINFORCING
(60" DIAMETER TAPER)
As = 0.28 SQ. IN./FT.

TRANSITION UNIT
60" OR 72" x 48" SLAB REDUCER
MAY BE USED IN LIEU OF TAPER
SECTION. SUBMIT SHOP DRAWING
OF SLAB REDUCERS.

{ 6" TYPICAL (60")
{ 7" TYPICAL (72")

FLEXIBLE GASKET CONNECTOR

PRECAST CONCRETE GRADE RINGS (SEE
STD. DETAIL G-3) OR BRICK MASONRY
16 IN. MAXIMUM, 2 COURSES MINIMUM)

CEMENT MORTAR
1-1/2" CLR.
BACKFILL ALL SIDES -
SEE STANDARD DETAIL G-2

PIPE SIZE	BASE UNIT LENGTH - MIN.	MIN. (H), A-2 MAX. (H), A-3
27" - 36"	5'	9' †
42" *	6'	10' †
48" *	7'	11' †

* USE 72" DIAMETER MANHOLE.

† ADD 2' TO INDICATED DIMENSION FOR
TRANSITION UNIT. INDICATED DIMENSIONS
APPLY ONLY TO SLAB REDUCER.

NOTES :

- UNLESS OTHERWISE NOTED, MANHOLE TAPERS, RISERS AND BASES SHALL BE FURNISHED IN STRICT ACCORDANCE WITH A.S.T.M. DESIGNATION C-478 (LATEST) FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS".
- ALL CONCRETE SHALL BE 4,500 PSI COMPRESSIVE STRENGTH.
- REINFORCING FOR TYPE A-3 THE SAME AS FOR TYPE A-2.
- SEE STANDARD DETAIL PLATE G-4 FOR MANHOLE STEP SPECIFICATIONS, SPACING AND PLACEMENT. STEP LOCATION SHOWN IS FOR ILLUSTRATION ONLY. LOCATE STEPS 90 ° FROM MAIN FLOW CHANNEL WITHIN MANHOLE.
- A PRECAST MANHOLE SECTION MAY BE PLACED OVER EXISTING PIPE. SEE DETAIL FOR PRECAST MANHOLE "DOGHOUSE" RISER, STANDARD DETAIL PLATE S-15.
- MINIMUM CIRCUMFERENTIAL REINFORCEMENT PER A.S.T.M. C76 TABLE III WALL B FOR PIPE DIAMETERS GREATER THAN 18".
- USE A MINIMUM OF 1 MANHOLE STEP IN BASE UNIT.
- PRECAST MANHOLE RISER JOINTS: THE MANUFACTURER SHALL FORM MALE AND FEMALE ENDS OF JOINTS USING THEIR OWN DESIGN. THE JOINTS SHALL BE SEALED BY THE CONTRACTOR & MADE WATER-TIGHT USING THE MANUFACTURER'S RECOMMENDED ASTM OR AASHTO-APPROVED SEALANT.
- SEE STANDARD DETAIL PLATE G-3 FOR SPECIFICATIONS AND PLACEMENT OF PRECAST CONCRETE GRADE RINGS.
- USE LARGEST APPLICABLE RISER UNIT LENGTHS. USE A MAXIMUM OF ONE- 1' LENGTH RISER UNIT PER STRUCTURE, TO BE PLACED IMMEDIATELY BELOW ECCENTRIC CONE SECTION.
- FOR PIPES OF DIAMETER LARGER THAN 48", USE BRICK BEND (DETAIL D-4.01 & D-4.02) OR A SPECIAL DESIGN MANHOLE.

APPROVAL
[Signature]
DIRECTOR
BUR. OF ENGINEERING/CONSTRUCTION
DATE: 1-2-07

DEPARTMENT OF PUBLIC WORKS
SANITARY SEWER DETAILS
60" & 72" PRECAST SANITARY
A-2 & A-3 MANHOLES
(FOR PIPE 27" THRU 48" HORIZ. DIAMETER)

ISSUED: OCTOBER 1977
REVISED: SEPTEMBER 1991
REVISED: OCTOBER 2006
PLATE
S-5

DROP CONNECTION			
SIZE OF SEWER	TYPE A		TYPE B
	MAX. DROP	MIN. DROP	MIN. DROP
6"	3'-9"	2'-0"	3'-9"
8"	3'-9"	2'-0"	3'-9"
10"	4'-0"	2'-0"	4'-0"
12"	6'-0"	2'-6"	6'-0"
15"	6'-0"	2'-6"	6'-0"

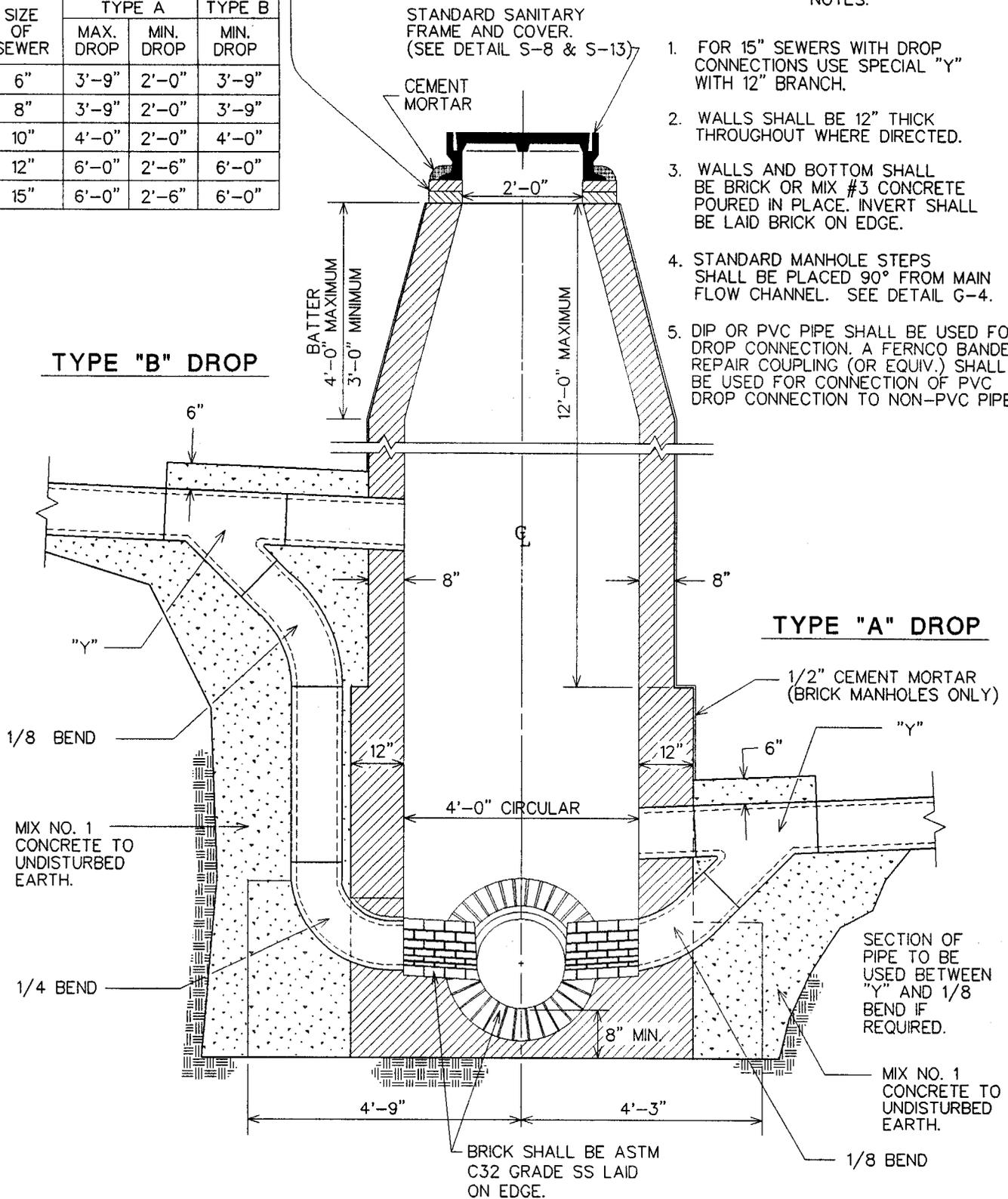
PRECAST GRADE ADJUSTMENT RING (SEE STD. DETAIL G-3) OR BRICK MASONRY (16 IN. MAXIMUM, 2 COURSES MINIMUM)

NOTES:

1. FOR 15" SEWERS WITH DROP CONNECTIONS USE SPECIAL "Y" WITH 12" BRANCH.
2. WALLS SHALL BE 12" THICK THROUGHOUT WHERE DIRECTED.
3. WALLS AND BOTTOM SHALL BE BRICK OR MIX #3 CONCRETE POURED IN PLACE. INVERT SHALL BE LAID BRICK ON EDGE.
4. STANDARD MANHOLE STEPS SHALL BE PLACED 90° FROM MAIN FLOW CHANNEL. SEE DETAIL G-4.
5. DIP OR PVC PIPE SHALL BE USED FOR DROP CONNECTION. A FERNCO BANDED REPAIR COUPLING (OR EQUIV.) SHALL BE USED FOR CONNECTION OF PVC DROP CONNECTION TO NON-PVC PIPE.

TYPE "B" DROP

TYPE "A" DROP



APPROVAL
William Koppenman
 DIRECTOR
 BUR. OF ENGINEERING/CONSTRUCTION
 DATE 3/18/02

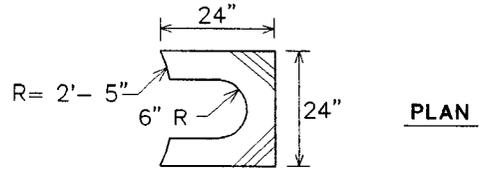
DEPARTMENT OF PUBLIC WORKS
 SANITARY SEWER DETAILS
**DROP CONNECTIONS AT
 MANHOLE, TYPE A AND B**

ISSUED: OCTOBER, 1977
 REVISED: AUGUST, 1997
 REVISED: FEBRUARY, 2002
 PLATE
S-6

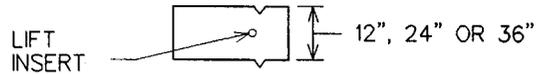
REV. FEBRUARY 2002, J.A.

NOTES.

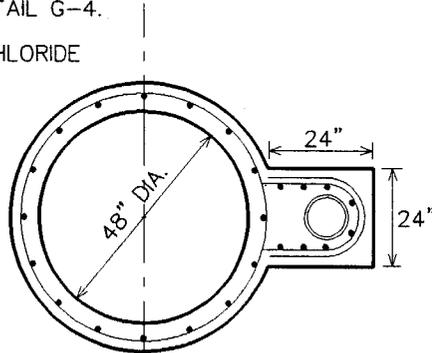
1. UNLESS OTHERWISE NOTED, MANHOLE BASE SHALL BE FURNISHED IN STRICT ACCORDANCE WITH ASTM DESIGNATION C478 (LATEST) FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS."
2. MANHOLE BASE SHALL BE OF 4,500 PSI PRECAST CONCRETE.
3. MANHOLE RISERS AND TAPERS SHALL CONFORM TO SANITARY SEWER DETAIL PLATE S-4. MINIMUM CIRCUMFERENTIAL REINFORCEMENT PER A.S.T.M. C478, UNLESS OTHERWISE NOTED.
4. MINIMUM DROP IS 2.5' FROM INVERT TO INVERT.
5. STEPS TO BE LOCATED 90° FROM MAIN FLOW CHANNEL. SEE STD. DETAIL G-4.
6. PIPE SHALL BE POLYVINYL CHLORIDE OR D.I.P.
7. BENCH REQUIRED FOR ALL MANHOLES.



SECTION



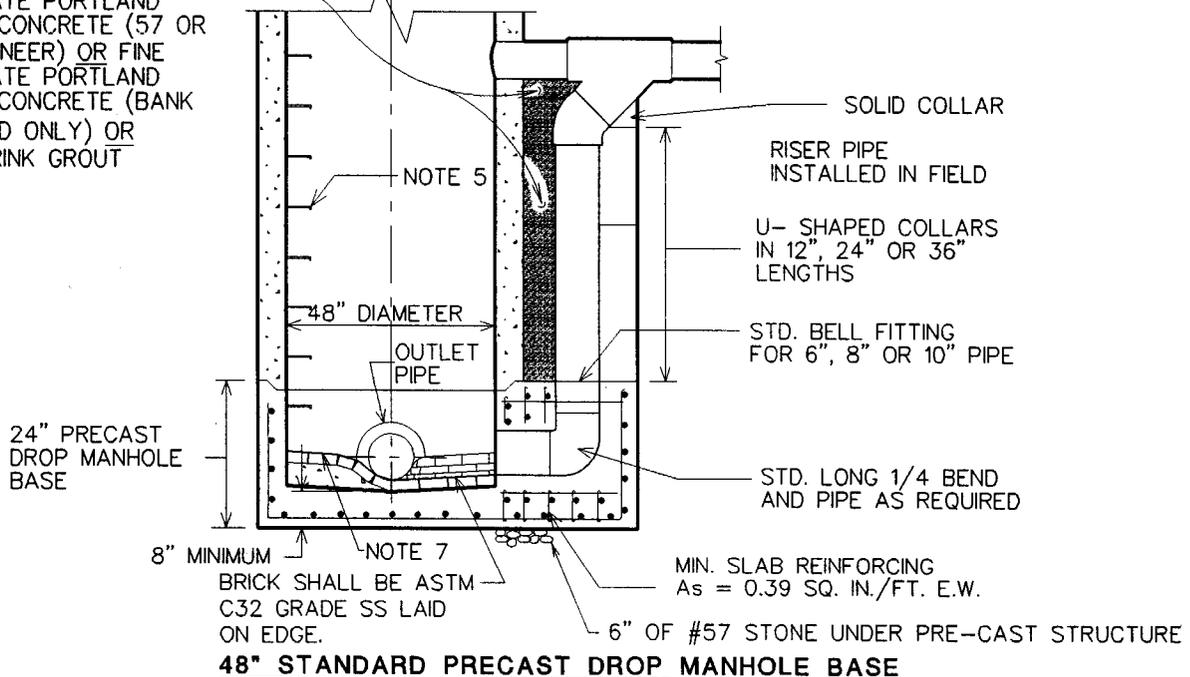
U- SHAPED CONCRETE COLLAR



REINFORCING AREA = 0.12 IN./VERTICAL FT. JOINED TO BASE REINFORCEMENT.

BACKFILL VOID WITH COARSE AGGREGATE PORTLAND CEMENT CONCRETE (57 OR PER ENGINEER) OR FINE AGGREGATE PORTLAND CEMENT CONCRETE (BANK RUN SAND ONLY) OR NON-SHRINK GROUT

STD. 45° WYE, 1/8 BEND, AND PIPE AS REQUIRED INSTALLED IN FIELD.



48" STANDARD PRECAST DROP MANHOLE BASE

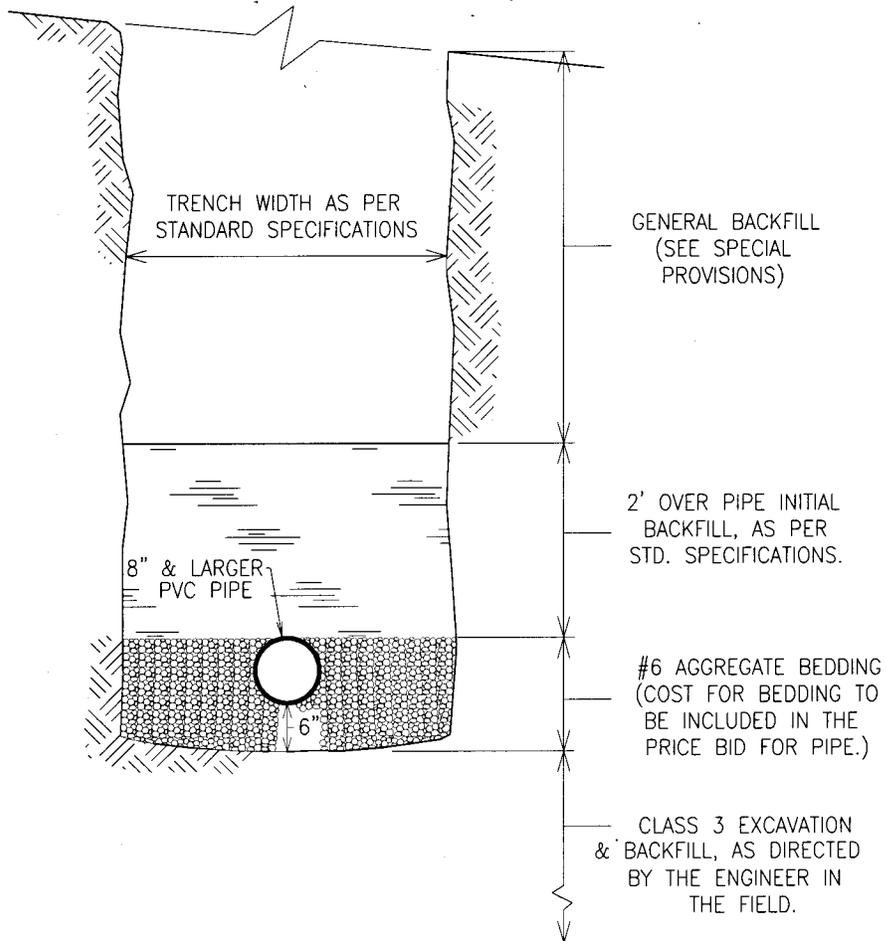


APPROVAL
David C. Adams, Jr.
 DIRECTOR
William J. Hoffman
 BUR. OF ENGINEERING/CONSTRUCTION
 12/4/01
 DATE

DEPARTMENT OF PUBLIC WORKS
 SANITARY SEWER DETAILS
PRECAST SANITARY DROP MANHOLE
 (FOR PIPE 6", 8" & 10" HORIZONTAL DIA.)

ISSUED: SEPTEMBER 16, 1991
 REVISED: OCTOBER 2001
 REVISED:
 PLATE
S-6A

REV. APRIL 2004 J.A.S.

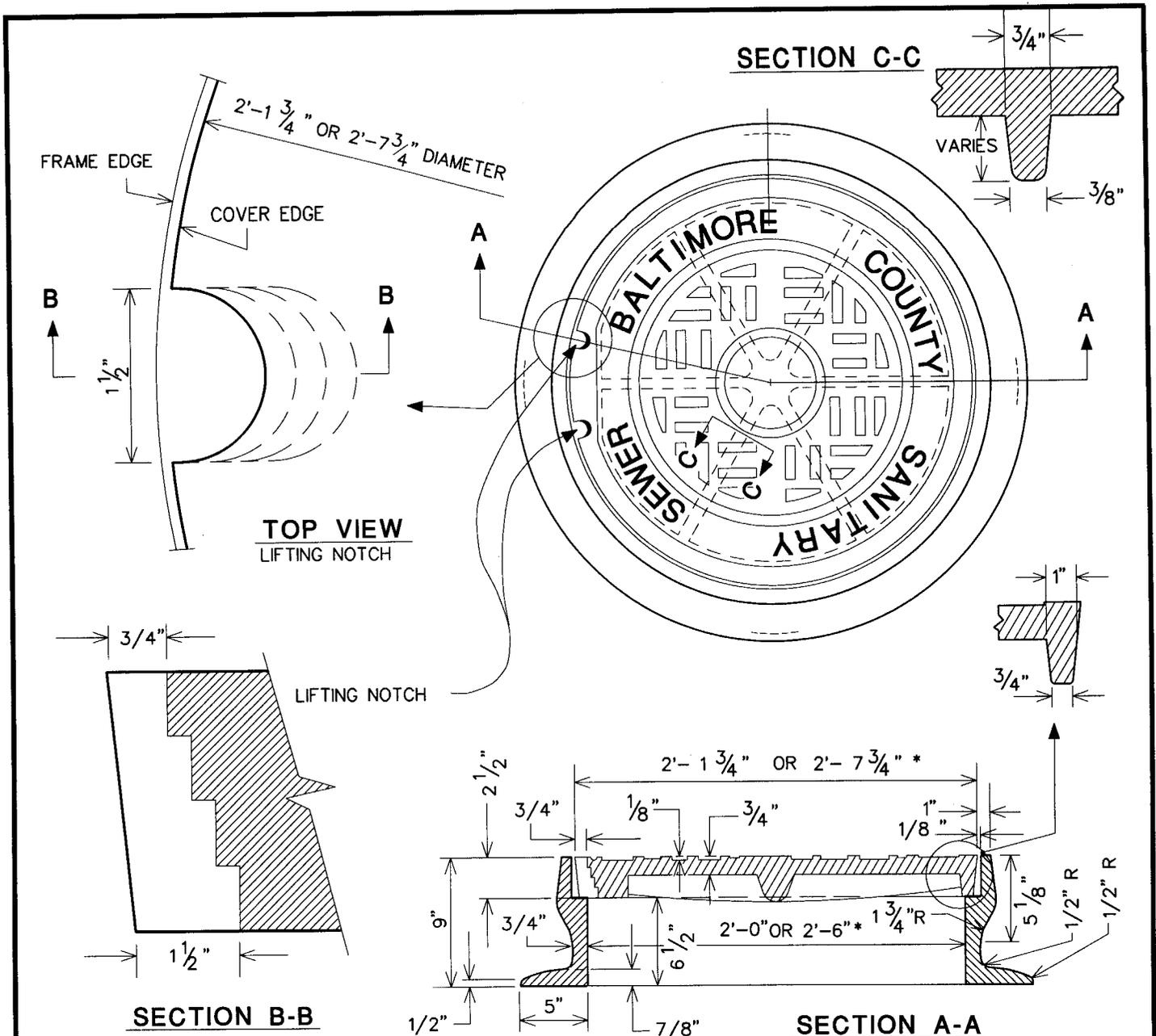


APPROVED
[Signature]
 DIRECTOR
[Signature]
 BUR. OF ENGINEERING/CONSTRUCTION
 01-31-07
 DATE

DEPARTMENT OF PUBLIC WORKS
 SANITARY SEWER DETAILS
BEDDING DETAIL
 FOR GRAVITY PVC PIPE 8" & LARGER

ISSUED: AUGUST, 1997
 REVISED: JANUARY, 2007
 REVISED:

PLATE
S-7



NOTE :

MATERIAL USED SHALL CONFORM TO ASTM SPECIFICATION A-48, CLASS 30B CAST IRON, PER SECTION 909.04, SPECIFICATIONS.

CASTING MUST BE MACHINED ON BEARING SURFACES.

* USE OF 30" FRAME & COVER SHALL BE LIMITED TO AREAS ACCESSIBLE BY VEHICLE. USE IN OTHER AREAS WILL BE APPROVED ON A CASE-BY CASE BASIS BY THE DEPARTMENT OF PUBLIC WORKS. 30" FRAMES AND COVERS SHALL BE CERTIFIED AS MEETING H-25 DESIGN LOAD STANDARDS.

WHERE FRAME & COVER IS USED OUTSIDE OF BALTIMORE COUNTY R/W OR EASEMENTS, SUBSTITUTE THE WORDS "PRIVATE SANITARY SEWER" FOR "BALTIMORE COUNTY SANITARY SEWER" ON THE COVER.

	24" DIAMETER	30" DIAMETER
NOMINAL WEIGHT OF FRAME	250 Lbs.	310 Lbs.
NOMINAL WEIGHT OF COVER	150 Lbs.	215 Lbs.
NOMINAL TOTAL WEIGHT	400 Lbs.	525 Lbs.



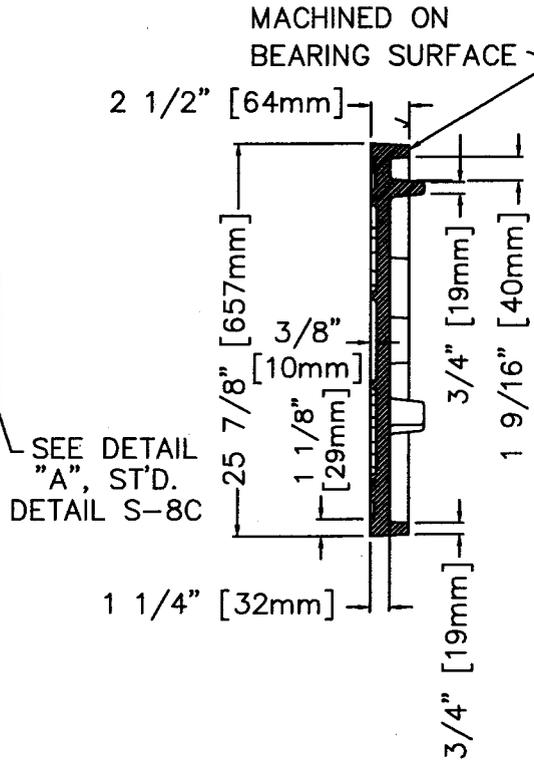
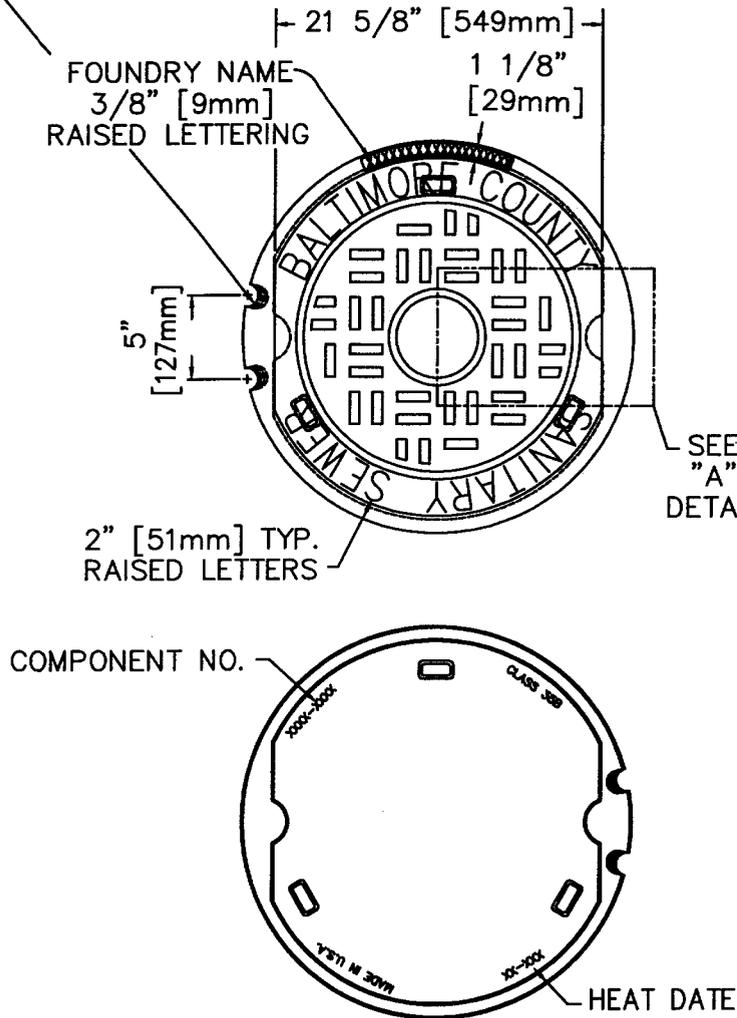
APPROVAL
William Boyman
 DIRECTOR
 BUR. OF ENGINEERING/CONSTRUCTION
 10/23/97
 DATE

DEPARTMENT OF PUBLIC WORKS
 SANITARY SEWER DETAILS
**HEAVY TRAFFIC MANHOLE
 FRAME AND COVER**

ISSUED: OCTOBER, 1977
 REVISED: JUNE, 1985
 REVISED: AUGUST, 1997

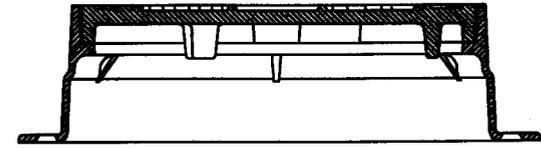
PLATE
S-8

(2) OPEN PICK HOLES
 3/4" [19mm] RAD.
 (SEE PICK HOLE DETAIL)

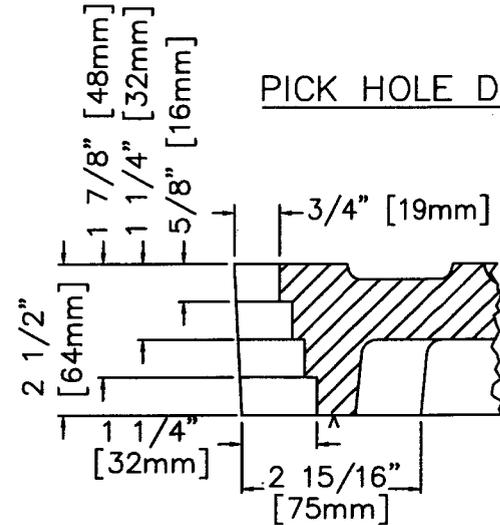


SEE DETAIL
 "A", ST'D.
 DETAIL S-8C

PLATEN COVER IN FRAME:



PICK HOLE DETAIL



NOTE: ALL DIMENSIONS SHOWN ARE IN ENGLISH AND [METRIC]
 MEETS OR EXCEEDS H20 LOADING
 MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B
 FINISH: NO PAINT
 WEIGHT: 177#
 FRAME: SEE DETAIL G-14



APPROVAL
William R. [Signature]
 DIRECTOR
 BUR. OF ENGINEERING/CONSTRUCTION
 DATE 2/2/00

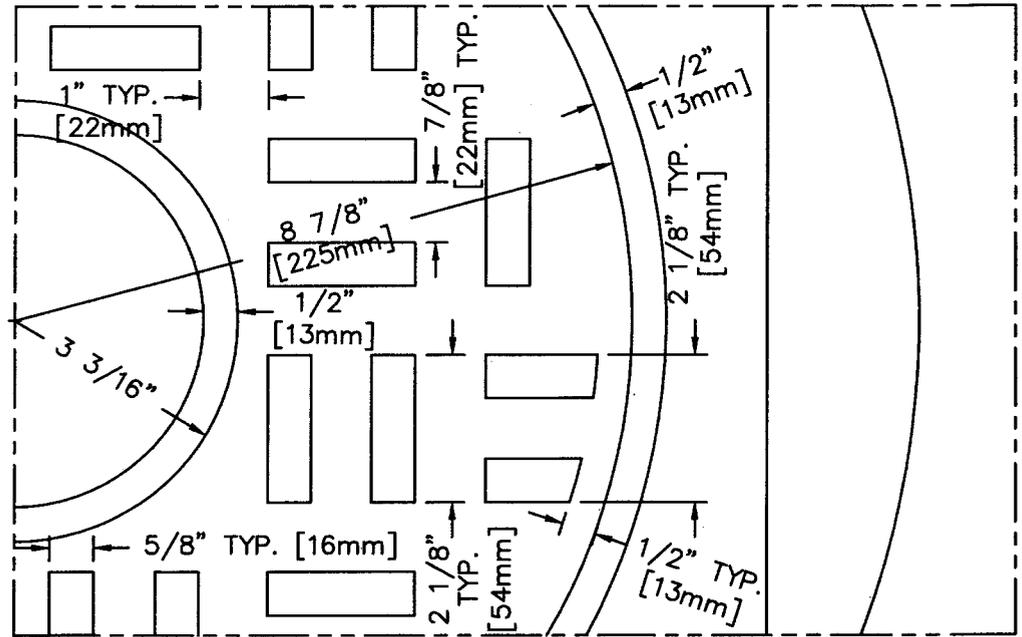
DEPARTMENT OF PUBLIC WORKS
 SANITARY SEWER DETAILS
SANITARY SEWER PLATEN COVER
 FOR USE WITH STRAIGHT WALL MH FRAME

ISSUED: FEBRUARY, 2000
 REVISED: _____
 REVISED: _____

PLATE
S-8B



SEE DETAIL "A"



DETAIL "A"

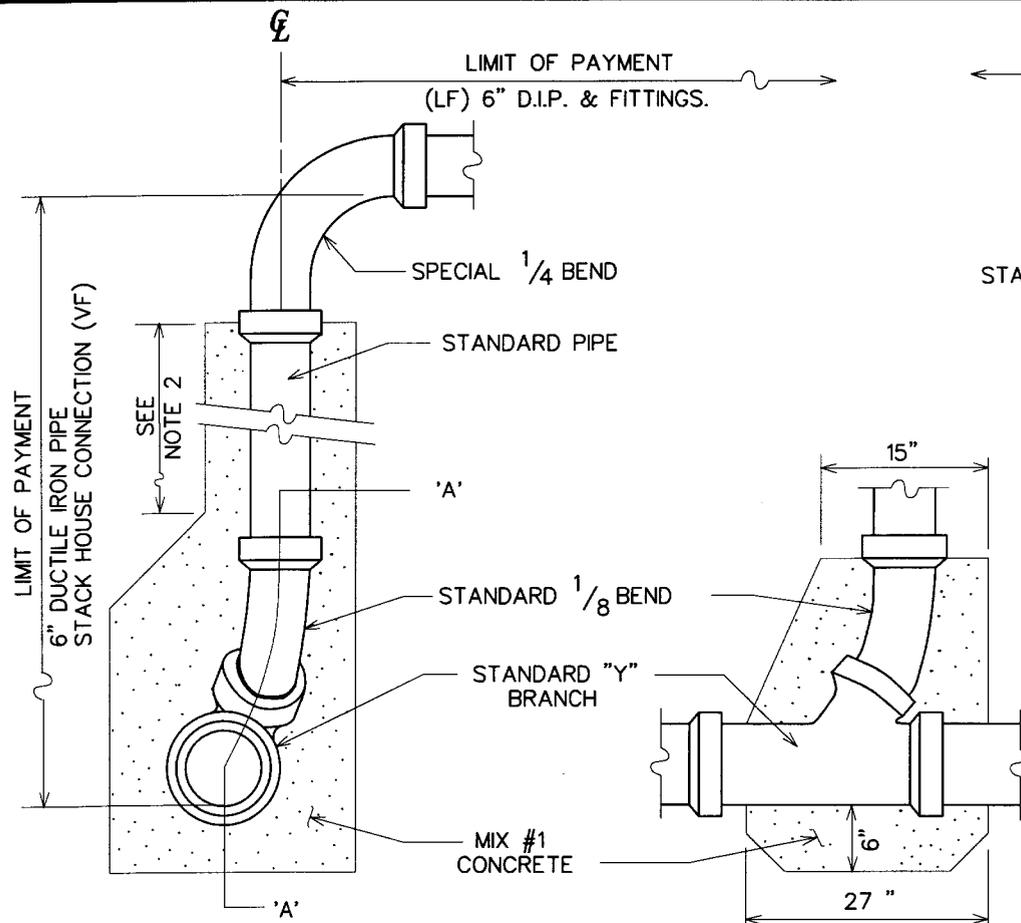


APPROVAL
Ronald C. Alford
 DIRECTOR
William E. ...
 BUR. OF ENGINEERING / CONSTRUCTION
 9/12/06
 DATE

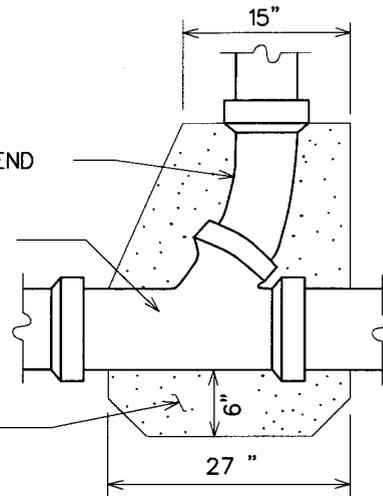
DEPARTMENT OF PUBLIC WORKS
 SANITARY SEWER DETAILS
SANITARY SEWER PLATEN COVER
 FOR USE WITH STRAIGHT WALL MH FRAME

ISSUED: FEBRUARY, 2000
 REVISED: _____
 REVISED: _____

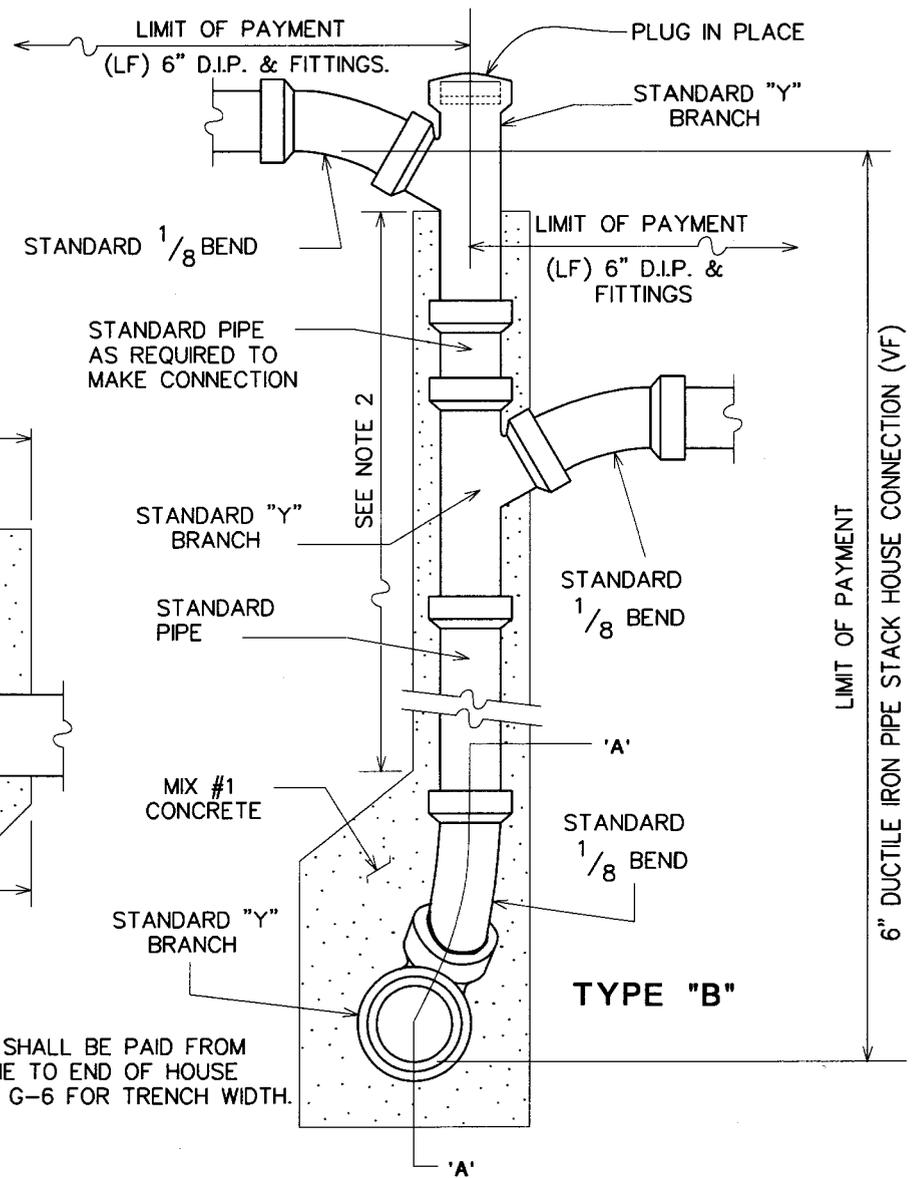
PLATE
S-8C



TYPE "A"



SECTION 'A'-'A'



TYPE "B"

NOTE:

1. USE ALL DUCTILE IRON FITTINGS INCLUDING SEWER WYE.
2. ENCASE RISER IN MIX #1 CONCRETE UTILIZING BRACED 14" DIAMETER SONOTUBE OR APPROVED EQUAL.
3. MAIN LINE TO BE DUCTILE IRON PIPE.
4. TRENCH WIDTH PAYMENT SHALL BE PAID FROM CENTER LINE OF MAIN LINE TO END OF HOUSE CONNECTION. SEE DETAIL G-6 FOR TRENCH WIDTH.



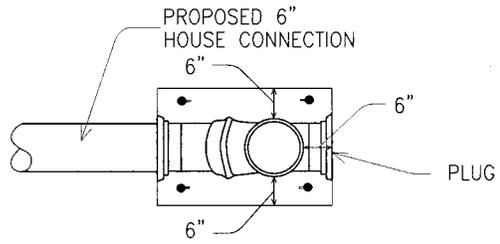
APPROVAL
William S. Oppman
 DIRECTOR
 BUR. OF ENGINEERING / CONSTRUCTION
 10/23/97
 DATE

DEPARTMENT OF PUBLIC WORKS
 SANITARY SEWER DETAILS

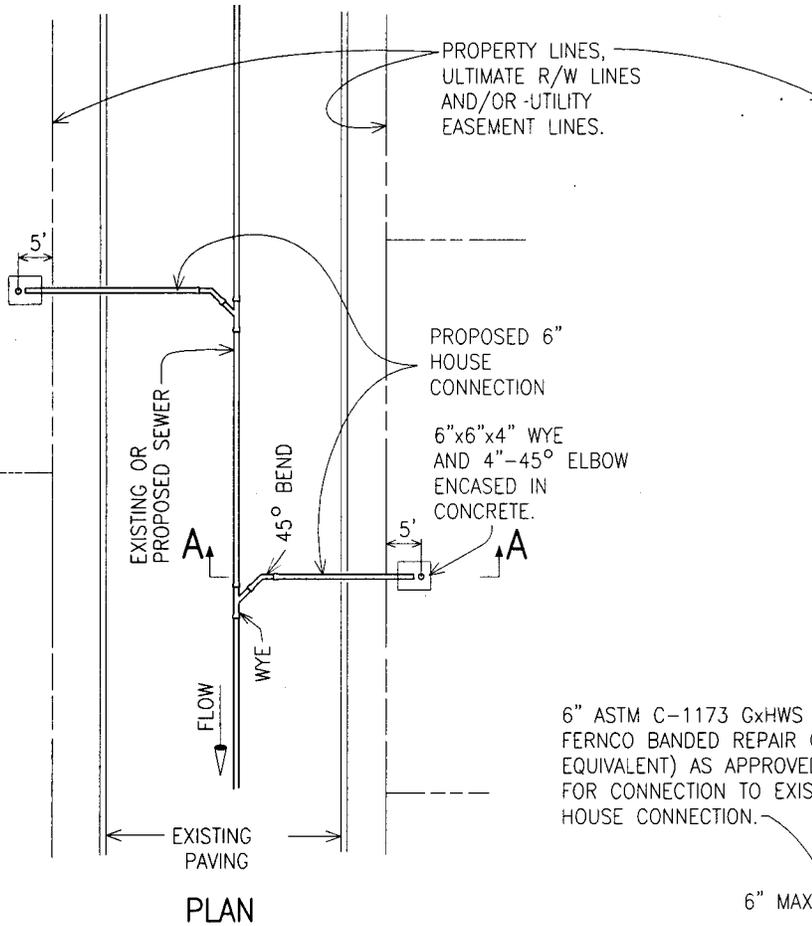
**STACK HOUSE
 CONNECTIONS**

ISSUED: OCTOBER 1977
 REVISED: JULY 1985
 REVISED: AUGUST 1997

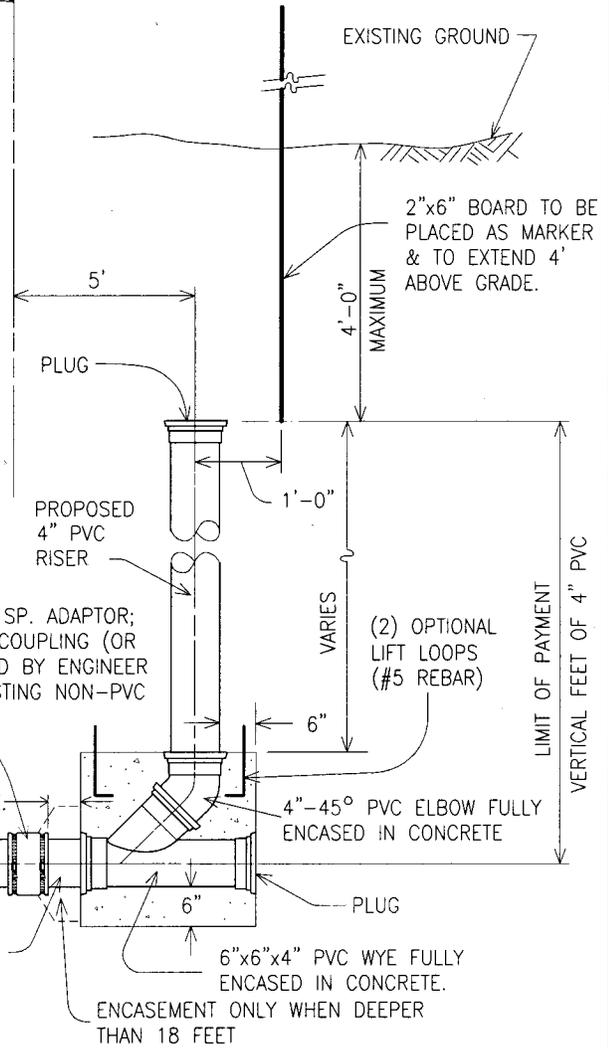
PLATE
S-12



TOP VIEW



PLAN



SECTION A-A

NOTES

THE PROPOSED 6" HOUSE CONNECTION SHALL CONSIST OF PVC PIPE OR DUCTILE IRON PIPE, SCHEDULE 52. MATCH TYPE OF H.C. PIPE TO TYPE USED IN SEWER, WHERE POSSIBLE.

CONCRETE TO BE MIX #1.

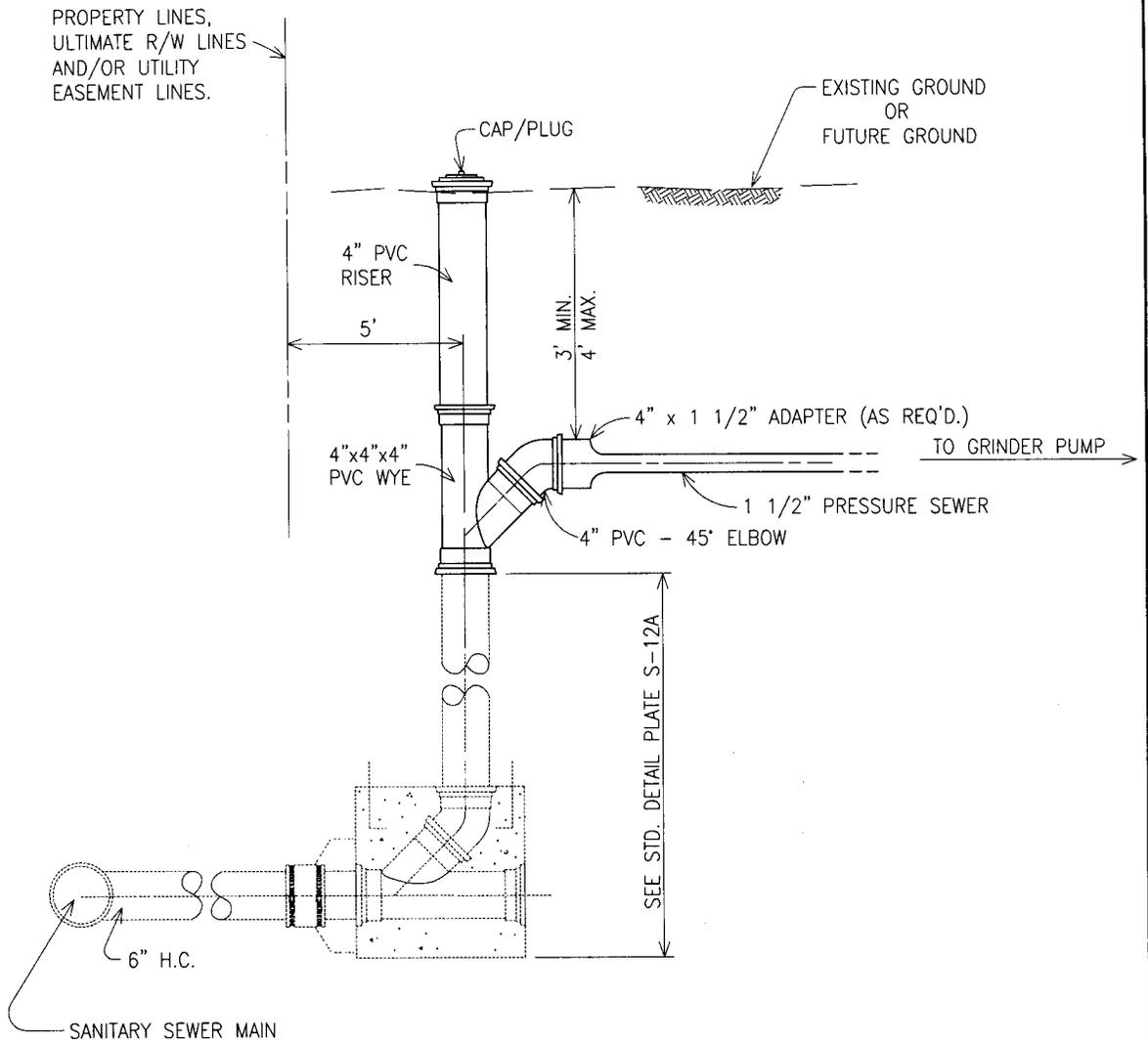


APPROVAL
[Signature]
 DIRECTOR
[Signature]
 BUR. OF ENGINEERING/CONSTRUCTION
 1-10-07
 DATE

DEPARTMENT OF PUBLIC WORKS
 SANITARY SEWER DETAILS
**SANITARY SEWER
 HOUSE CONNECTION
 AT PROPERTY LINE**

ISSUED: SEPTEMBER 1991
 REVISED: AUGUST 1997
 REVISED: JANUARY 2007

PLATE
S-12A



SECTION VIEW

NOTES

WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR MAY ELECT TO MODIFY THIS DETAIL TO REDUCE DOWN FROM 4" PVC TO 1 1/2" PRESSURE SEWER.
 ALL COST TO BE INCLUDED AS PART OF OTHER ITEMS BID.

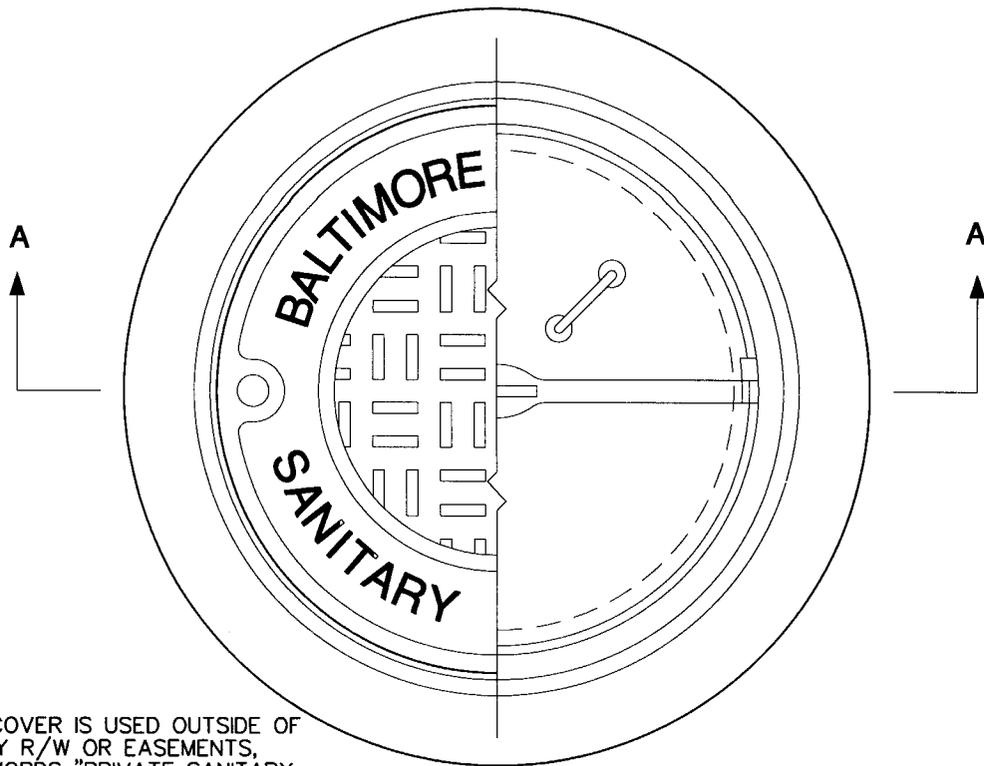


APPROVAL
[Signature]
 DIRECTOR
[Signature]
 BUR. OF ENGINEERING/CONSTRUCTION
 1-2-07
 DATE

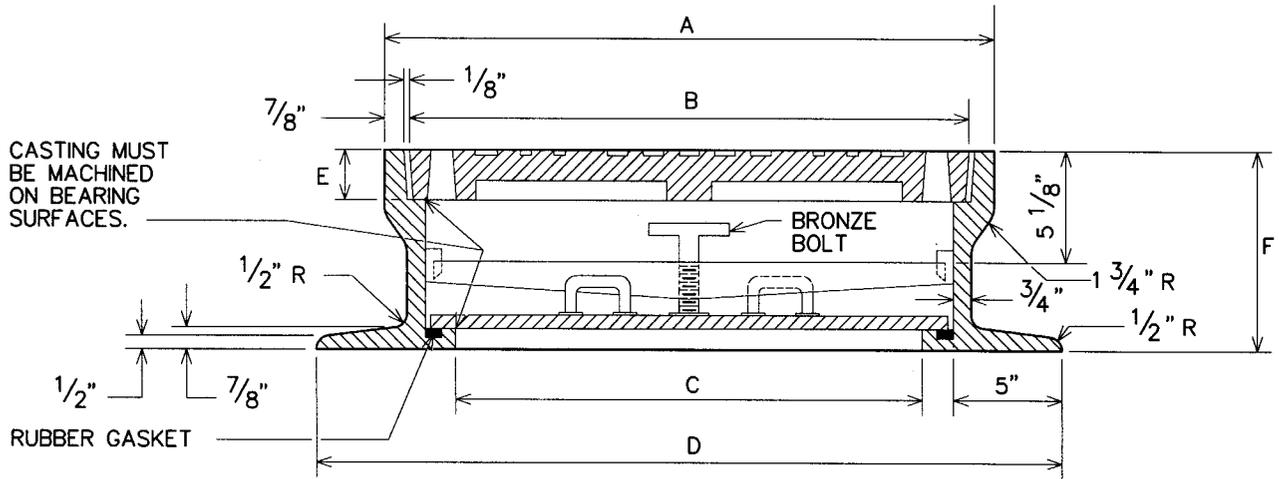
DEPARTMENT OF PUBLIC WORKS
 SANITARY SEWER DETAILS
**GRINDER PUMP CONNECTION
 WITH SANITARY SEWER
 HOUSE CONNECTION RISER**

ISSUED: OCTOBER 2006
 REVISED: _____
 REVISED: _____
 PLATE
S-12B

10/18/2006 3:42 PM S-12B.DWG



WHERE FRAME & COVER IS USED OUTSIDE OF BALTIMORE COUNTY R/W OR EASEMENTS, SUBSTITUTE THE WORDS "PRIVATE SANITARY SEWER" FOR "BALTIMORE COUNTY SANITARY SEWER" ON THE COVER.



SECTION A-A

WATERTIGHT MANHOLE FOR HEAVY TRAFFIC

A	B	C	D	E	F	WEIGHT
29 7/8"	27 7/8"	24"	36"	2 1/2"	9"	575 Lbs.

NOTE : MATERIAL USED WILL CONFORM TO A.S.T.M. SPECIFICATION A-48, CLASS 30B CAST IRON.



APPROVAL
William K. [Signature]
 DIRECTOR
William K. [Signature]
 BUR. OF ENGINEERING / CONSTRUCTION
 10/23/97
 DATE

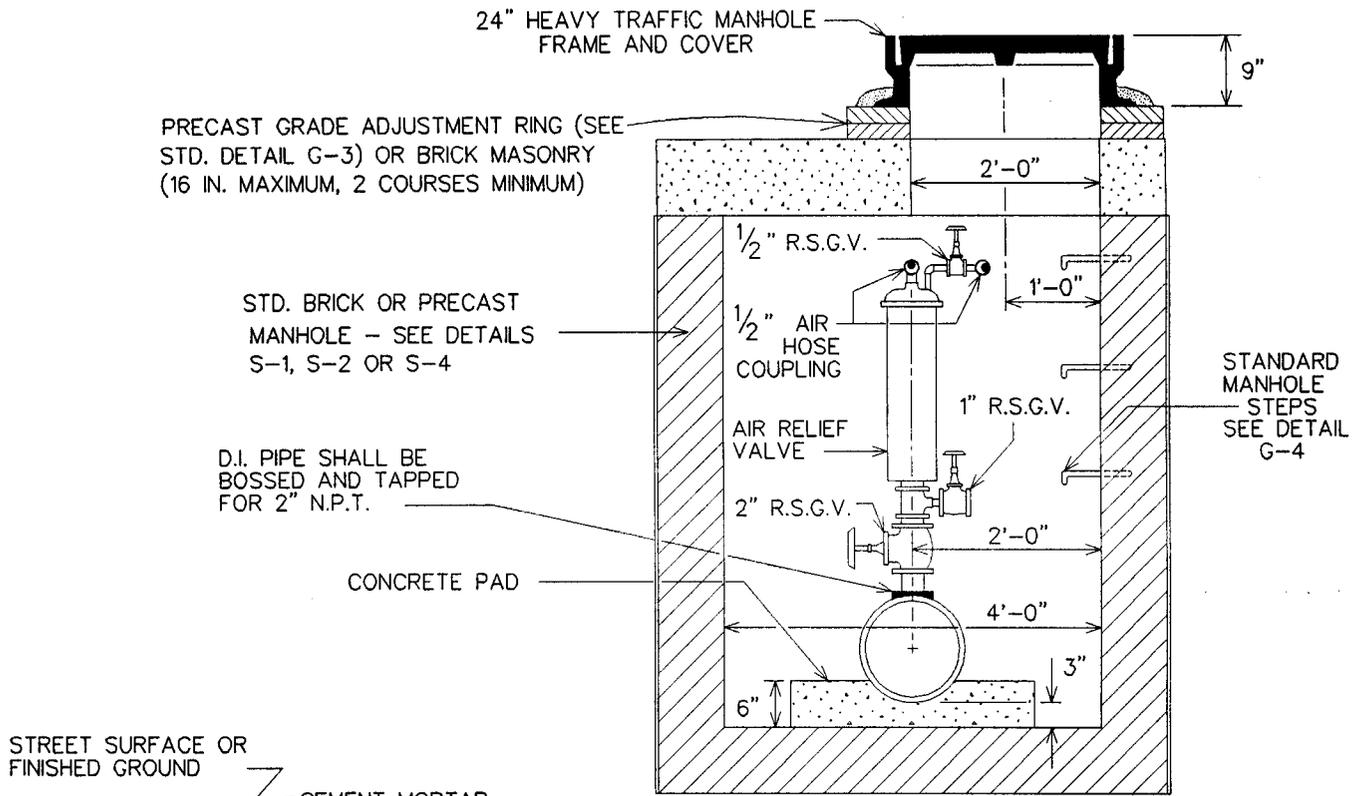
DEPARTMENT OF PUBLIC WORKS
 SANITARY SEWER DETAILS
**WATERTIGHT MANHOLE
 FRAME AND COVER**

ISSUED: OCTOBER, 1977
 REVISED: AUGUST, 1997
 REVISED:

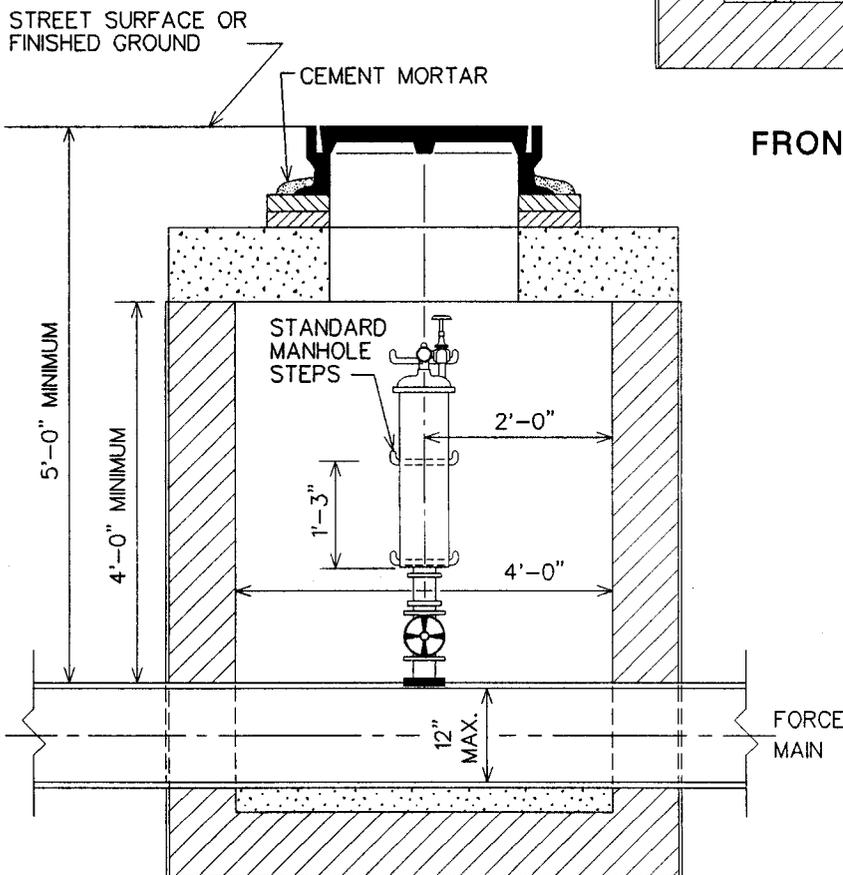
PLATE

S-13

REV. FEBRUARY 1986 J. A. V.



FRONT ELEVATION



SIDE ELEVATION

NOTES :

ALL VALVES SHALL BE SOLID WEDGE 125 Lb. GATE VALVES.

WHERE VACUUM RELIEF IS REQUIRED, RELIEF VALVES SHALL BE MANFOLDED AS RECOMMENDED BY THE MANUFACTURER.

6" TO 12" DIAMETER FORCE MAINS STANDARD, SPECIAL DETAIL REQUIRED FOR 16" AND LARGER FORCE MAIN.

R.S.G.V. = RISING STEM GATE VALVE



APPROVAL
William Koppman
 DIRECTOR
 BUR. OF ENGINEERING/CONSTRUCTION
 DATE 3/18/02

DEPARTMENT OF PUBLIC WORKS
 SANITARY SEWER DETAILS

AIR RELIEF VALVE VAULT

ISSUED: OCTOBER, 1977
 REVISED: AUGUST, 1997
 REVISED: FEBRUARY, 2002
 PLATE

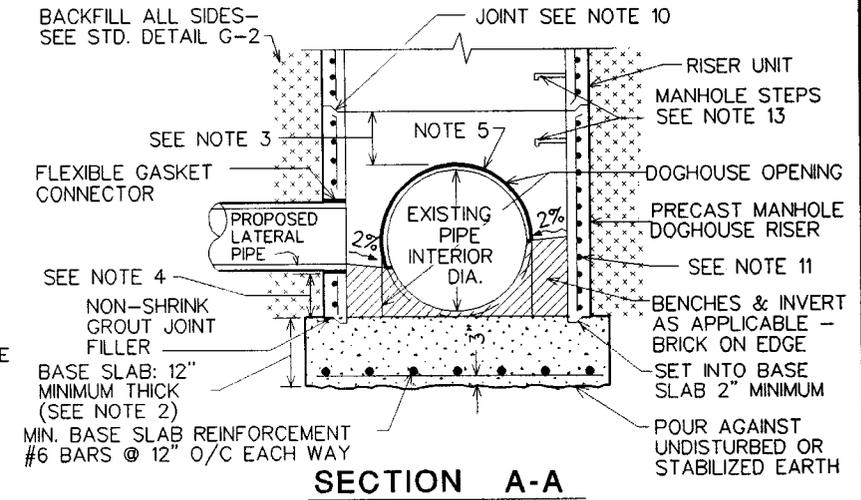
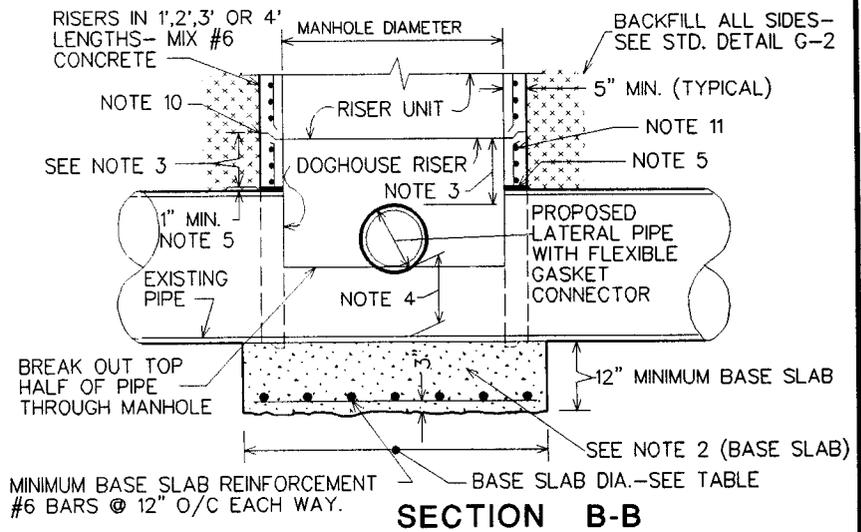
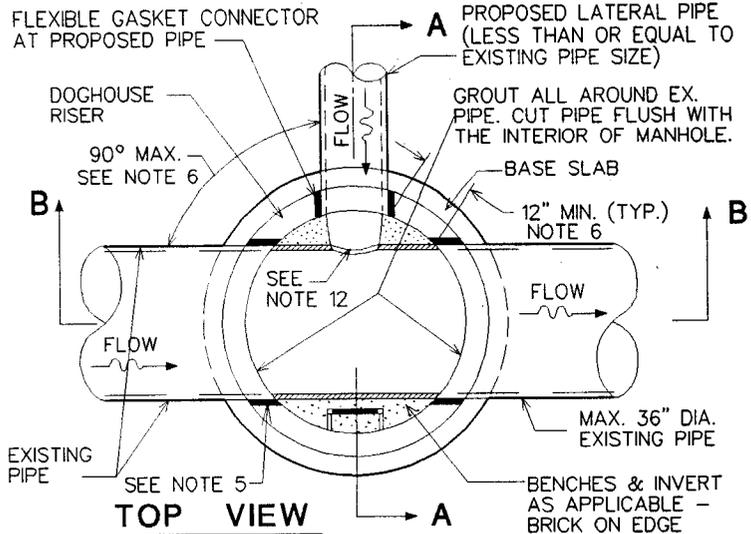
S-14

EX. PIPE DIA.	MANHOLE DIA.	MAXIMUM * LATERAL PIPE DIA.	MINIMUM BASE DIA.
36"	72"	15"	84"
33"	72"	18"	84"
24", 27" OR 30"	72"	24"	84"
24"	48"	12"	60"
21"	48"	15"	60"
UP TO 18"	48"	SAME AS EX.	60"

* BASED ON LATERAL PIPE AT 90° TO EXISTING PIPE. OTHER ANGLES MAY BE USED IF POSITIVE FLOW IS MAINTAINED WITHIN MANHOLE AND TWELVE INCHES OF REINFORCED "DOGHOUSE" WALL IS MAINTAINED BETWEEN PIPE OPENINGS.

NOTES

- UNLESS OTHERWISE NOTED, MANHOLE TAPERS AND RISERS SHALL BE FURNISHED IN STRICT ACCORDANCE WITH ASTM DESIGNATION C-478 (LATEST) FOR "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS".
- CONCRETE:
BASE SLAB - MIX #3, POURED-IN-PLACE
DOGHOUSE RISER - 4500 psi PRECAST
- PROVIDE 12" MINIMUM CLEARANCE FROM PROPOSED PIPE AND FROM DOGHOUSE OPENING TOP(S) TO UPPER RISER JOINT
- PROVIDE 6" MINIMUM CLEARANCE FROM INCOMING LATERAL PIPE OPENING TO BOTTOM OF DOGHOUSE RISER.
- MINIMUM 1" CLEARANCE SHALL BE MAINTAINED BETWEEN PIPES AND PRECAST DOGHOUSE PIPE OPENINGS. OPENINGS SHALL BE GROUTED WITH NON-SHRINK GROUT JOINT FILLER.
- IN ALL CASES, A MINIMUM 12" WIDE SECTION OF MANHOLE WALL SHALL BE MAINTAINED BETWEEN PIPE OPENINGS IN DOGHOUSE RISER.
- ALL REINFORCING STEEL SHALL CONFORM TO ASTM A-615, GRADE 60.
- SEE STANDARD PLATE S-4 OR S-5 FOR 48" OR 60" DIA. SANITARY MANHOLE DETAILS RESPECTIVELY FOR USE WITH DOGHOUSE RISER SHOWN HERE.
- MAXIMUM MANHOLE HEIGHT SHALL BE 30 FT. WHEN USING PRECAST DOGHOUSE RISER.
- PRECAST MANHOLE RISER JOINTS: THE MANUFACTURER SHALL FORM MALE AND FEMALE ENDS OF JOINTS USING THEIR OWN DESIGN. THE JOINTS SHALL BE SEALED BY THE CONTRACTOR AND MADE WATER TIGHT USING THE MANUFACTURER'S RECOMMENDED ASTM OR AASHTO APPROVED SEALANT.
- MINIMUM CIRCULAR REINFORCEMENT PER ASTM C76 TABLE III WALL B FOR PIPE DIAMETERS GREATER THAN 18 INCHES.
- BREAK OUT ADDITIONAL PIPE AS REQUIRED TO PROVIDE POSITIVE FLOW FROM INCOMING LATERAL PIPE TO CENTER MANHOLE CHANNEL.
- SEE STANDARD DETAIL PLATE G-4 FOR MANHOLE STEP SPECIFICATIONS, SPACING & PLACEMENT. USE A MINIMUM OF ONE MANHOLE STEP IN "DOGHOUSE" RISER UNIT.
- BRICK SHALL BE ASTM C32 GRADE SS.



APPROVAL
William K. Koppen
 DIRECTOR
 BUR. OF ENGINEERING/CONSTRUCTION
 5/15/02
 DATE

DEPARTMENT OF PUBLIC WORKS
 SANITARY SEWER DETAILS
**PRECAST MANHOLE "DOGHOUSE"
 RISER BUILT OVER EXISTING SEWER**
 (FOR USE WITH PIPES 36" AND SMALLER)

ISSUED: SEPTEMBER 16, 1991
 REVISED: AUGUST, 1997
 REVISED: MAY, 2002
 PLATE
S-15