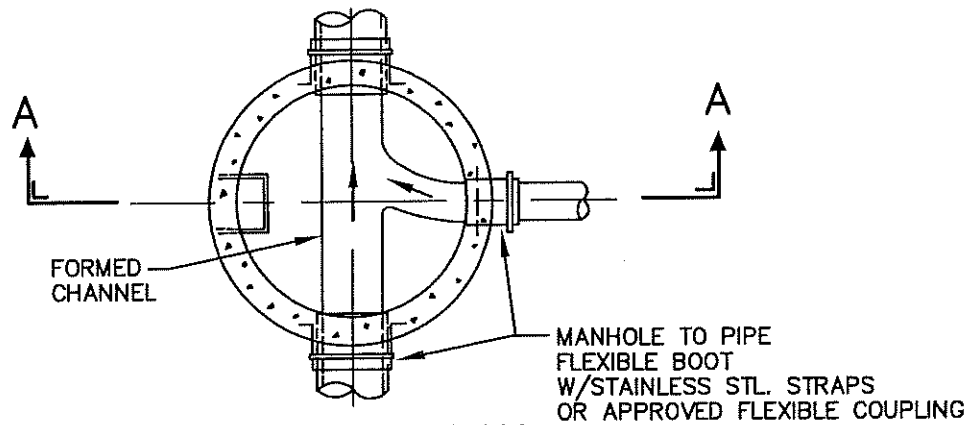
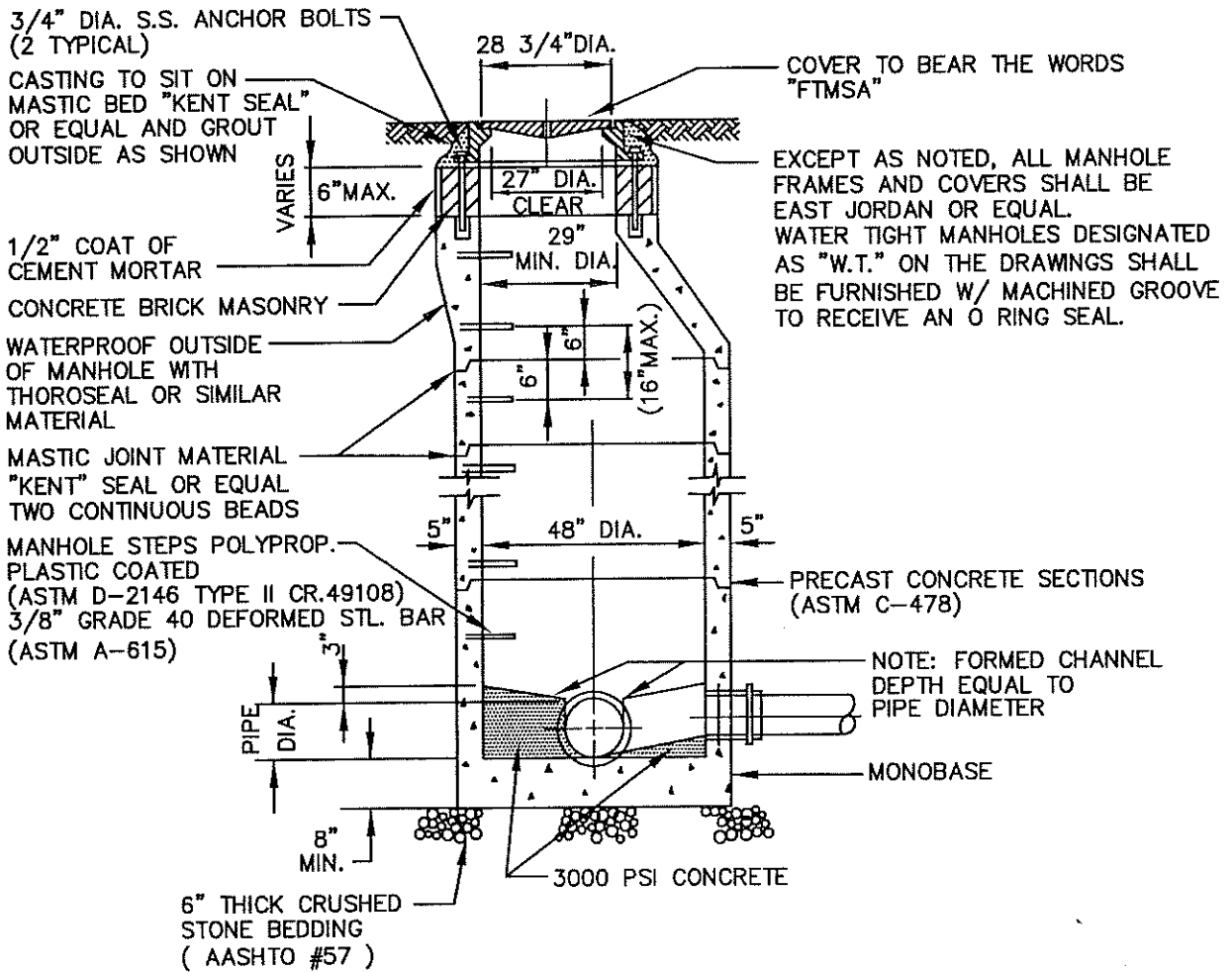


## **B. TYPICAL DETAILS FOR SEWER CONSTRUCTION**

- Dwg. 1 – 48” Dia Concrete Manhole Detail**
- Dwg. 2 – 60” Dia. Concrete Manhole Detail**
- Dwg. 3 – 72” Dia. Concrete Manhole Detail – 42” Pipe**
- Dwg. 4 – Splash Invert Detail**
- Dwg. 5 – Inside Manhole Drop Connection**
- Dwg. 6 – Inside Manhole Drop Connection**
- Dwg. 7 – Outside Drop Manhole Detail**
- Dwg. 8 – Trench Section Detail in Local Roadway Shoulder or Travel area**
- Dwg. 9 – Trench Section Detail in Unimproved Areas**
- Dwg. 10 – Service Connection Detail**
- Dwg. 11 – Typical Service Connection Detail – Deep Sewer**
- Dwg. 12 – Service Sewer Detail**
- Dwg. 13 – Service Sewer for New or Existing Building (inside trap)**
- Dwg. 14 – Typical Concrete Encasement**
- Dwg. 15 – Trench Check and Pipe Anchor Block Detail**
- Dwg. 16 – Standard Blocking and Anchoring Methods for Sewage Force Main**
- Dwg. 17 – Pavement Replacement Detail**
- Dwg. 18 – Typical Grinder Pump Installation**
- Dwg. 19 – Grinder Pump House Connection to Pressure Sewer Main**
- Dwg. 20 – Grinder Pump House Connection to Gravity Sewer**
- Dwg. 21 – Air Relief Valve Vault Detail**



**SECTIONAL PLAN**



**SECTION A-A**

**48" DIA CONCRETE MANHOLE DETAIL**

**( FOR SEWERS THRU 24" DIA. )**

NO SCALE

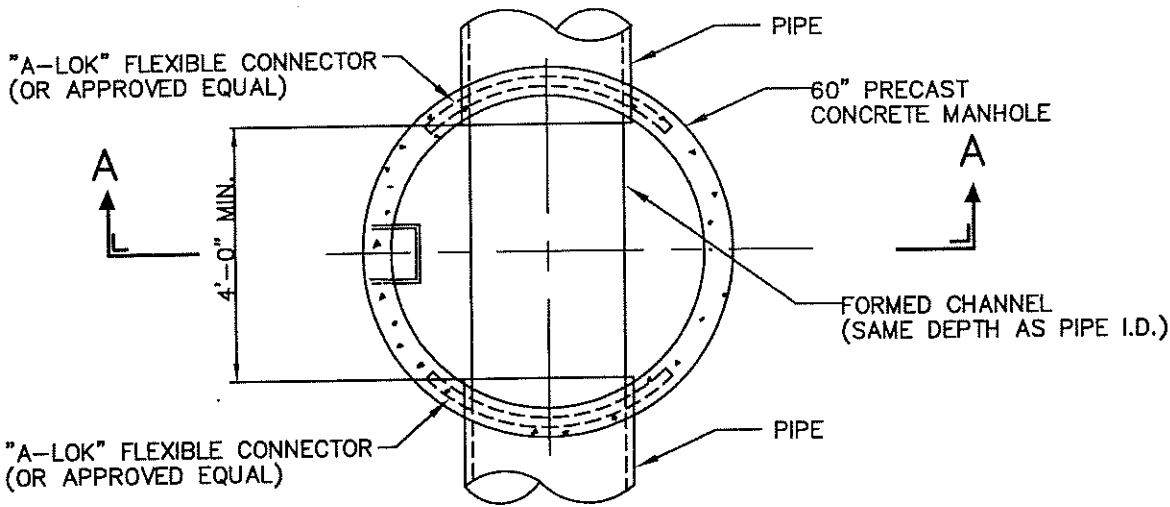
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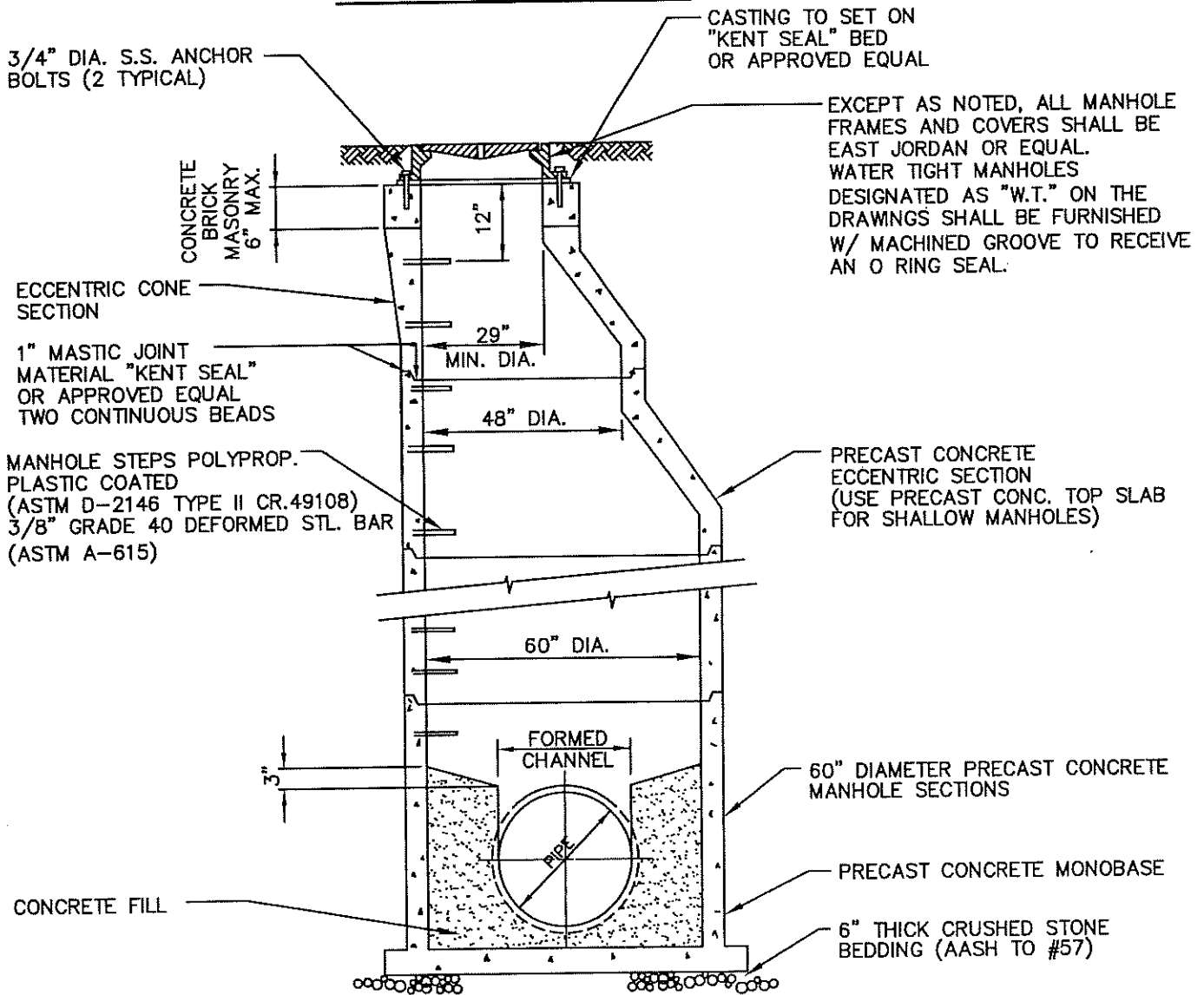
**Hatch Mott  
MacDonald**

**FRANKLIN TOWNSHIP MUNICIPAL  
SANITARY AUTHORITY**

DWG. No.  
**1**



**SECTIONAL PLAN**



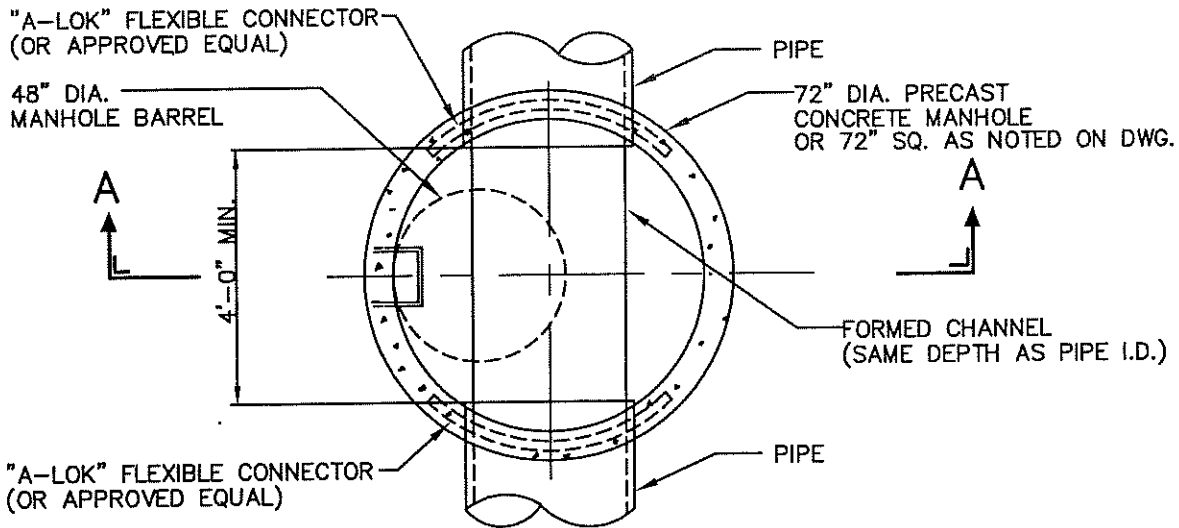
**SECTION A-A**

**60" DIA CONCRETE MANHOLE DETAIL**

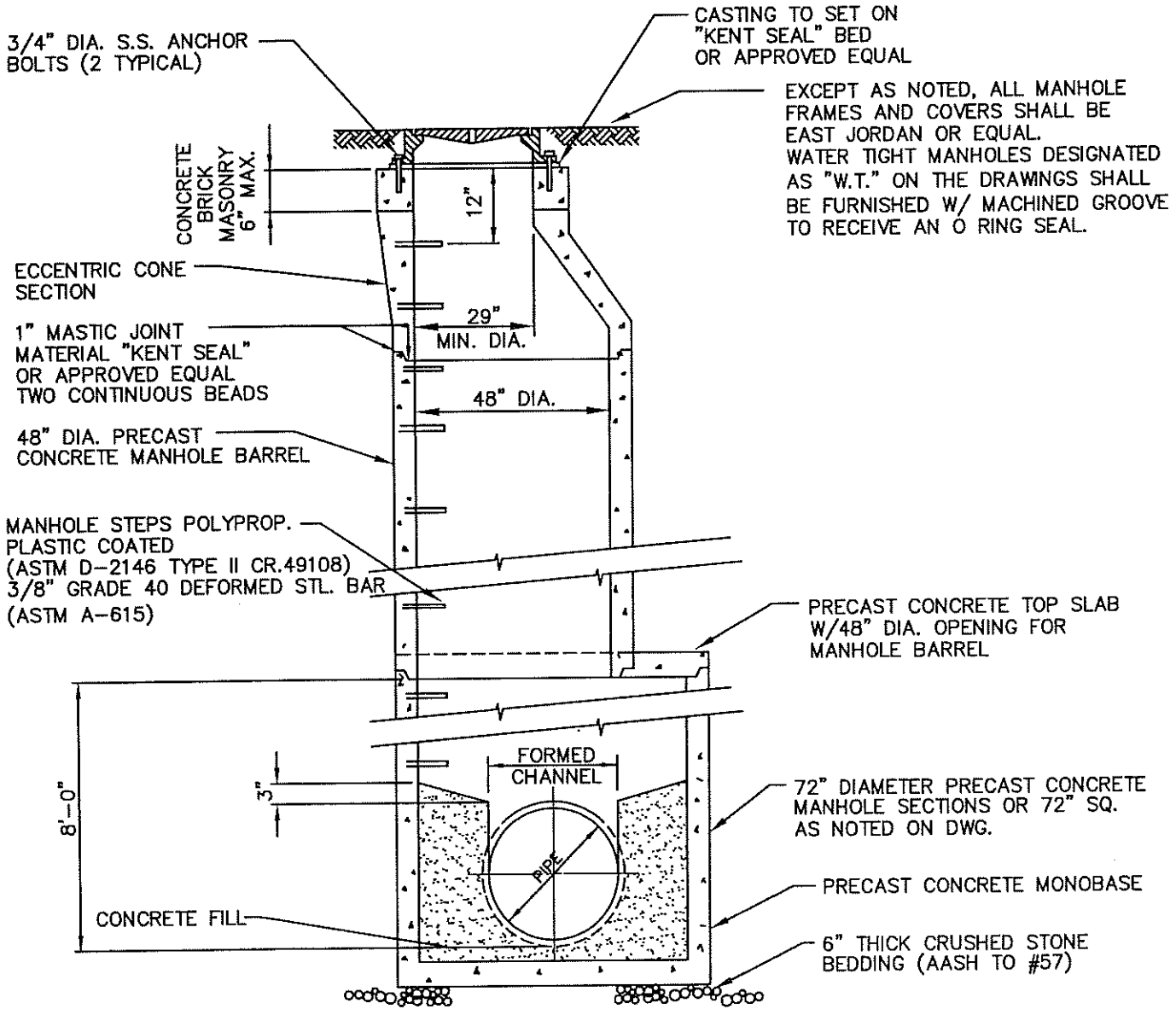
( FOR SEWERS 27" THRU 36" DIA. )

NO SCALE

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**SECTIONAL PLAN**



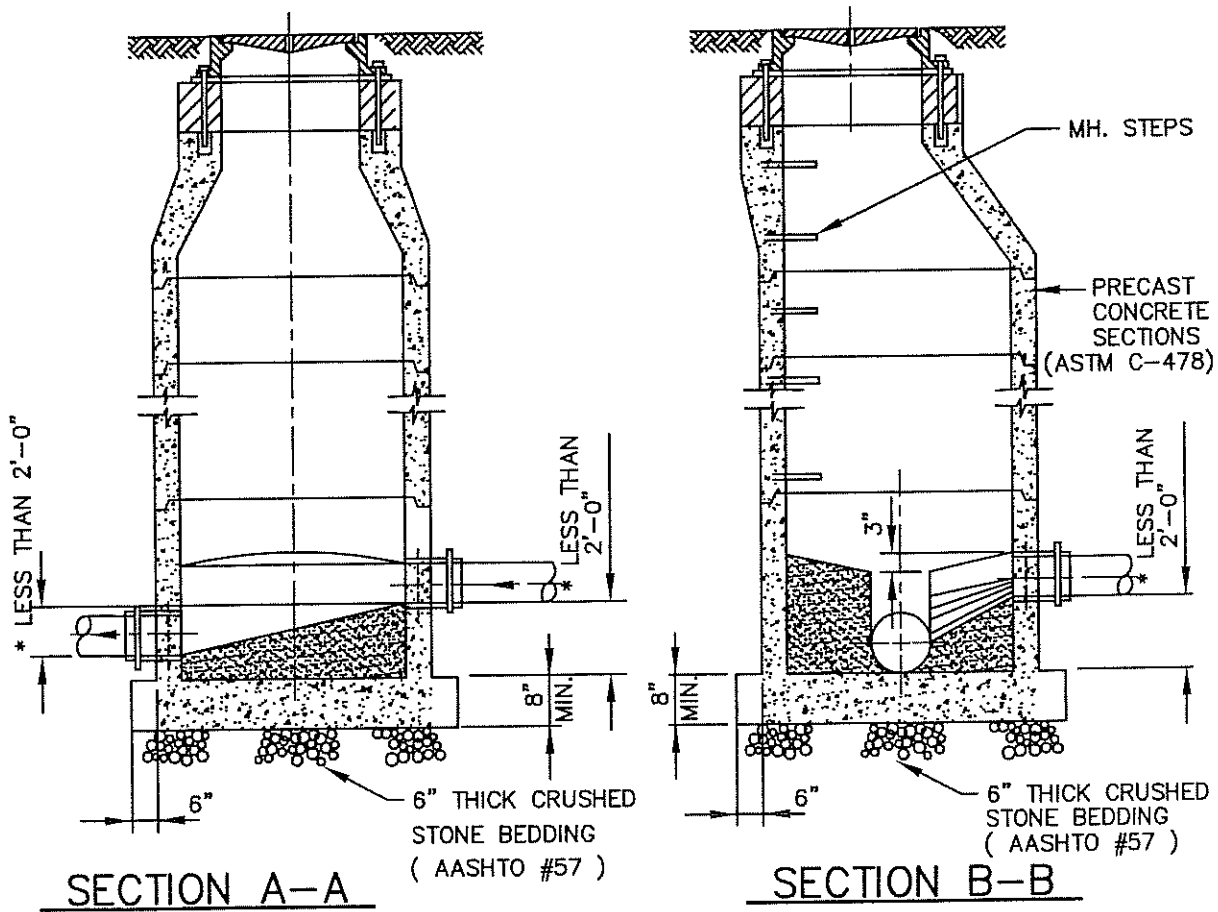
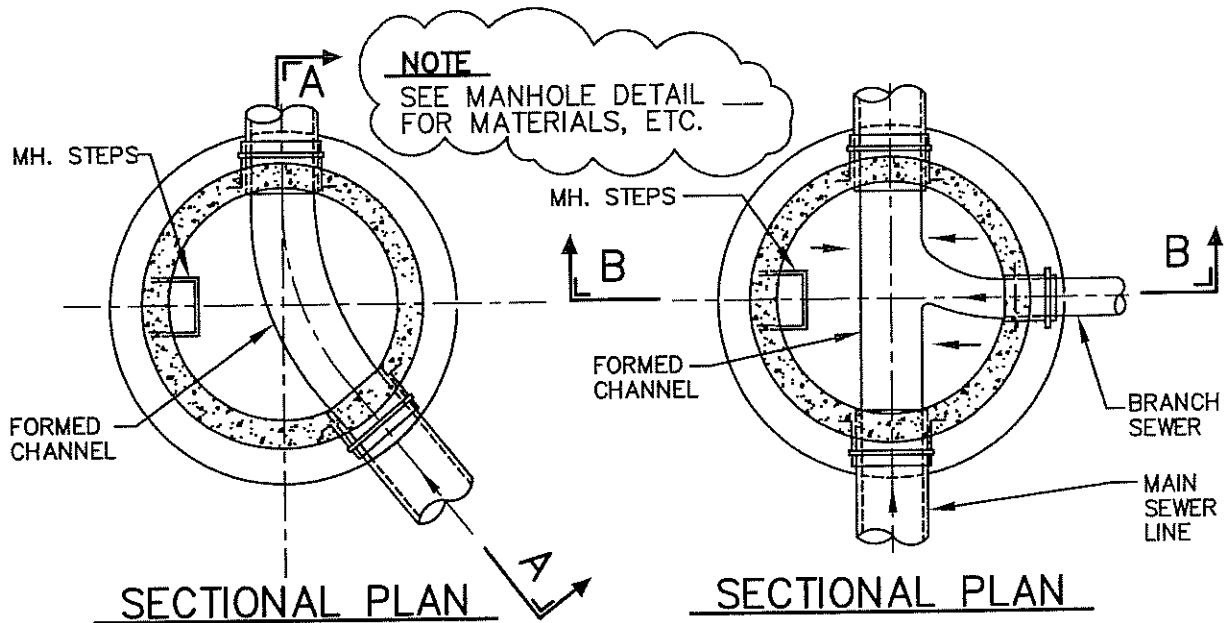
**SECTION A-A**

**72" DIA. CONCRETE MANHOLE DETAIL - 42" PIPE**

NO SCALE

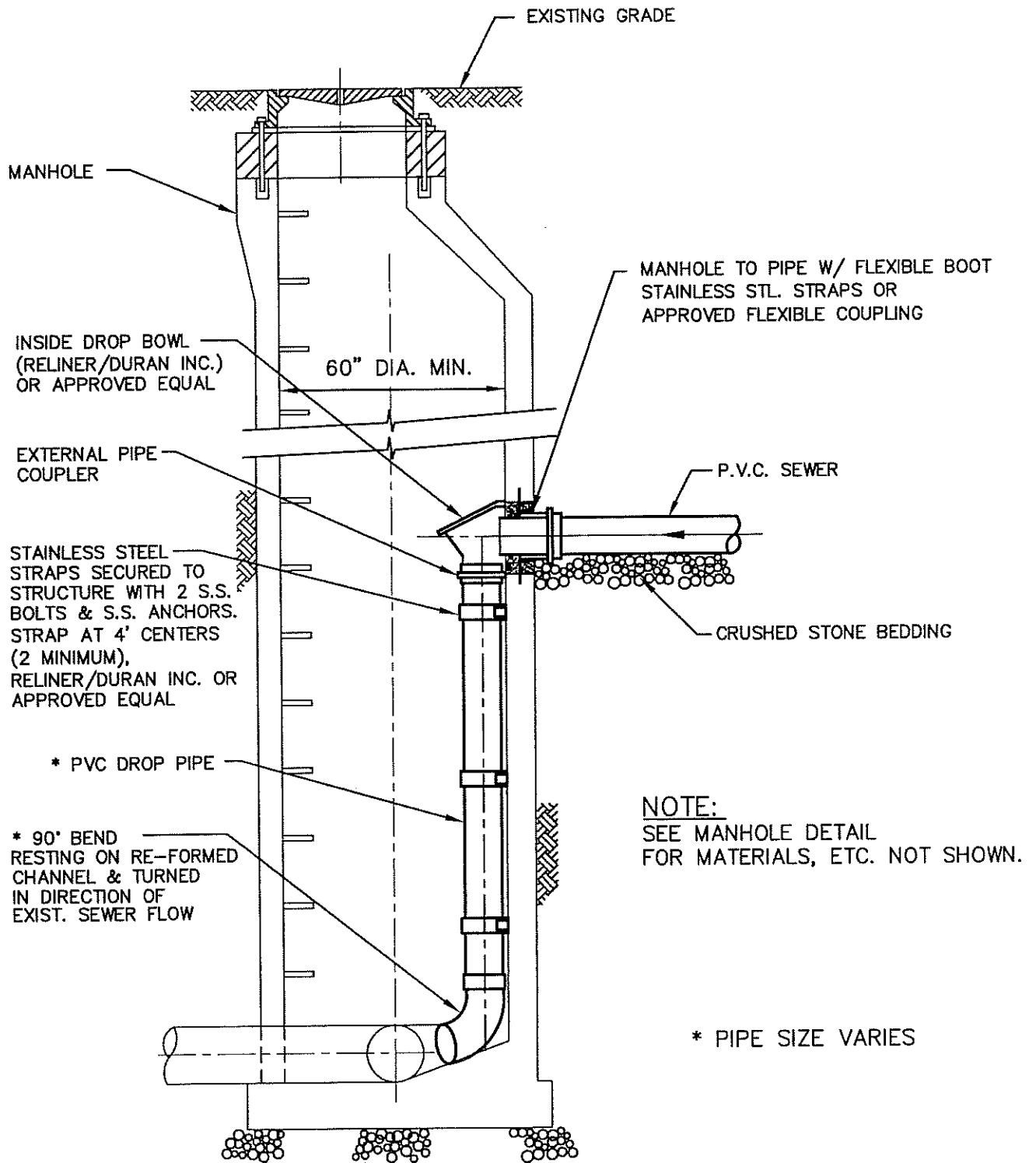
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\\Cad\CADSTAND\FTMSA STANDARD DETAILS\SPLASH MH.dwg 12/13/2006 2:58 PM



# SPLASH INVERT DETAIL

NO SCALE



NOTE:  
SEE MANHOLE DETAIL  
FOR MATERIALS, ETC. NOT SHOWN.

\* PIPE SIZE VARIES

SECTION

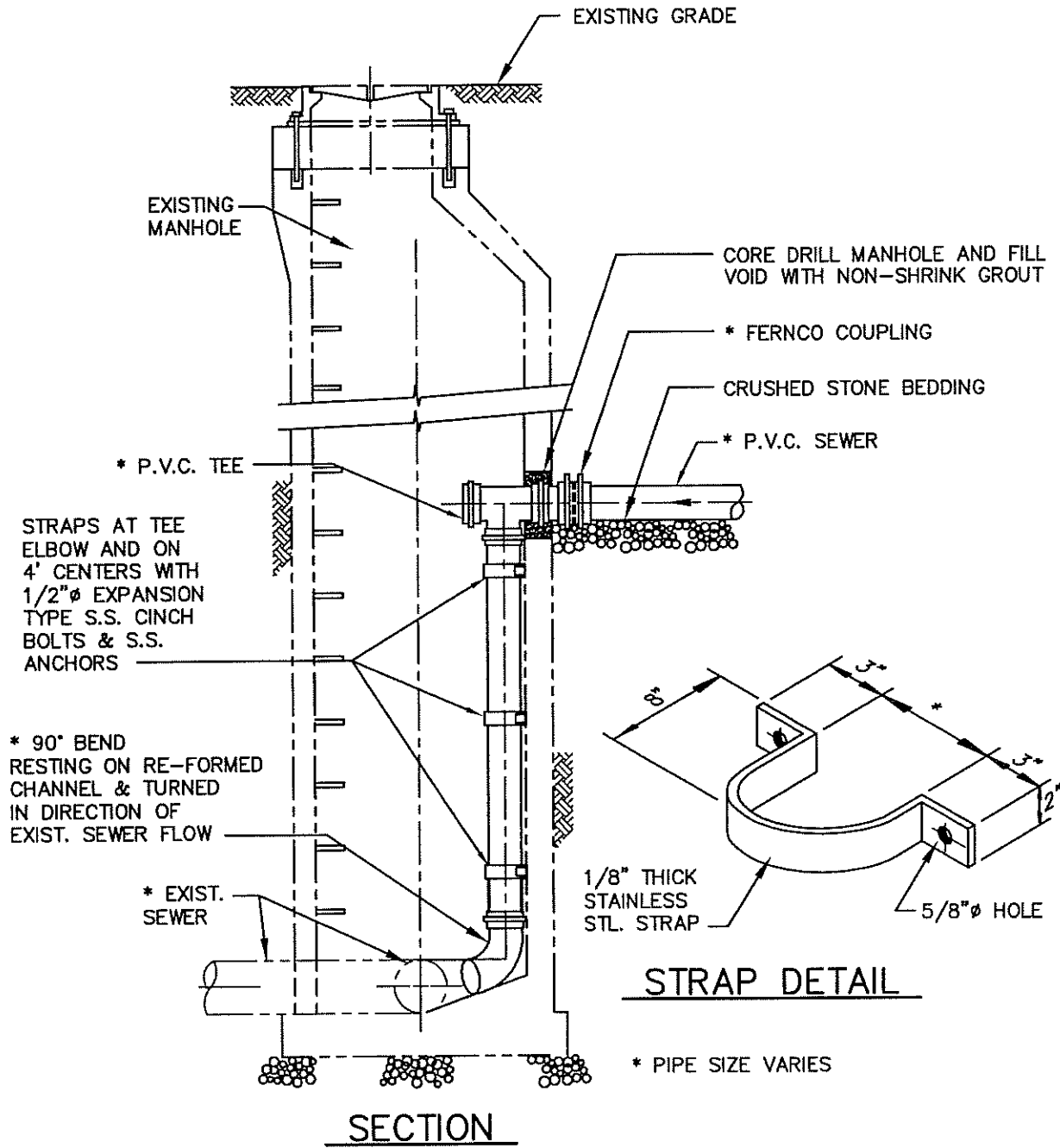
NOTE: THE CONSTRUCTION OF AN INSIDE DROP  
MANHOLE IS ONLY PERMITTED WITH PRIOR  
APPROVAL OF THE AUTHORITY.

INSIDE MANHOLE DROP CONNECTION

NO SCALE

H:\Cad\CADSTAND\FTMSA STANDARD DETAILS\INSIDE\_DROP\_BOWL\_MH.dwg 12/13/2006 2:58 PM

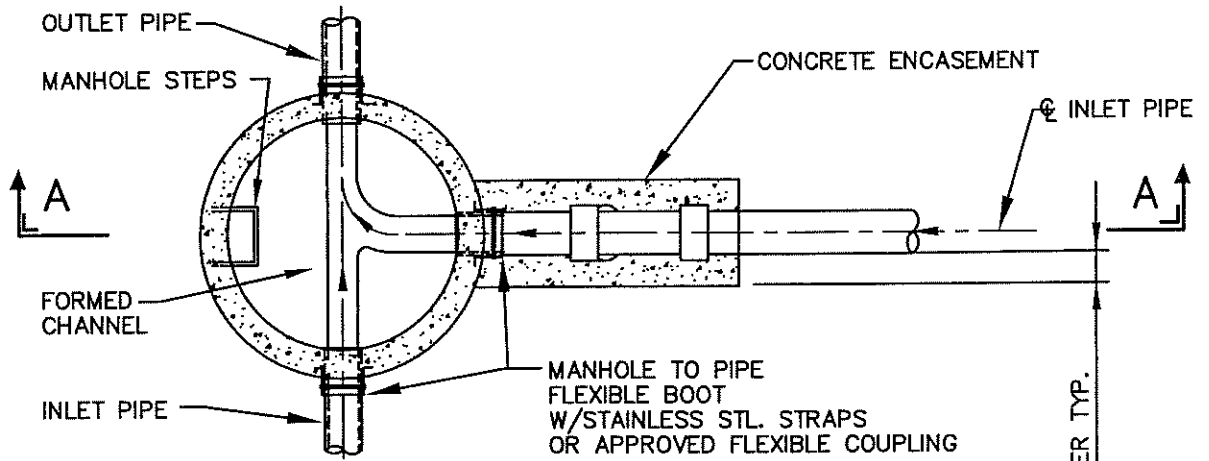
H:\Cad\CADSTAND\FTMSA STANDARD DETAILS\INSIDE DROP.dwg 12/13/2006 2:58 PM



NOTE: THE CONSTRUCTION OF AN INSIDE DROP MANHOLE IS ONLY PERMITTED WITH PRIOR APPROVAL OF THE AUTHORITY.

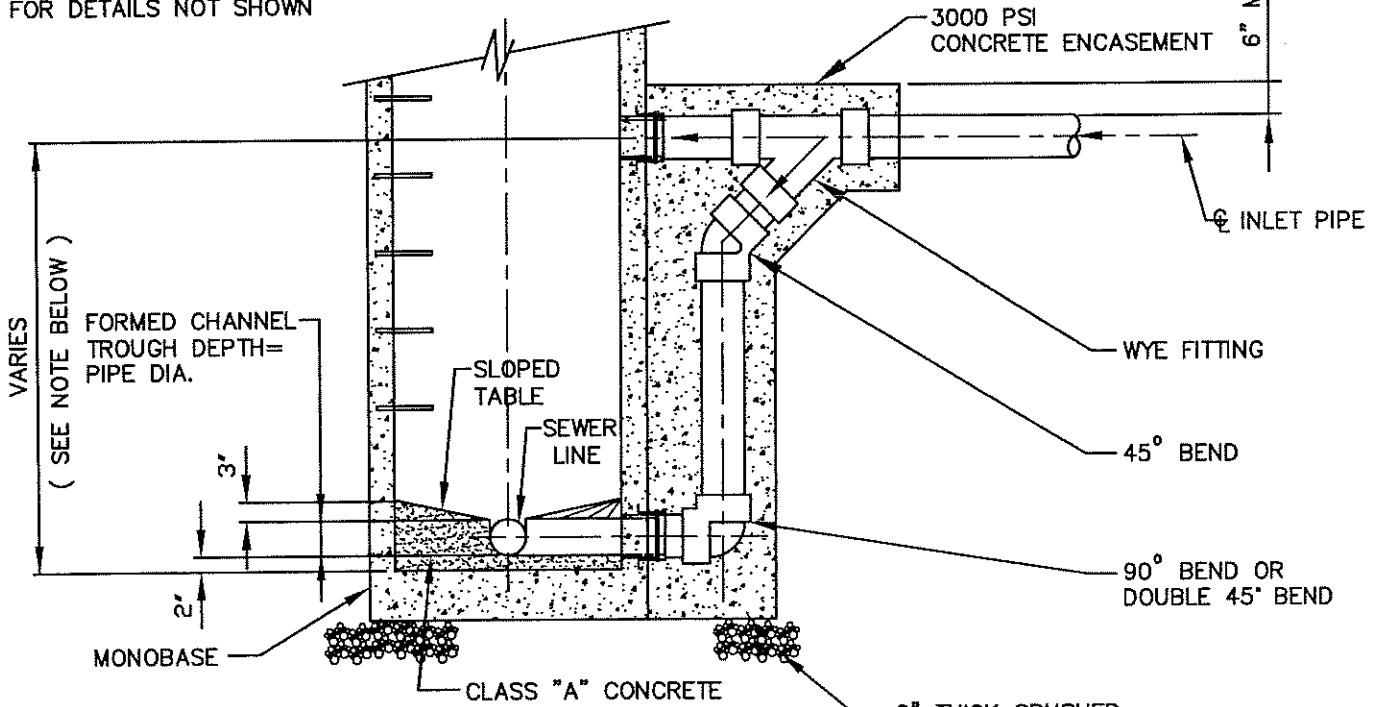
# INSIDE MANHOLE DROP CONNECTION

NO SCALE



NOTE: SEE MANHOLE DETAIL C-07 FOR DETAILS NOT SHOWN

**SECTIONAL PLAN**



NOTE: THE CONNECTION OF AN INSIDE DROP MANHOLE IS ONLY PERMITTED WITH PRIOR APPROVAL OF THE AUTHORITY

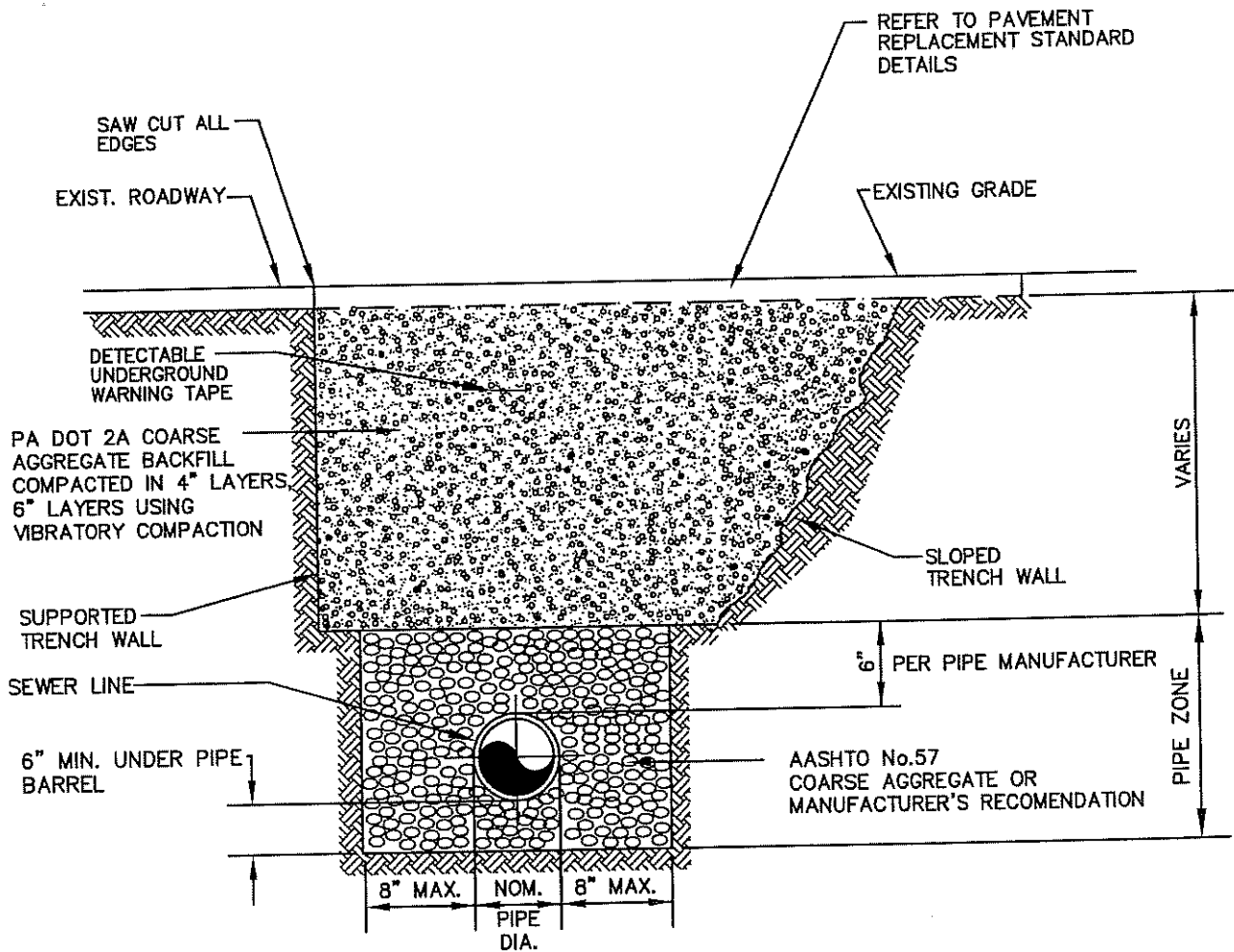
6" THICK CRUSHED STONE BEDDING ( AASHTO #57 )

**SECTION A-A**

**OUTSIDE DROP MANHOLE DETAIL**

NO SCALE

H:\Cad\CADSTAND\FTMSA STANDARD DETAILS\DROP\_MH.dwg 12/13/2006 2:58 PM

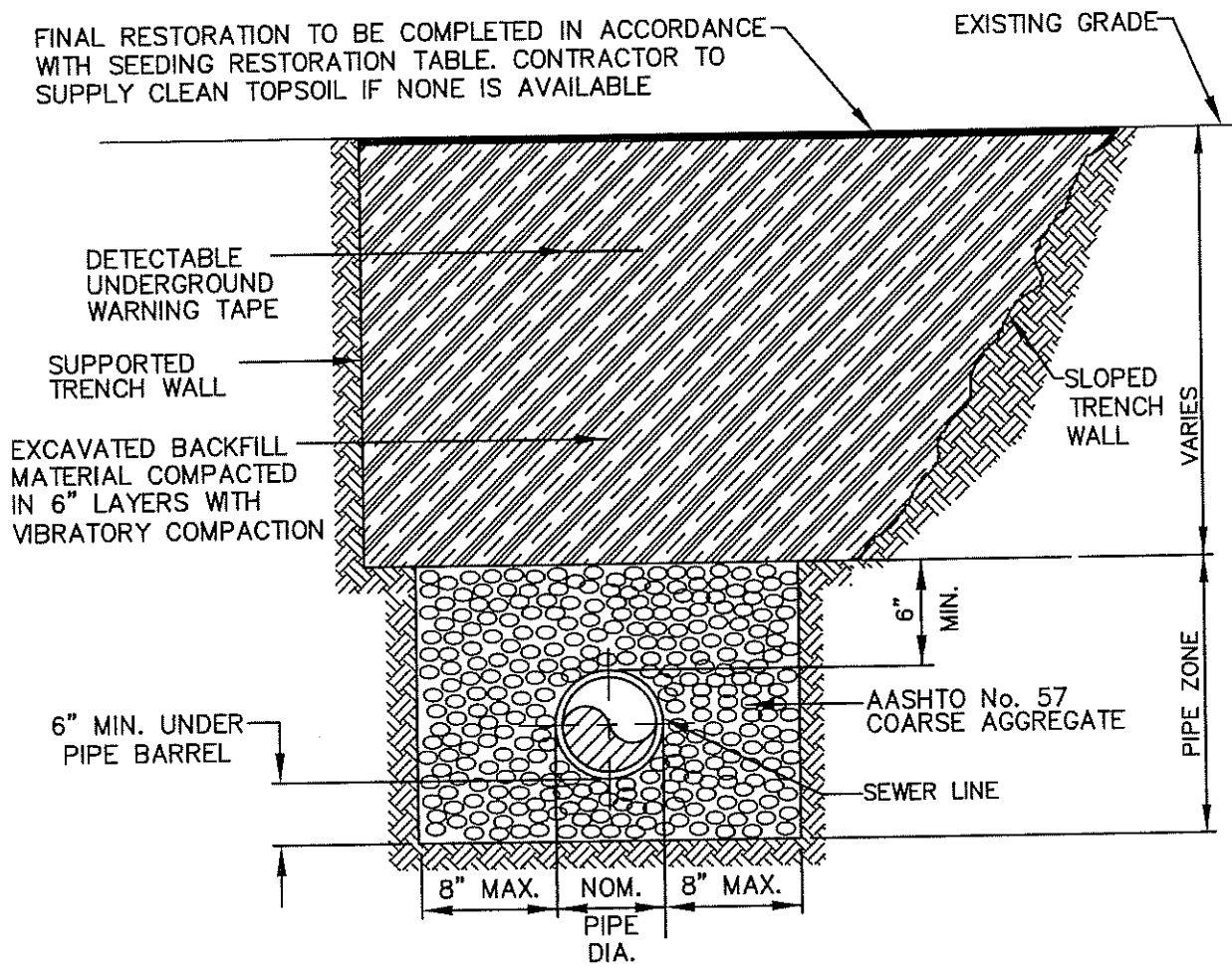


# TRENCH SECTION DETAIL IN LOCAL ROADWAY SHOULDER OR TRAVEL AREA

NO SCALE

\\Cad\CADSTAND\FTMSA STANDARD DETAILS\TRENCH\_ROADWAY.dwg 12/13/2006 2:58 PM

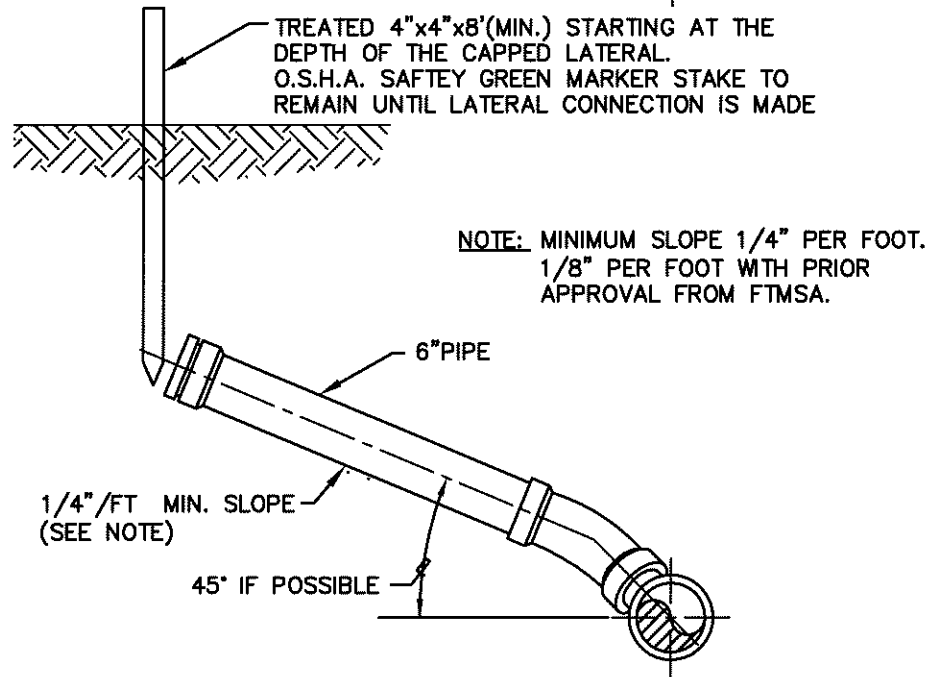
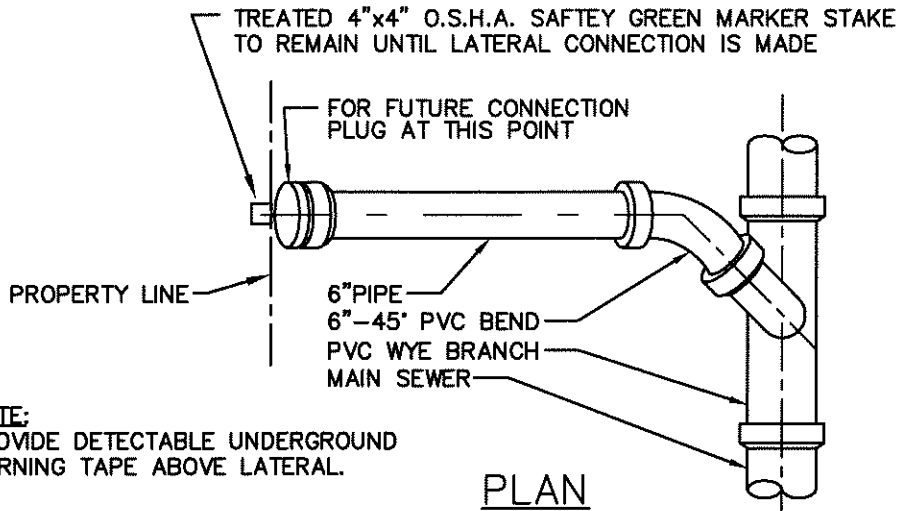
I:\Cad\CADSTAND\FTMSA STANDARD DETAILS\TRENCH\_UNIMPROVED.dwg 12/13/2006 2:58 PM



# TRENCH SECTION DETAIL IN UNIMPROVED AREAS

NO SCALE

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SECTION

6" PIPE MATERIAL TO BE PVC, SDR 35, ASTM D-3034

SERVICE CONNECTION DETAIL

NO SCALE

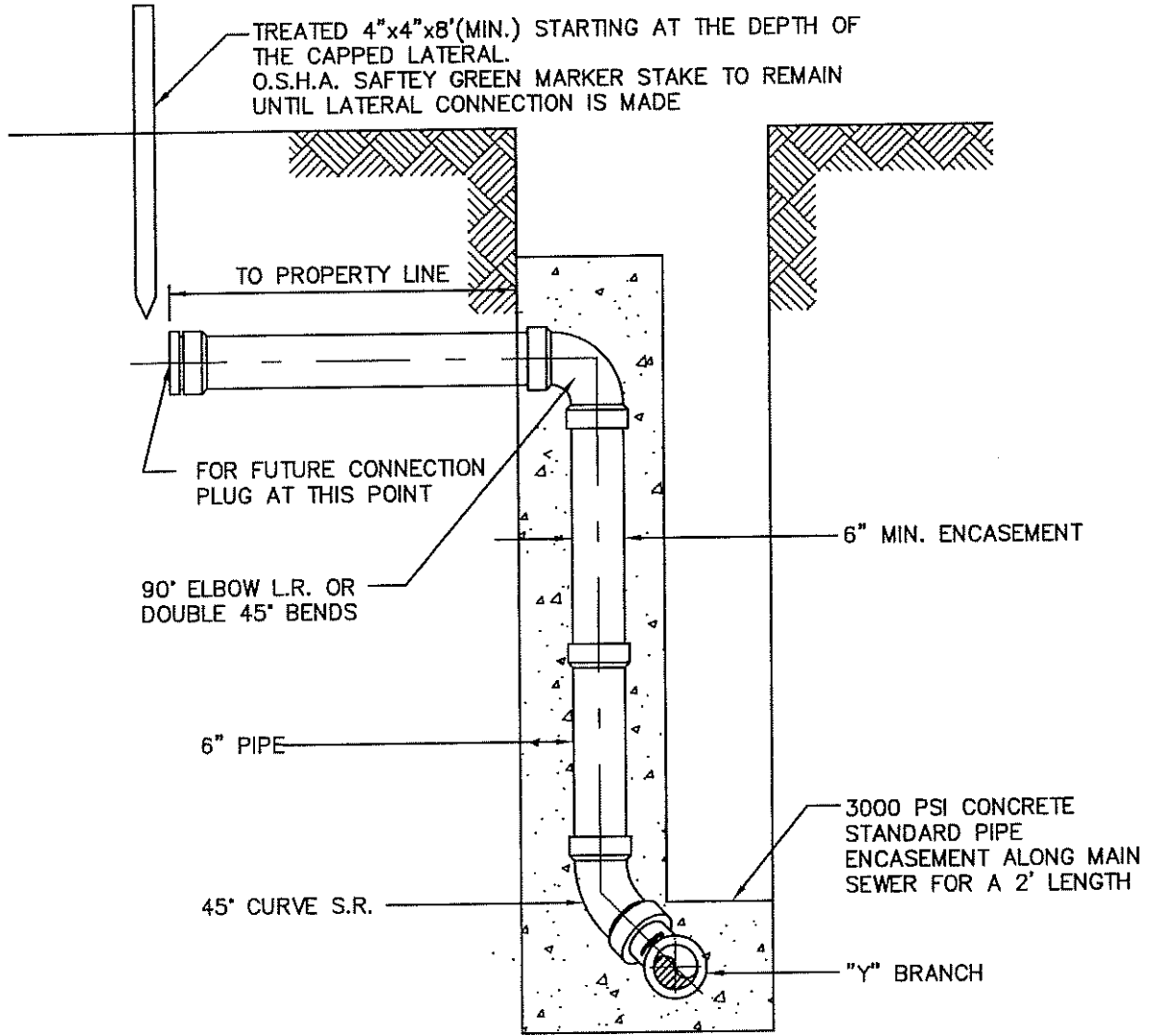


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SANITARY AUTHORITY**

DWG. No.  
**10**

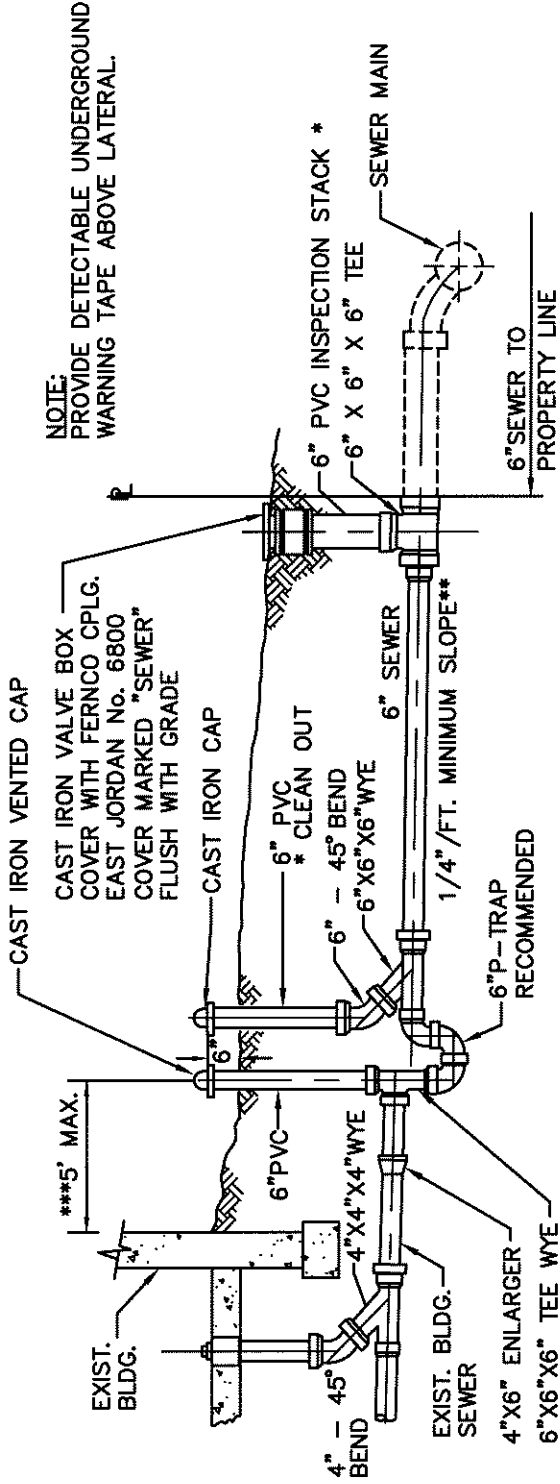
H:\Cad\CADSTAND\FTMSA STANDARD DETAILS\SER\_CONNECTION\_DEEP.dwg 12/13/2006 2:58 PM



# TYPICAL SERVICE CONNECTION DETAIL — DEEP SEWER

NO SCALE

ACCEPTABLE PIPE GRADES: SDR 35 OR ASTM 3034, SCH 40 PVC MAY BE USED WITH PRIOR APPROVAL FROM AUTHORITY



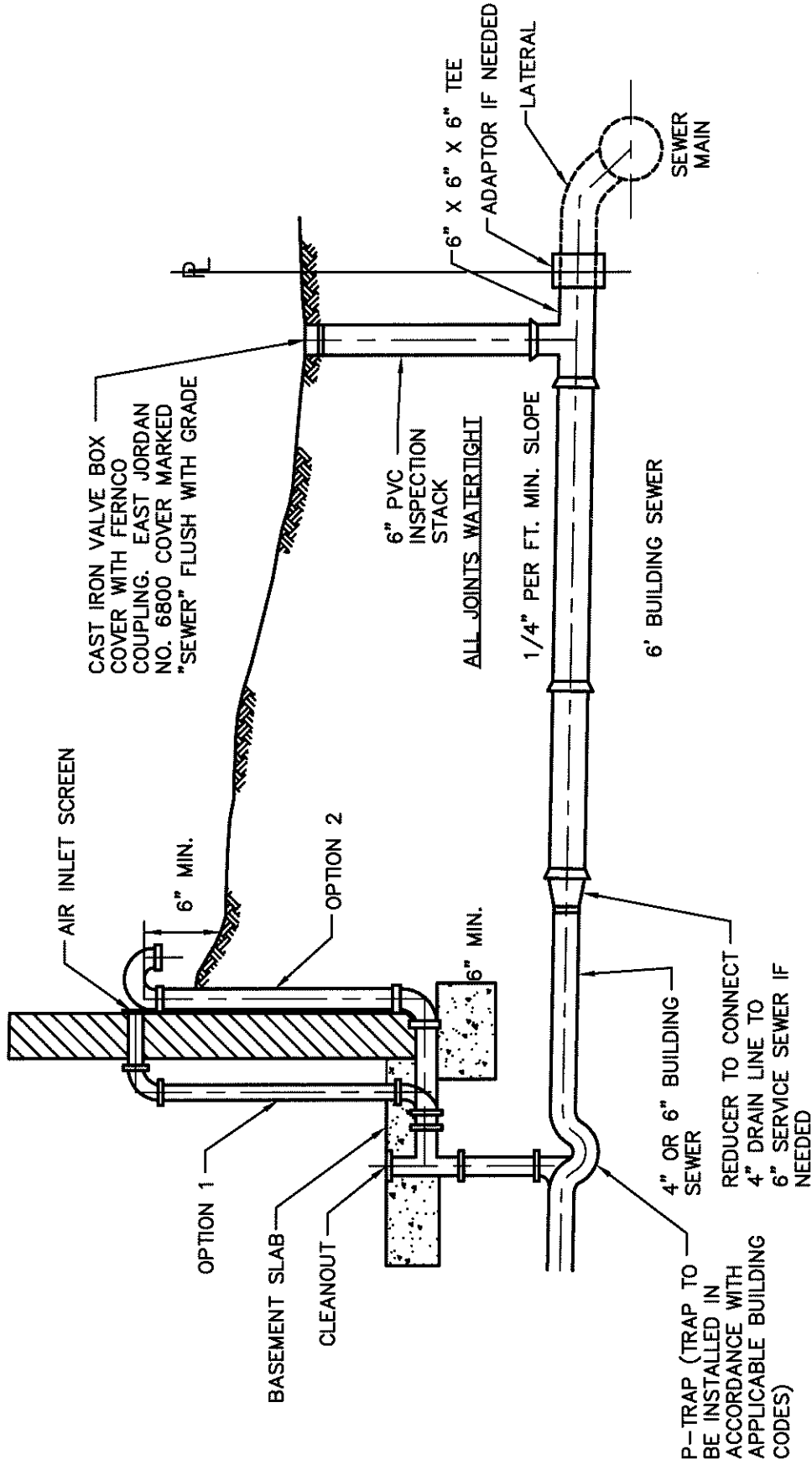
NOTE: PROVIDE DETECTABLE UNDERGROUND WARNING TAPE ABOVE LATERAL.

CLEANOUTS TO BE INSTALLED AFTER TRAP, AT ANY CHANGE OF DIRECTION AND EVERY 100' THEREAFTER AS REQUIRED

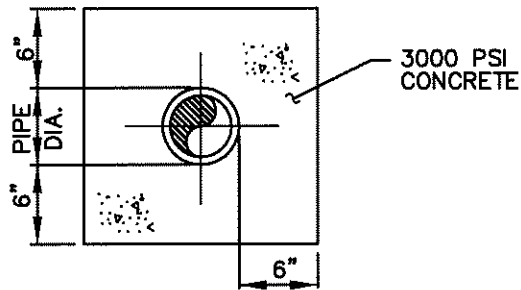
NOTE: CALL THE (724) 327-1950 FOR SERVICE SEWER INSPECTION BY FTMSA PRIOR TO BACKFILLING ALL PIPE TO BE BEDDED AND SURROUNDED BY FIRMLY PACKED AASHTO 57 CRUSHED AGGREGATE WITH A 6" MINIMUM BEDDING UNDER THE PIPE AND A 6" MINIMUM OVER TOP SPECIFICATIONS ARE ON A SEPERATE SHEET.

- \* CAST IRON OR CONCRETE ENCASED IF STACK IS SUBJECT TO VEHICLE TRAFFIC
- \*\* 1/8"/FT. MINIMUM SLOPE WITH PRIOR APPROVAL FROM FTMSA
- \*\*\* VENT SHALL BE AT LEAST 10' AWAY FROM ANY DOOR, OPENABLE WINDOW OR OTHER AIR INTAKE OPENING IF POSSIBLE

**SERVICE SEWER DETAIL**  
N.T.S.



**SERVICE SEWER FOR NEW OR  
EXISTING BUILDING (INSIDE TRAP)**  
N.T.S.

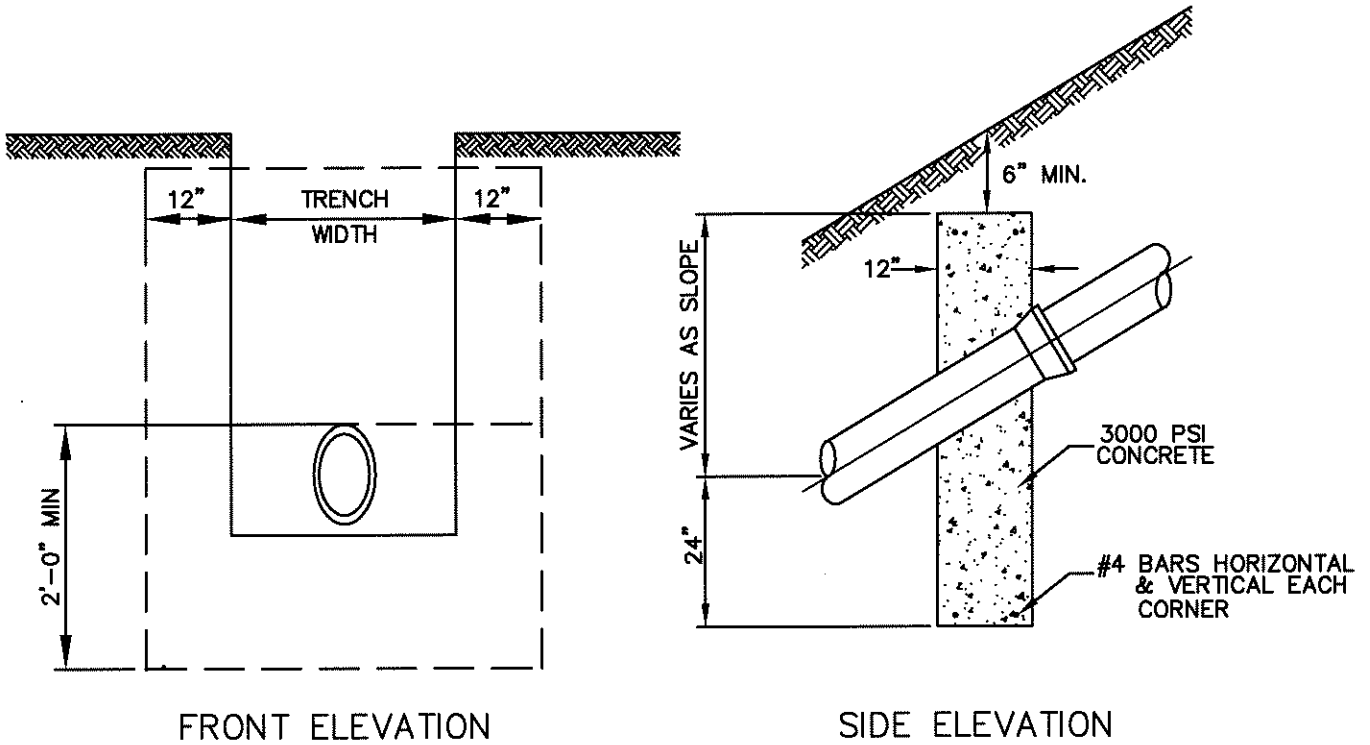


**TYPICAL CONCRETE  
ENCASEMENT**  
NO SCALE



NOTE:

ANCHORS SHALL BE SPACED ALONG SEWER AS FOLLOWS  
GRADE 20% TO 35% - 36 FEET CTR TO CTR  
GRADE 35% TO 50% - 24 FEET CTR TO CTR  
GRADE 50% AND OVER - 16 FEET CTR TO CTR



# TRENCH CHECK AND PIPE ANCHOR BLOCK DETAIL

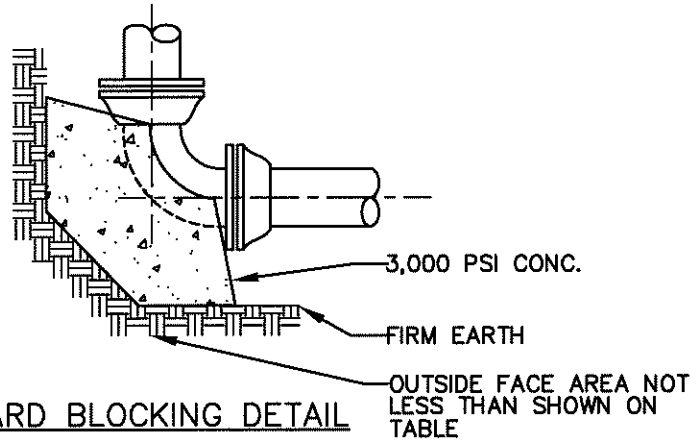
NO SCALE

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H:\Cad\STAND\FTMSA STANDARD DETAILS\BLOCKING\_ANCHORING\_FM.dwg 12/13/2006 2:58 PM

\* FIGURES BASED ON 150 PSI  
MAX. WORKING PRESSURE  
AND 2,000 PSI SOIL BEARING LOAD.

PIPE SIZE	AREA OF BLOCK IN SQ. FT. *			
	90° BENDS	45° BENDS	22 1/2° BENDS	11 1/4° BENDS
≤4"	1.5	1.5	1.5	1.5
6"	4.0	2.0	1.5	1.5
8"	7.0	3.8	1.8	0.9
12"	16.2	8.8	4.5	2.3



**STANDARD BLOCKING DETAIL**

RODS BENT AROUND PIPE  
AND ANCHORED IN CONCRETE

SEE TABLE FOR VOLUME  
OF CONCRETE AND  
ANCHOR RODS REQUIRED

3,000 PSI CONC.

PIPE SIZE	VOLUME IN CU. FT. *			RODS REQUIRED		
	45° BENDS	22 1/2° BENDS	11 1/4° BENDS	45° BENDS	22 1/2° BENDS	11 1/4° BENDS
≤4"	12	8	4	2-1/2" #	2-1/2" #	1-1/2" #
6"	37	19	9	2-1/2" #	2-1/2" #	1-1/2" #
8"	54	27	13	2-1/2" #	2-1/2" #	1-1/2" #
12"	122	62	31	2-5/8" #	2-1/2" #	2-1/2" #

**NOTE:**  
ALL BLOCKS HAVING LENGTH OF 3'  
OR MORE TO BE REINFORCED W/#4  
BARS AT 6" - PLACED 3" FROM TOP  
OF BLOCK

**STANDARD ANCHORING DETAIL**

# STANDARD BLOCKING AND ANCHORING METHODS FOR SEWAGE FORCE MAIN

NO SCALE

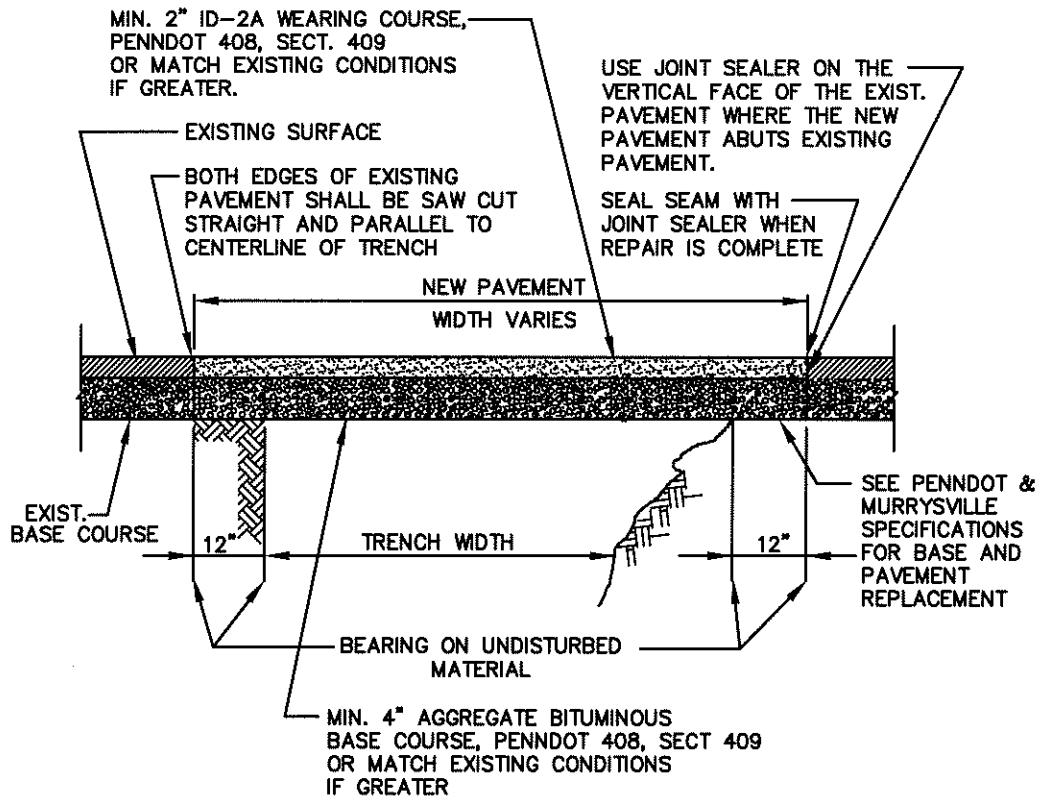


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**16**

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## PAVEMENT REPLACEMENT DETAIL

NO SCALE



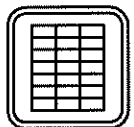
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SANITARY AUTHORITY**

DWG. No.  
**17**

H:\Cad\CADSTAND\FTMSA STANDARD DETAILS\TP GRINDER PUMP.dwg 12/13/2006 2:58 PM

MAIN ELECTRICAL PANEL



POWER SUPPLY

GRINDER PUMP PANEL

PROTECTIVE SHROUD FOR ELECTRICAL CONNECTION FROM HOUSE

VENT

WATERTIGHT LID

FLEXIBLE COUPLING

FLEXIBLE COUPLING

6" WASTE PIPE FROM HOUSE

1 1/2" PRESSURE PIPE TO COLLECTION SYSTEM

41"

CHECK VALVE

GRINDER PUMP

6" THICK AASHTO 57 CRUSHED AGGREGATE

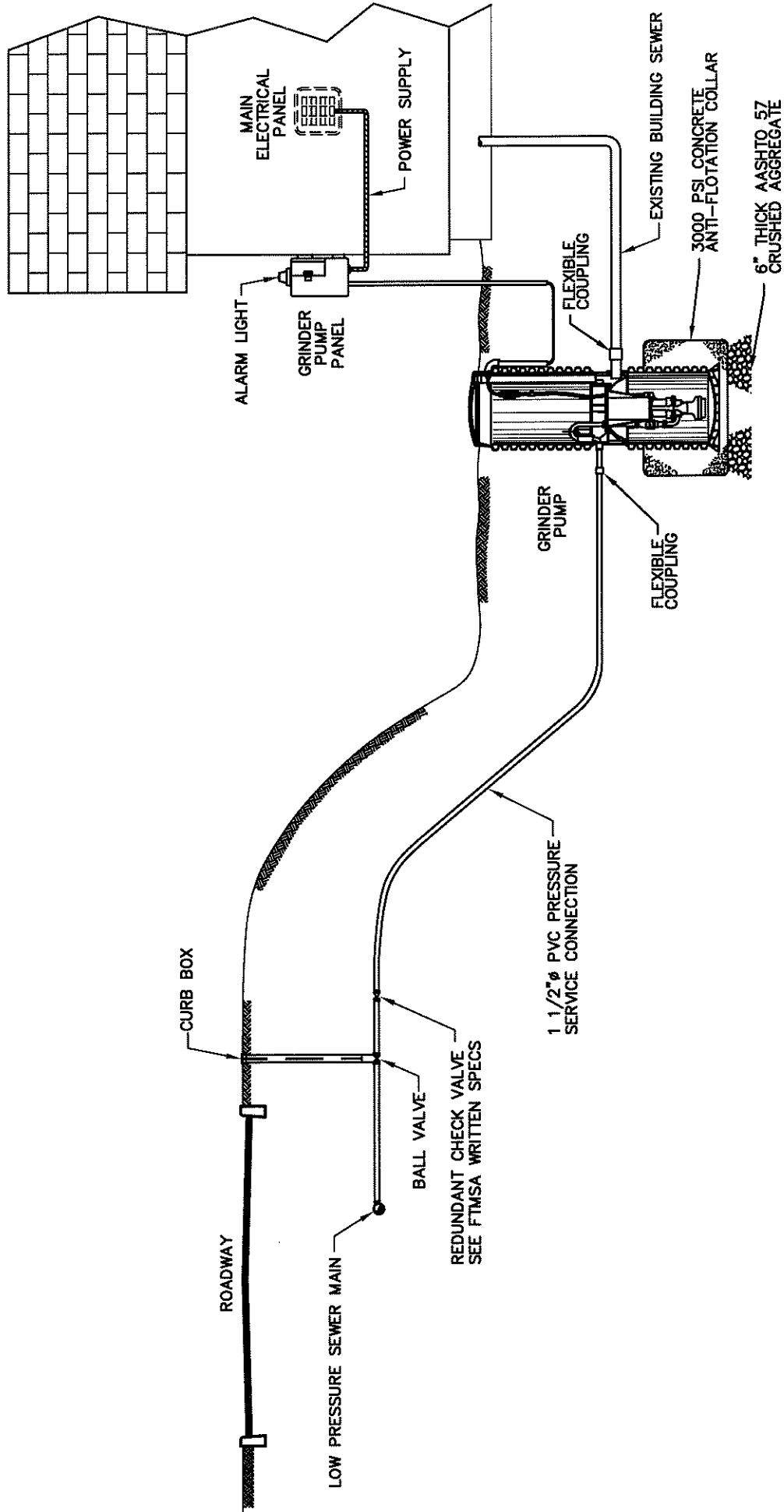
3000 PSI CONCRETE ANTI-FLOTATION COLLAR

- NOTE:**
1. PROVIDE DETECTABLE UNDERGROUND WARNING TAPE ABOVE 1 1/2" PRESSURE PIPE
  2. SEE FTMSA WRITTEN SPECS.

SECTION

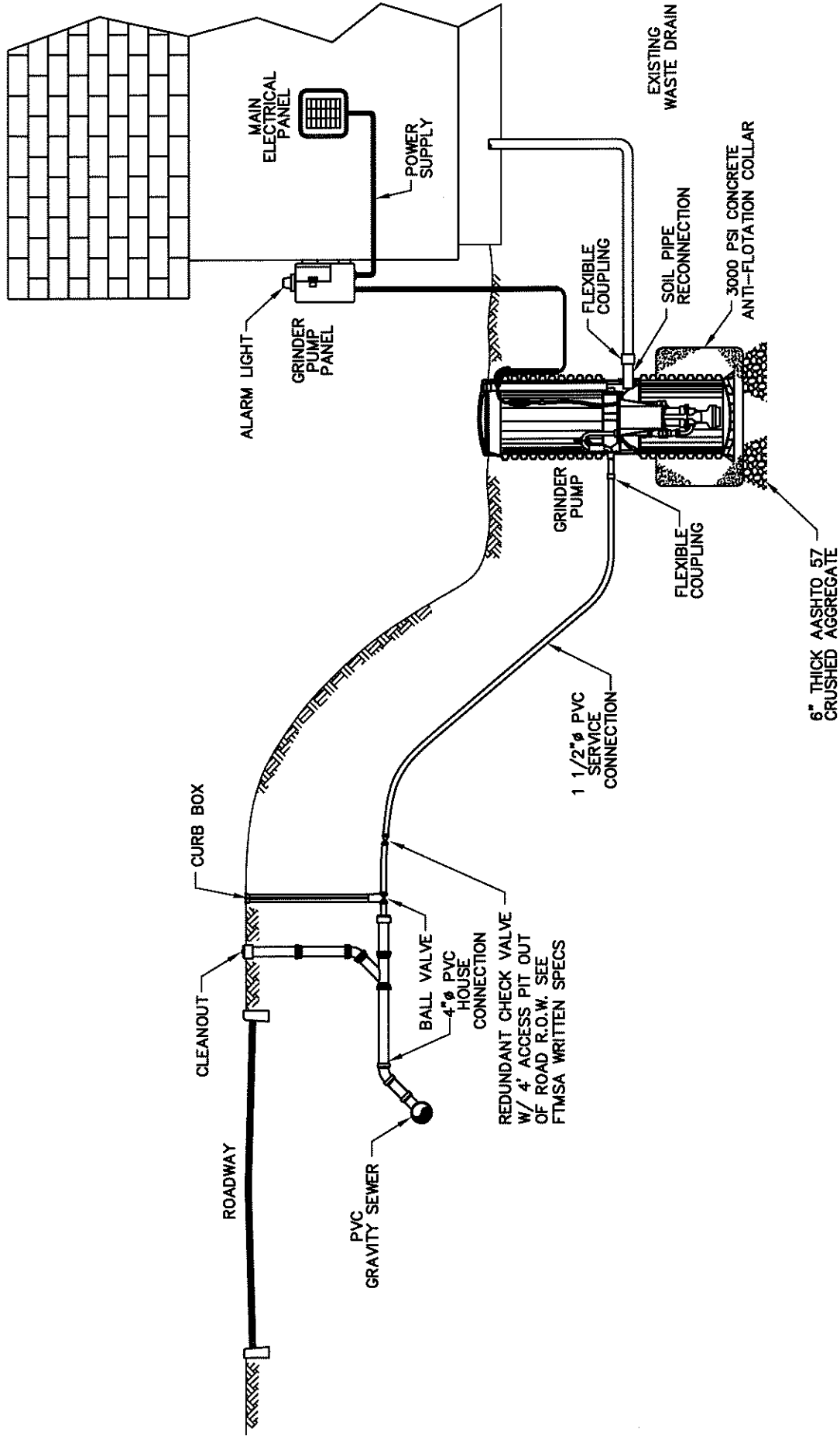
TYPICAL GRINDER PUMP INSTALLATION

NO SCALE



# GRINDER PUMP HOUSE CONNECTION TO PRESSURE SEWER MAIN

NOT TO SCALE



# GRINDER PUMP HOUSE CONNECTION TO GRAVITY SEWER

NOT TO SCALE

FORCEMAIN DIAMETER	PRECAST MANHOLE DIAMETER
4"	48"
6"	48"
8"	60"
10"	60"
12"	60"
14"	72"
16"	72"
18"	84"
24"	84"
30"	96"

MH STEPS POLYPROPYLENE  
PLASTIC COATED (ASTM D-4101)  
1/2" GRADE 60 DEFORMED STL.  
BAR (ASTM A-615) @ 12" C/C

SLOPE GROUT FILL  
1/4" PER. FT.  
AWAY FROM  
MH. STEPS

NON-SHRINK  
GROUT

NEOPRENE  
MH WATERSTOP

RISER CLAMP W/ ALL THD.  
ROD CINCH ANCHORED  
TO WALL

2" APCO MODEL 400 WA  
SEWAGE AIR RELEASE  
VALVE

MANHOLE  
FORCEMAIN

**PLAN**

3/4" S.S. ANCHOR BOLTS  
(2 TYPICAL)

EXCEPT AS NOTED, ALL MANHOLE FRAMES & COVERS  
SHALL BE FTMSA

CASTING TO SET ON  
"CONSEAL" BED  
OR APPROVED EQUAL

PRECAST CONCRETE  
TOP SLAB

12" MAX.  
CONCRETE  
BRICK  
MASONRY

2" APCO MODEL  
400 WA SEWAGE AIR  
RELEASE VALVE

2 ROWS OF MASTIC  
JOINT SEALANT MATERIAL  
"CONSEAL" OR EQUAL

S.S. RISER CLAMP  
W/ ALL THD. ROD CINCH  
ANCHORED TO WALL

TEE W/BLIND FLANGE  
TAPPED FOR AIR  
RELEASE VALVE  
(BRANCH & RUN SAME  
DIA. AS FORCEMAIN)

MH STEPS

BRASS ISOLATION  
VALVES

TRANSITION TO PVC  
IF REQUIRED

TRANSITION TO PVC  
IF REQUIRED

NON-SHRINK  
GROUT

MONOBASE

CONC. SUPPORT

GROUT FILL SLOPE  
AWAY FROM MH. STEPS  
D.I.P.

6" THICK  
CRUSHED STONE  
AASHTO #57

FORCEMAIN

6" MIN.

8" MIN.

4'-0" MIN. COVER

**SECTION**

**AIR RELIEF VALVE VAULT DETAIL**

NO SCALE

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**21**