

## **Section 21 Appendix A**

### ***21.1 Deptford Township Municipal Utilities Authority Construction Notes & Details***

### **DTMUA GENERAL CONSTRUCTION NOTES:**

1. All construction, materials restorations and methods of installation in township roads shall be subject to the requirements and approval of the Township of Deptford
2. Sanitary sewer and Water Main construction, materials and testing shall be subject to the approval of and inspection by the Deptford Township M.U.A. Engineer, and subject to D.T.M.U.A. rules and regulations.
3. Sanitary Sewer shall be a Polyvinyl Chloride (PVC) Pipe (Meeting ASTM 03034, SDR 35 specifications).
4. All water piping 4" and larger shall be Class 52 Cement Lined Ductile Iron Pipe with push-on joints. All fittings, bends, resilient seated valves, and sleeves to be mechanical joint with retaining flanges. Water piping smaller than 3" shall be Type "K" soft temper copper tubing with flared fittings. All water piping shall have 48" minimum cover. Water piping shall be disinfected by contact with a chlorine solution not less than 50 PPM for not less than 24 hours.
5. Water mains and sanitary sewer shall be separated by ten (10) feet horizontally. Otherwise, the sewer and water shall be in separate trenches with the sewer 18" below the bottom of the water main.
6. At water and sewer main crossings, the sewer shall be 18" minimum below the water or the sewer main shall be ductile iron pipe with slip-on joints for ten (10) feet minimum on each side of the crossing.
7. All sanitary sewers shall be constructed with Class "B" modified bedding unless otherwise noted.
8. Wherever the trench bottom does not afford sufficient bearing strength to sustain the weight of the pipe and superimposed loads, it shall be over excavated and stabilized with a 12" thick minimum layer of crushed stone.
9. All water and sewer installations shall conform to the requirements of the Testing and Inspecting Procedures Manual of the D.T.M.U.A.
10. Megalug restraints are to be installed at all water main bends, fittings, valves and fire hydrants.
11. No sanitary sewer laterals shall be connected directly into any manholes.
12. Sanitary sewer connection to existing manhole core to be oversized. Fill voids at connection with non-shrink grout as specified by the Authority Engineer. Existing flow not to be interrupted during proposed connection and construction.

13. The applicant/owner is aware and agrees that the review by the D.T.M.U.A. and Authority Engineer is based upon the best information available and in no way does it guarantee the existence of, or non-existence of sanitary sewer and water mains, and/or appurtenances. It is the responsibility of the applicant; owner to verify the location of such mains/appurtenances.

14. All fittings, bends, resilient seated valves, and sleeves shall be mechanical jointed with retaining flanges.

15. No water main or sewer main to be installed beneath curb.

16. Pressure testing, lamping and vertical survey as-built of the sewer system shall be performed by the developer and reviewed by the Authority Engineer prior to authorizing any base paving. The Authority Engineer and Superintendent, prior to authorizing any paving operations shall review and accept lamping, pressure test results, slopes and depths of new mains.

17. Acceptance of the sewer mains at the time of base paving does not absolve the developer of any responsibility for settlement or failures between base paving and final paving operations.

18. All water meters to be radio read water meters.

19. Sanitary sewer cleanouts and water shutoffs shall not be installed in driveways, aprons or sidewalks.

20. A water meter shall be installed for each house in accordance with Deptford Township Municipal Utility Authority's rates, rules and regulations. The meter shall be radio frequency type for billing purposes.

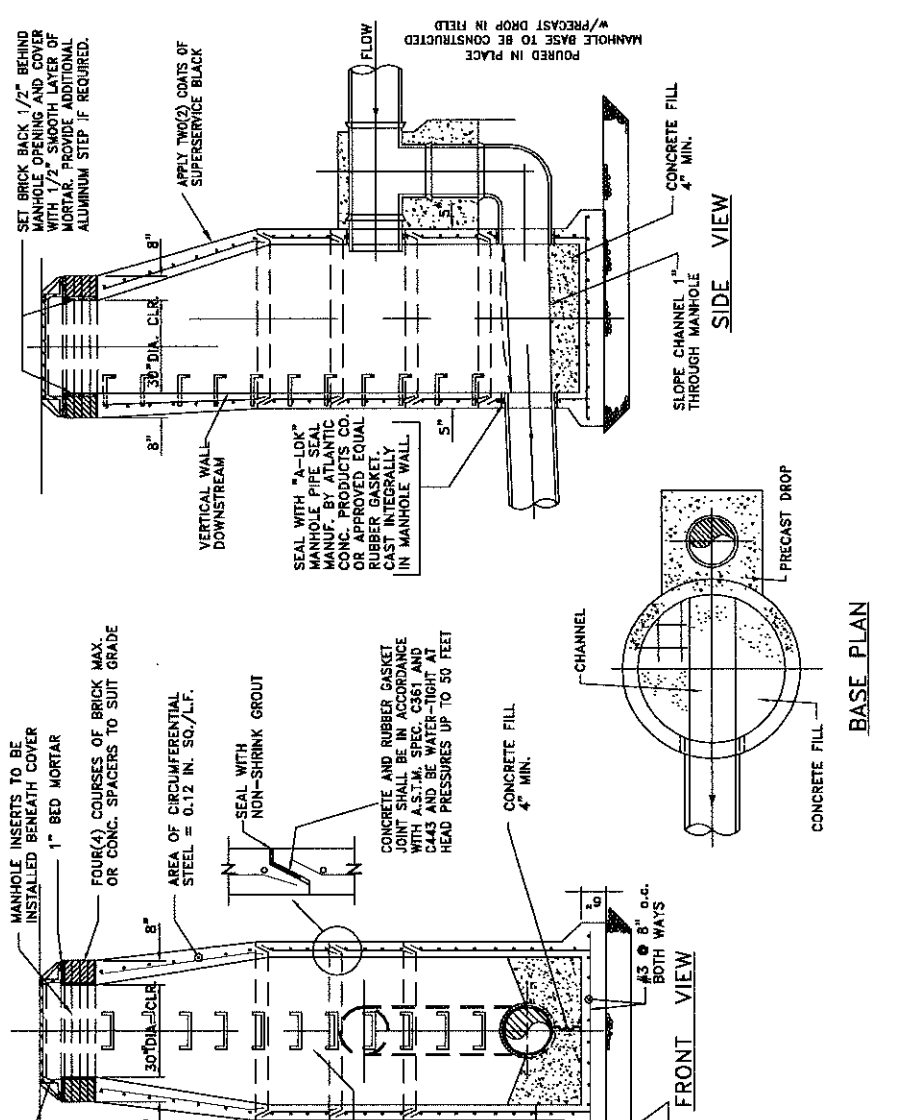
21. Water service lines shall be separated a distance of at least five (5') feet horizontally from any sanitary sewer lateral.

22. Water service lines and sanitary sewer laterals shall be separated a distance of at least five (5') feet horizontally from any property line.

23. All proposed water mains shall be installed with a minimum clearance of thirty-six inches (36") to any utility pole or storm drainage structure or pipe.

24. All proposed water mains shall be installed with a minimum clearance of thirty-six inches (36") to any face of curb.





AMERICAN MADE MANHOLE FRAME & COVER BY CAMPBELL FOUNDRY PATTERN NO. 1012B OR APPROVED EQUAL WITH DROP LIFT HANDLES & "SEWER" CAST IN LID. LETTERS SHALL BE TWO (2") INCHES HIGH AND EMBOSSED AGAINST RECESSED BACKGROUND. FRAME SHALL BE LOCKED IN PLACE & WATERPROOFED WITH MORTAR. MANHOLE INSERTS SHALL BE INSTALLED BENEATH THE COVER TO PREVENT STORM WATER INFLOW.

APPLY TWO(2) COATS OF SUPERSERVICE BLACK 1", 2", 3" & 4" RISER SECTION

POLYPROPYLENE STEPS 12" O.C. IN DOWNSTREAM WALL

MANHOLE INSERTS TO BE INSTALLED BENEATH COVER 1" BED MORTAR

FOUR(4) COURSES OF BRICK MAX. OR CONC. SPACERS TO SUIT GRADE.

AREA OF CIRCUMFERENTIAL STEEL = 0.12 IN. SQ./L.F.

SEAL WITH NON-SHRINK GROUT

CONCRETE AND RUBBER GASKET JOINT SHALL BE IN ACCORDANCE WITH A.S.T.M. SPEC. C981 AND SHALL WITHSTAND WATER HEAD PRESSURES UP TO 50 FEET

CONCRETE FILL 4" MIN.

CHANNEL

CONCRETE FILL 4" MIN.

PRECAST DROP

CONCRETE FILL 4" MIN.

SLOPE CHANNEL 1" THROUGH MANHOLE

CONCRETE FILL 4" MIN.

SEAL WITH "A-LDK" MANHOLE PIPE SEAL MANUF. BY ATLANTIC CONC. PRODUCTS CO. OR APPROVED EQUAL. RUBBER GASKET. CAST INTEGRALLY IN MANHOLE WALL.

VERTICAL WALL DOWNSTREAM

30" DIA. CLR

8"

8"

5"

FLOW

POURED IN PLACE MANHOLE BASE TO BE CONSTRUCTED W/PRECAST DROP IN FIELD

SET BRICK BACK 1/2" BEHIND MANHOLE OPENING AND COVER WITH 1/2" SMOOTH LAYER OF MORTAR. PROVIDE ADDITIONAL ALUMINUM STEP IF REQUIRED.

8" THICK 3/4" STONE

#5 @ 8" o.c. BOTH WAYS

6" MIN (Typ.)

FRONT VIEW

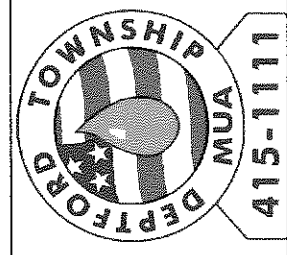
BASE PLAN

SIDE VIEW

- NOTES:
1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTING ADEQUATE BALLAST TO OFFSET FLOTATION FORCES ACTING ON MANHOLES.
  2. ALL REINFORCEMENT IS SUBJECT TO ENGINEER'S APPROVAL BEFORE CONSTRUCTION.
  3. ALL MANHOLES SHALL CONFORM TO ASTM SPEC C478.
  4. INSTALL HIGH DENSITY POLYETHYLENE MANHOLE INSERTS WITH VENTILATION VALVE AND HEAVY DUTY NYLON LIFTING STRAPS.
  5. ALL DROPS TO BE EXTERNAL.
  6. 5-FT. DIAMETER PRE-CAST MANHOLES SHALL HAVE 6-INCH THICK REINFORCED WALLS.
  7. 6-FT. DIAMETER PRE-CAST MANHOLES SHALL HAVE 7-INCH THICK REINFORCED WALLS.
  8. ANY MANHOLE DEPTH EQUAL TO OR GREATER THAN 18'-FEET SHALL BE CONSTRUCTED WITH A SAFETY PLATFORM AT MID-POINT, AND HAVE A MINIMUM DIAMETER OF 5'-FEET.
  9. THE PROPER SAFETY DEVICES AND FALL-PROTECTION EQUIPMENT SHALL BE INSTALLED AND PROVIDED BY THE DEVELOPER.

FIGURE 2 - SANITARY SEWER PRECAST CONCRETE DROP MANHOLE

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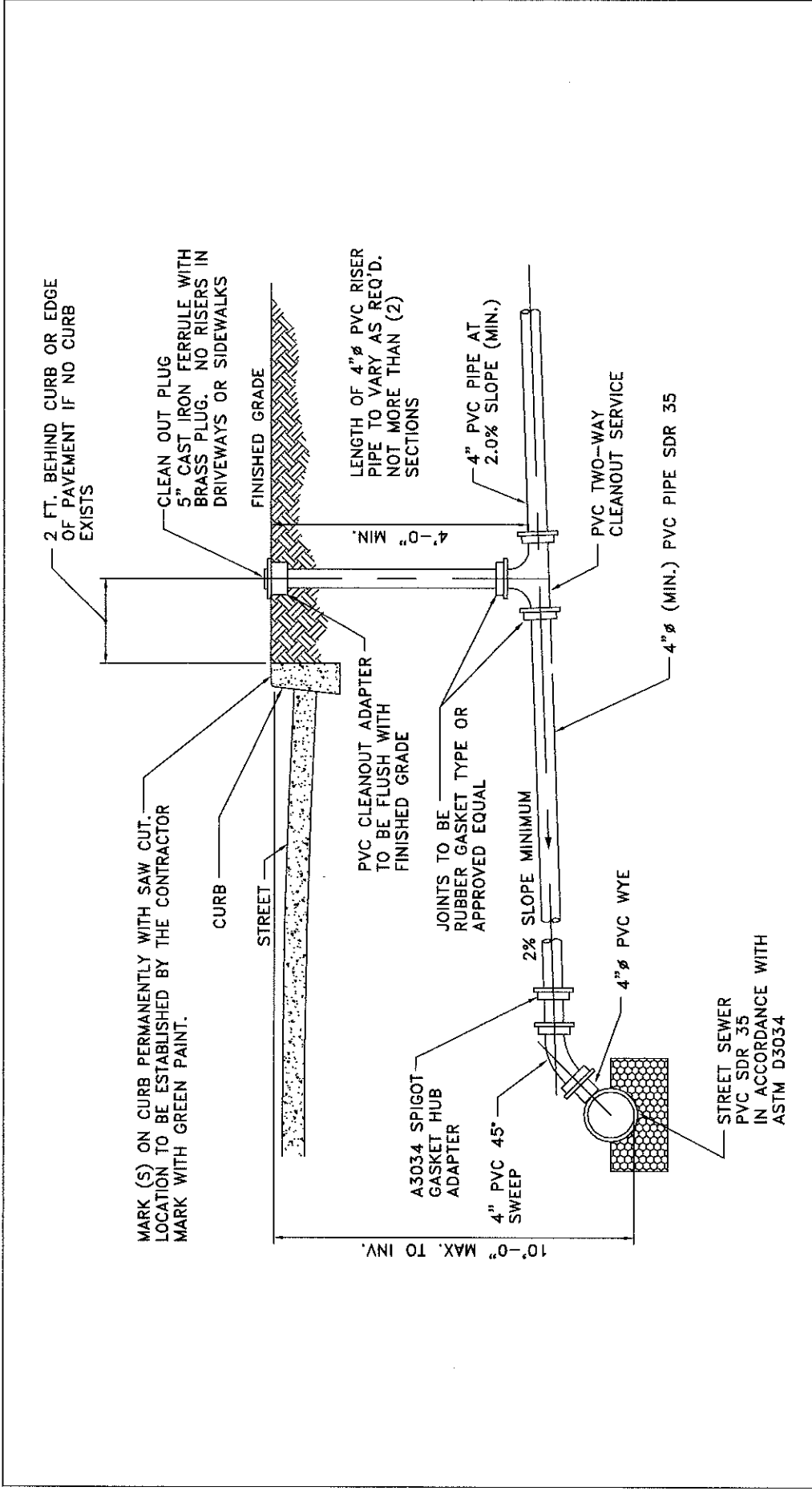
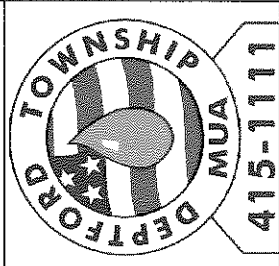
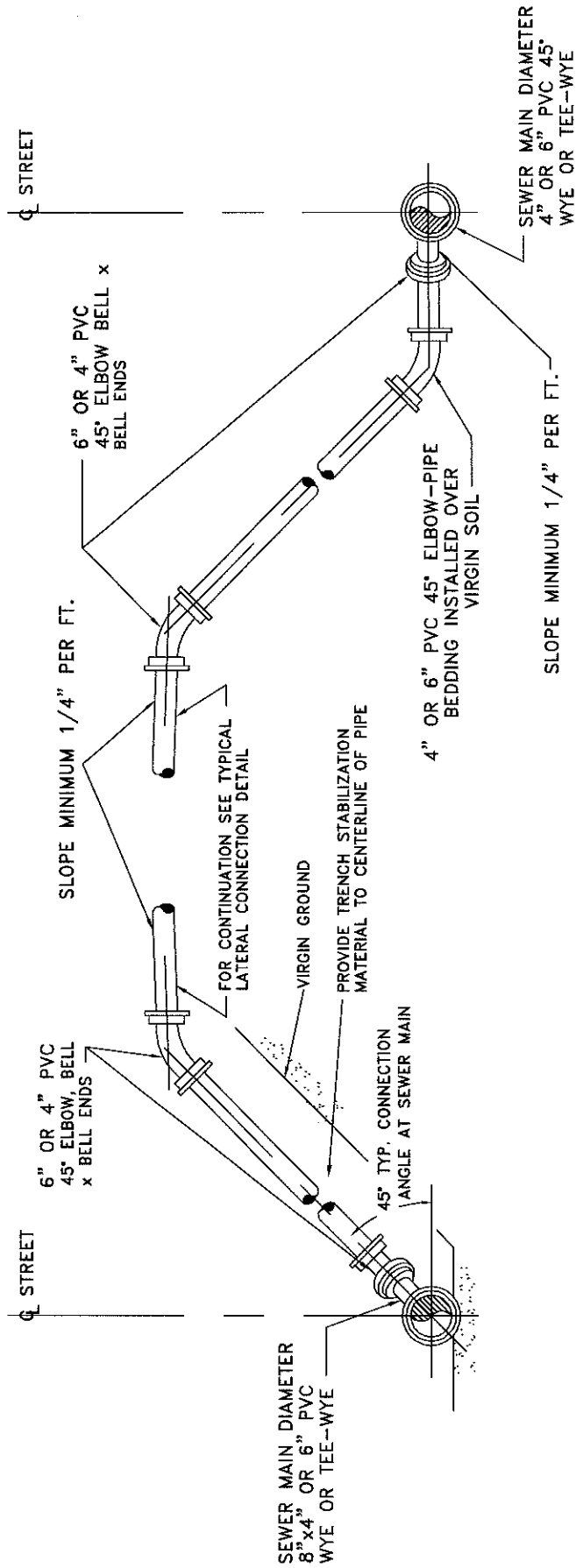


FIGURE 3 - SANITARY SERVICE LATERAL



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ALTERNATE DETAIL

ALTERNATE DETAIL

FIGURE 4 - SANITARY SEWER DEEP CUT LATERAL CONNECTION

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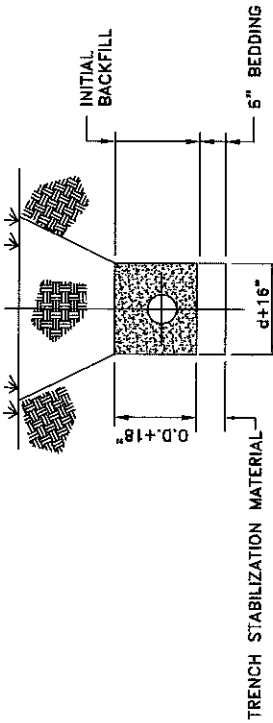




SPECIFIED CLASS OF  
PVC PIPE WITH  
3-12' OF COVER

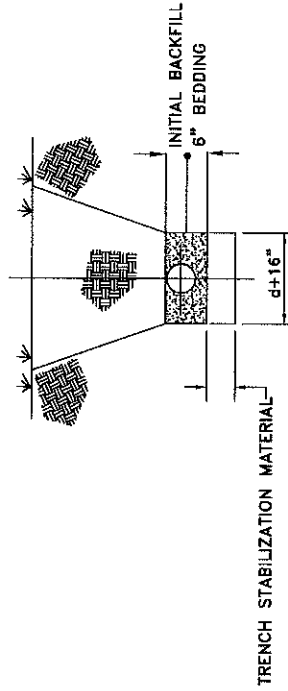
SDR-35

BEDDING AND INITIAL  
BACKFILL REQUIREMENTS  
FOR SPECIFIED PIPE CLASS &  
COVER CONDITION



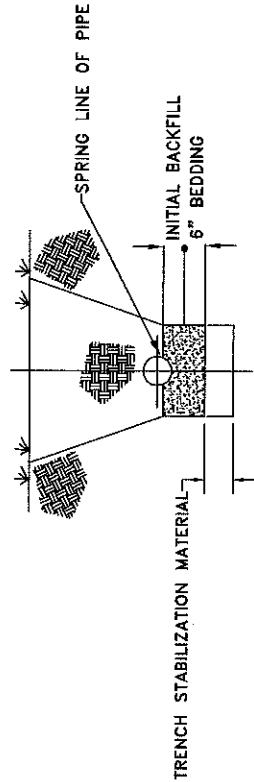
SPECIFIED CLASS OF  
PVC PIPE WITH  
12-16' OF COVER

SDR-35



CLASS 100  
SDR-25

CLASS 100  
SDR-35

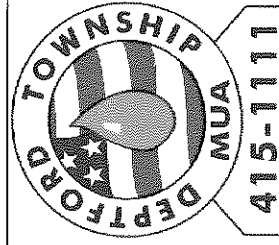


CLASS 150  
SDR-18

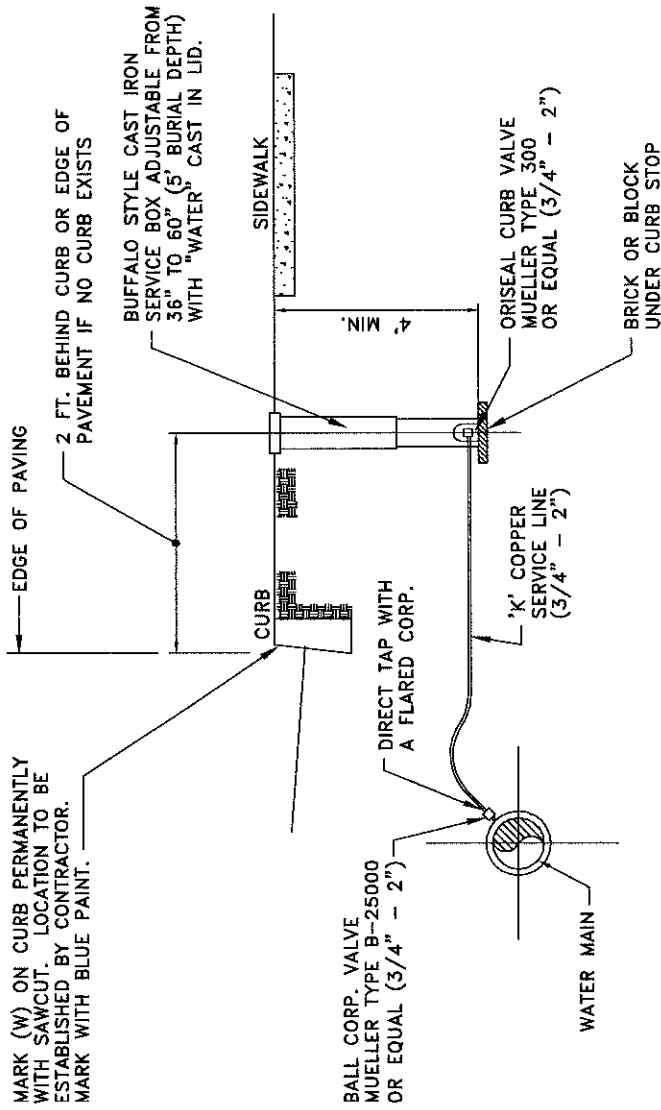
FIGURE 6 - PVC/DIP SANITARY SEWER TRENCH

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MAXIMUM TAP SIZES	
MAIN SIZE	LARGEST TAP
6", 8"	1"
10"	1 1/2"
12"	2"

- NOTE:**
- CURB STOPS SHALL NOT BE LOCATED IN SIDEWALKS OR DRIVEWAYS.
  - STAINLESS STEEL TAPPING SADDLES ONLY APPROVED FOR ACP, SMITH BLAIR MODEL #315 OR APPROVED EQUAL.
  - WATER SERVICE TO HAVE TEN FEET HORIZONTAL SEPARATION FROM SANITARY SEWER LATERAL. UNDER NO CIRCUMSTANCES SHALL THE HORIZONTAL SEPARATION BE LESS THAN FIVE FEET.

FIGURE 7 - WATER MAIN TYPICAL SERVICE

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FIRE HYDRANT WITH (2)-2 1/2" NSFT HOSE CONNECTIONS & (1)-5" STORZ PUMPER CONNECTION WITH SAFETY BREAKABLE SECTION. 5-1/4" VALVE OPENING, PENTAGON 1-1/2" NST OPERATING NUT.  
 MUELLER SUPERCENTURION MODEL #250A423, WATEROUS PACER MODEL 1250, AMERICAN DARLING B-62-B, OR APPROVED EQUAL

CAST IRON VALVE BOX, TWO(2) PIECE, 5 1/4" SHAFT.

FIRE HYDRANTS SHALL BE PAINTED IN ACCORDANCE WITH THE FOLLOWING SCHEDULE:

- 12" OR LARGER WATER MAINS  
MAB PRECAUTION BLUE #0745018
- 8" WATER MAINS  
MAB SAFETY GREEN #0746321
- 6" WATER MAINS  
MAB AUTUMN ORANGE #0743391

BREAKOFF SECTION

18" MIN.  
24" MAX.

2'x2'x4' CONCRETE PAD

4'-0" MIN.

6" D.I.P.

6" M.J. GATE VALVE  
CAST RETAINER GLAND

THRUST BLOCK

THRUST BLOCK

8 CU. FT. OF CLEAN STONE FOR DRAIN. STONE TO BE AT LEAST 6" ABOVE DRAIN HOLES.

(2) 3/4" DIA. RODS, THREAD 8" MIN. BOTH ENDS. RODS TO BE SYMMETRICALLY PLACED & COATED.

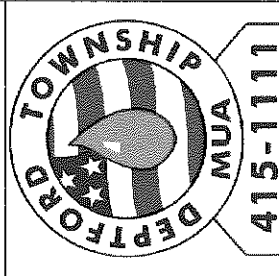
HYDRANT VALVE ANCHORING TEE WITH INTEGRALLY CAST GLAND FOR STANDARD M.J. ON 6" P.E. BRANCH

ALL FITTINGS MUST BE RETAINED

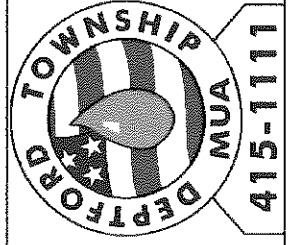
FIGURE 8 - FIRE HYDRANT

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FIGURE 9 - THRUST BLOCK

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PROCEDURE FOR CALCULATING REQUIRED AREA OF THRUST BLOCK

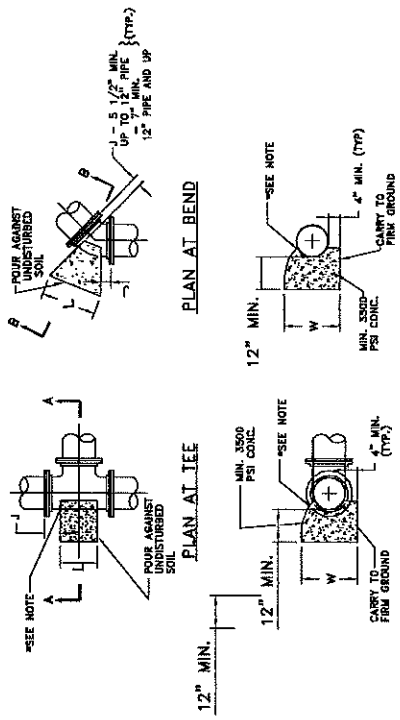
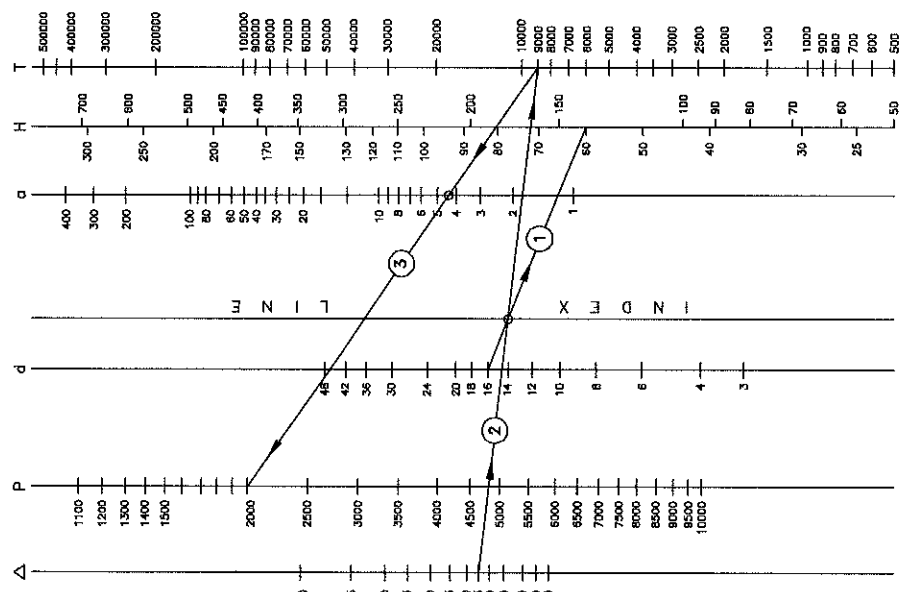
- LEGEND**
- H - HYDRAULIC HEAD/WATER PRESSURE, FT.
  - d - DIAMETER OF PIPE, IN.
 $\Delta$  - PIPE BEND, DEGREE
  - T - TOTAL RADIAL THRUST, LBS.
  - P - SOIL BEARING PRESSURE, PSI
  - a - AREA OF THRUST BLOCK, SQ. FT. (LxW)

**STEP 1**  
CONSTRUCT LINE FROM "DIAMETER OF PIPE" (d) TO "WATER PRESSURE/HYDRAULIC HEAD (H) TO ESTABLISH POINT ON "INDEX LINE".

**STEP 2**  
CONSTRUCT LINE FROM "PIPE BEND" ( $\Delta$ ) THROUGH ESTABLISHED POINT ON "INDEX LINE" TO INTERSECT "TOTAL RADIAL THRUST" (T) LINE.

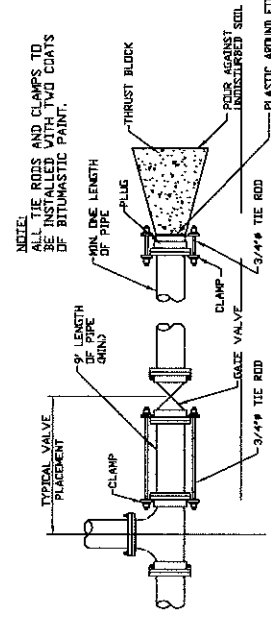
**STEP 3**  
CONSTRUCT LINE FROM POINT ON "TOTAL RADIAL THRUST" (T) LINE TO KNOWN POINT ON "SOIL BEARING PRESSURE" (P) LINE WHICH DETERMINES REQUIRED "AREA OF THRUST BLOCK" (a).

**EXAMPLE:** GIVEN (A) 16" DIAMETER PIPE - 45° ELBOW (90° END-TO-END)  
(B) WATER PRESSURE 60 PSI  
(C) SOIL BEARING PRESSURE 2000 PSI  
(1) LINE d-H-INDEX POINT  
(2) LINE  $\Delta$ -INDEX POINT-T (9000 LBS)  
(3) LINE T-P  
REQUIRED THRUST BLOCK BEARING AREA = 4.5 S.F.



SECTION A-A

SECTION B-B



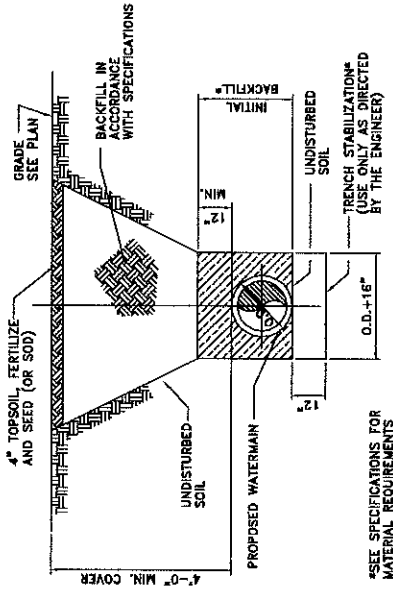
TYPICAL STUB FOR FUTURE CONNECTION

NOTES:

1. NOMOGRAPH DOES NOT APPLY FOR VERTICAL DOWN BENDS.
2. INTERNAL WATER PRESSURE TO BE 150 PSI
3. SOIL BEARING PRESSURE TO BE 2000 PSI
4. ALL FITTINGS SHALL BE WRAPPED IN VISQUENE AT THRUST BLOCKS

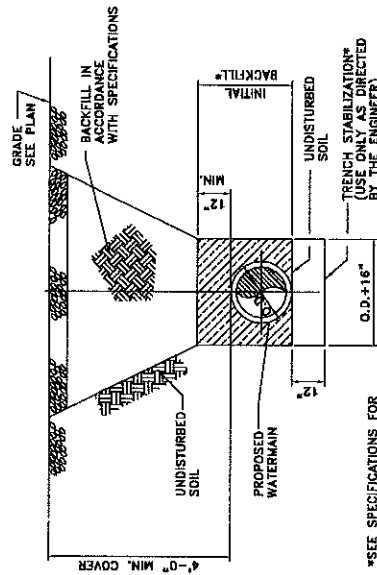
**CONSTRUCTION NOTES:**

1. PROPER SIZED PLUG SHALL BE INSERTED INTO PIPE END AT ALL TIMES DURING CONSTRUCTION.
2. ON ANY COUNTY ROAD, LOW-STRENGTH FLOWABLE FILL SHALL BE USED FOR ENTIRE TRENCH BACKFILL, IF THE TRENCH IS 7'-FT. OR GREATER IN DEPTH.
3. FLOWABLE FILL SECTION SHALL BE STEEL-PLATED FOR 24-HOURS PRIOR TO ANY LOADING.
4. TO ACCELERATE CURE-TIME, ADD 'RAPIDSET CEMENT' TO MIX PRIOR TO PLACEMENT.
5. 15-1 MIX MAY BE SUBSTITUTED FOR FLOWABLE FILL, AND REQUIRES COMPACTION IN 12-INCH LIFTS.
6. ANY TRENCHES ACROSS PUBLIC PROPERTY SHALL BE BASE PAVED TO THE TOP OF THE TRENCH, AND THEN PERMITTED TO SETTLE FOR AT LEAST FOUR (4) MONTHS, PRIOR TO THE FINAL ROADWAY RESTORATION CONSISTING OF MILL/RESURFACE TO 10'-FT. BEYOND THE ORIGINAL TRENCH LIMITS AS SHOWN.
7. FINAL RESTORATION SHALL NOT OCCUR PRIOR TO AS-BUILT PLANS BEING SUBMITTED AND ACCEPTED BY THE AUTHORITY ENGINEER ALONG WITH ANY OTHER TESTS REQUIRED.

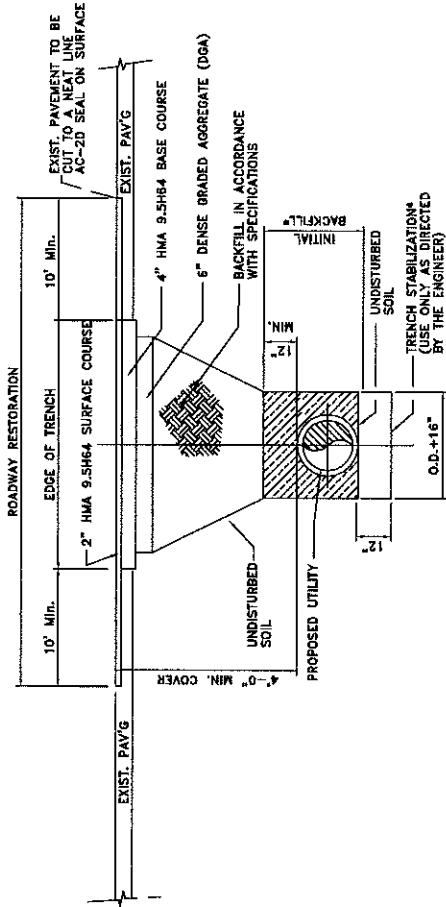


\*SEE SPECIFICATIONS FOR MATERIAL REQUIREMENTS

**TURF AREAS**



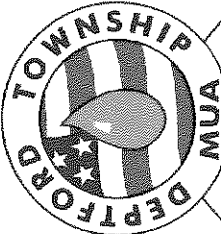
\*SEE SPECIFICATIONS FOR MATERIAL REQUIREMENTS



RESTORATION ON ANY PUBLIC ROAD OR PUBLIC ACCESS DRIVE/PARKING AREA

**FIGURE 10 - WATER MAIN TRENCHING & ROAD RESTORATION**

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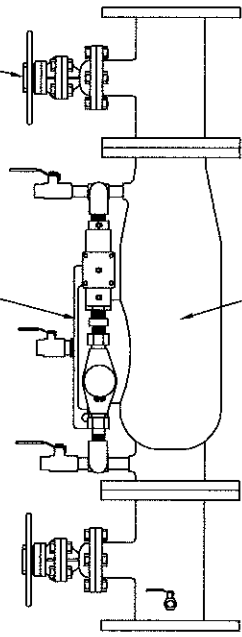
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BY-PASS LINE W/ METER, SMALL DOUBLE CHECK VALVE,  
TEST COCKS, AND ISOLATION VALVES

GATE VALVE

GATE VALVE



DOUBLE CHECK DETECTOR ASSEMBLY

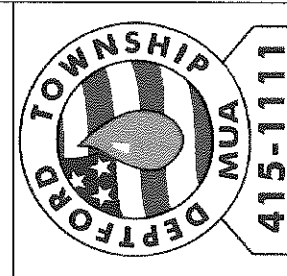
**NOTE:**

FOR COMMERCIAL BUILDINGS, AN AMES SILVER BULLET SERIES  
3000-SS DOUBLE DETECTOR CHECK VALVE, OR APPROVED  
EQUAL, EQUIPPED W/ BY-PASS METER IN GALLONS SHALL BE  
INSTALLED ON THE FIRE SERVICE LINE INSIDE OF BUILDING.

**FIGURE 12 - FIRE SERVICE CHECK VALVE**

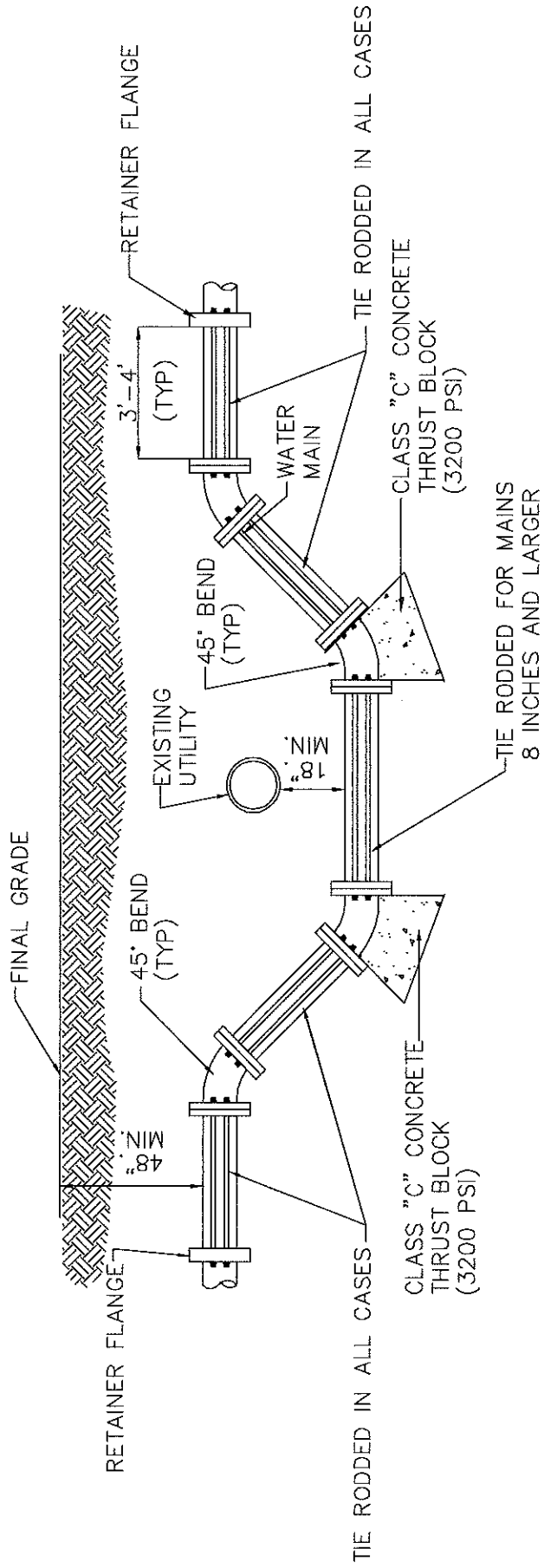
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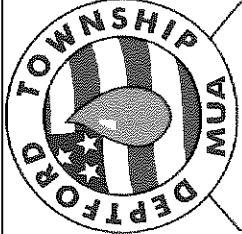


NOTES:

WATER MAIN OFF-SETS SHALL NOT BE CONSTRUCTED WITHOUT PRIOR APPROVAL OF THE AUTHORITY ENGINEER. EVERY EFFORT SHALL BE MADE TO COORDINATE UTILITY CONSTRUCTION SO AS TO AVOID THE NEED FOR OFF-SETS IN THE WATER MAIN.

FIGURE 13 - WATER MAIN OFFSET

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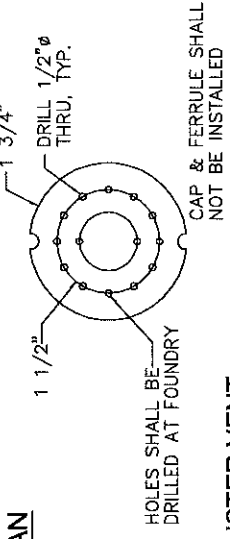
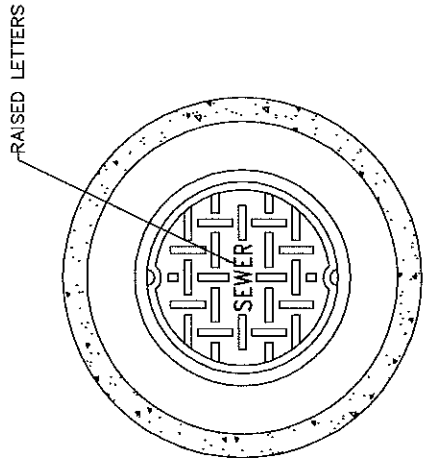


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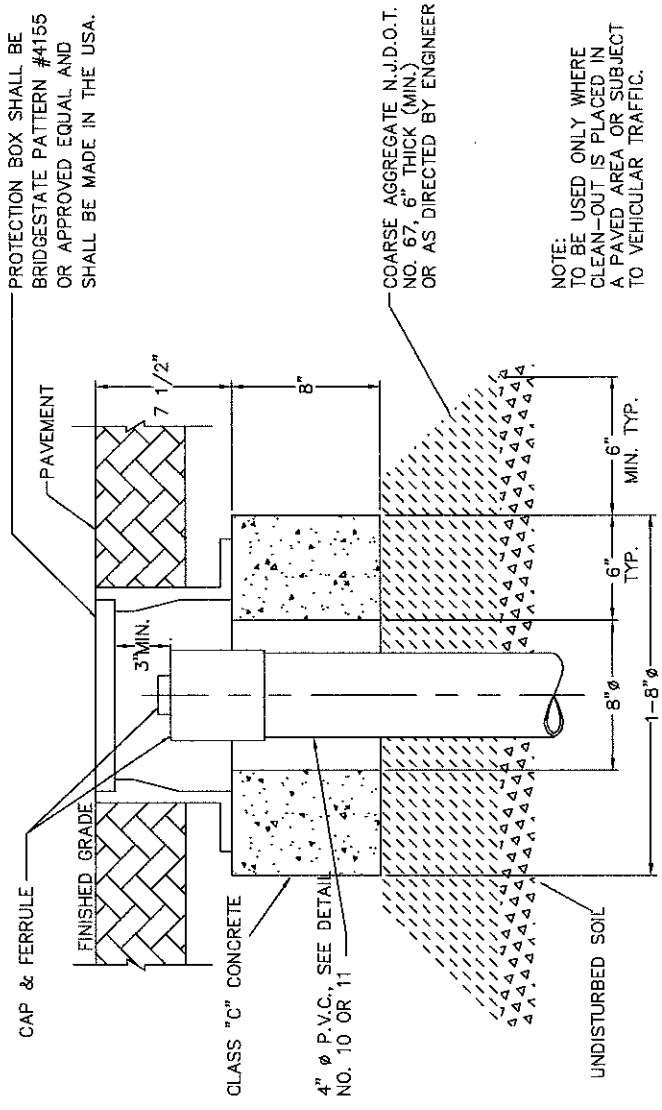
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**SHUSTER VENT REPLACEMENT COVER**



NOTE:  
TO BE USED ONLY WHERE CLEAN-OUT IS PLACED IN A PAVED AREA OR SUBJECT TO VEHICULAR TRAFFIC.

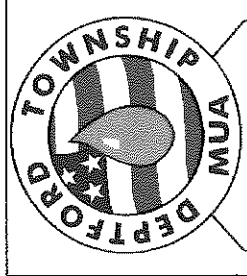
ALL CLEAN-OUTS MUST BE APPROVED BY DTMOA PERSONNEL AND THE AUTHORITY ENGINEER.

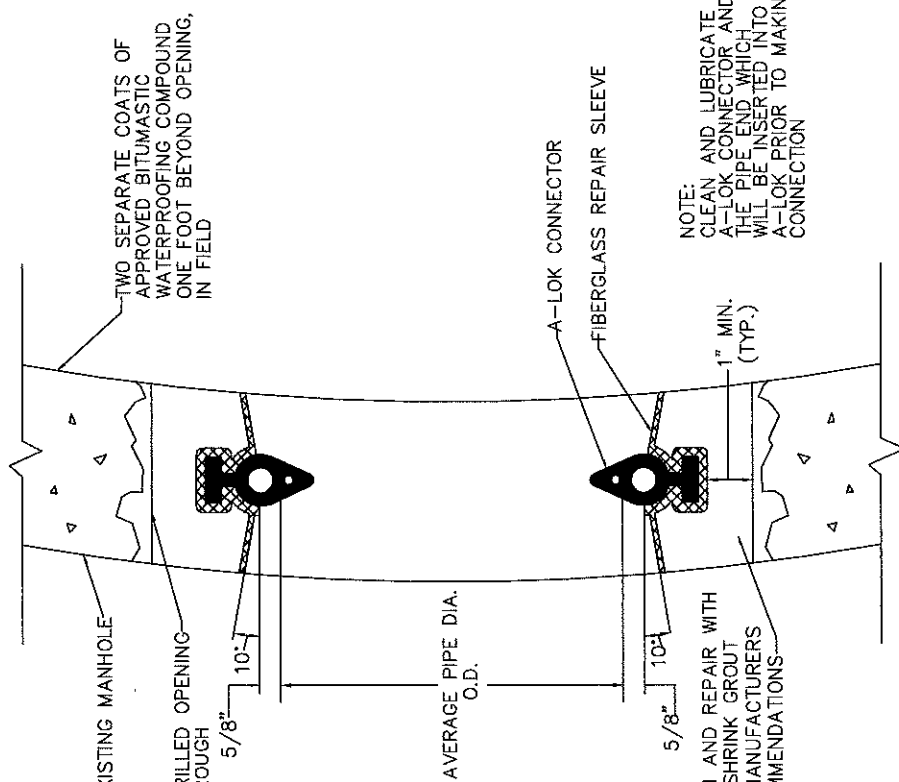
**FIGURE 14 - SANITARY SEWER CLEANOUT PROTECTION BOX**

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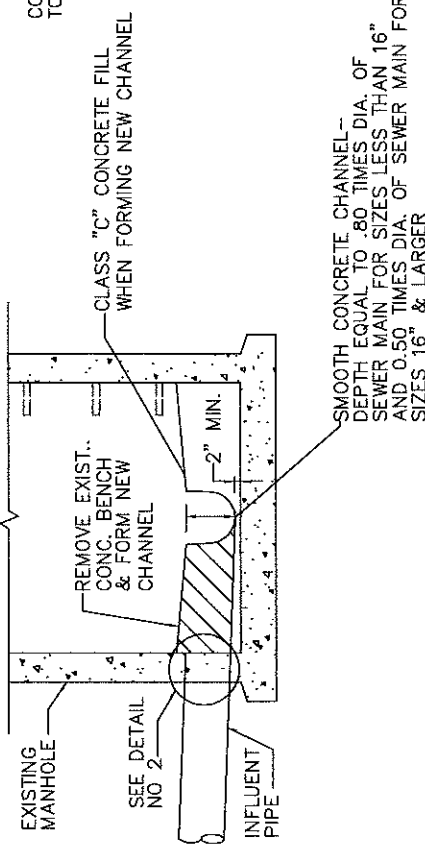
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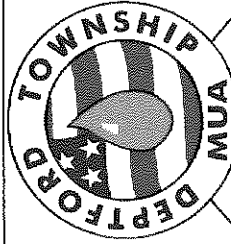


NOTE:  
 CLEAN AND LUBRICATE  
 A-LOK CONNECTOR AND  
 THE PIPE END WHICH  
 WILL BE INSERTED INTO  
 A-LOK PRIOR TO MAKING  
 CONNECTION



- NOTE:  
 IF THE PROPOSED PIPE COINCIDES WITH THE EXISTING MANHOLE RUNGS:
- 1) THE EXISTING MANHOLE OPENING AND CONE SECTION SHALL BE REALIGNED WITH THE PROPOSED ACCESS LADDER. THE EXISTING MANHOLE RUNGS WITHIN THE CONE SECTION MAY REMAIN AND ALL OTHERS SHALL BE REMOVED.
  - 2) A NEW STAINLESS STEEL ACCESS LADDER WITH 1" DIAMETER RUNGS (MIN.) X 12" WIDE (MIN.) @ 12" ON CENTER SHALL BE INSTALLED 7" FROM THE MANHOLE WALL TO THE CENTER OF THE RUNGS AND ATTACHED TO THE MANHOLE WALL WITH STAINLESS STEEL HARDWARE.

FIGURE 15 - CONNECTION TO EXISTING MANHOLE

		<b>DEPTFORD TOWNSHIP</b> <b>MUNICIPAL UTILITIES AUTHORITY</b> P.O. BOX 5506 DEPTFORD, NEW JERSEY 08096 856-415-1111		<b>415-1111</b>
DATE	REVISIONS	DATE	DRAWN BY:	BACH ASSOCIATES
		MARCH 2012		

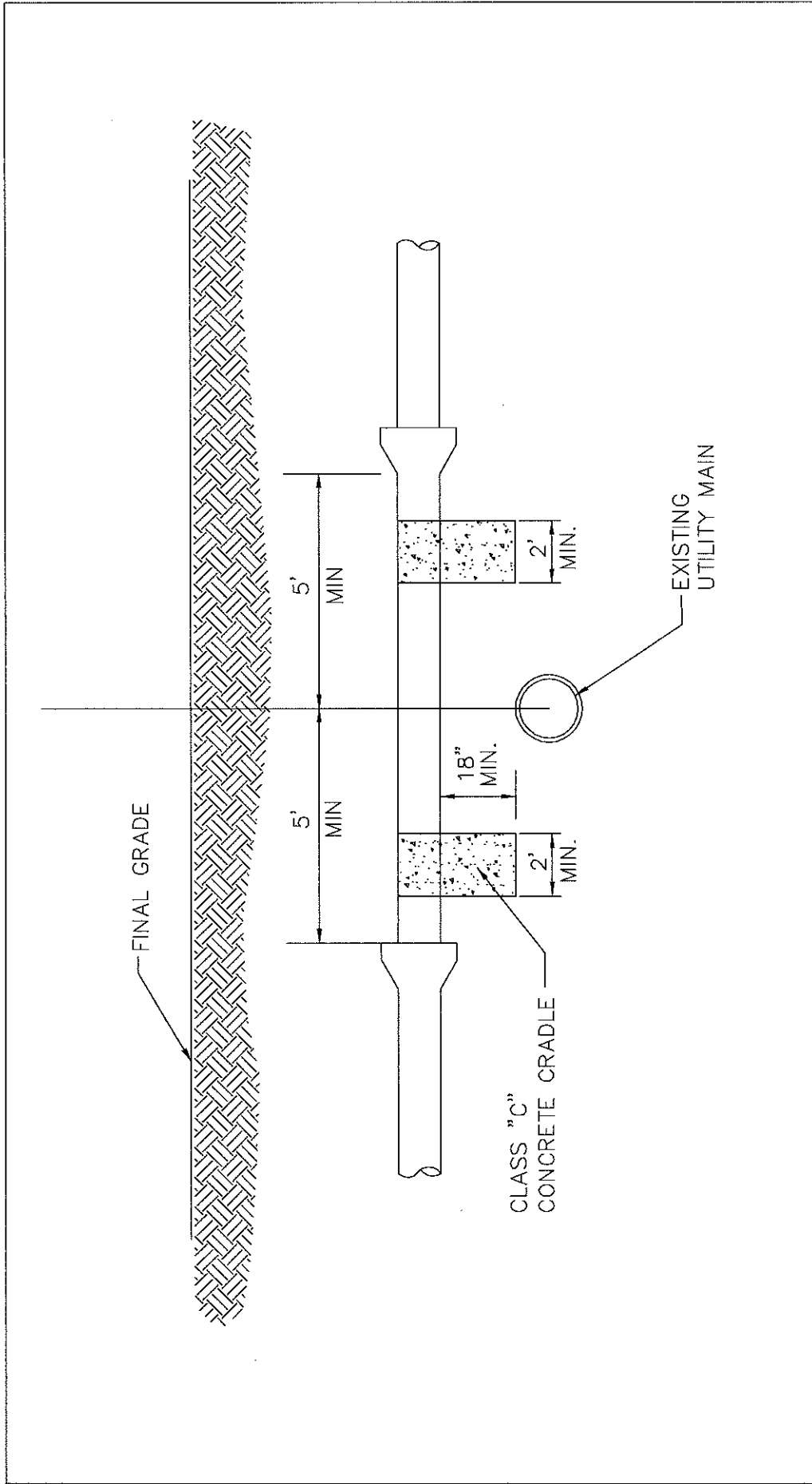
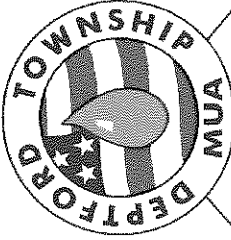


FIGURE 16 - UTILITY CROSSING

DATE	REVISIONS	 <p>DEPTFORD TOWNSHIP MUNICIPAL UTILITIES AUTHORITY P.O. BOX 5506 DEPTFORD, NEW JERSEY 08096 856-415-1111</p>	DATE: MARCH 2012	DRAWN BY: BACH ASSOCIATES	415-1111