

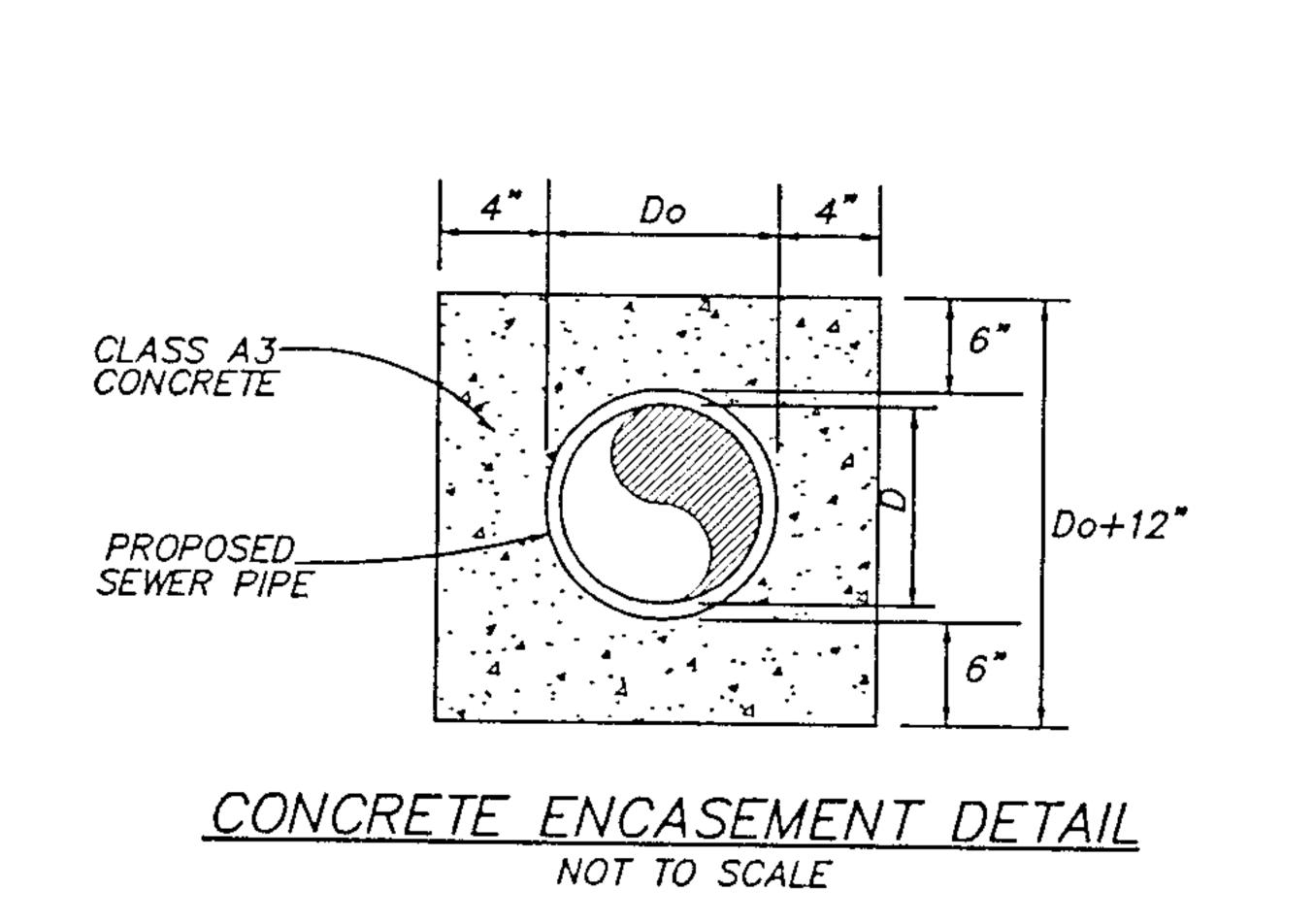
---- STEP SHALL BE

STEP SHALL BE MADE WITH 3/8" STEEL REINFORCING BAR ENCAPSULATED IN POLYPROPYLENE PLASTIC.

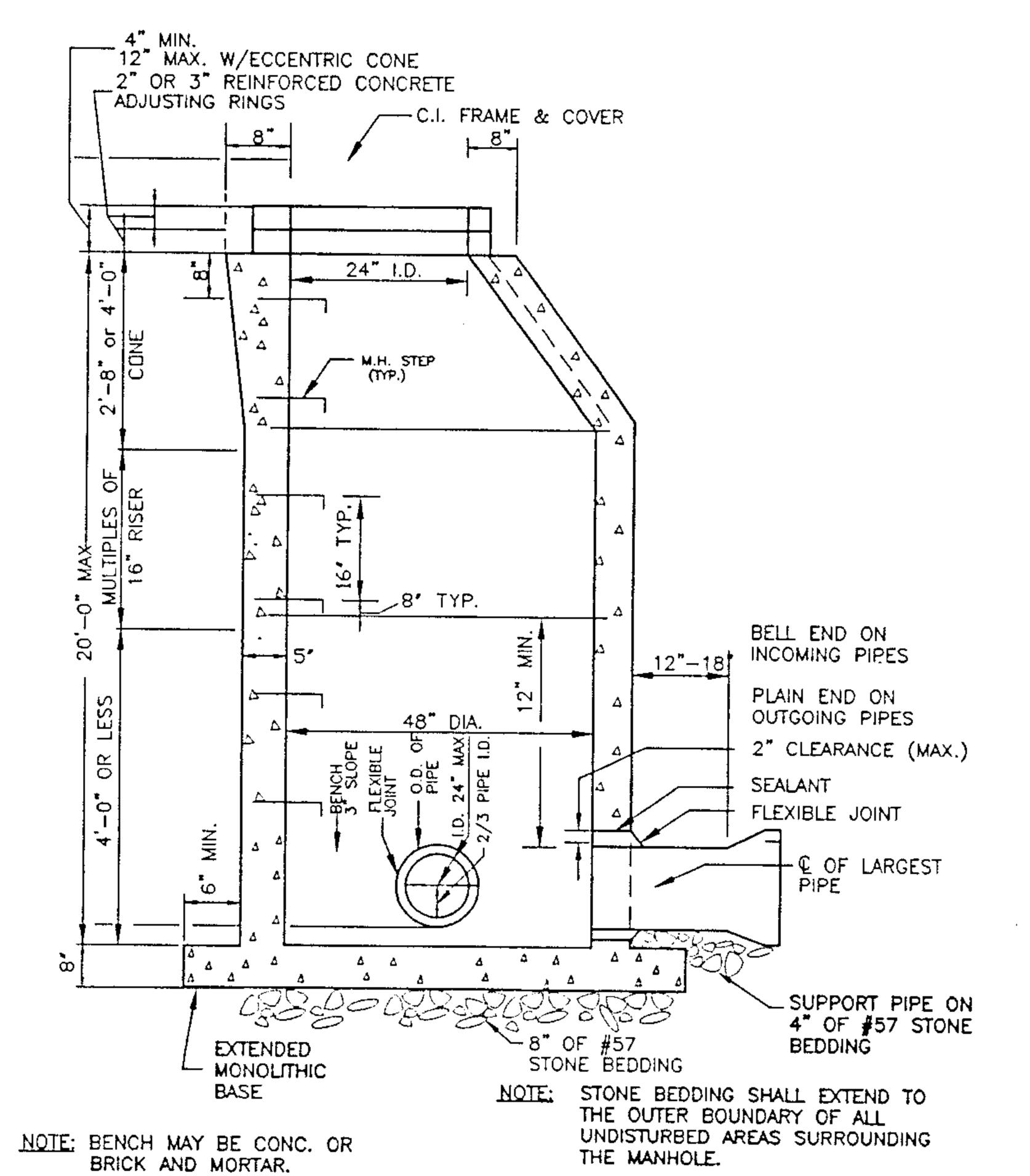
2'-8' DR 4'-0"

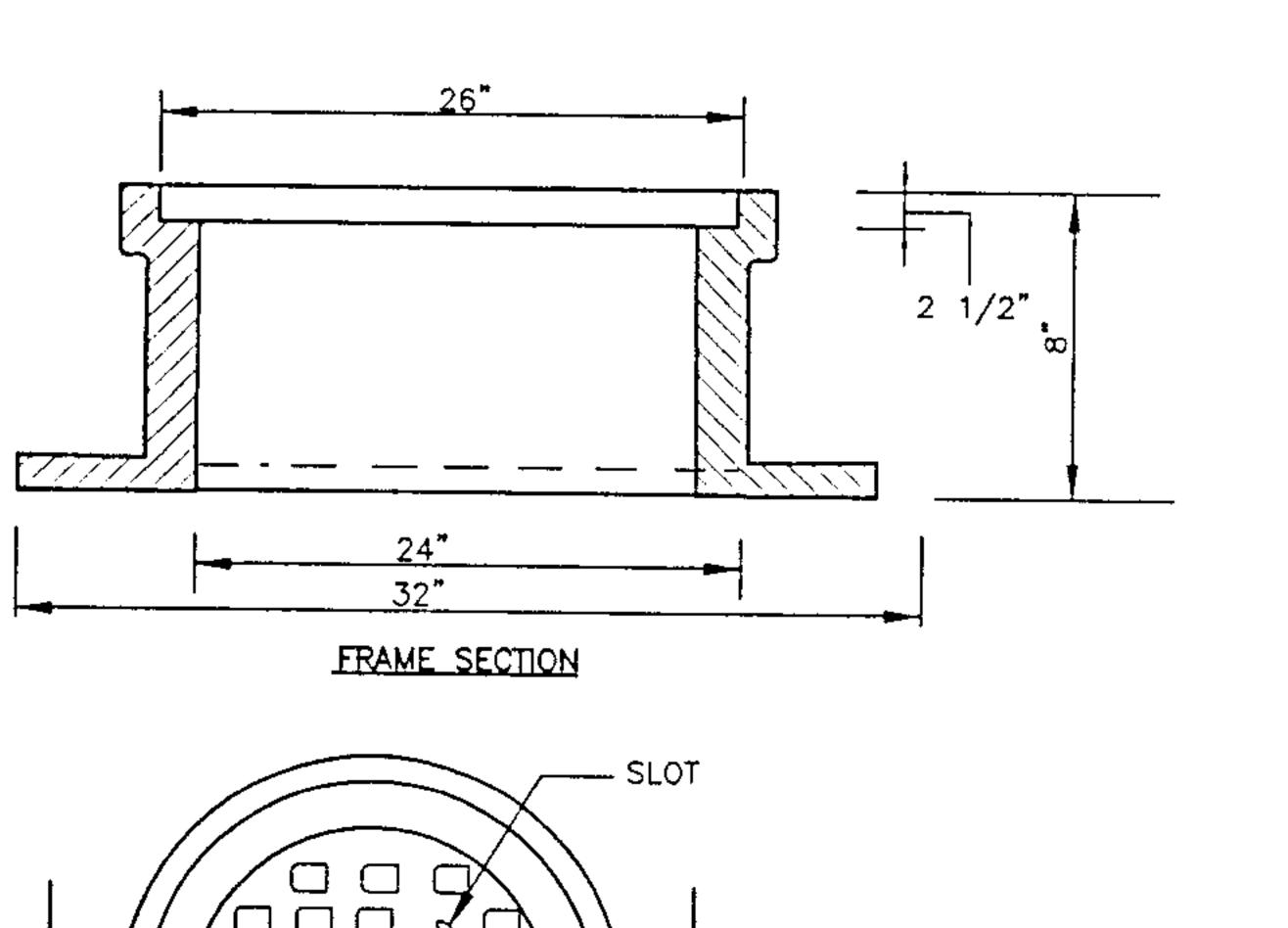
CAST IN PLACE

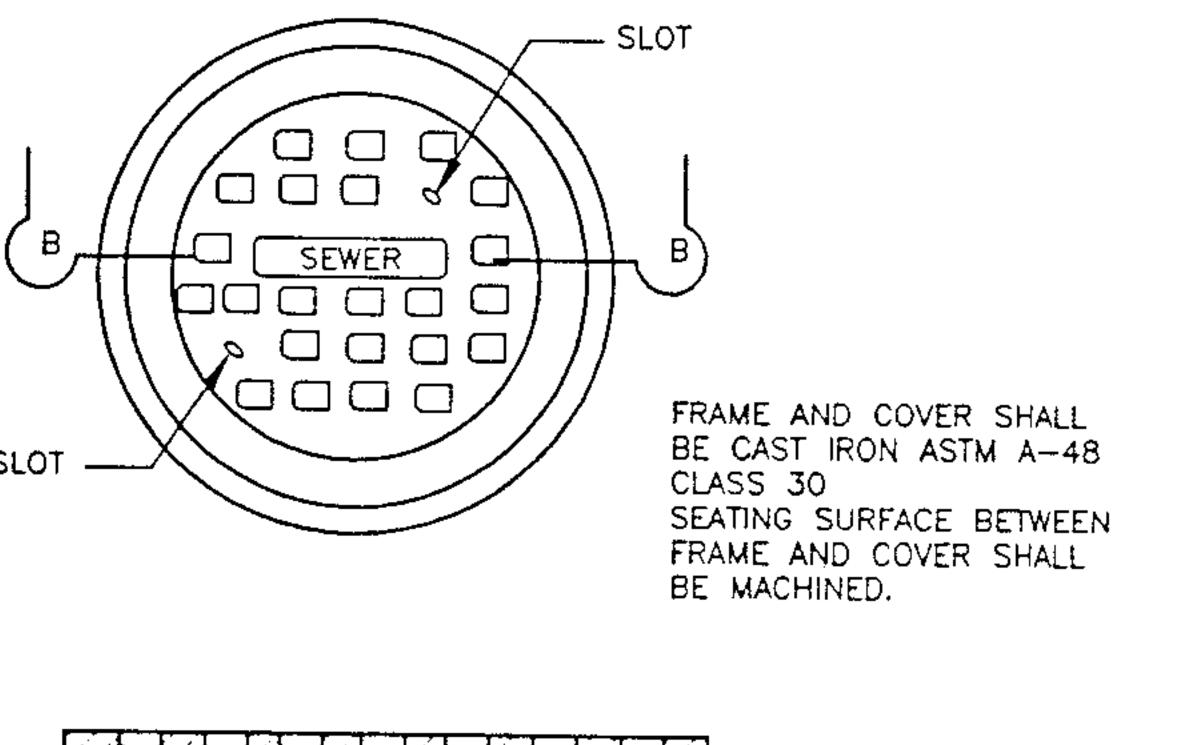
3.75\*

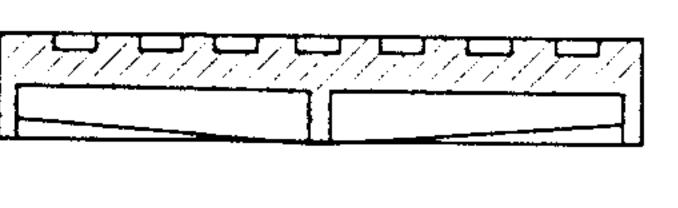


STANDARD PRECAST CONCRETE MANHOLE (SEWERS 8" TO 24") NOT TO SCALE



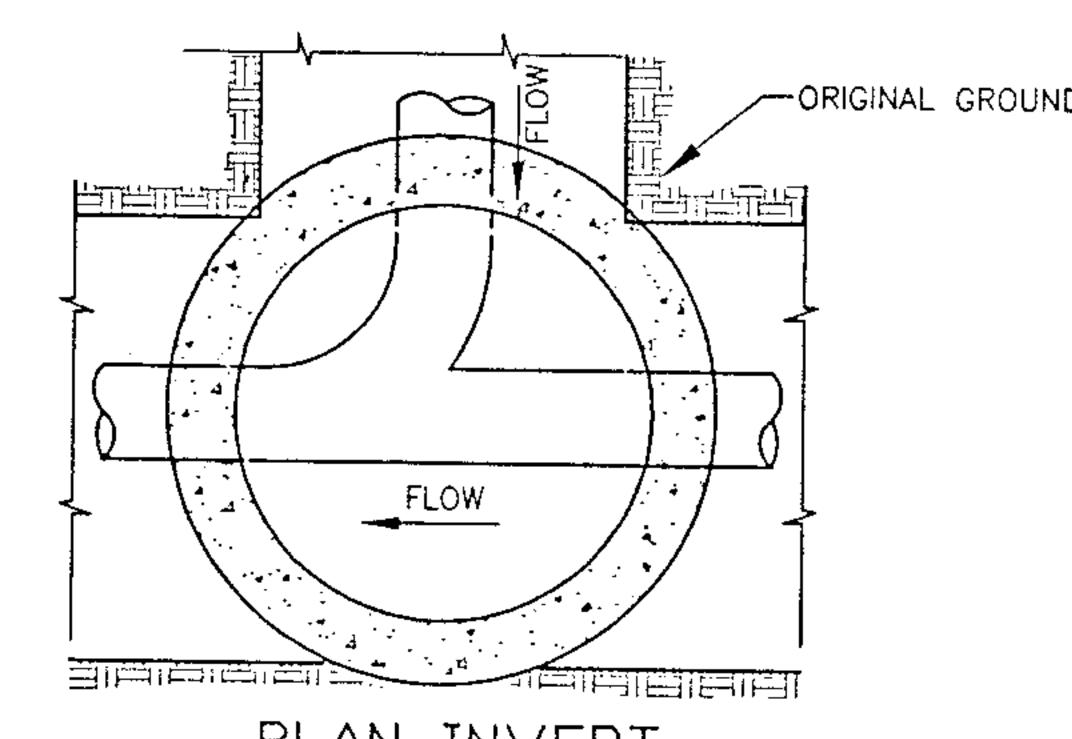




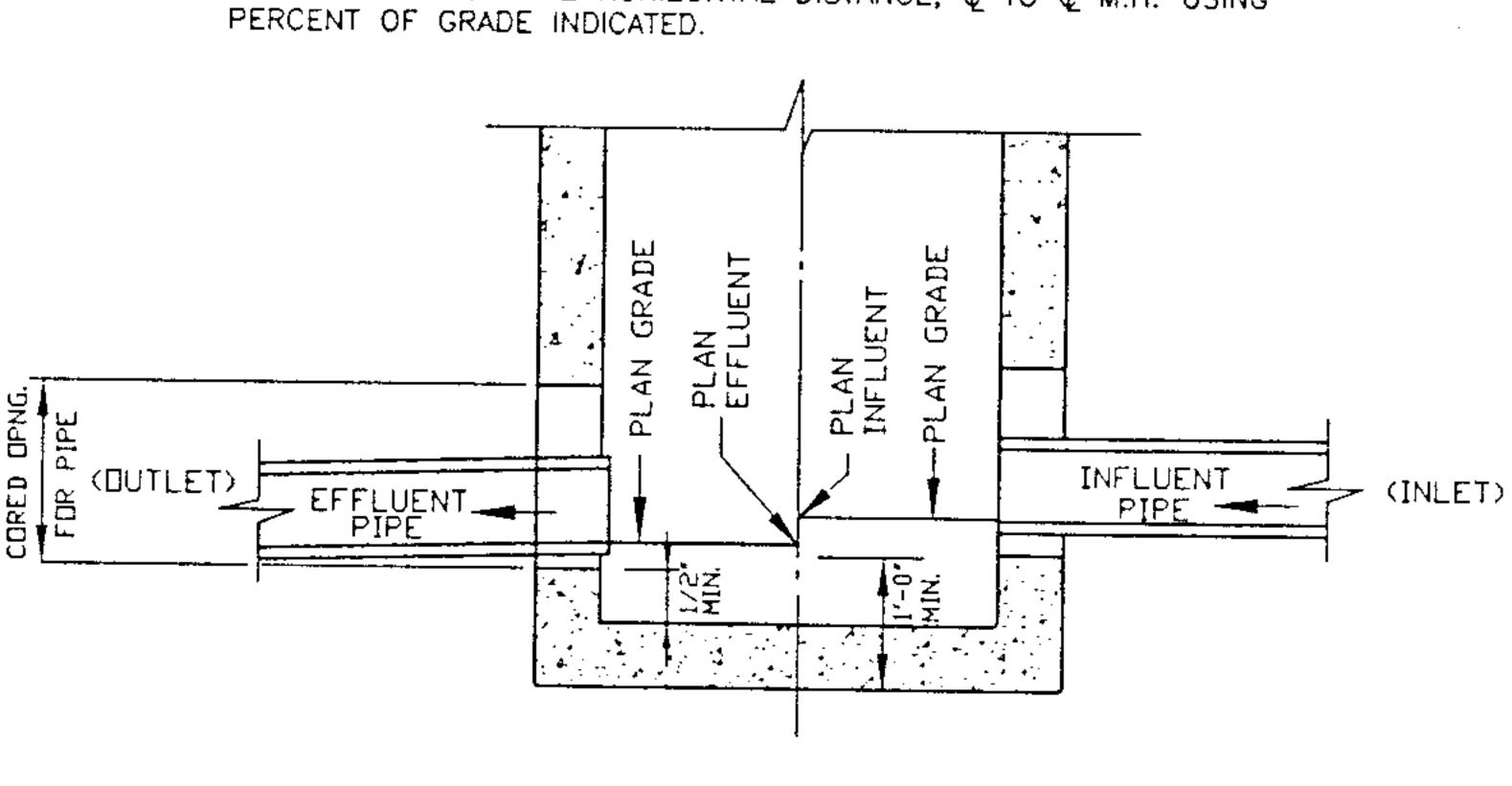


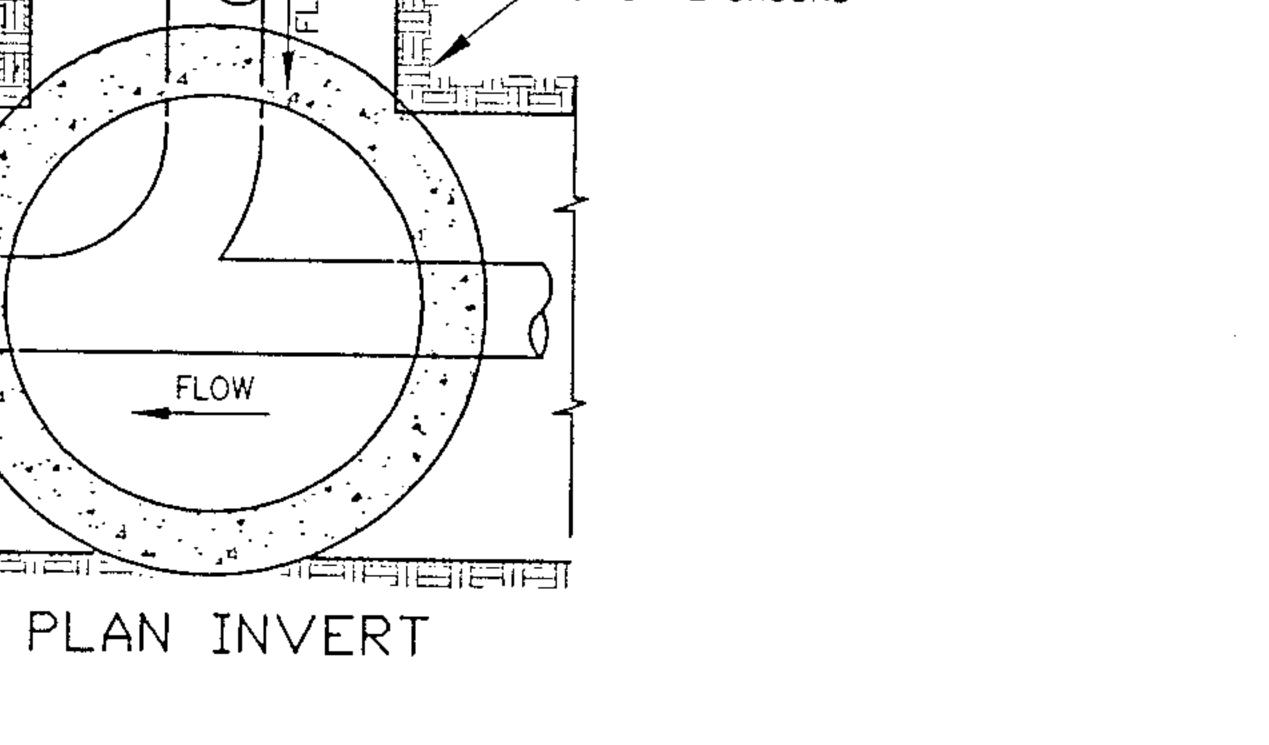
SECT. B-B STANDARD MANHOLE FRAME & COVER

NOT TO SCALE



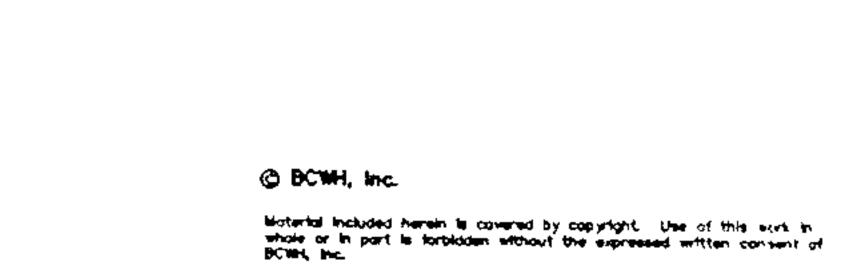
NOTE: THE EFFLUENT ELEVATION SHOWN AT A MANHOLE IS ESTABLISHED FROM THE INFLUENT ELEVATION OF THE MANHOLE IMMEDIATELY DOWNSTREAM. ELEVATIONS SHOWN APPLY AT THE @ OF MANHOLES & ARE BASED ON THE HORIZONTAL DISTANCE, @ TO @ M.H. USING PERCENT OF GRADE INDICATED.





207 West Broad Street Richmond, Virginia 23220 804, 788, 4774 POE 804, 788, 0986 FAX www. bowh. com

STANDARD INVERT DETAILS



ARCHITECTUR

CONSULTING

SOUTH ELEMENTARY

SCHOOL LAGOON

PUMP STATION

PRINCE GEORGE COUNTY

PRINCE GEORGE, VIRGINIA

AND FORCE MAIN

CLOSURE,

SCHOOL BOARD

## PROJECT NUMBER: 20148-07

PROJECT MANAGER: STEVE PELLEI DRAWN BY:

ISSUE DATE:

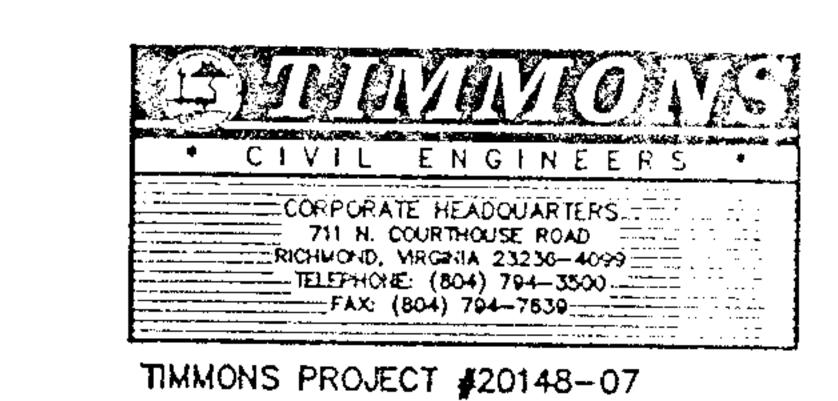
N. MATHIS

JUNE 18, 2002

REVISIONS:



FOR CONSTRUCTION



SHEET TITLE:

MISCELLANEOUS

UTILITY NOTES

AND DETAILS

DROP MANHOLE CROSS —AS MANUFACTURED BY GPK PRODUCTS, INC. OR APPROVED EQUAL USE FLEXIBLE RUBBER BOOT OR

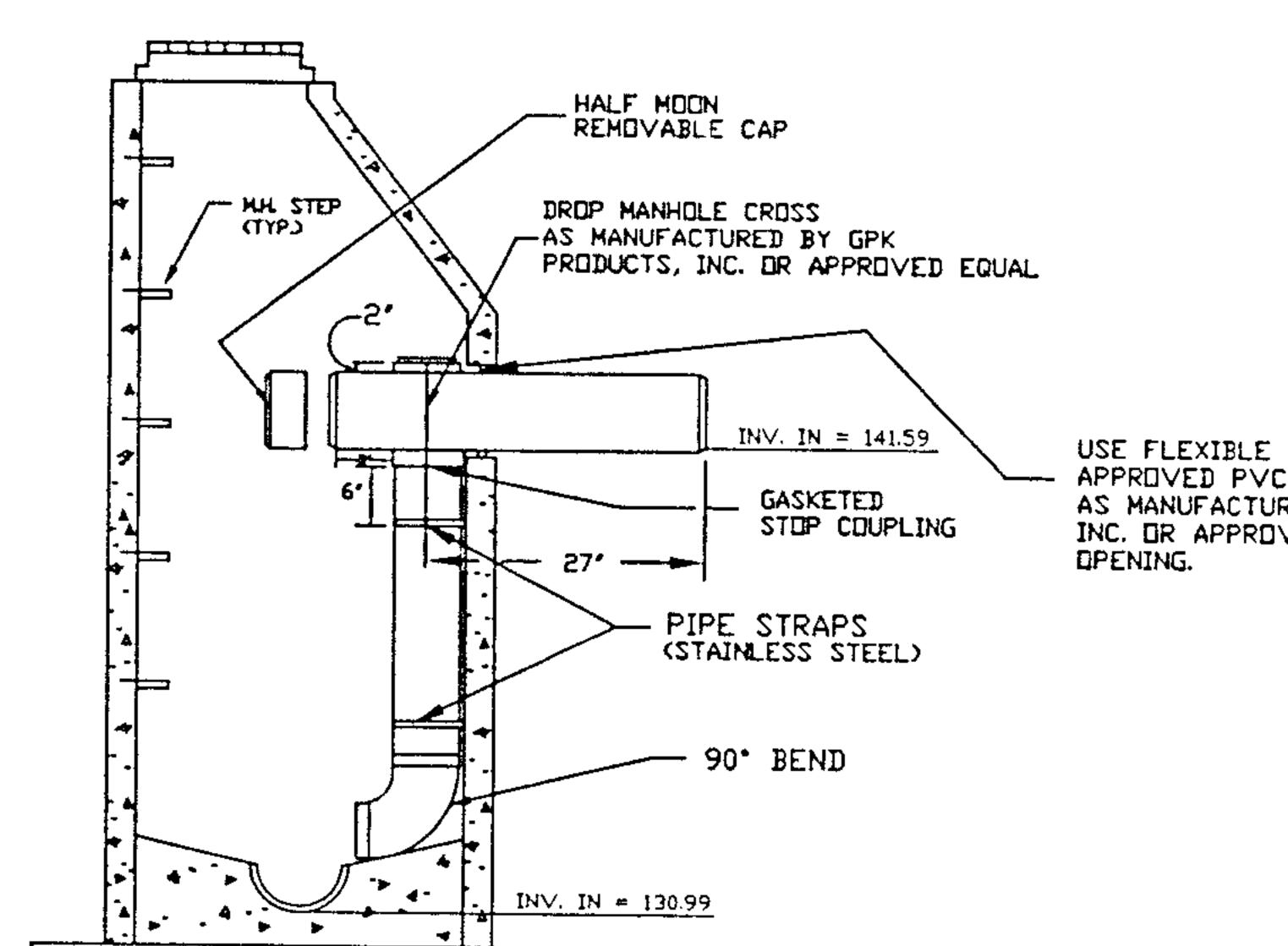
APPROVED PVC MANHOLE ADAPTOR

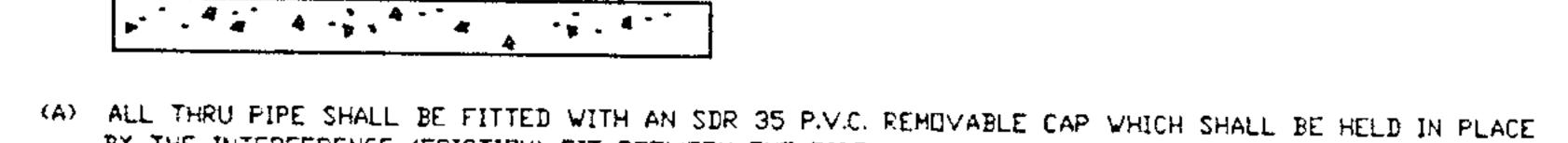
AS MANUFACTURED BY GPK PRODUCTS,

INC. OR APPROVED EQUAL IN CORE
OPENING. INV. IN = 141.59CASING DETAIL NOTES:

- . CARRIER PIPE SHALL BE CENTERED WITHIN CASING BY AN APPROVED STAINLESS STEEL CASING SPACER.
- 2. CASING PIPE SHALL BE SEALED BY USE OF WRAPAROUND END SEALS OR WRAP ENDS OF CARRIER PIPE WITH TAR PAPER AND INSTALL 4" THICK BRICK AND MORTAR PLUG IN THE ANNULAR SPACE A 1" WEEP HOLE.
- THREE CASING SPACERS SHALL BE ATTACHED TO EACH JOINT OF CARRIER PIPE WITH ONE AT THE CENTER AND ONE NOT MORE THAN 24" FROM EACH END. 4. ONE CASING SPACER SHALL BE LOCATED NOT MORE THAN 12" FROM EACH END
- OF CASING PIPE. 5. VALVES OR OTHER CONTROL/MAINTENANCE EQUIPMENT ATTACHED TO WATERLINE/ SEWER FORCE MAINS SHALL BE LOCATED A MINIMUM FOUR PIPE LENGTHS FROM
- THE END OF THE CASING, OR AS APPROVED BY THE COUNTY. 6. STEEL CASING SHALL HAVE A MINIMUM YIELD STRENGTH OF 35,000 PSI AND SUFFICIENT CORROSION PROTECTION.
- . LINES TO BE ENCASED UNDER STATE ROADS/RAILROADS WILL COMPLY WITH COUNTY AND ANY APPLICABLE VDOT/AMERICAN RAILROAD ENDINEERING SPECIFICATIONS WHICHEVER IS MORÉ STRINGENT.
- 8. WHEN INSTALLING CARRIER PIPE, CONTRACTOR SHALL PUSH SO THAT PIPE JOINTS ARE ALWAYS BEING COMPRESSED.
- J. REINFORCED CONCRETE CASING PIPE SHALL BE ASTM C-76, CLASS III STEEL CASING PIPE SHALL BE ASTM-139, GRADE B.

SEWER FORCE MAINS CASING DETAIL FOR ROUTE 156 CROSSING





- BY THE INTERFERENCE (FRICTION) FIT BETWEEN THE PIPE AND CAP.
- (B) ALL CAPS SHALL BE SECURED ID THE DROP FITTING WITH TWO (2) FEET OF GALVANIZED CHAIN SECURED WITH TWO STEEL MACHINE SCREWS, NUTS AND WASHERS.
- (C) CHAMFER ON ALL PIPE SIZES TO BE AT A 15 DEGREE ANGLE.
- (D) HEIGHT OF VERTICAL STACK WILL BE DETERMINED BY ENGINEER, BUT WILL NOT BE LESS THAN TWO FEET. (E) DROP STACK TO BE 6' OR 8' SDR 35 P.V.C. PIPE CONNECTED TO DROP FITTING WITH STANDARD GASKETED
- (F) VERTICAL STACK WILL BE STRAPPED TO MANHOLE AT PIPE JOINTS. STRAPS SHALL BE MADE OF STAINLESS STEEL OR APPROVED MATERIAL NONCORRISIVE TO SEWER GASES.
- (G) SHAPE INVERT AS NEEDED TO PROVIDE SMOOTH TRANSITION FROM DROP CONNECTION DISCHARGE POINT TO SPRING LINE OF MANHOLE INVERT.
- (H) ELBOW AT BOTTOM OF THE STACK WILL BE A 90 DEGREE BEND POSITIONED IN THE DIRECTION OF THE FLOW IN MANHOLE WITH BENCH CONSTRUCTED TO CONFORM TO MANHOLE BENCH.
- (I) MANHOLE OPENING TO BE CORED AS DESCRIBED IN PART III AND PART IV OF THE LATEST COUNTY WATER AND SEVER SPECIFICATIONS.
- (J) DROP STACK SHALL NOT BE INSTALLED WITHIN 60 DEGREES OF THE ACCESS STEPS.
- (K) INSIDE DROP CONNECTIONS MAY BE USED AS AN ALTERNATIVE TO EXTERIOR DROP CONNECTIONS UNDER
- SPECIAL CIRCUMSTANCES, IE. BAD SOILS, HIGH WATER TABLE, UTILITY CONFLICTS, AND EXCESSIVE DEPTHS.

### STANDARD DROP CONNECTION (INSIDE) NOT TO SCALE

# 1. COME SHALL MEET REQUIREMENTS OF ASTM C-478. D-RING GASKET JOINTS MEET REQUIREMENTS OF ASTM C443. 2. CONCRETE SHALL MEET OR EXCEED THE TEST 4000 PSI MINIMUM COMPRESSIVE

41-0'

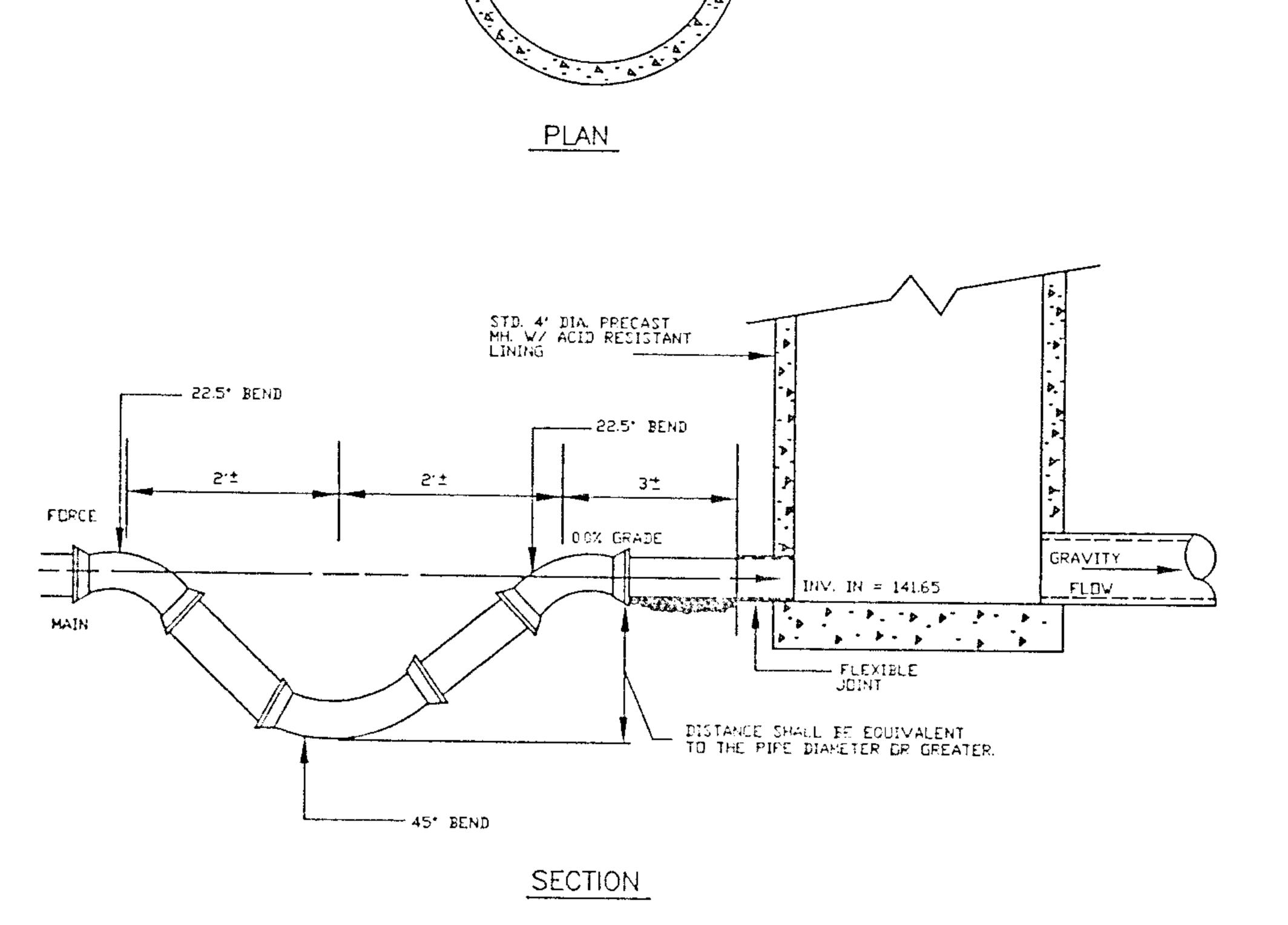
TYPICAL MANHOLE STEP

NOT TO SCALE

- 28 DAY STRENGTH 3. APPROVED STEPS SHALL BE EQUAL, SPACED & 16 INCHES D.C.
- 4. REINFERCING SHALL BE A MINIMUM J2 IN2 VFT. (MINIMUM DF 8 EACH 1/4" PARS DN BACK FACE) & MINIMUM DF 4 EACH - #3 BARS DN FRONT FACE AND W3.4 [5 GAL.] 5. A MAXIMUM OF TWO LIFT HOLES PER SECTION.

16 D.C. (TYP.)

#### STANDARD ECCENTRIC CONE NOT TO SCALE



SEE SPECIFICATIONS SECTION 02730, PART 2.05 FOR SPECIFIC INFORMATION ON ACID RESISTANT COATING

FORCE MAIN

FORCE MAIN DISCHARGE NOT TO SCALE