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DEPARTMENT OF PUBLIC WORKS AND PLANNING ENGINEERING DIVISION CITY OF GRAND JUNCTION, COLORADO	STANDARD SANITARY SEWER DETAILS	APPROVED: <u>DN</u> DATE: <u>JAN. 2009</u> DRAWN: <u>CM</u>	PAGE SS-00
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- A. CONTRACTOR SHALL HAVE ONE SIGNED COPY OF PLANS AND A COPY OF THE CITY OF GRAND JUNCTION'S STANDARD SPECIFICATIONS AT THE JOB SITE AT ALL TIMES.
- B. ALL SEWER MAINS SHALL BE PVC SDR 35 (ASTM 3034) UNLESS OTHERWISE NOTED.
- C. ALL SEWER MAINS SHALL BE LAID TO GRADE UTILIZING A PIPE LASER.
- D. ALL SERVICE LINE CONNECTIONS TO NEW MAINS SHALL BE ACCOMPLISHED WITH FULL BODY WYES OR TEES. TAPPING SADDLES WILL NOT BE ALLOWED.
- E. SERVICE LINE CONNECTIONS TO EXISTING NON-PVC MAINS SHALL BE ACCOMPLISHED USING "INSERTA TEES" MANUFACTURED BY INSERTA FITTINGS COMPANY OF HILLSBORO, OREGON. FOR EXISTING PVC MAINS, TAPPING SADDLES SHALL BE USED.
- F. 4 INCH SERVICES SHALL NOT BE CONNECTED DIRECTLY INTO MANHOLES. ALL 6 INCH SERVICES SHALL BE CONNECTED TO THE MAIN AT A MANHOLE.
- G. THE CONTRACTOR SHALL NOTIFY THE CITY INSPECTOR 48 HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- H. THE CONTRACTOR IS RESPONSIBLE FOR ALL REQUIRED SEWER LINE TESTING TO BE COMPLETED IN THE PRESENCE OF THE ENGINEER OR HIS REPRESENTATIVE. PRESSURE TESTING WILL BE PERFORMED AFTER INSTALLATION OF DRY UTILITIES, AFTER ALL COMPACTION OF STREET SUBGRADE AND PRIOR TO STREET PAVING. FINAL LAMPING WILL ALSO BE ACCOMPLISHED AFTER PAVING IS COMPLETED. THESE TESTS SHALL BE THE MINIMUM BASIS OF ACCEPTANCE OF THE SEWER LINE EXTENSION.
- I. THE CONTRACTOR SHALL OBTAIN CITY OF GRAND JUNCTION STREET CUT PERMIT FOR ALL WORK WITHIN EXISTING CITY RIGHT-OF-WAY PRIOR TO CONSTRUCTION.
- J. A CLAY CUT-OFF WALL SHALL BE PLACED 10 FEET UPSTREAM FROM ALL NEW MANHOLES UNLESS OTHERWISE NOTED. THE CUT-OFF WALL SHALL EXTEND FROM 6 INCHES BELOW TO 6 INCHES ABOVE GRANULAR BACKFILL MATERIAL AND SHALL BE 2 FEET WIDE. IF NATIVE MATERIAL IS NOT SUITABLE, THE CONTRACTOR SHALL IMPORT MATERIAL APPROVED BY THE ENGINEER.
- K. SEWER SERVICE STUB OUTS SHALL BE CAPPED AND PLUGGED. STUB OUT SHALL BE MARKED WITH A 4X4 INCH POST PAINTED GREEN BURIED WITH 3 FEET ABOVE GRADE. AS-BUILT SURVEYING FOR VERTICAL GRADE OF STUB OUT REQUIRED PRIOR TO BACKFILL.
- L. RED LINE AS-BUILTS SHALL BE SUBMITTED TO THE CITY UTILITY ENGINEER AT LEAST 72 HOURS PRIOR TO PAVING FOR REVIEW.

MANHOLE NOTES

- 1. CONCRETE SHALL BE COLORADO DEPARTMENT OF TRANSPORTATION CLASS "B" (SECTION 601.02)
- 2. ALL CEMENT USED IN MORTAR, CONCRETE BASES, GRADE RINGS, RISER SECTIONS AND CONES FOR SANITARY SEWER MANHOLES, SHALL BE TYPE V OR MODIFIED TYPE II PORTLAND CEMENT WITH LESS THAN 5% TRICALCIUM ALUMINATE.
- 3. MANHOLE RISER SECTIONS, CONES AND GRADE RINGS SHALL BE PRECAST REINFORCED CONCRETE CONFORMING TO ASTM C-478 OR AASHTO M-199.
- 4. BACKFILL AROUND MAHHOLES AND OTHER PIPELINE STRUCTURES SHALL BE PLACED IN 8" MAX. LIFTS AND COMPACTED TO 95% AASHTO T-99 WITH HAND OPERATED MECHANICAL EQUIPMENT.
- 5. ALL WORK SHALL BE IN ACCORDANCE WITH APPROVED PLANS AND CITY SPECIFICATION.
- 6. THE MANHOLE CONE AND BARREL SECTIONS SHALL BE POSITIONED SUCH THAT THE MANHOLE RING AND STEPS ARE AT A 45° ANGLE FROM THE INLET PIPE (SEE PAGE SS-08).
- 7. MANHOLE RING AND COVER SHALL BE SET TO FINISH GRADE USING RAPID ROAD REPAIR GROUT TO ADJUST RIM ELEVATION. GROUT SHALL NOT EXCEED 2". THICKNESS. GROUT SHALL BE PLACED BETWEEN TOP OF CONCRETE GRADE RING AND RING AND COVER. STEEL GRADE ADJUSTMENT RINGS MAY BE USED FOR ADJUSTMENT OF MANHOLE COVERS ONLY WHEN STREETS ARE OVERLAID.
- 8. INVERTED MANHOLE RINGS WILL NOT BE ALLOWED UNLESS APPROVED BY THE ENGINEER.

GENERAL SEWER NOTES

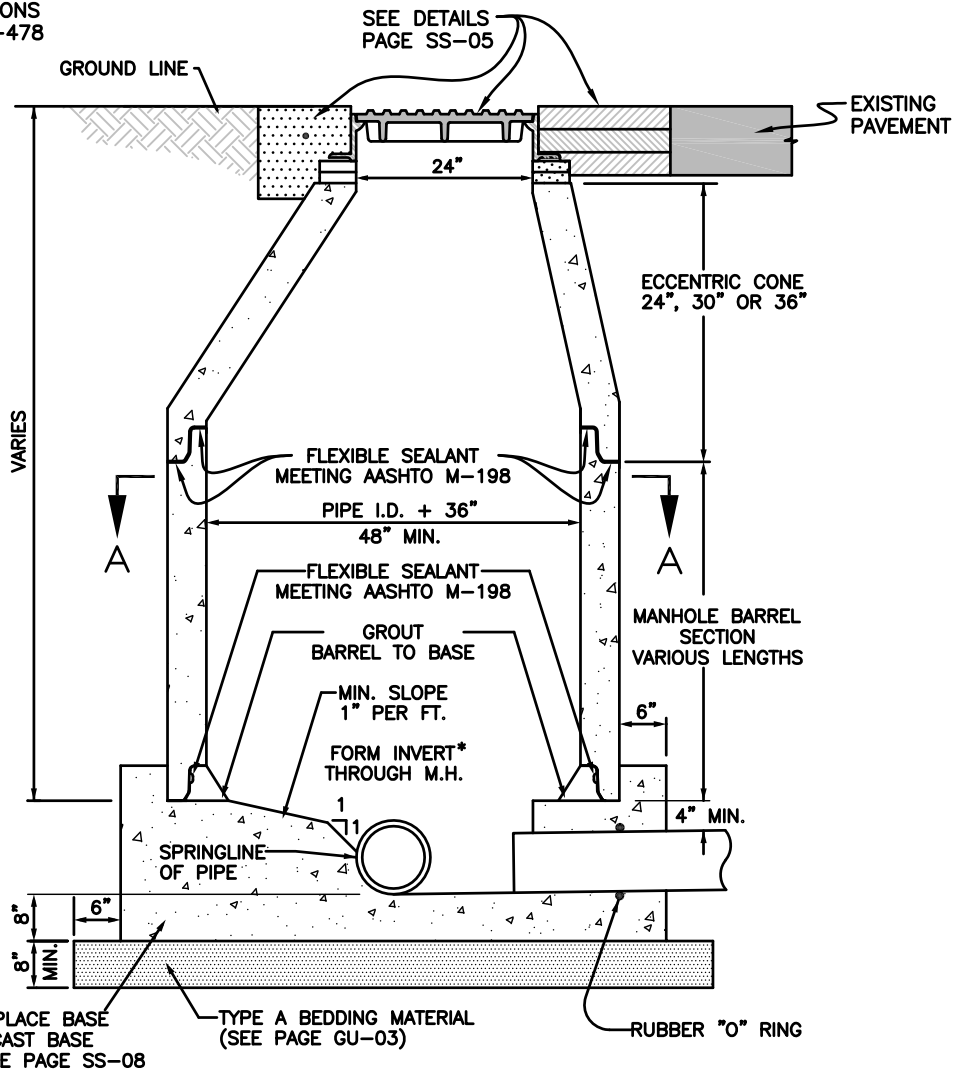
DEPARTMENT OF PUBLIC WORKS AND PLANNING
ENGINEERING DIVISION
CITY OF GRAND JUNCTION, COLORADO

STANDARD SANITARY SEWER
DETAIL

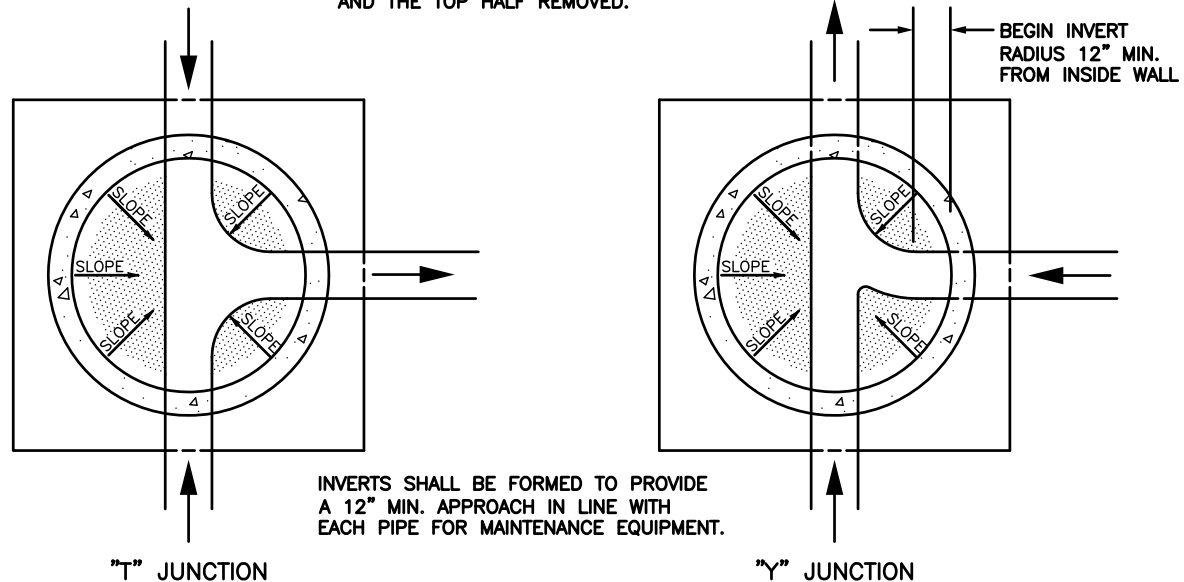
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SS-01

ALL PRECAST MANHOLE SECTIONS
SHALL CONFORM TO ASTM C-478
OR AASHTO M-199



* FOR IN LINE MANHOLES THE PIPE MAY
BE INSTALLED THROUGH THE MANHOLE BASE
AND THE TOP HALF REMOVED.



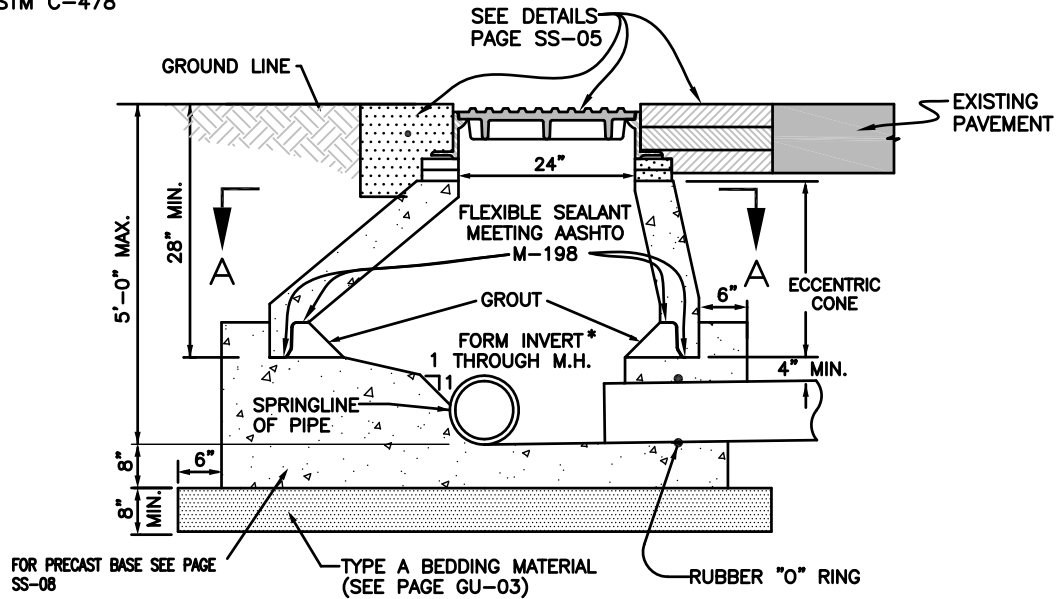
SECTION A-A

STANDARD MANHOLE - CAST IN PLACE BASE

DEPARTMENT OF PUBLIC WORKS AND PLANNING ENGINEERING DIVISION CITY OF GRAND JUNCTION, COLORADO	STANDARD SANITARY SEWER DETAIL	APPROVED: <u>DN</u> REVISED: <u>FEB. 2007</u> DRAWN: <u>TLT</u>	PAGE SS-02
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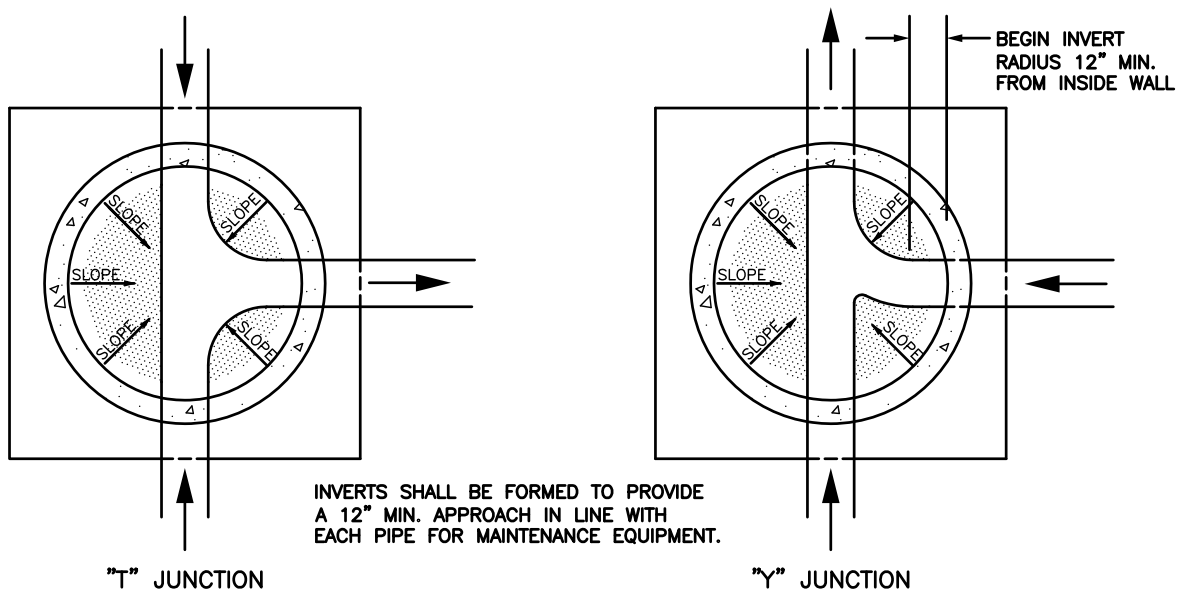
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ALL PRECAST MANHOLE SECTIONS
SHALL CONFORM TO ASTM C-478
OR AASHTO M-199



* FOR IN LINE MANHOLES THE PIPE MAY BE
INSTALLED THROUGH THE MANHOLE BASE
AND THE TOP HALF REMOVED.

NOTE:
MANHOLES SHALLower THAN SHOWN ABOVE SHALL BE APPROVED BY
THE CITY UTILITY ENGINEER.



INVERTS SHALL BE FORMED TO PROVIDE
A 12" MIN. APPROACH IN LINE WITH
EACH PIPE FOR MAINTENANCE EQUIPMENT.

SECTION A-A

STANDARD SHALLOW MANHOLE - CAST IN PLACE BASE

DEPARTMENT OF PUBLIC WORKS AND PLANNING
ENGINEERING DIVISION
CITY OF GRAND JUNCTION, COLORADO

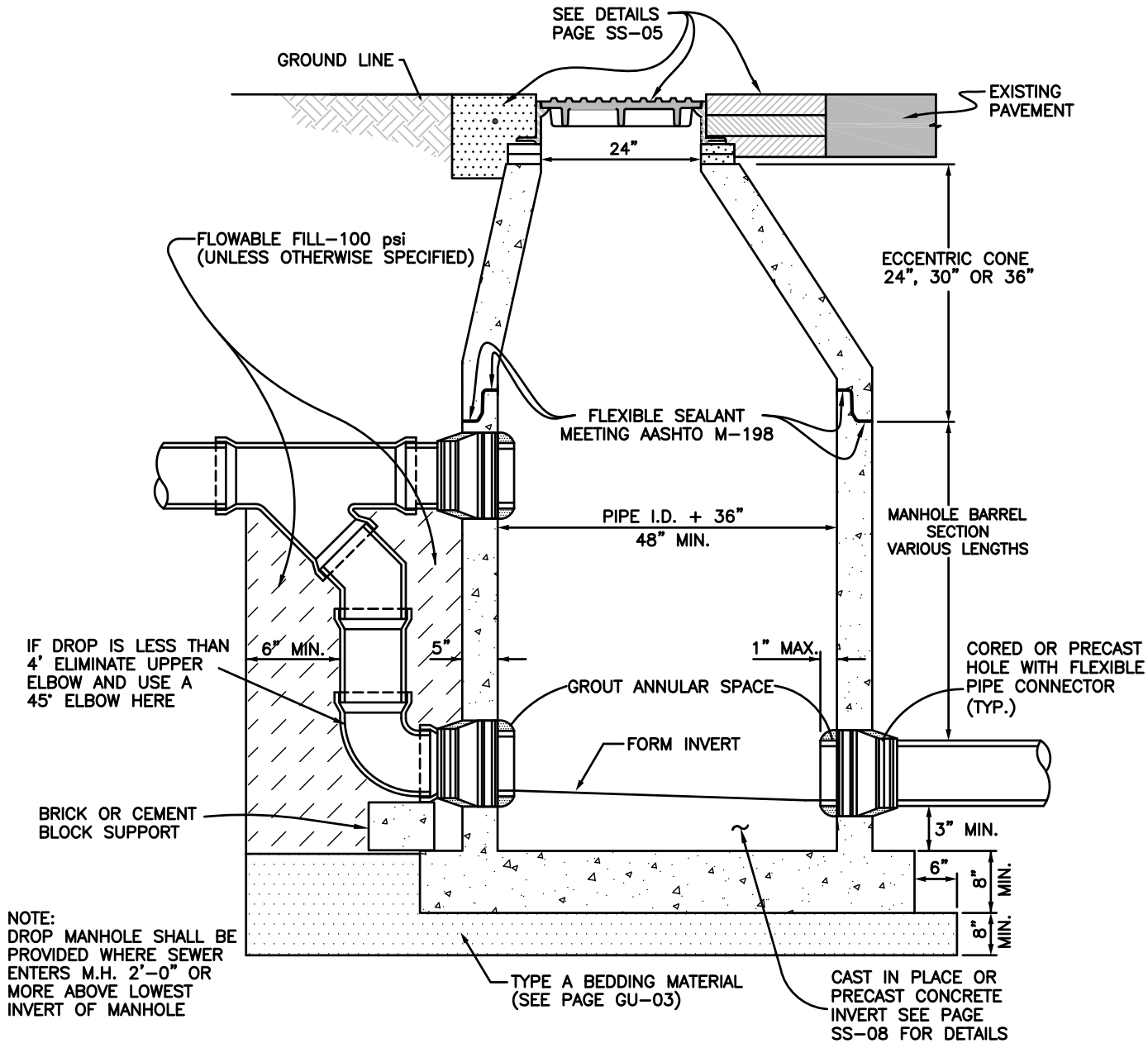
STANDARD SANITARY SEWER
DETAIL

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ALL PRECAST MANHOLE SECTIONS
SHALL CONFORM TO ASTM C-478
OR AASHTO M-199



NOTE:
DROP MANHOLE SHALL BE
PROVIDED WHERE SEWER
ENTERS M.H. 2'-0" OR
MORE ABOVE LOWEST
INVERT OF MANHOLE

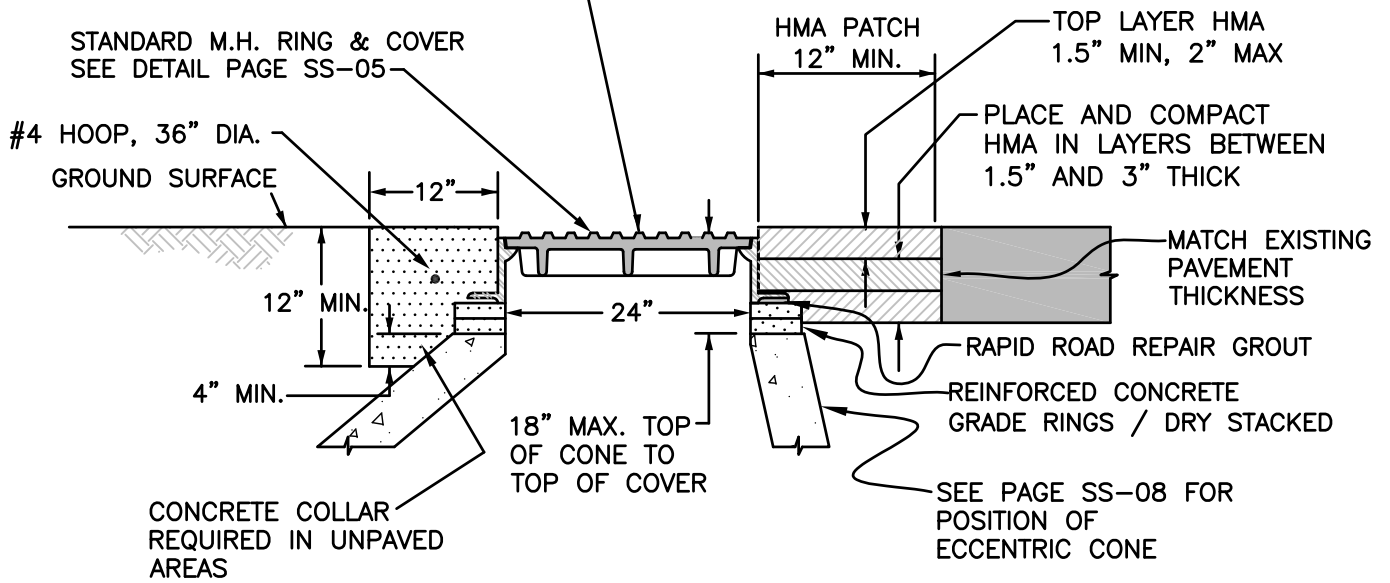
NOTE: THE INTERIOR SURFACES OF ALL DROP
MANHOLES SHALL BE EPOXY COATED IN
ACCORDANCE WITH SECTION 102 OF THE CITY'S
STANDARD SPECIFICATIONS FOR CONSTRUCTION OF
UNDERGROUND UTILITIES.

DROP MANHOLE

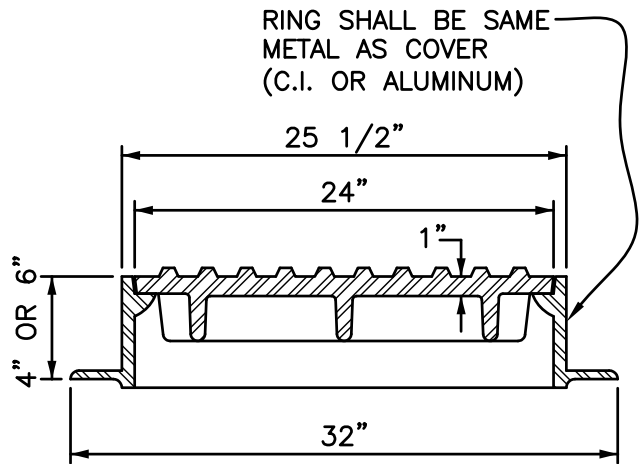
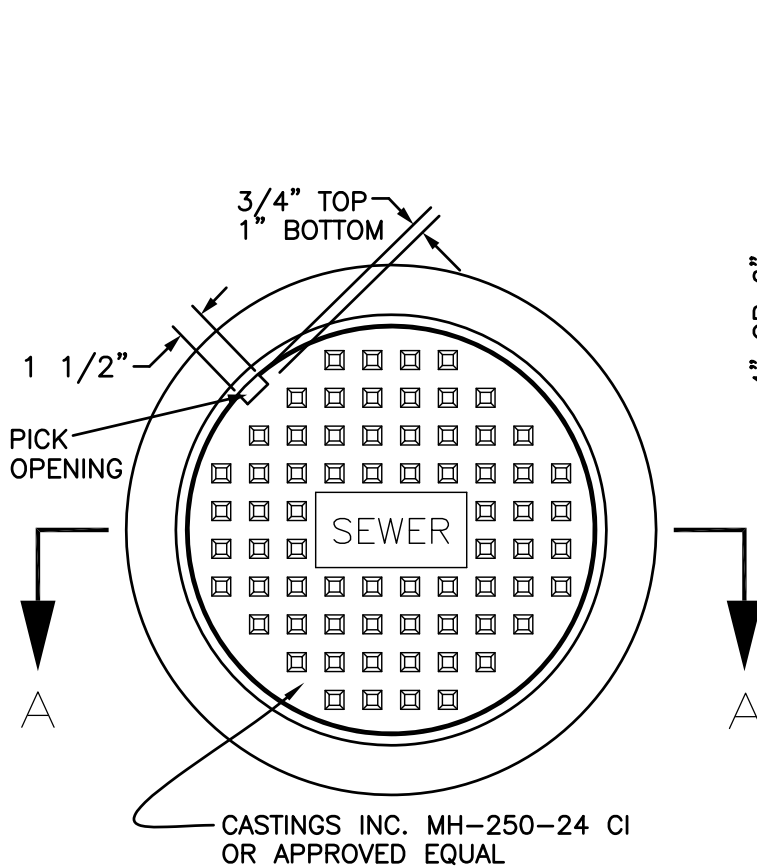
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ADJUST MANHOLE RING AND COVER TO MATCH SLOPE OF PAVEMENT. TOP OF KNOBS ON MANHOLE LID SHALL BE FLUSH WITH, OR NO MORE THAN 1/8" BELOW TOP OF PAVEMENT.



DETAIL A



SECTION A-A

NOTE:
FOR SEWER MANHOLES LOCATED IN SIDEWALK OR OTHER PEDESTRIAN WAY USE CASTINGS INC. MH-250-24D CI (CHECKER PATTERN LID)

STANDARD MANHOLE RING AND COVER

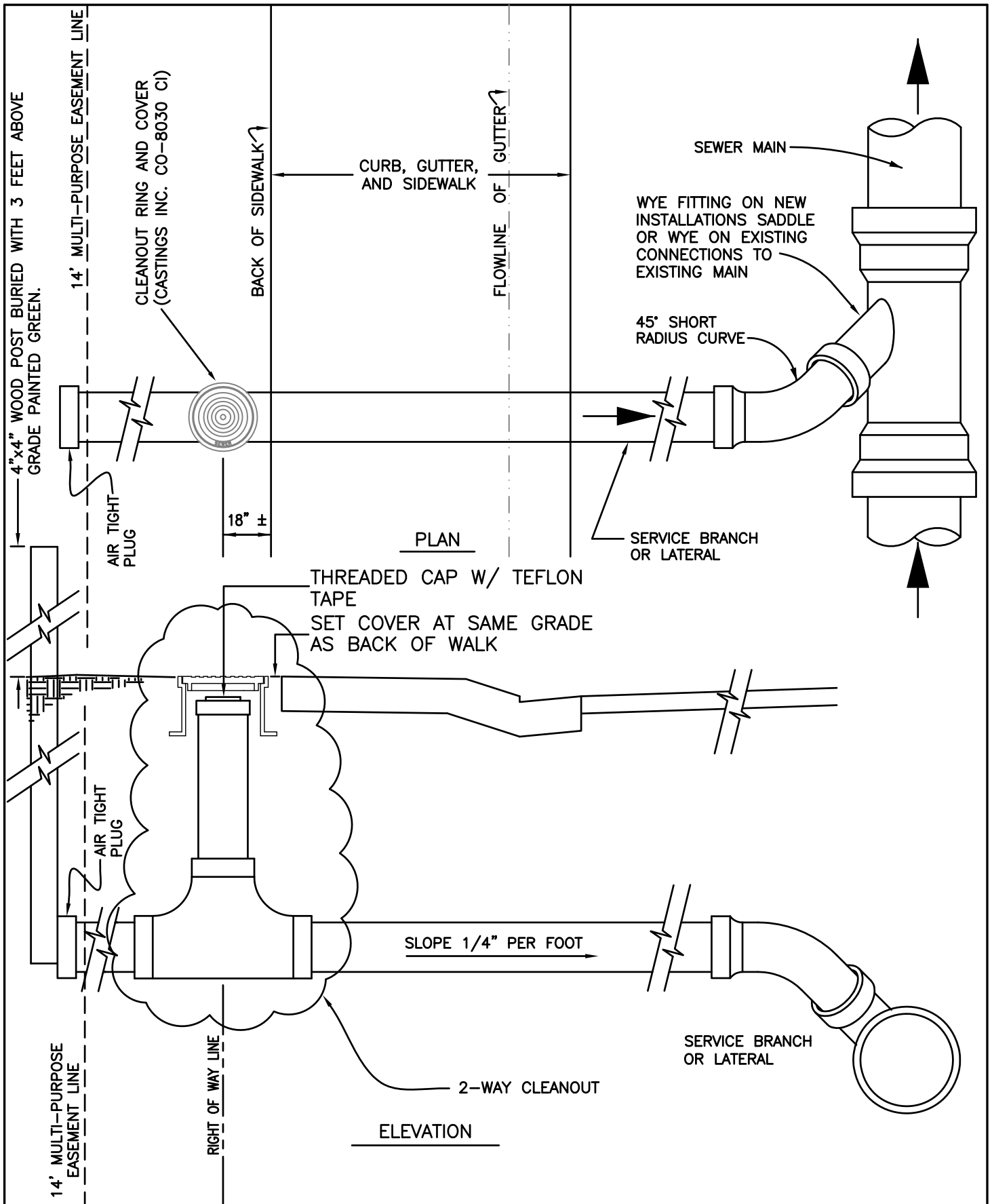
DEPARTMENT OF PUBLIC WORKS AND PLANNING
ENGINEERING DIVISION
CITY OF GRAND JUNCTION, COLORADO

STANDARD SANITARY SEWER
DETAIL

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TYPICAL SERVICE "Y" CONNECTION

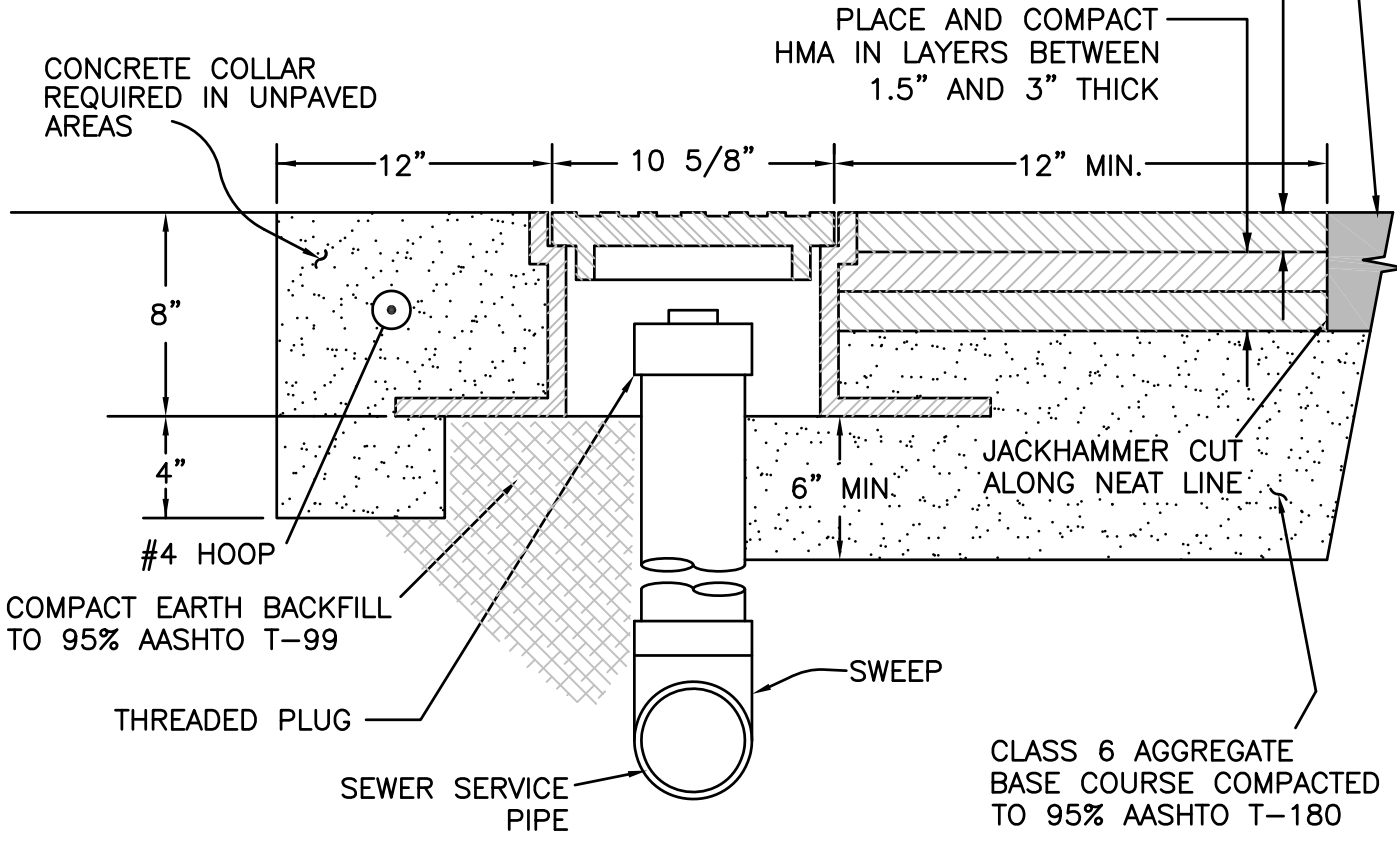
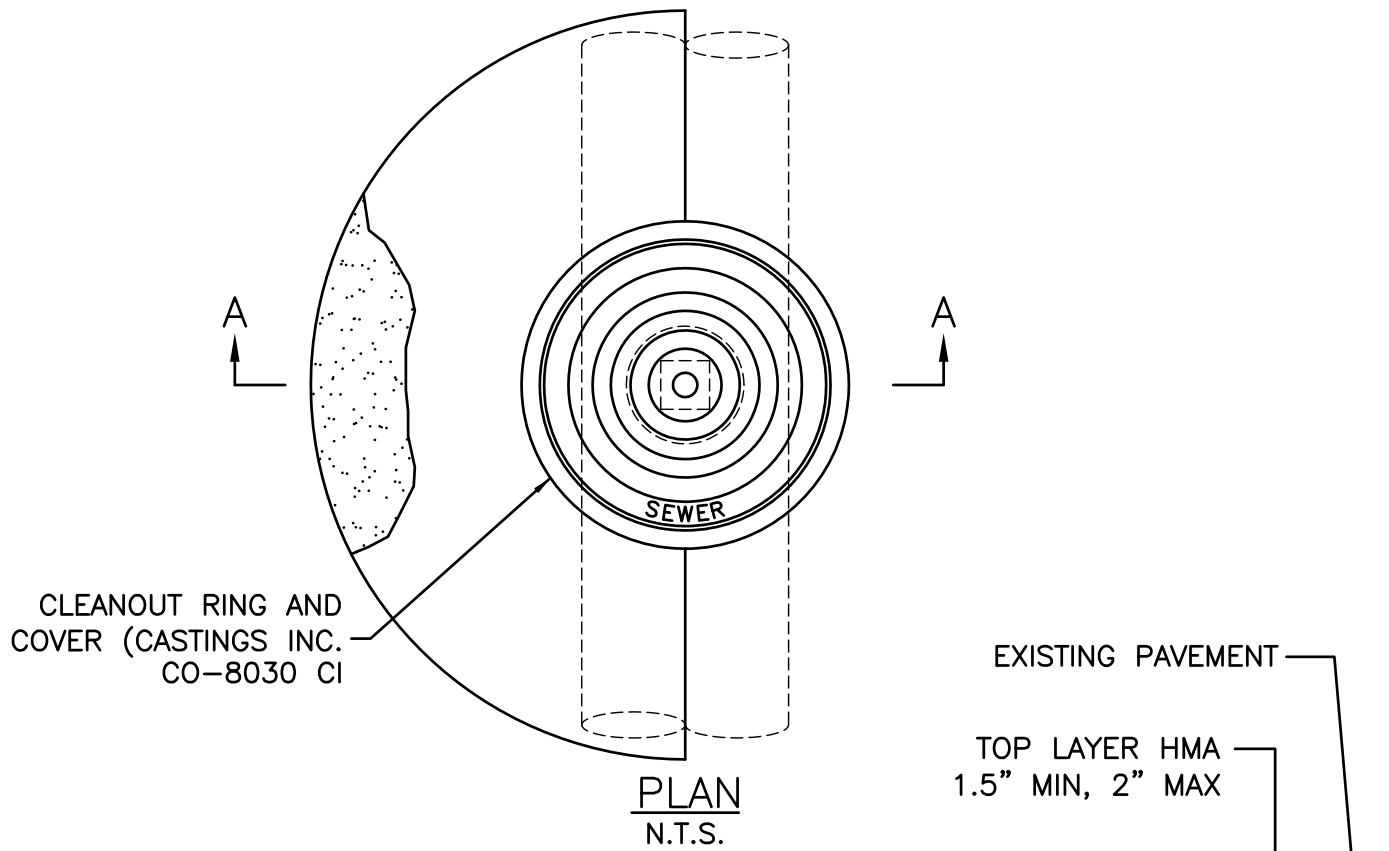
DEPARTMENT OF PUBLIC WORKS AND PLANNING
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CITY OF GRAND JUNCTION, COLORADO

STANDARD SANITARY SEWER SERVICE
DETAIL

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SECTION A-A
N.T.S.

SEWER SERVICE CLEANOUT WITHIN RIGHT-OF-WAY

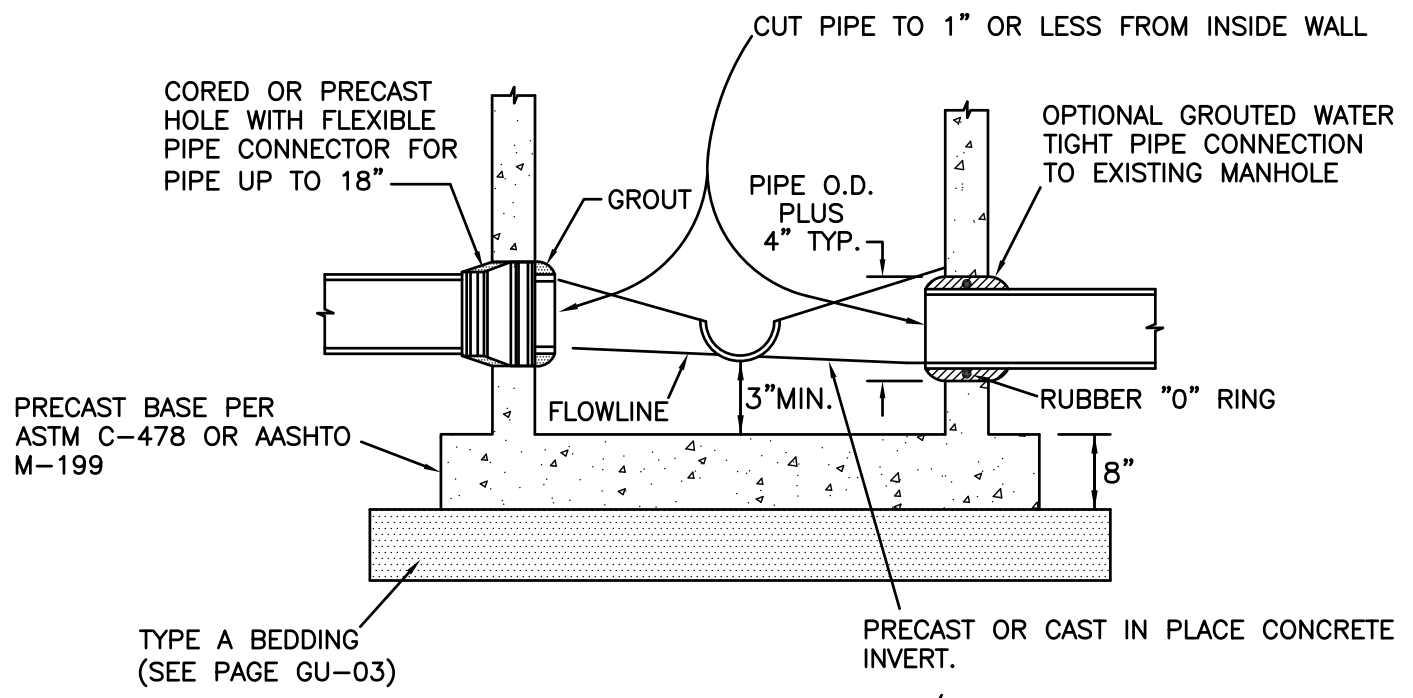
DEPARTMENT OF PUBLIC WORKS AND PLANNING
ENGINEERING DIVISION
CITY OF GRAND JUNCTION, COLORADO

STANDARD SEWER LINE
DETAIL

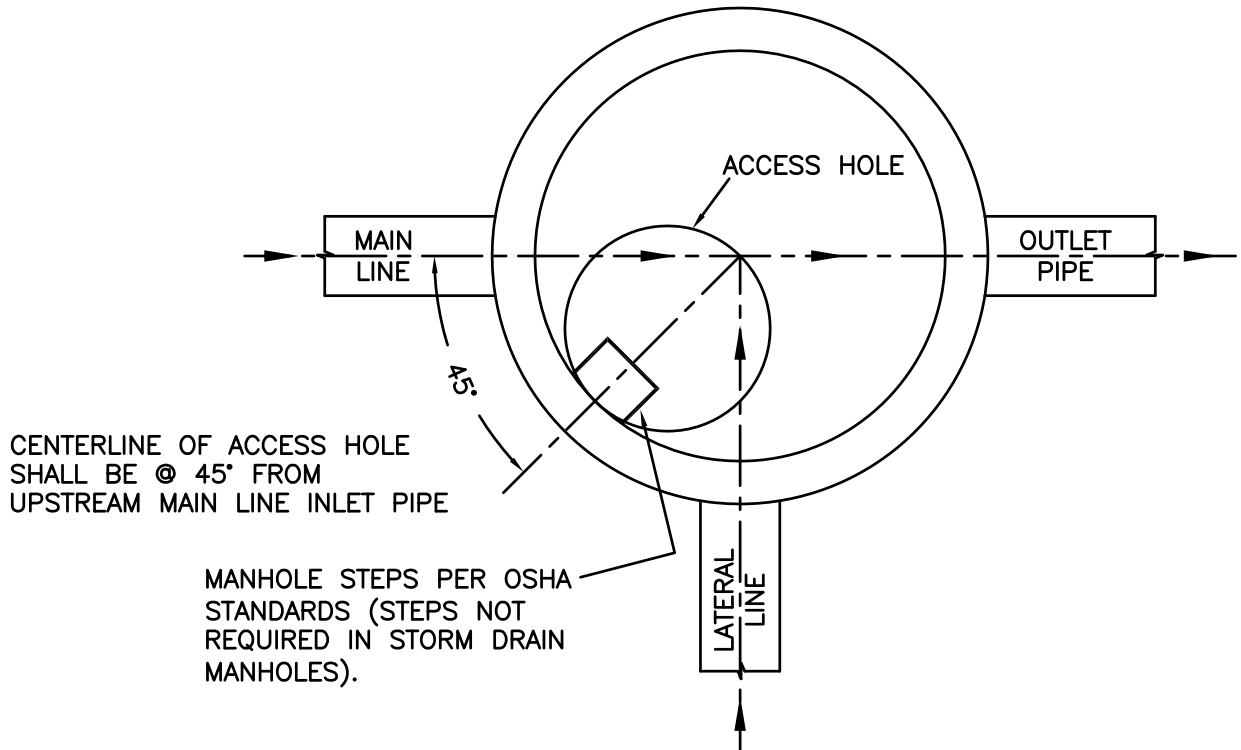
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SS-07

GROUT FOR PIPE CONNECTIONS SHALL BE ALL-CRETE (5 OR 20 MINUTE SET) MANUFACTURED BY FOSROC INC. OR AN APPROVED SUBSTITUTE.



PRECAST MANHOLE BASE/TIE TO EXISTING MANHOLE WITHOUT BOOT



MANHOLE ACCESS LOCATION

PRECAST MANHOLE BASE, PIPE CONNECTIONS AND ACCESS HOLE LOCATION

DEPARTMENT OF PUBLIC WORKS AND PLANNING ENGINEERING DIVISION CITY OF GRAND JUNCTION, COLORADO	STANDARD SANITARY SEWER DETAIL	APPROVED: <u>DN</u> DATE: <u>JULY 2005</u> DRAWN: <u>CM</u>	PAGE SS-08
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