



DEPARTMENT OF PUBLIC WORKS & UTILITIES  
ENGINEERING DIVISION

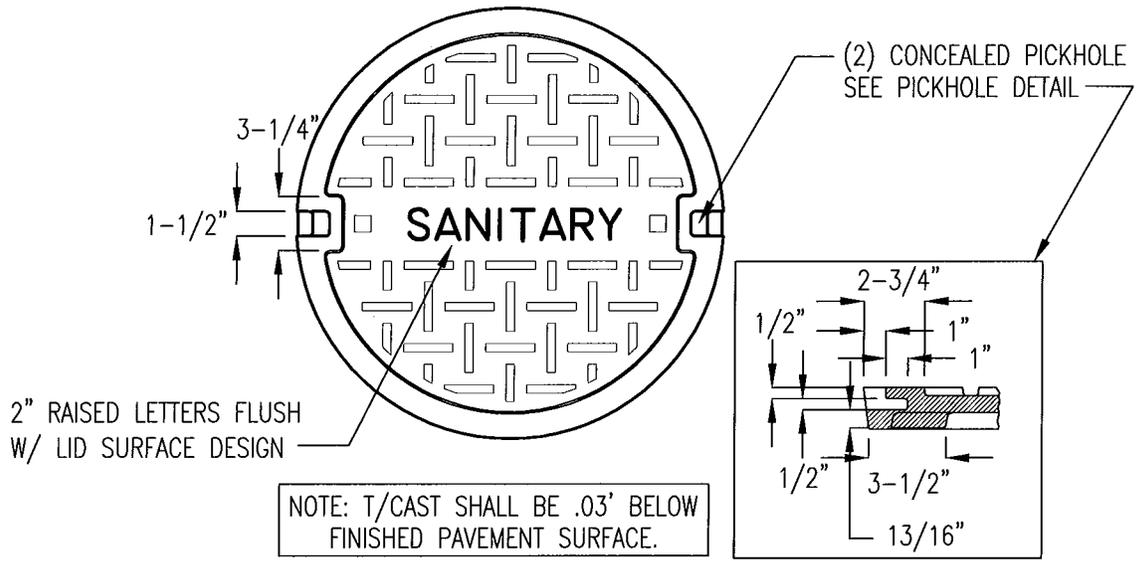
STANDARD DETAIL DRAWINGS

### SANITARY SEWER DETAILS

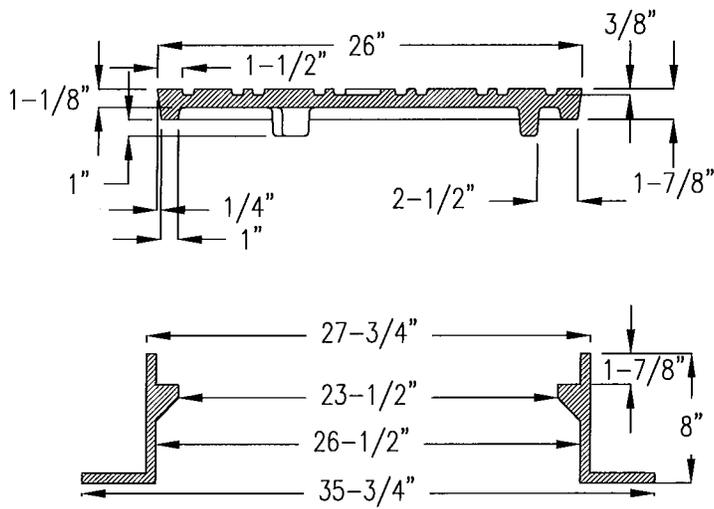
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WGT. 298 LBS		MATERIAL: GRAY IRON CLASS 35B
WGT. 122 LBS	TOTAL WEIGHT 420 LBS.	SPEC.: ASTM A-48-74

NOTE: SUITABLE FOR HS25 WHEEL LOADS



NOTE: T/CAST SHALL BE .03' BELOW FINISHED PAVEMENT SURFACE.



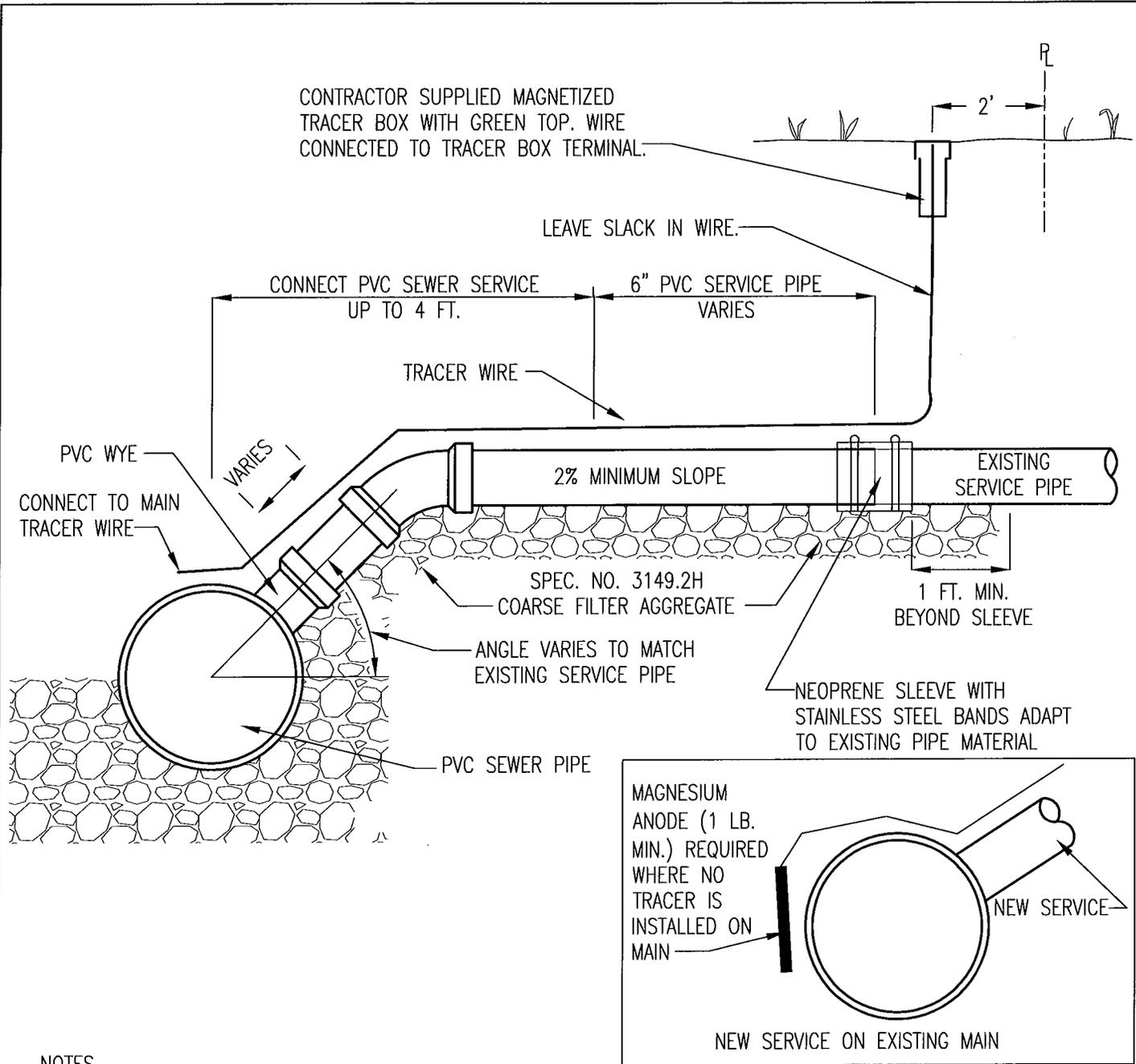
SANITARY CASTING DETAIL

SAN-1

REVIEWED/APPROVED 2/01/2013

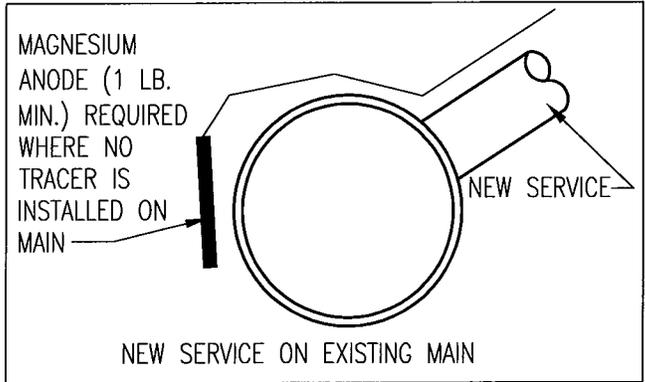
CITY OF DULUTH STANDARD DETAIL  
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NO SCALE

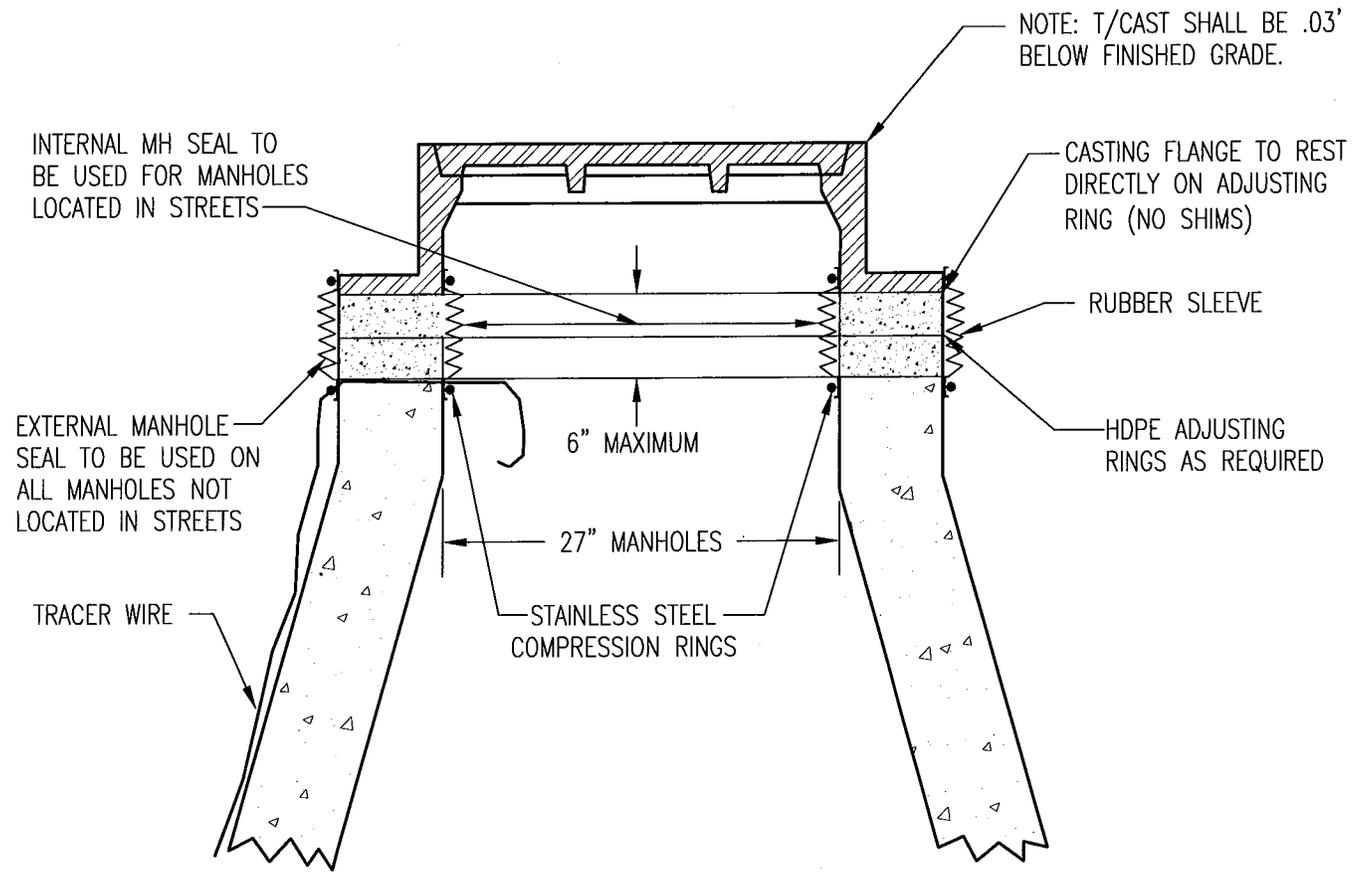


NOTES

1. BID ITEM FOR PVC WYE INCLUDES FURNISHING AND INSTALLING WYE IN SEWER MAIN.
2. CONNECT SANITARY SERVICE INCLUDES UP TO 4.0' OF PVC HOUSE SERVICE PIPE AND ALL FITTINGS
3. 6" PVC SEWER SERVICE PIPE IS INTENDED FOR THE RECONSTRUCTION OF SEWER SERVICES (WHEN FOUND TO BE IN NEED BY THE ENGINEER) COMPLETE IN PLACE FROM 4.0' BEYOND THE C/L OF THE SEWER MAIN TO A POINT DESIGNATED BY THE ENGINEER
4. FOR NEW SERVICES, PIPE TO STOP AT RIGHT OF WAY
5. #12 GAUGE GREEN INSULATED COPPER TRACER WIRE SHALL BE INSTALLED WITH SANITARY SEWER MAINS AND SERVICES. TRACER WIRE TERMINAL BOXES SHALL BE INSTALLED DIRECTLY ABOVE THE SEWER SERVICE OR AS DETERMINED BY THE ENGINEER
6. FOR SERVICES, TRACER WIRE SHALL RUN FROM THE WYE AND TERMINATE IN A FLUSH MOUNTED TRACER BOX WITH A GREEN CAST IRON LOCKABLE TOP.
7. THE TRACER WIRE SHALL REMAIN CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. SPLICES IN THE TRACER WIRE SHOULD BE MADE WITH SPLIT BOLT CONNECTORS. WIRE NUTS SHALL NOT BE USED. A WATER-PROOF CONNECTION IS NECESSARY TO PREVENT CORROSION.



TYPICAL SEWER SERVICE CONNECTION		SAN-2
REVISED/APPROVED 2/01/2013	CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES	NO SCALE



NOTE:

1. ALL SEALS SHALL EXTEND FROM THE CASTING TO THE CONE
2. TRACER WIRE REQUIRED ON ALL SANITARY SEWER MAINS

SANITARY MANHOLE SEAL

SAN-3

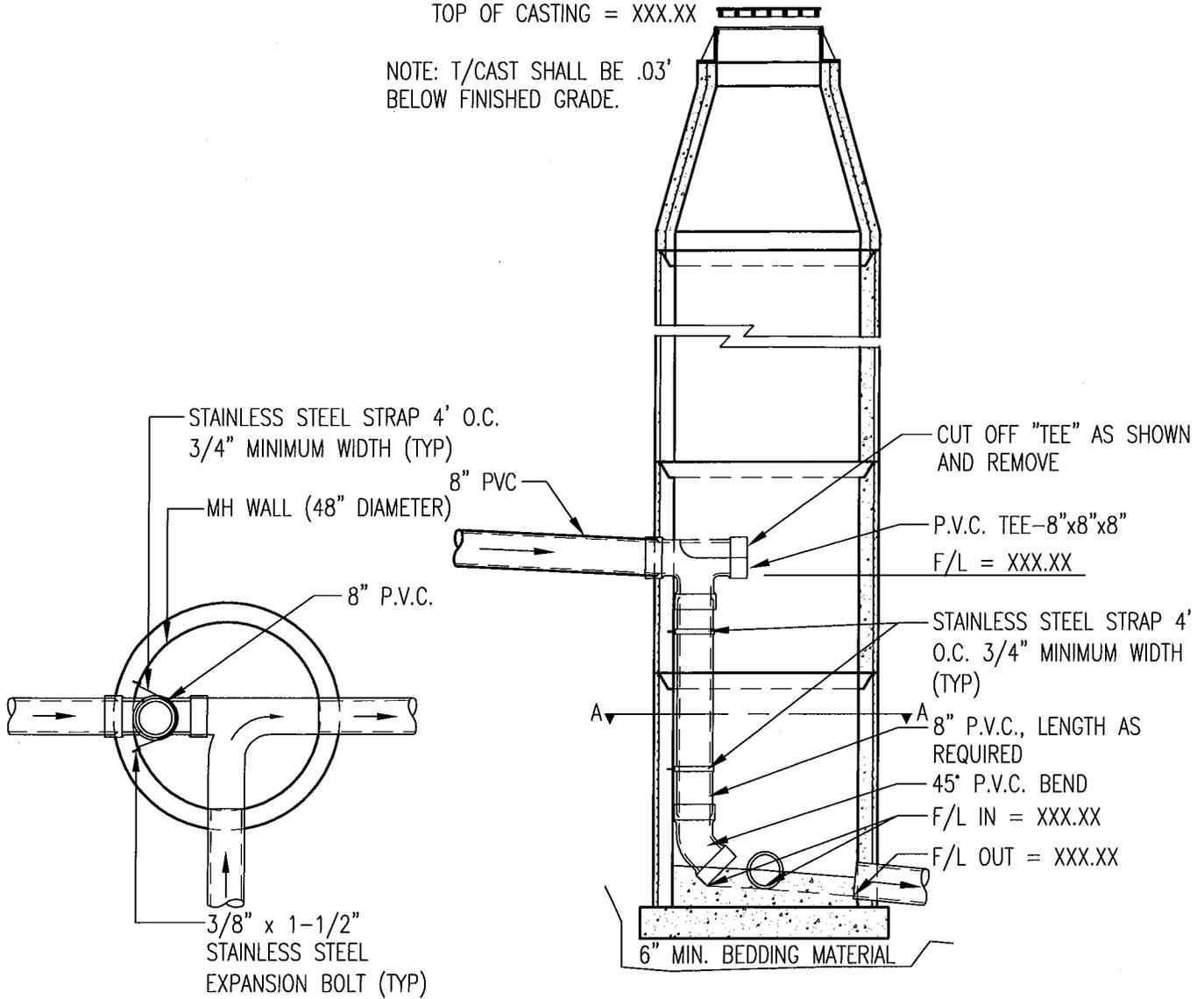
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NO SCALE

TOP OF CASTING = XXX.XX

NOTE: T/CAST SHALL BE .03'  
BELOW FINISHED GRADE.



SECTION AA

NOTES: REFER TO PLAN/PROFILES FOR ELEVATIONS

CONSTRUCT INSIDE DROP STRUCTURE

SAN-4

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NO SCALE

CONTRACTOR SUPPLIED MAGNETIZED  
TRACER BOX WITH GREEN TOP OVER  
1-1/2" I.D. BLK IRON PIPE. WIRE  
CONNECTED TO TRACER BOX TERMINAL.

2" I.D. BLK IRON PIPE BOTTOM SECTION SCREWED  
ONTO 2" X 1 1/2" I.D. REDUCING BUSHING  
SUPPLIED BY CITY AT GARFIELD SHOP AND  
INSTALLED BY CONTRACTOR. (INCIDENTAL)

BUTT FUSE REDUCER AS NECESSARY  
TO MATCH LATERAL DIAMETER

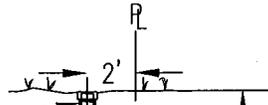
BUTT FUSE WYE

HDPE FORCE MAIN

HDPE LATERAL SERVICE

SPEC. NO. 3149.2H  
COARSE FILTER AGGREGATE

CONCRETE BLOCK

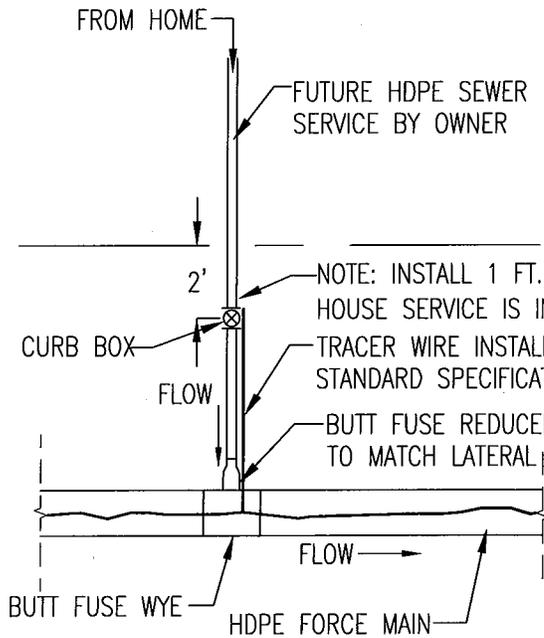


7' MINIMUM COVER

TRACER WIRE RUN ALONG  
OUTSIDE OF STANDPIPE

LEAVE SLACK IN WIRE

TRACER  
WIRE



NOTES:

1. #12 GAUGE GREEN INSULATED COPPER TRACER WIRE SHALL BE INSTALLED WITH THE NON-CONDUCTIVE SERVICE PIPE. TRACER WIRE INSTALLATION REQUIRES ACCESS POINTS AT LEAST EVERY 300 FEET.
2. THE TRACER WIRE SHALL REMAIN CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. SPLICES IN THE TRACER WIRE SHOULD BE MADE WITH SPLIT BOLT CONNECTORS. WIRE NUTS SHALL NOT BE USED. A WATER-PROOF CONNECTION IS NECESSARY TO PREVENT CORROSION.
3. TRACER WIRE SHALL RUN FROM THE WYE AND TERMINATE IN A FLUSH MOUNTED TRACER BOX WITH A GREEN CAST IRON TOP.

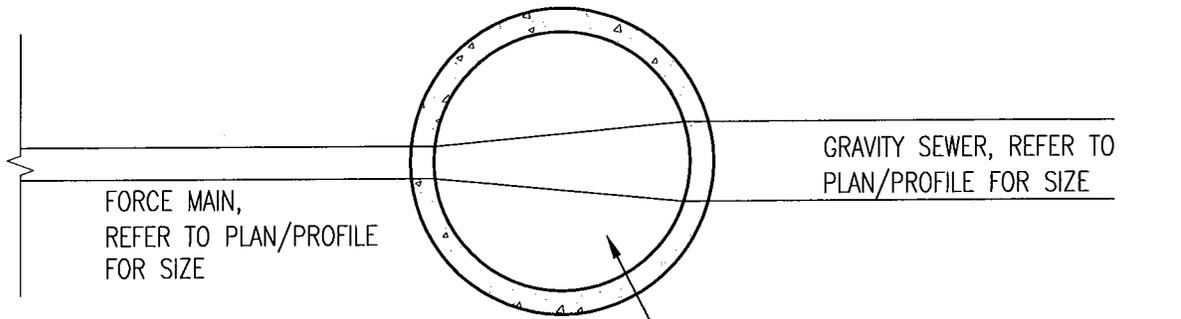
HDPE SANITARY SEWER PRESSURE LATERAL CONNECTION

SAN-5

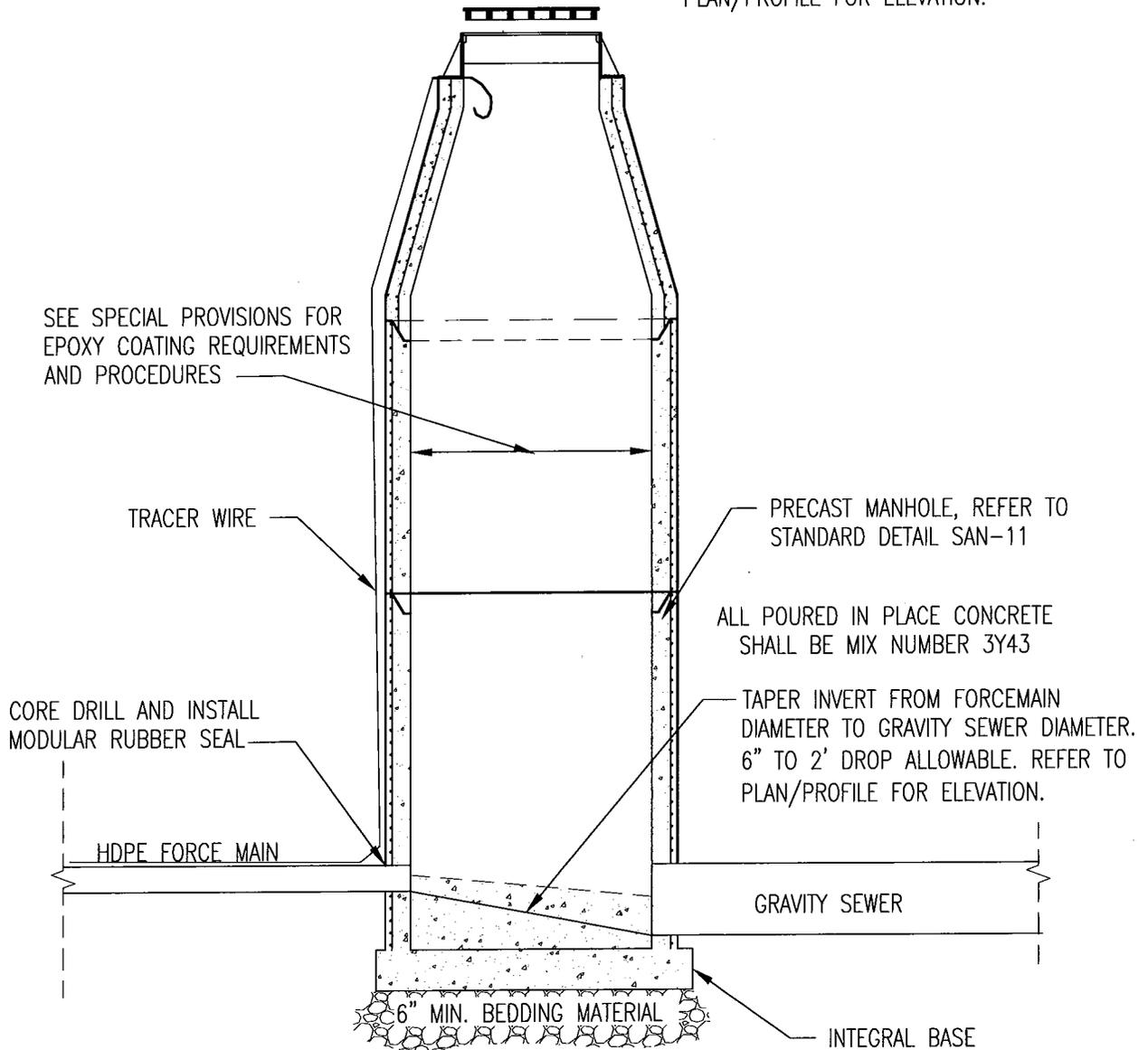
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CITY OF DULUTH STANDARD DETAIL  
DEPT. OF PUBLIC WORKS AND UTILITIES

NO SCALE



TAPER INVERT FROM FORCEMAIN DIAMETER TO GRAVITY SEWER DIAMETER. 6" TO 2' DROP ALLOWABLE. REFER TO PLAN/PROFILE FOR ELEVATION.



HDPE FORCEMAIN TO GRAVITY MAIN MANHOLE

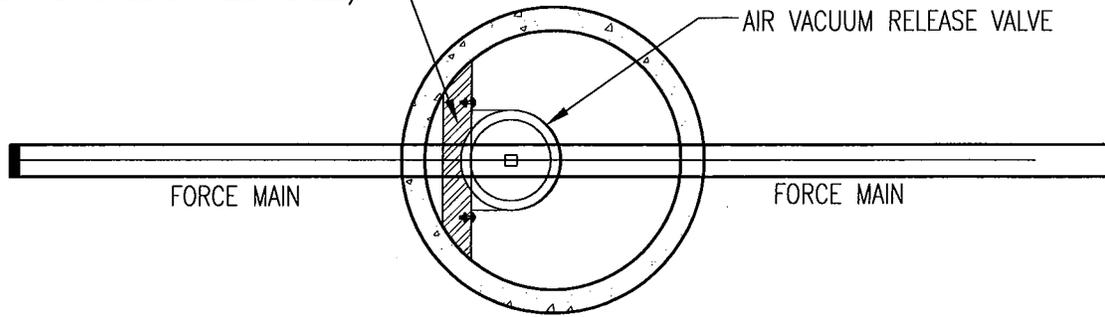
SAN-6

REVISED/APPROVED 2/01/2013

CITY OF DULUTH STANDARD DETAIL  
DEPT. OF PUBLIC WORKS AND UTILITIES

NO SCALE

1-1/2"x1-1/2" S.S. SUPPORT BRACKET WITH S.S. BAND OR APPROVED EQUAL (ALL PARTS AND HARDWARE TO BE STAINLESS STEEL)



AIR VACUUM RELEASE VALVE

FORCE MAIN

FORCE MAIN

NOTE: T/CASTING SHALL BE .03' BELOW FINISHED GRADE.  
SEE STANDARD DETAIL FOR CHIMNEY SEAL INSTALLATION

ALL POURED IN PLACE CONCRETE SHALL BE MIX NUMBER 3Y43

1 1/2"x1 1/2" S.S. AIR RELEASE SUPPORT BRACKET WITH S.S. BAND OR APPROVED EQUAL

TRACER WIRE

CORE DRILL AND INSTALL MODULAR RUBBER SEAL

HDPE FORCE MAIN

6" POLYSTYRENE INSULATION BOARD (DOW STYROFOAM HI 40, CERTIFOAM 40 OR EQUIV.)

1/2" TREATED PLYWOOD SUPPORTED BY 1" S.S. ANGLE IRON W/ STAINLESS LAG BOLTS.

INCIDENTAL TO MH CONSTRUCTION

PRECAST MANHOLE, REFER TO STANDARD DETAIL SAN-11

TRACER WIRE

AIR VACUUM RELEASE VALVE APCO MODEL 443, VAL-MATIC 801WA OR APPROVED EQUAL

2" GALV. IRON PIPE

2" P.E. FULLY PORTED BALL VALVE

HDPE FORCE MAIN

CONCRETE SUPPORT, MIN. 8" HIGH

6" MIN. BEDDING MATERIAL

INTEGRAL BASE

AIR-RELEASE MANHOLE

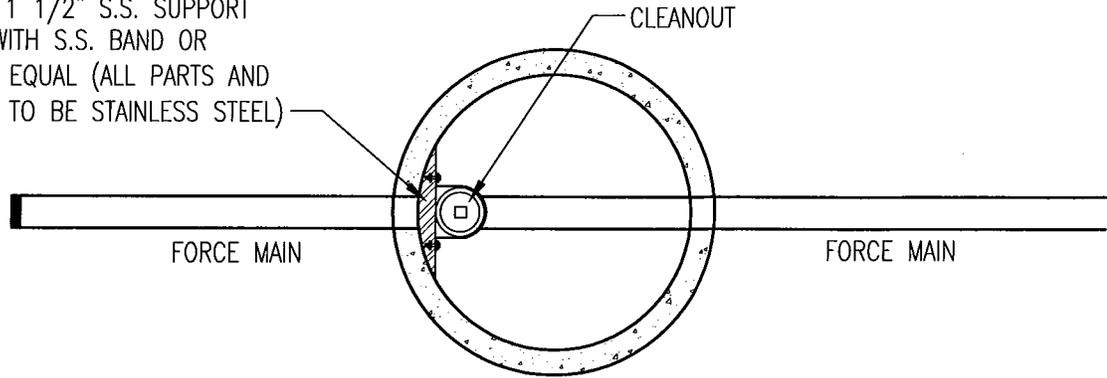
SAN-7

REVISED/APPROVED 2/01/2013

CITY OF DULUTH STANDARD DETAIL  
DEPT. OF PUBLIC WORKS AND UTILITIES

NO SCALE

1 1/2" X 1 1/2" S.S. SUPPORT BRACKET WITH S.S. BAND OR APPROVED EQUAL (ALL PARTS AND HARDWARE TO BE STAINLESS STEEL)



FORCE MAIN

FORCE MAIN

CLEANOUT

NOTE: T/CASTING SHALL BE .03' BELOW FINISHED GRADE.

SEE STANDARD DETAIL FOR CHIMNEY SEAL INSTALLATION

2" CAMLOCK COUPLER  
3" BELOW PLYWOOD

2" P.E. FULLY PORTED BALL VALVE

6" POLYSTYRENE INSULATION BOARD (DOW STYROFOAM HI 40, CERTIFOAM 40 OR EQUIV.)

1/2" TREATED PLYWOOD SUPPORTED BY 1" S.S. ANGLE IRON W/ STAINLESS LAG BOLTS.

INCIDENTAL TO MH CONSTRUCTION

1 1/2" X 1 1/2" S.S. SUPPORT BRACKET WITH S.S. BAND OR APPROVED EQUAL BELOW VALVE AND EVERY 4 FT. (ALL PARTS AND HARDWARE TO BE STAINLESS STEEL)

TRACER WIRE

TRACER WIRE

ALL POURED IN PLACE CONCRETE SHALL BE MIX NUMBER 3Y43

PRECAST MANHOLE, REFER TO STANDARD DETAIL SAN-11

CORE DRILL AND INSTALL MODULAR RUBBER SEAL

P.E. 45 BEND

P.E. WYE

HDPE FORCE MAIN

HDPE FORCE MAIN

CONCRETE SUPPORT, MIN. 8" HIGH

6" MIN. BEDDING MATERIAL

INTEGRAL BASE

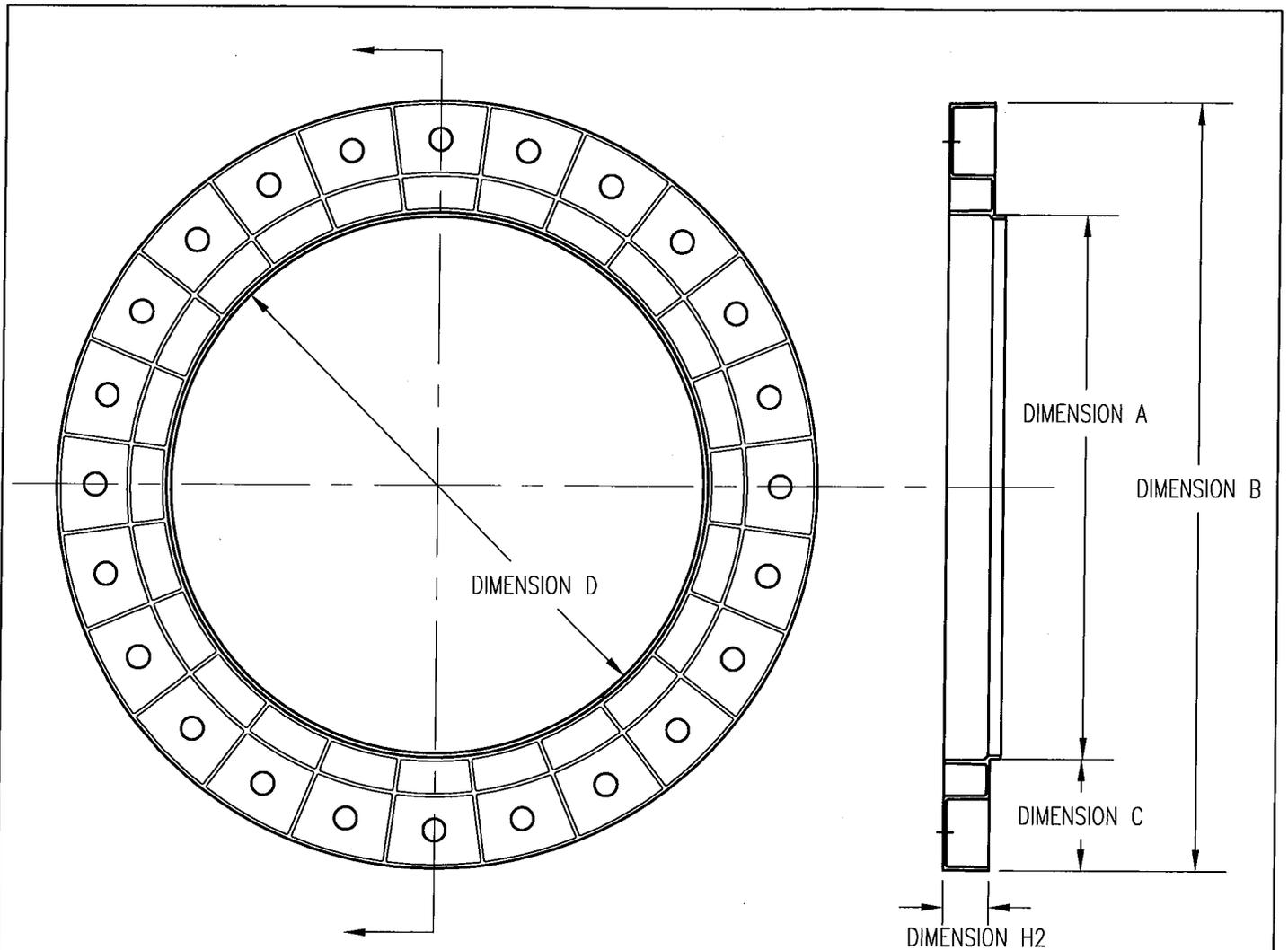
CLEANOUT MANHOLE

SAN-8

REVISED/APPROVED 2/01/2013

CITY OF DULUTH STANDARD DETAIL  
DEPT. OF PUBLIC WORKS AND UTILITIES

NO SCALE



DIMENSION SCHEDULE

CONE SIZE	DIMENSION A	DIMENSION B	DIMENSION C	DIMENSION D	DIMENSION H1
27.00	26.75	36.50	5.00	26.25	1.20, 1.50, 2.00, 4.00

DESCRIPTION

1. PLASTIC INJECTION MOLDED ADJUSTMENT RING
2. MOLDED FROM HIGH DENSITY POLYETHYLENE AS DEFINED IN ASTM SPECIFICATION D1248
3. ACTUAL RESIN PROPERTIES WILL VARY ALLOWING FOR THE UTILIZATION OF A MAXIMUM PERCENT OF RECYCLED MATERIAL
4. THE PERCENT OF POST CONSUMER WASTE TO INDUSTRIAL WASTE WILL VARY WITH AVAILABILITY AND PROPERTY RETENTION NEEDS
5. COLOR, SHADE AND UNIFORMITY WILL VARY WITH THE MIX OF THE POST CONSUMER AND INDUSTRIAL WASTE MATERIALS
6. DIMENSIONS SHOWN ARE NOMINAL – ACTUAL SIZE WILL VARY WITHIN ALLOWABLE TOLERANCE AND REQUIRED FIT

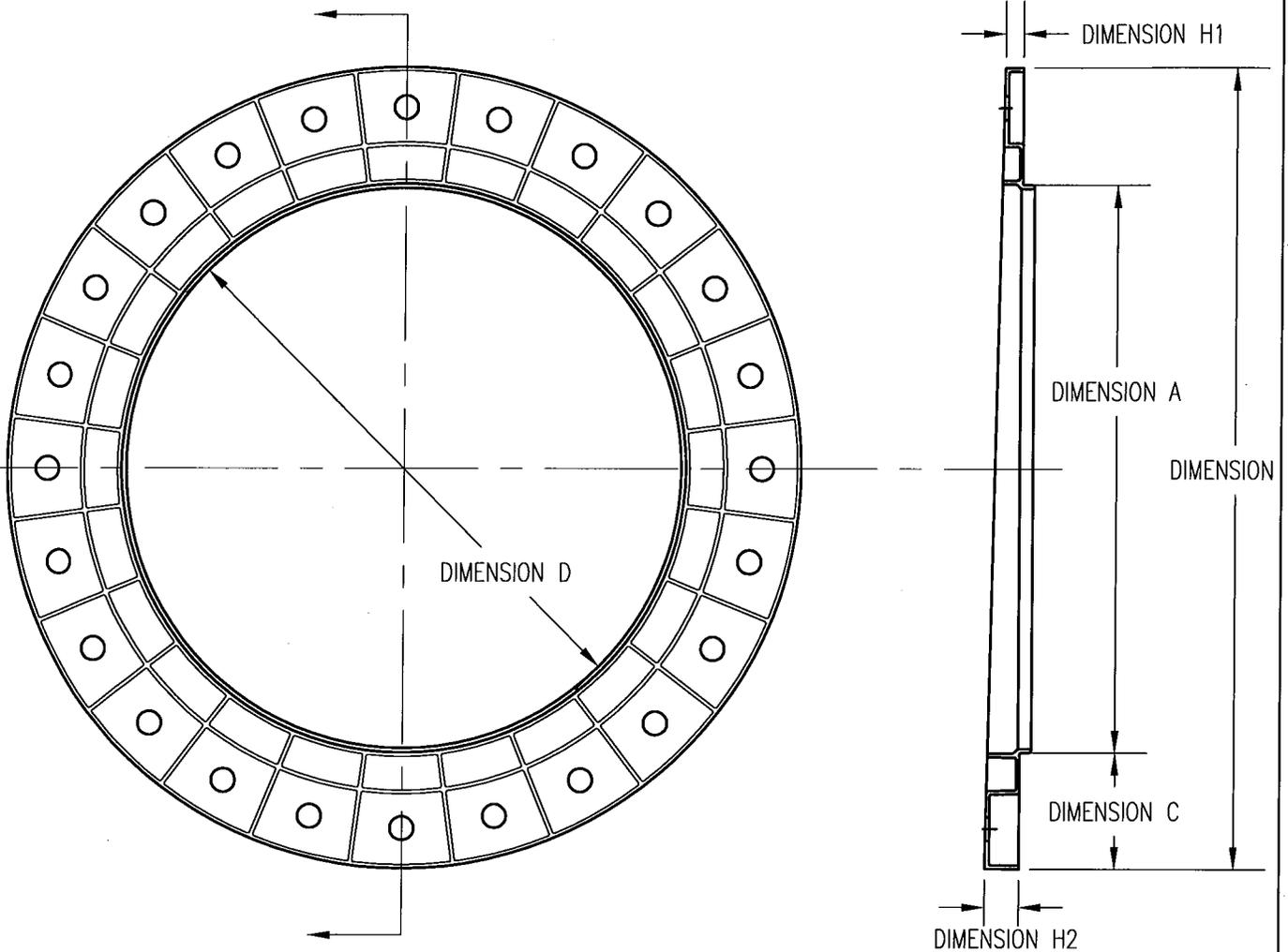
POLYETHYLENE MH ADJUSTING RING – FLAT

SAN-9

REVIEWED/APPROVED 2/01/2013

CITY OF DULUTH STANDARD DETAIL  
DEPT. OF PUBLIC WORKS AND UTILITIES

NO SCALE



DIMENSION SCHEDULE

CONE SIZE	DIMENSION A	DIMENSION B	DIMENSION C	DIMENSION D	DIMENSION H1-H2
27.00	26.75	36.50	5.00	26.25	0.75 - 1.50

DESCRIPTION

1. PLASTIC INJECTION MOLDED ADJUSTMENT RING
2. MOLDED FROM HIGH DENSITY POLYETHYLENE AS DEFINED IN ASTM SPECIFICATION D1248
3. ACTUAL RESIN PROPERTIES WILL VARY ALLOWING FOR THE UTILIZATION OF A MAXIMUM PERCENT OF RECYCLED MATERIAL
4. THE PERCENT OF POST CONSUMER WASTE TO INDUSTRIAL WASTE WILL VARY WITH AVAILABILITY AND PROPERTY RETENTION NEEDS
5. COLOR, SHADE AND UNIFORMITY WILL VARY WITH THE MIX OF THE POST CONSUMER AND INDUSTRIAL WASTE MATERIALS
6. DIMENSIONS SHOWN ARE NOMINAL - ACTUAL SIZE WILL VARY WITHIN ALLOWABLE TOLERANCE AND REQUIRED FIT

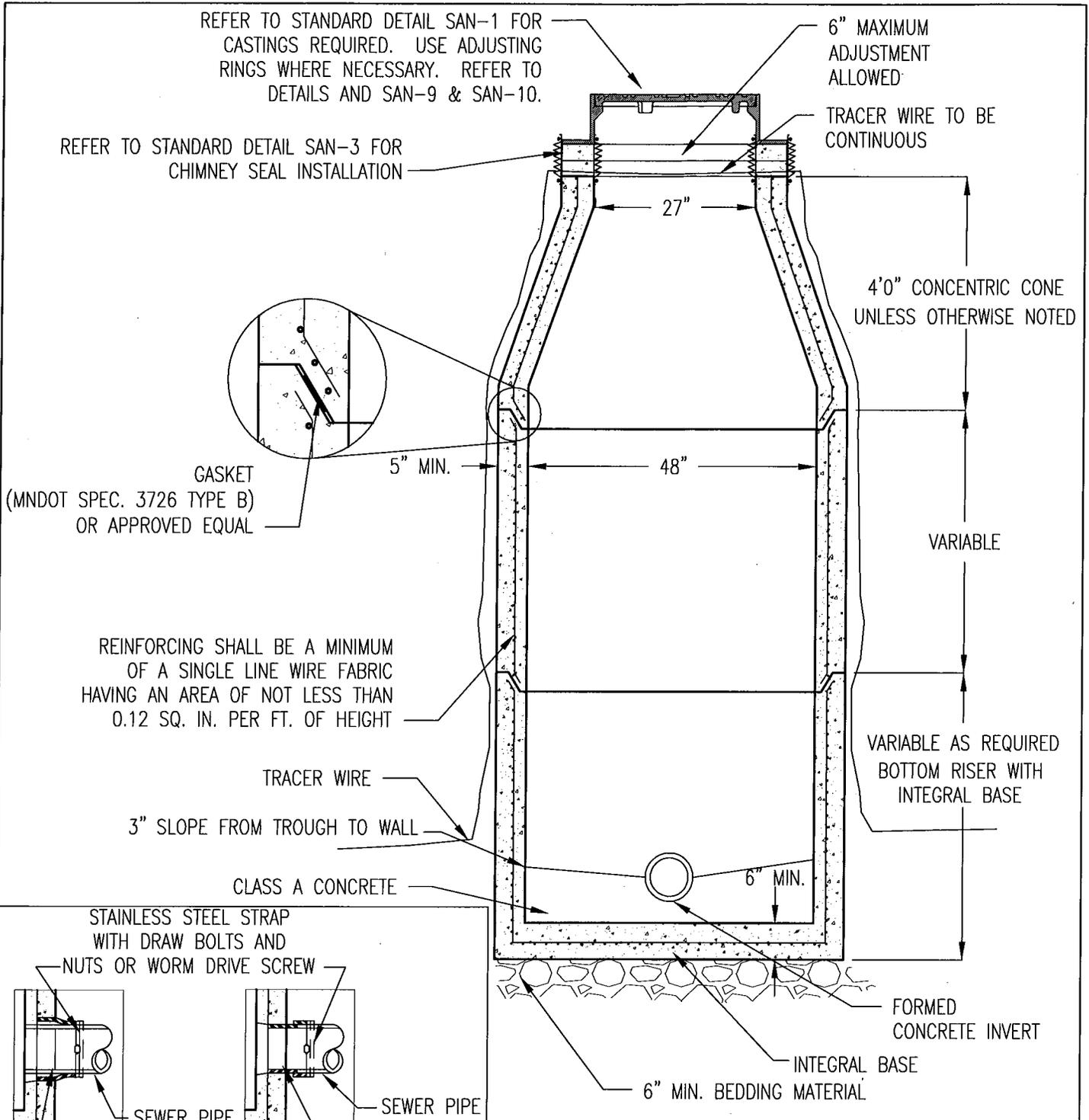
POLYETHYLENE MH ADJUSTING RING - WEDGE

SAN-10

REVIEWED/APPROVED 2/01/2013

CITY OF DULUTH STANDARD DETAIL  
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NO SCALE



- NOTES
1. SANITARY MANHOLES SHALL NOT HAVE STEPS.
  2. ALL SANITARY MANHOLES SHALL BE VACUUM TESTED.
  3. ALL SANITARY MANHOLES SHALL BE WATERTIGHT. ANY OBSERVABLE WATER SEEPAGE THROUGH THE END OF THE WARRANTY PERIOD SHALL BE CAUSE TO REJECT MANHOLES.
  4. AN INSIDE DROP IS REQUIRED PER DETAIL SAN-4 ANYTIME THE DROP IS GREATER THAN 2.0'.

1. MANHOLE FLEXIBLE SLEEVES SHALL BE NPC KOR-N-SEAL 1 OR PRESS SEAL PSX DIRECT DRIVE
2. ALL PIPE SLEEVES MUST BE WATER TIGHT

PRECAST MECHANICAL JOINT SEWER MANHOLE

SAN-11

REVIEWED/APPROVED 2/01/2013

CITY OF DULUTH STANDARD DETAIL  
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NO SCALE