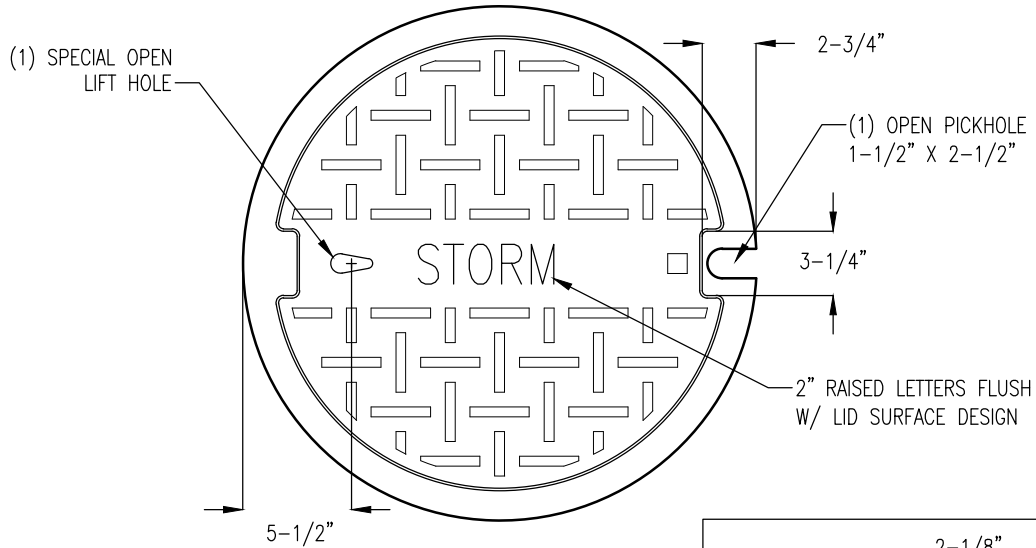


STORM SEWER DETAILS

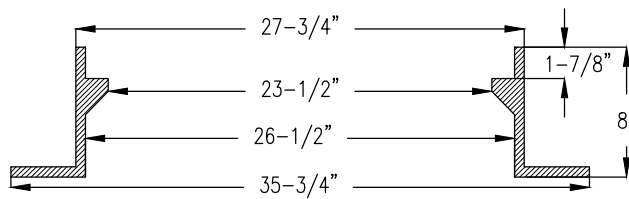
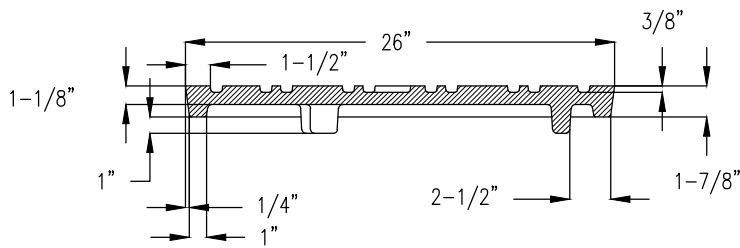
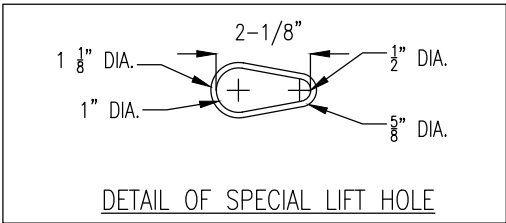
STRM-1	STORM MANHOLE CASTING
STRM-2	CATCH BASIN/CURB BOX CASTINGS
STRM-2B	CATCH BASIN/CURB BOX CASTINGS - BICYCLE SAFE
STRM-3	CATCH BASIN/CURB BOX CASTINGS
STRM-3A	CATCH BASIN CASTINGS - ADA
STRM-3B	CATCH BASIN CASTINGS - BICYCLE SAFE
STRM-4	FABRIC WRAPPED CATCH BASIN CASTING
STRM-5	STORM MANHOLE NON-PAVED AREAS
STRM-5A	CONCRETE ENCASED CASTING COLLAR FOR STORM MH IN ROADWAY, WALKS, & DRIVES
STRM-6	GUTTER SWALE
STRM-7	GUTTER STAMP
STRM-8	PRIVATE STORM SERVICE - TYPE A
STRM-9	PRIVATE STORM SERVICE - TYPE B
STRM-10	PRIVATE STORM SERVICE - TYPE C
STRM-11	PRIVATE STORM SERVICE - TYPE D

WEIGHT 298 LBS		MATL. GRAY IRON CLASS 35B
WEIGHT 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.



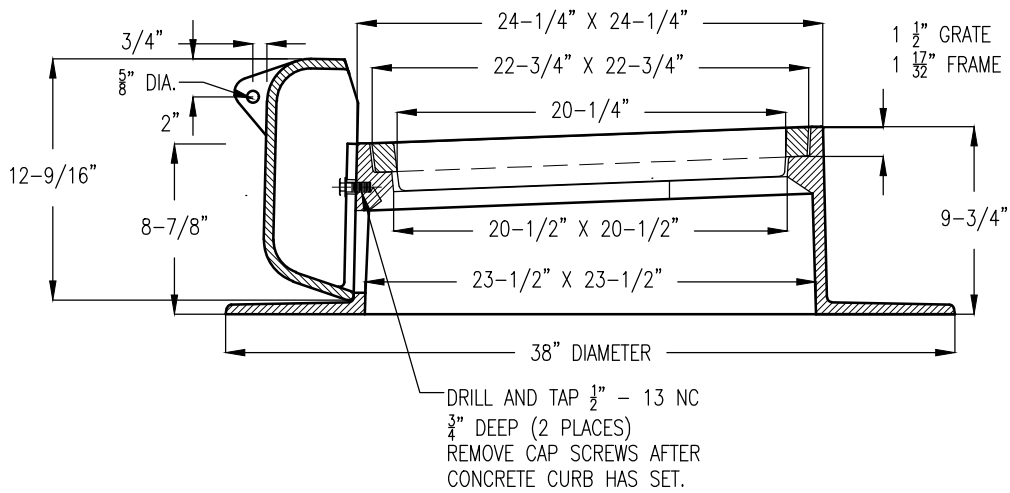
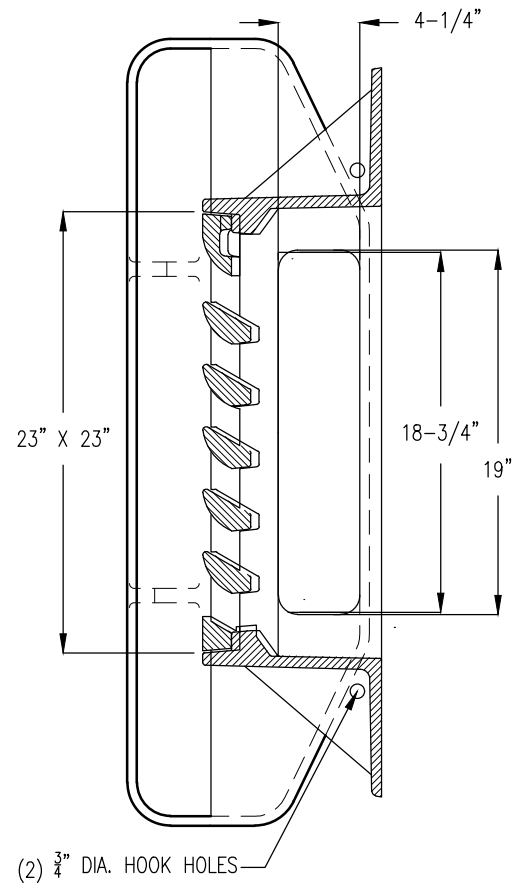
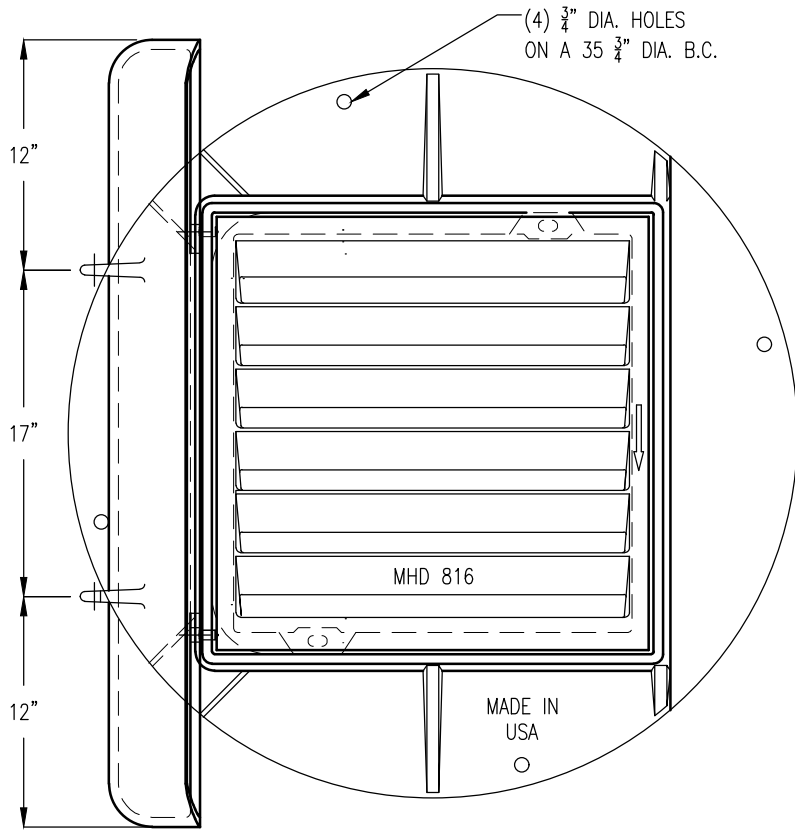
STORM MANHOLE CASTING

STRM-1

REVISED/APPROVED 02/01/2013

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

NO SCALE



NOTES:

1. COMPONENT NO'S: FRAME 5002, GRATE MHD 816 (STD PLATE 4154), CURB BOX 823A (STD PLATE 4160).
2. MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B
3. WEIGHT: FRAME APPROX. 257#, GRATE 131#, CURB BOX 105#.
4. ALL GUTTERS UPSTREAM OF CATCH BASINS SHALL BE STAMPED, "NO DUMPING, LEADS TO LAKE" WITH A CITY SUPPLIED STAMP.

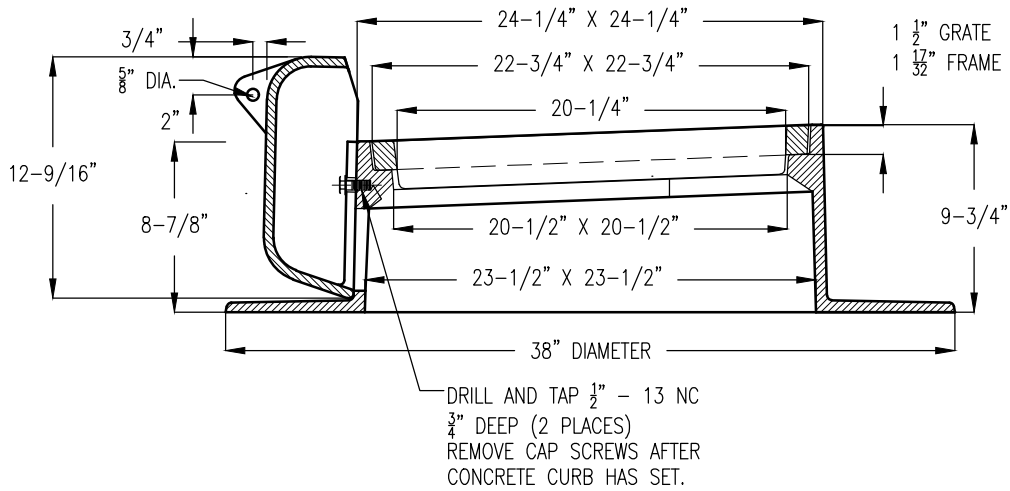
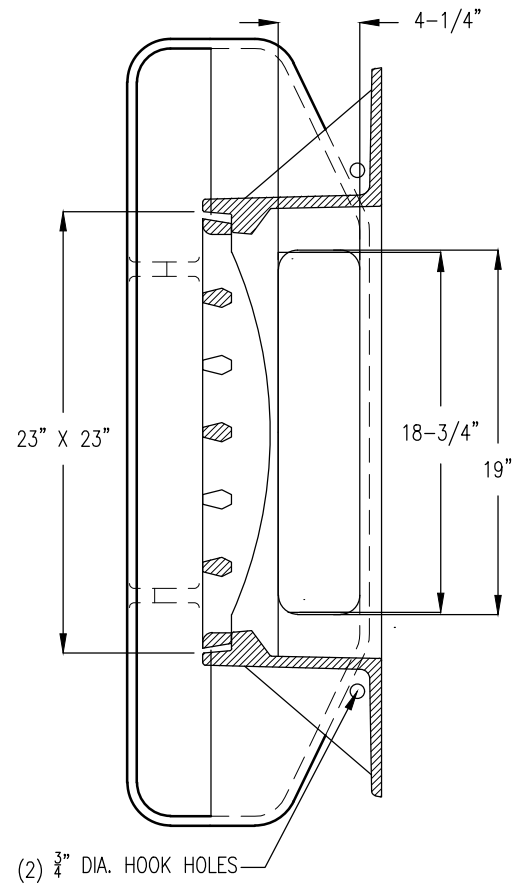
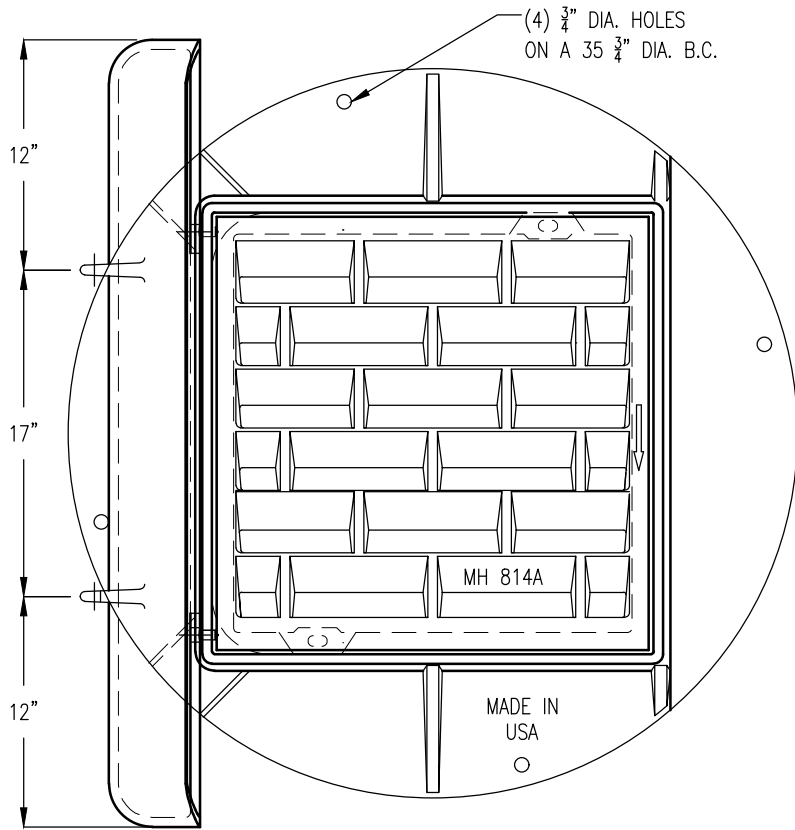
CATCH BASIN/CURB BOX CASTINGS

STRM-2

REVISED/APPROVED 04/05/2019

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

NO SCALE



NOTES:

1. COMPONENT NO'S: FRAME 5002, GRATE MHD 814A (STD PLATE 4152), CURB BOX 823A (STD PLATE 4160).
2. MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B
3. WEIGHT: FRAME APPROX. 257#, GRATE 131#, CURB BOX 105#.
4. ALL GUTTERS UPSTREAM OF CATCH BASINS SHALL BE STAMPED, "NO DUMPING, LEADS TO LAKE" WITH A CITY SUPPLIED STAMP.

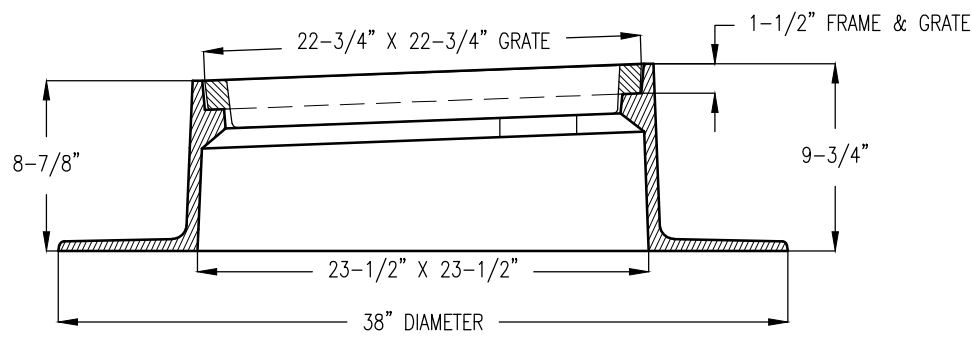
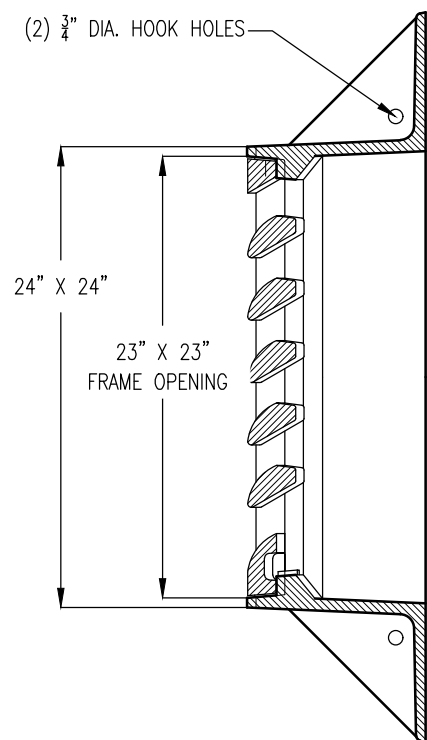
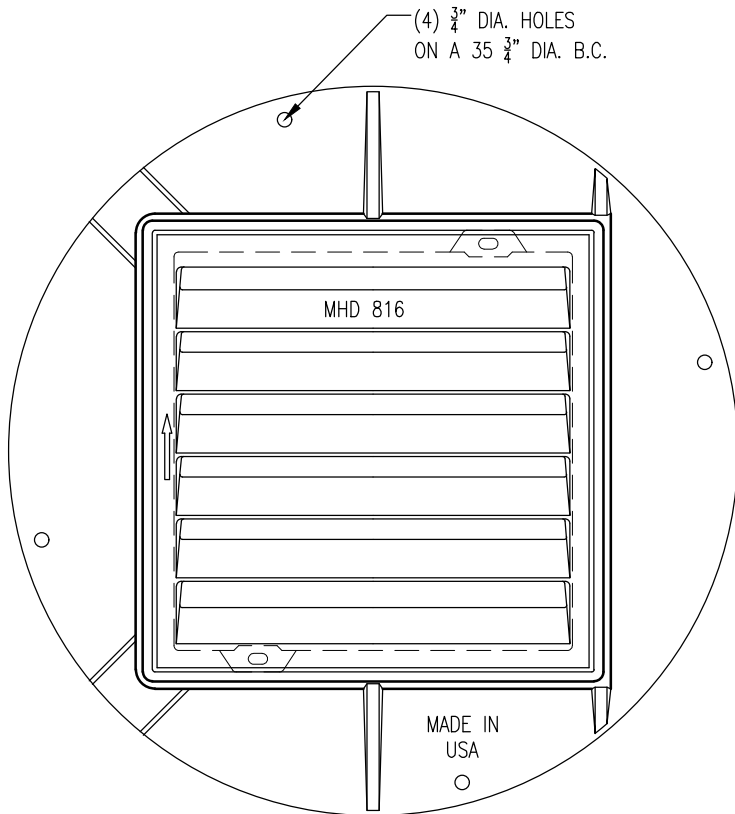
CATCH BASIN/CURB BOX CASTINGS - BICYCLE SAFE

STRM-2B

REVIEWED/APPROVED 04/05/2019

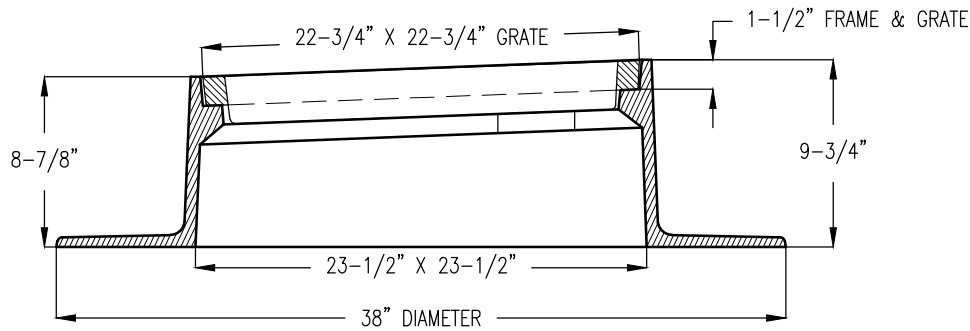
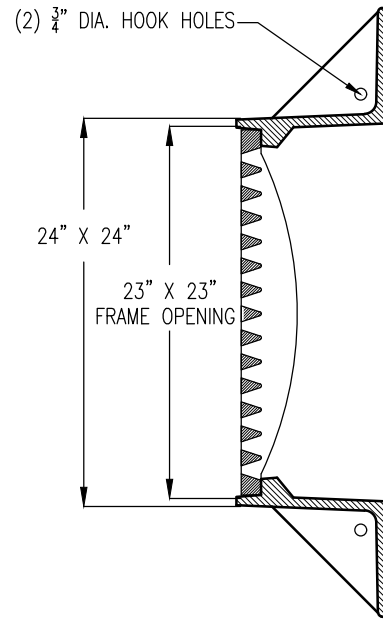
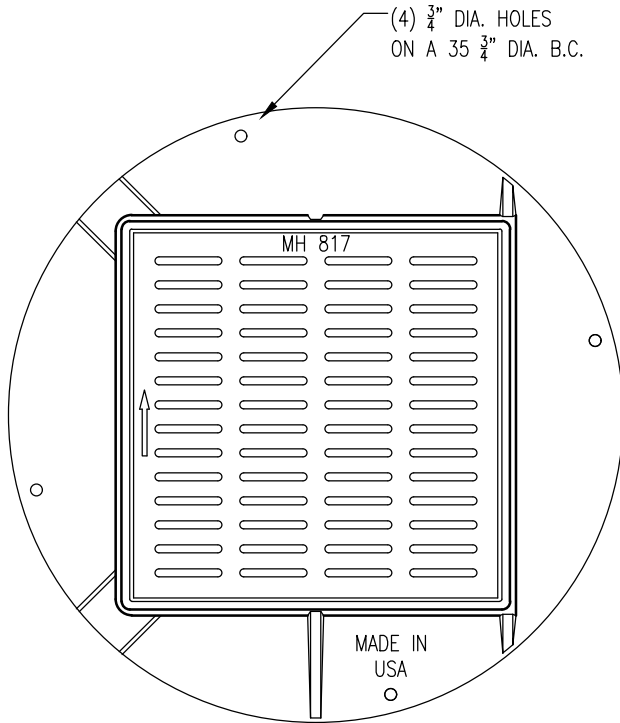
CITY OF DULUTH STANDARD DETAIL
DEPT. OF PUBLIC WORKS AND UTILITIES

NO SCALE



- NOTES:
1. COMPONENT NO'S: FRAME 5005, GRATE 816 (STD PLATE 4154).
 2. MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B
 3. WEIGHT: FRAME 262#; GRATE 131#
 4. ALL GUTTERS UPSTREAM OF CATCH BASINS SHALL BE STAMPED, "NO DUMPING, LEADS TO LAKE" WITH A CITY SUPPLIED STAMP.

CATCH BASIN CASTINGS		STRM-3
REVISED/APPROVED 04/05/2019	CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES	NO SCALE



NOTES:

1. COMPONENT NO'S: FRAME 5005, GRATE 817 (STD PLATE 4155).
2. MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B
3. WEIGHT: FRAME 262#; GRATE 131#
4. ALL GUTTERS UPSTREAM OF CATCH BASINS SHALL BE STAMPED, "NO DUMPING, LEADS TO LAKE" WITH A CITY SUPPLIED STAMP.

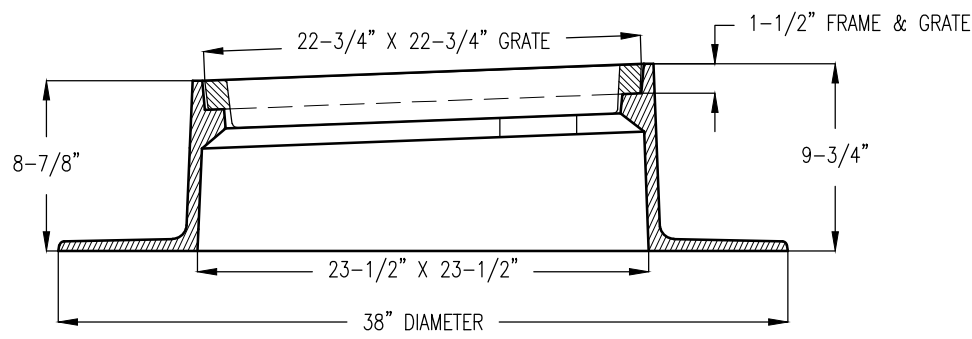
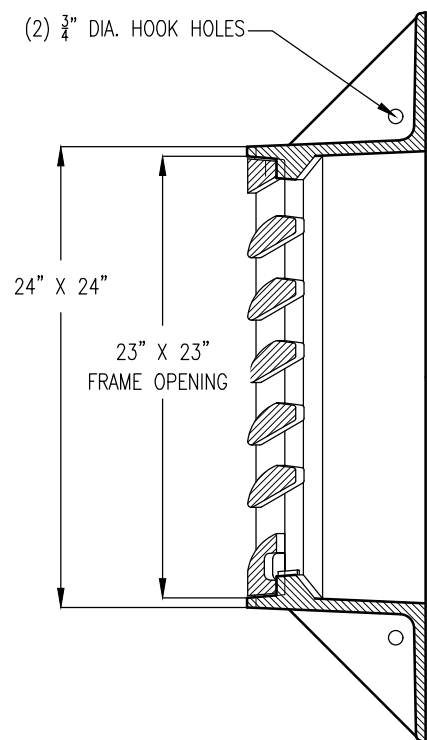
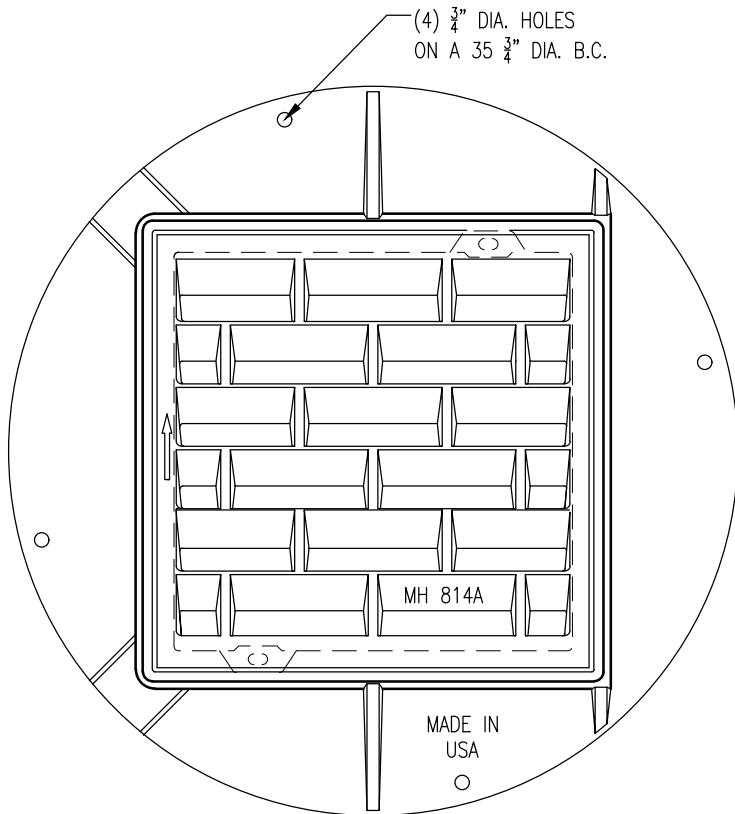
CATCH BASIN CASTINGS – ADA

STRM-3A

REVIEWED/APPROVED 04/05/2019

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

NO SCALE



- NOTES:
1. COMPONENT NO'S: FRAME 5005, GRATE 814A (STD PLATE 4152).
 2. MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B
 3. WEIGHT: FRAME 262#; GRATE 131#
 4. ALL GUTTERS UPSTREAM OF CATCH BASINS SHALL BE STAMPED, "NO DUMPING, LEADS TO LAKE" WITH A CITY SUPPLIED STAMP.

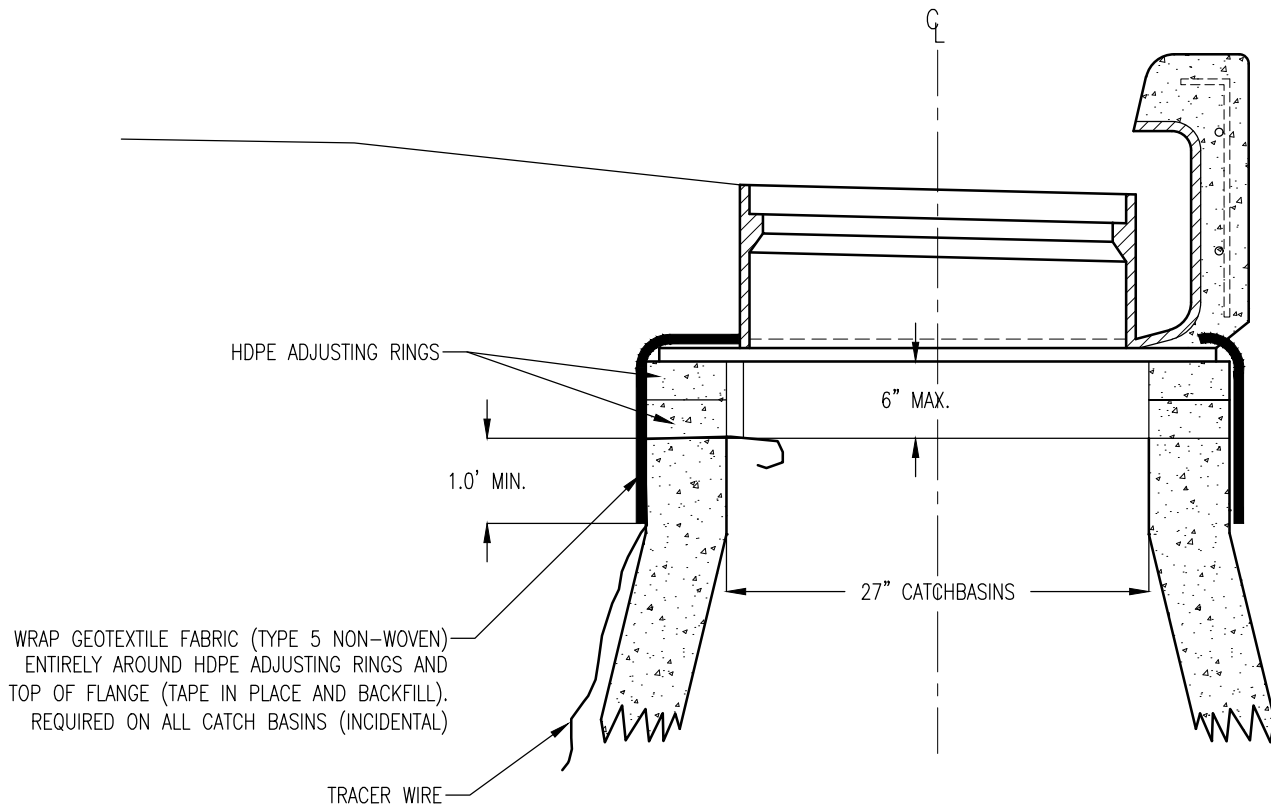
CATCH BASIN CASTINGS – BICYCLE SAFE

STRM-3B

REVIEWED/APPROVED 04/05/2019

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

NO SCALE



NOTE:
TRACER WIRE REQUIRED ON ALL PLASTIC STORM SEWER PIPES

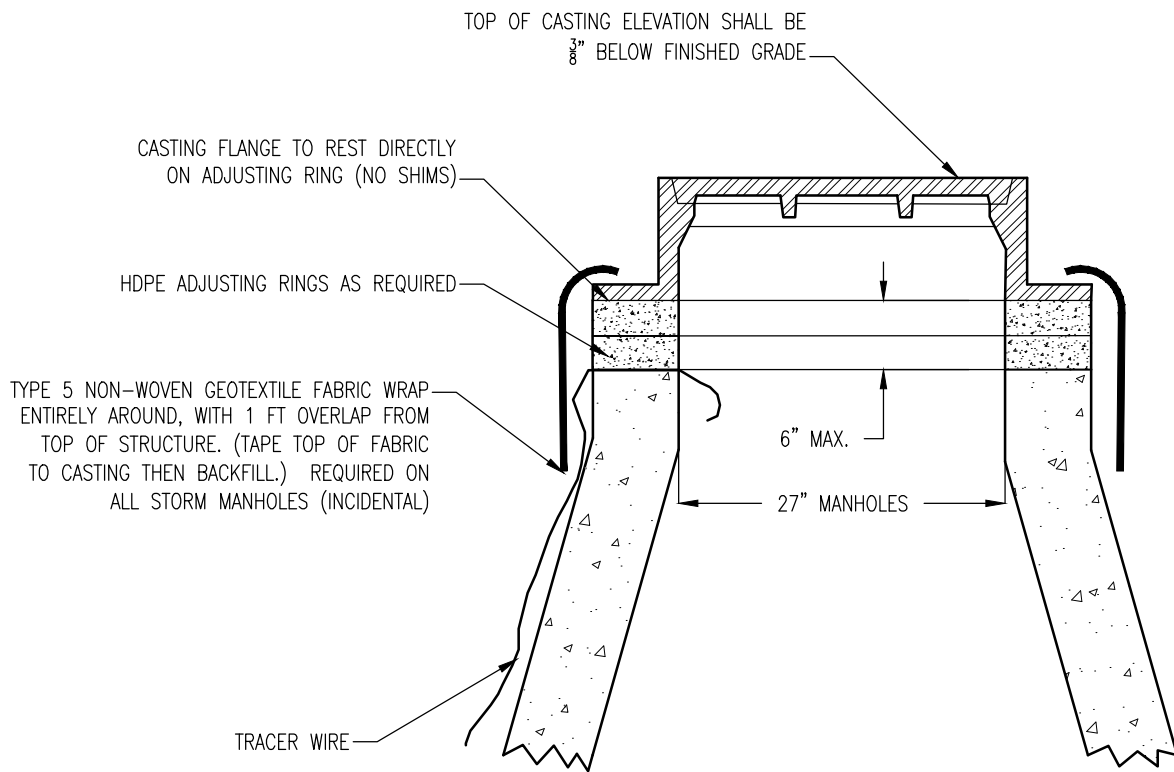
FABRIC WRAPPED CATCH BASIN CASTING

STRM-4

REVIEWED/APPROVED 04/05/2019

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

NO SCALE



NOTE:
TRACER WIRE REQUIRED ON ALL PLASTIC STORM SEWER PIPE

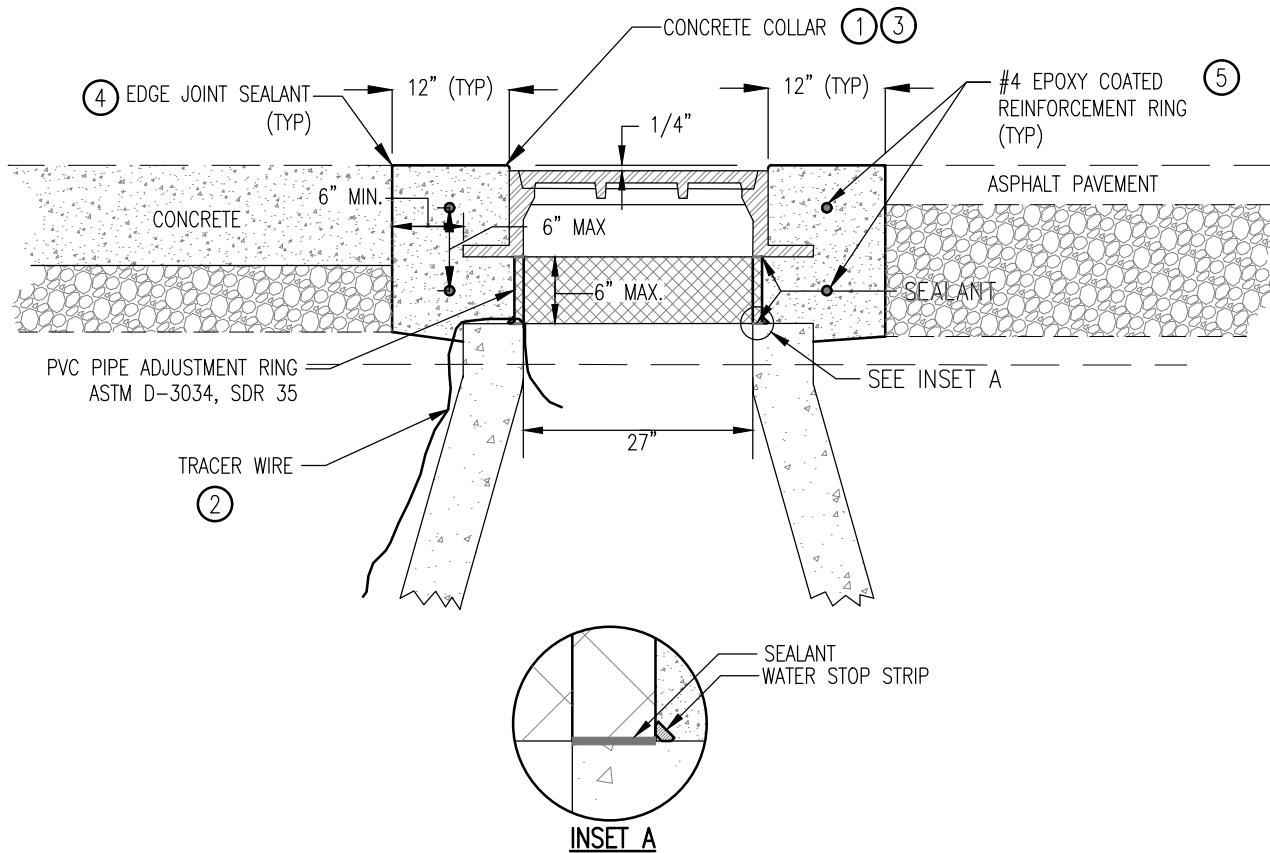
STORM MANHOLE NON-PAVED AREAS

STRM-5

REVIEWED/APPROVED 04/05/2019

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

NO SCALE



NOTES:

- ① CONCRETE (MIX NO. 3G52) COLLAR TO ENCASE CASTING AND ADJUSTMENT RING.
- ② TRACER WIRE, IF REQUIRED, FOR PLASTIC PIPE ON PROJECT
- ③ CONCRETE COLLAR SHALL BE CIRCULAR LAYOUT. PAVEMENT AND BASE SHALL BE CUT OUT WITH ROTATING CUTTING DEVICE
- ④ FINISH CONCRETE EDGE WITH 1/4" RADIUS. SEAL JOINT BETWEEN PAVEMENT AND COLLAR.
- ⑤ MAINTAIN 3.5" COVER ON REINFORCEMENT.

NOT TO SCALE

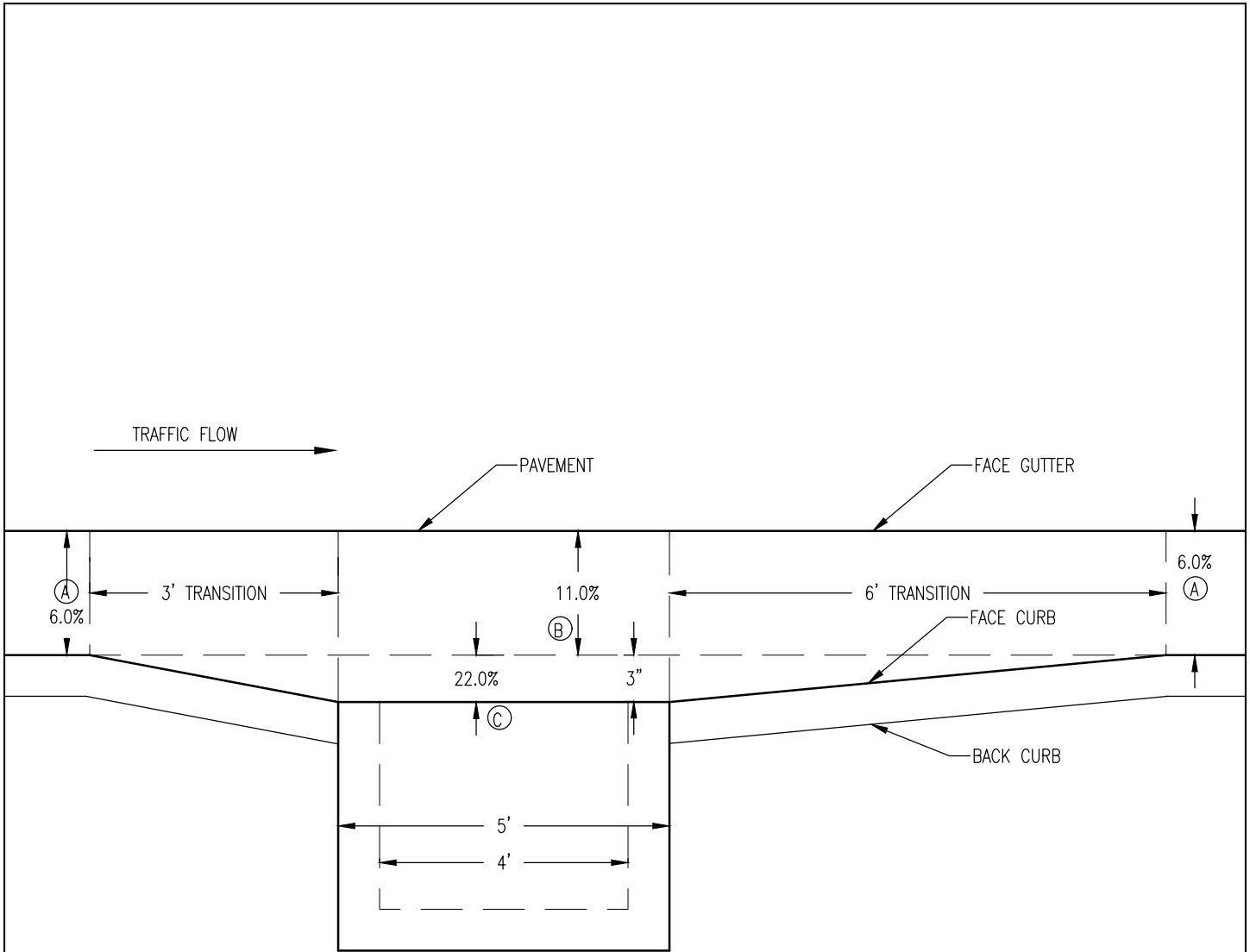
CONCRETE ENCASED CASTING COLLAR FOR STORM MH IN ROADWAY, WALKS, & DRIVES

STRM-5A

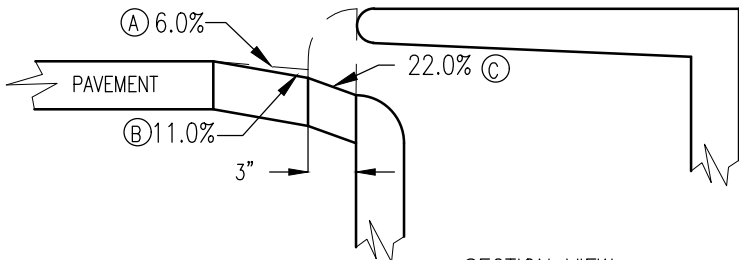
REVIEWED/APPROVED 04/05/2019

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

NO SCALE



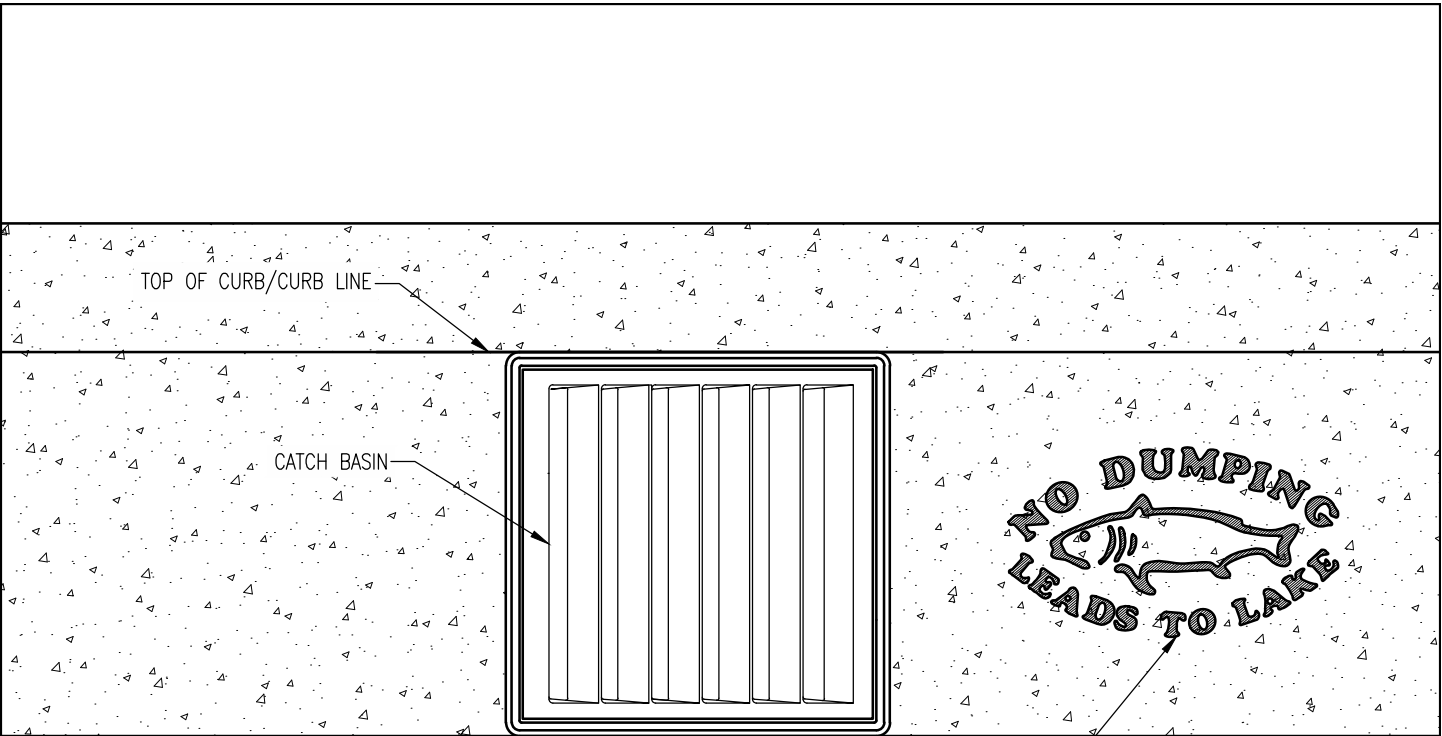
PLAN VIEW



SECTION VIEW

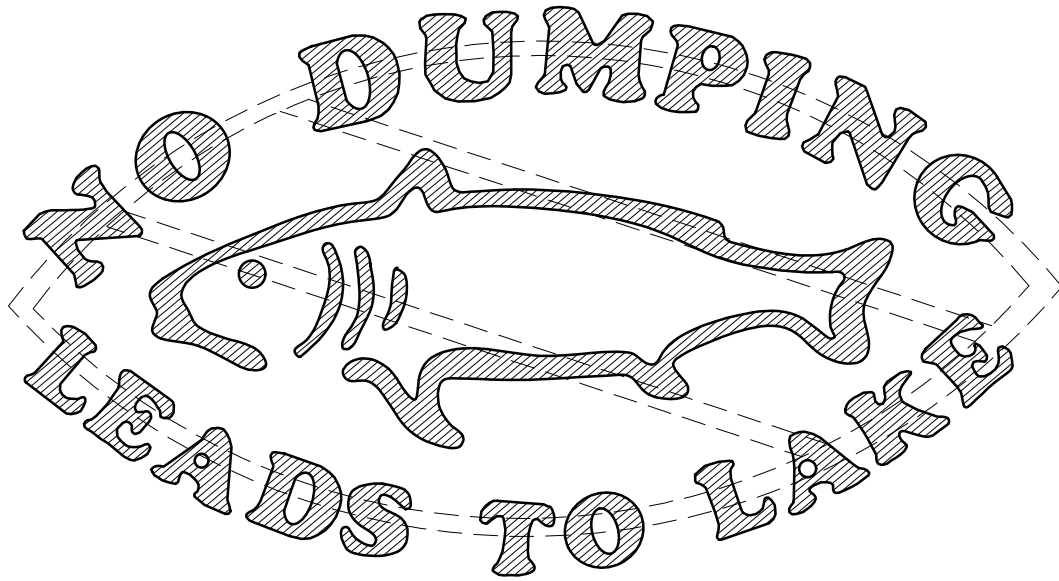
SEE STANDARD PLATE 4021 FOR CATCH BASIN CONSTRUCTION DETAILS.

GUTTER SWALE		STRM-6
REVIEWED/APPROVED 04/05/2019	CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES	NO SCALE



GUTTER STAMP TO BE PLACED A MAXIMUM OF 18" FROM CATCH BASIN GRATE ON UPHILL SIDE AND CENTERED IN GUTTER

GUTTER STAMP TO BE OBTAINED FROM CITY OF DULUTH BY CONTRACTOR.



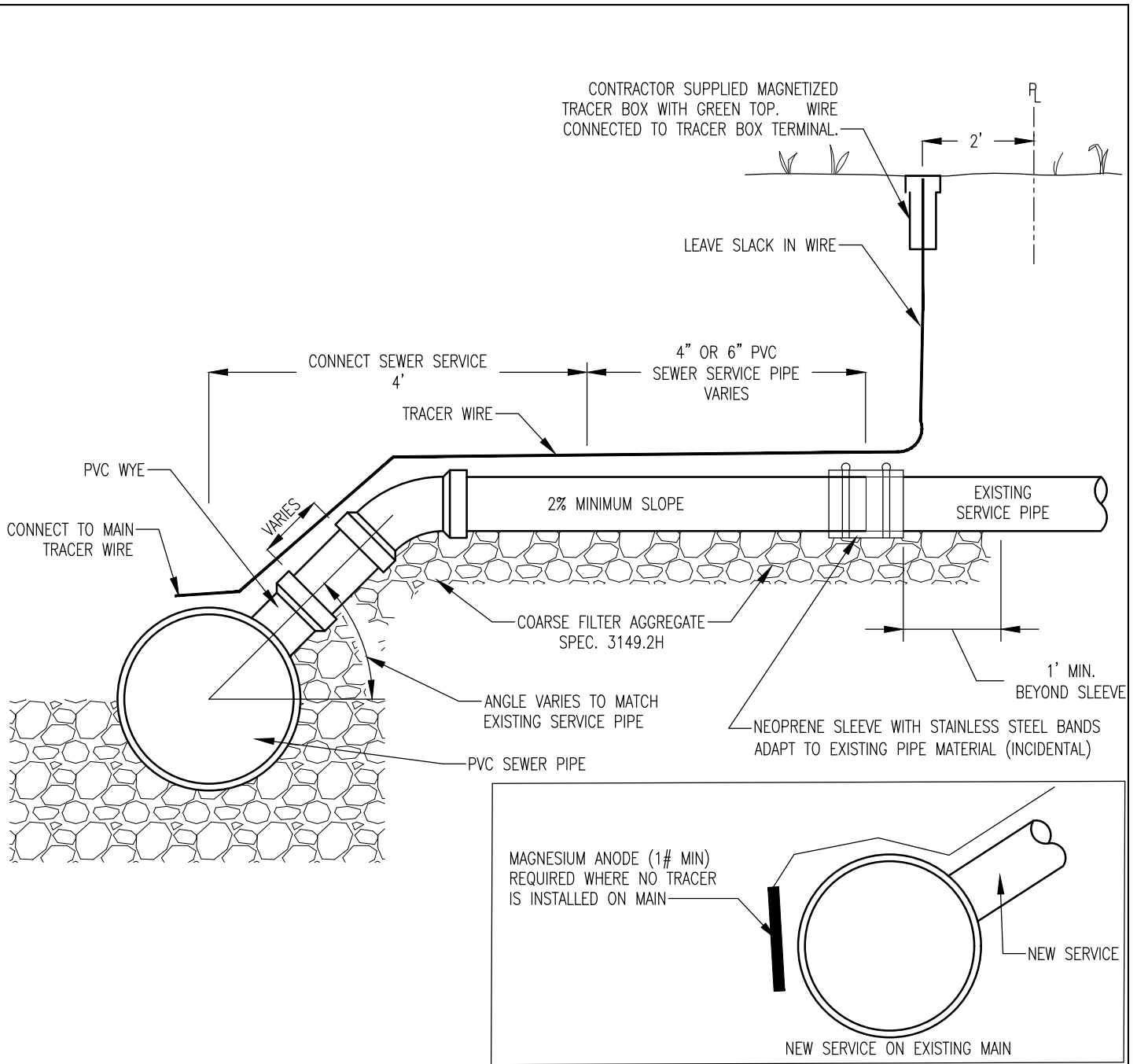
GUTTER STAMP

STRM-7

REVIEWED/APPROVED 02/01/2013

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

NO SCALE



NOTES

1. BID ITEM FOR PVC WYE INCLUDES FURNISHING AND INSTALLING WYE IN SEWER MAIN.
2. CONNECT SEWER SERVICE INCLUDES 4" OR 6" PVC SEWER SERVICE PIPE (TO 4' FROM C/L) AND ALL FITTINGS
3. 4" OR 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 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.

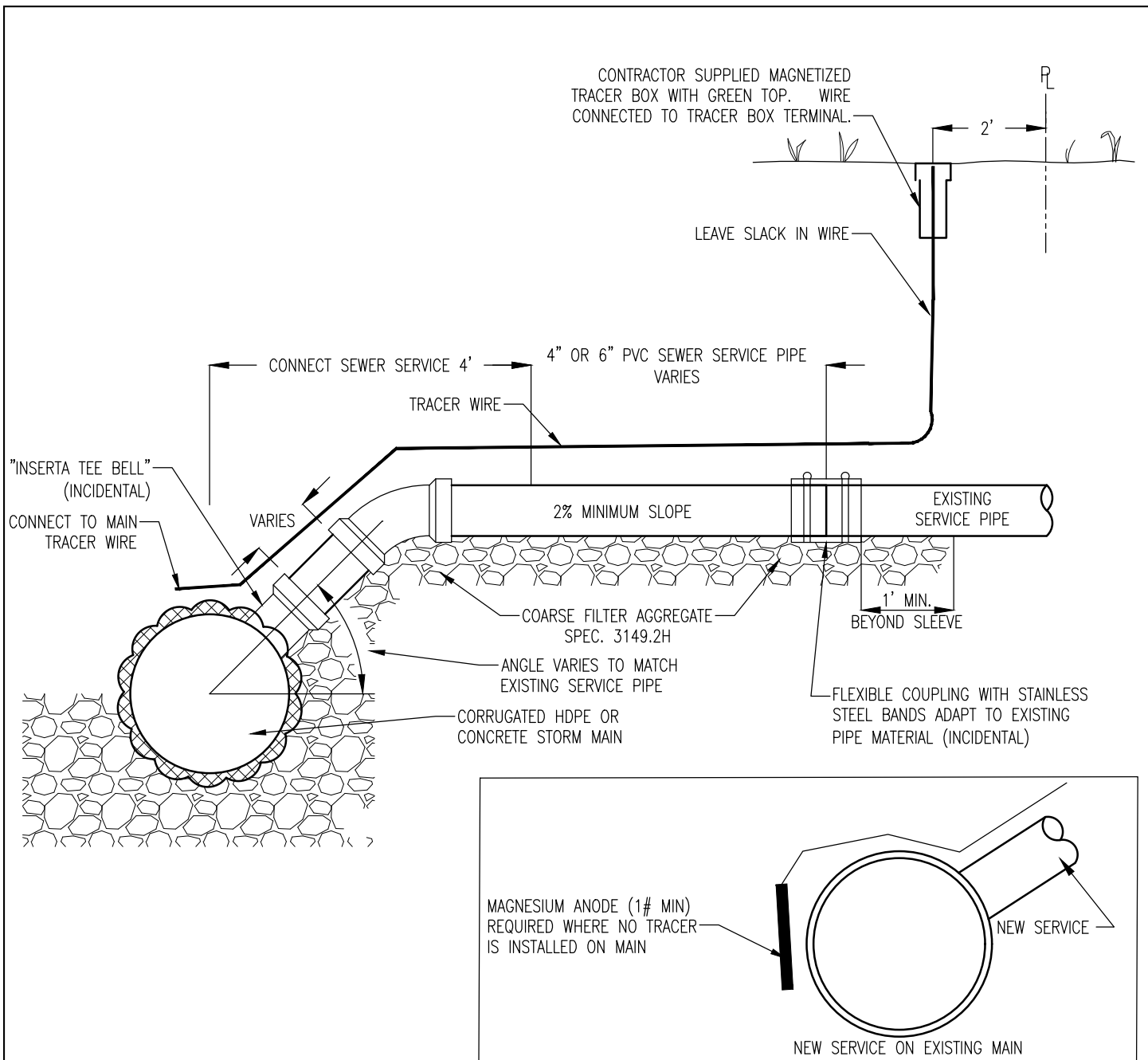
PRIVATE STORM SERVICE – TYPE A

STRM-8

REVIEWED/APPROVED 04/05/2019

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

NO SCALE



NOTES

1. PROVIDE AND INSTALL INSERTA TEE (INCIDENTAL).
2. CONNECT SEWER SERVICE INCLUDES 4" OR 6" PVC SEWER SERVICE PIPE (TO 4' FROM C/L) AND ALL FITTINGS
3. 4" OR 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 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.

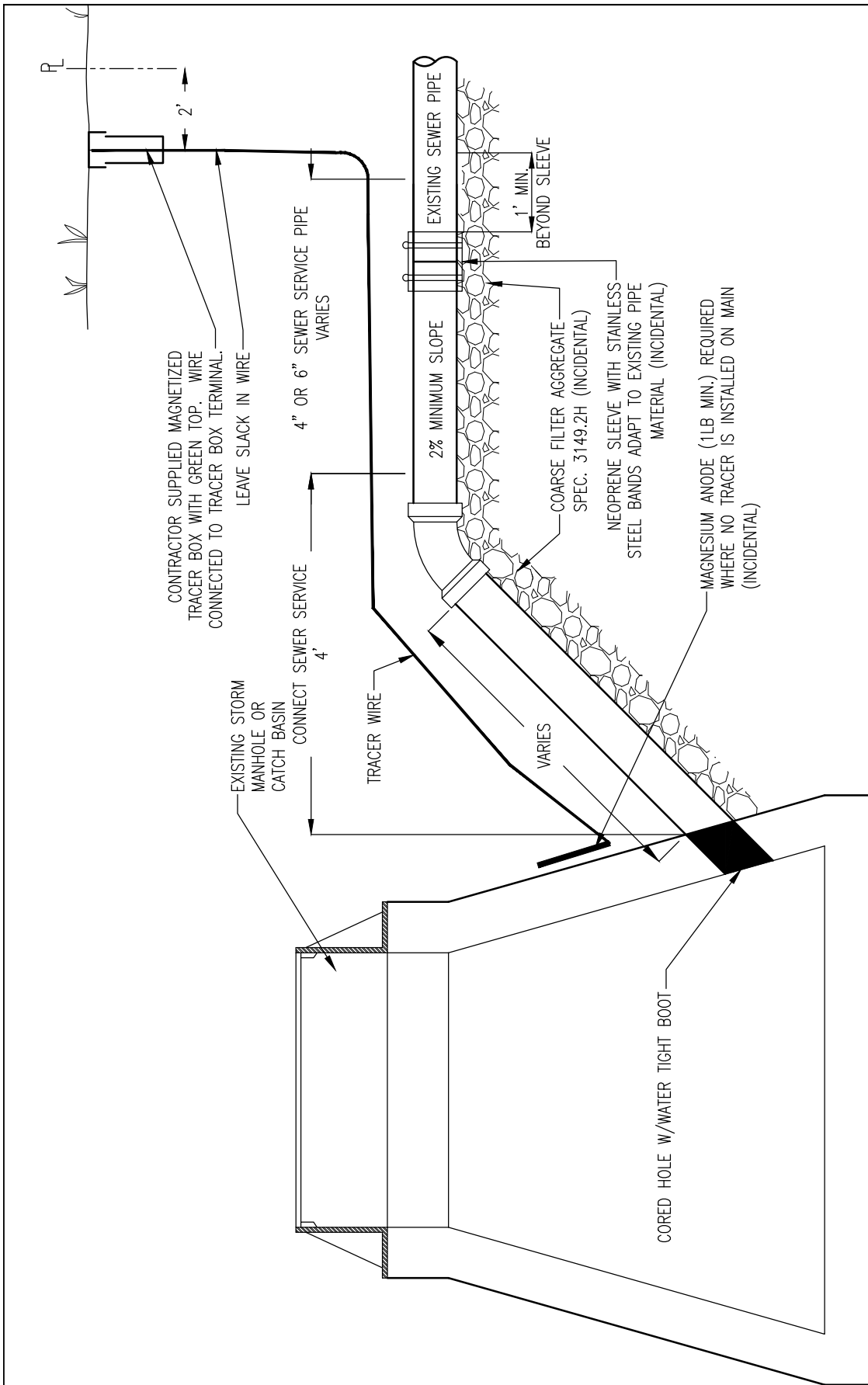
PRIVATE STORM SERVICE – TYPE B

STRM-9

REVIEWED/APPROVED 04/05/2019

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

NO SCALE



NOTES

1. CONNECT SEWER SERVICE INCLUDES 4" OR 6" PVC SEWER SERVICE PIPE (TO 4' FROM STRUCTURE) AND ALL FITTINGS
2. 4" & 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 STRUCTURE OF THE SEWER MAIN TO A POINT DESIGNATED BY THE ENGINEER
3. FOR NEW SERVICES, PIPE TO STOP AT RIGHT OF WAY
4. #12 GAUGE GREEN INSULATED COPPER TRACER WIRE SHALL BE INSTALLED WITH SEWER SERVICES. TRACER WIRE TERMINAL BOXES SHALL BE INSTALLED DIRECTLY ABOVE THE SEWER SERVICE OR AS DETERMINED BY THE ENGINEER
5. FOR SERVICES, TRACER WIRE SHALL RUN FROM THE WYE AND TERMINATE IN A FLUSH MOUNTED TRACER BOX WITH A GREEN CAST IRON LOCKABLE TOP.
6. 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.

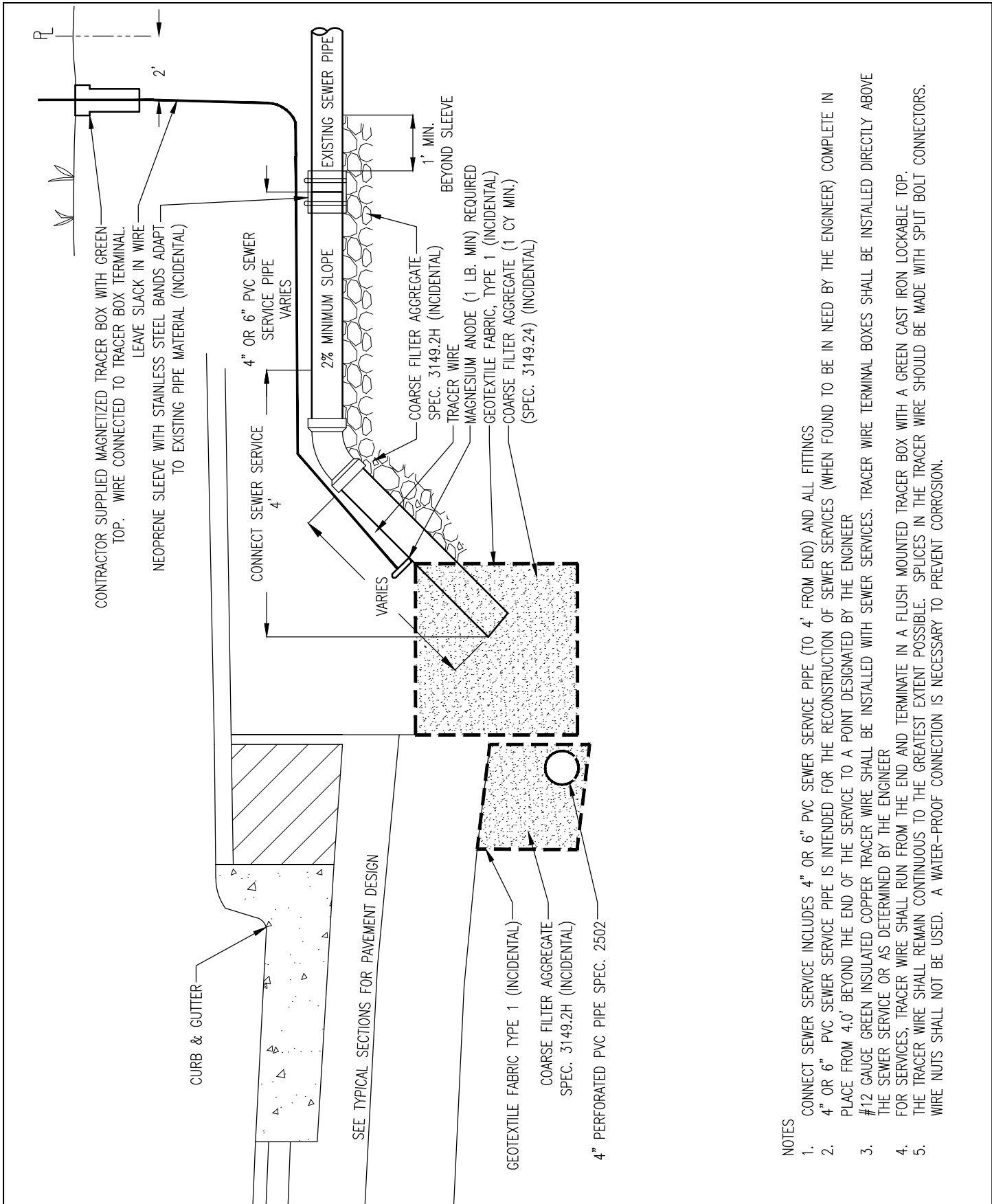
PRIVATE STORM SERVICE – TYPE C

STRM-10

REVIEWED/APPROVED 04/05/2019

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

NO SCALE



NOTES

1. CONNECT SEWER SERVICE INCLUDES 4" OR 6" PVC SEWER SERVICE PIPE (TO 4' FROM END) AND ALL FITTINGS
2. 4" OR 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 END OF THE SERVICE TO A POINT DESIGNATED BY THE ENGINEER
3. #12 GAUGE GREEN INSULATED COPPER TRACER WIRE SHALL BE INSTALLED WITH SEWER SERVICES. TRACER WIRE TERMINAL BOXES SHALL BE INSTALLED DIRECTLY ABOVE THE SEWER SERVICE OR AS DETERMINED BY THE ENGINEER
4. FOR SERVICES, TRACER WIRE SHALL RUN FROM THE END AND TERMINATE IN A FLUSH MOUNTED TRACER BOX WITH A GREEN CAST IRON LOCKABLE TOP.
5. 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.

PRIVATE STORM SERVICE – TYPE D

STRM-11

REVIEWED/APPROVED 04/05/2019

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

NO SCALE