NOTE: The following standard plates establish minimum engineering design guidance. All designs shall use engineering judgement and are the responsibility of the Engineer of Record.

<table>
<thead>
<tr>
<th>NUMBER</th>
<th>TITLE</th>
<th>PUBLISHED</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEN-0001</td>
<td>Abandoned Structure</td>
<td>3/17/2023</td>
</tr>
<tr>
<td>GEN-0002</td>
<td>Concrete Encased Casting Collar</td>
<td>3/17/2023</td>
</tr>
<tr>
<td>WTR-0001</td>
<td>Water Structure Standard 48&quot; Eccentric Cone</td>
<td>4/30/2024</td>
</tr>
<tr>
<td>WTR-0002</td>
<td>Gate Valve and Box Installation</td>
<td>4/30/2024</td>
</tr>
<tr>
<td>WTR-1001</td>
<td>Water Structure Cover Casting</td>
<td>3/17/2023</td>
</tr>
<tr>
<td>SAN-0001</td>
<td>Sanitary Sewer Structure Standard 48&quot; Eccentric Cone</td>
<td>4/30/2024</td>
</tr>
<tr>
<td>SAN-0002</td>
<td>Precast Manhole Inside Drop Eccentric Cone</td>
<td>4/30/2024</td>
</tr>
<tr>
<td>SAN-0003</td>
<td>Sanitary Sewer Cleanout</td>
<td>4/30/2024</td>
</tr>
<tr>
<td>SAN-1001</td>
<td>Sanitary Sewer Structure Cover Casting</td>
<td>3/17/2023</td>
</tr>
<tr>
<td>STM-0002</td>
<td>Storm Sewer Structure Standard 48&quot; Eccentric Cone</td>
<td>4/30/2024</td>
</tr>
<tr>
<td>STM-0003</td>
<td>Catch Basin Standard 2'x3'</td>
<td>4/30/2024</td>
</tr>
<tr>
<td>STM-0004</td>
<td>Catch Basin Standard 27&quot;</td>
<td>4/30/2024</td>
</tr>
<tr>
<td>STM-0005</td>
<td>Precast Manhole - 48&quot; Standard Sump</td>
<td>4/30/2024</td>
</tr>
<tr>
<td>STM-0020</td>
<td>Box Culvert Watertight Joint</td>
<td>2/4/2022</td>
</tr>
<tr>
<td>STM-0022</td>
<td>Fabric Wrapped Casting</td>
<td>2/4/2022</td>
</tr>
<tr>
<td>STM-1001</td>
<td>Storm Sewer Structure Solid Cover Casting</td>
<td>3/17/2023</td>
</tr>
<tr>
<td>STM-4001</td>
<td>Catch Basin Gutter Stamp - UMD Campus Only</td>
<td>4/13/2023</td>
</tr>
</tbody>
</table>
PLACE AND COMPACT BACKFILL OVER EXISTING STRUCTURE TO PROPOSED GRADE

REMOVE EXISTING FRAME, COVER, CASTING, AND ADJUSTING RINGS, SALVAGE CASTING BACK TO THE UNIVERSITY.

REMOVE EXISTING STRUCTURE TO A MINIMUM DEPTH OF 40" BELOW FINISHED GRADE. STRUCTURE MAY BE REMOVED TO A GREATER DEPTH.

MIN. 40"

FILL REMAINING DEPTH OF STRUCTURE LEFT IN PLACE WITH FLOWABLE FILL, SAND, AND/OR BALLAST AS APPLICABLE

CAP OR PLUG ALL EXISTING SEWER PIPE ENDS OR OPENINGS IN ABANDONED STRUCTURE AND INSTALL CONCRETE AROUND CAP AND OVER PIPE TO ENSURE IT IS NOT PENETRATABLE BY GROUNDWATER

FILL EXISTING SEWER PIPEs THAT ARE TO BE ABANDONED WITH FLOWABLE FILL

DRILL HOLEs IN STRUCTURE FLOOR AND WALLS PRIOR TO FILLING TO ALLOW STRUCTURE TO DRAIN

NOT TO SCALE

ABANDONED STRUCTURE

GEN-0001
NOTES:

1. CONCRETE COLLAR TO ENCASE CASTING AND ADJUSTING RINGS

2. CONCRETE COLLAR SHALL BE CIRCULAR OR SQUARE LAYOUT

3. SEAL JOINT BETWEEN PAVEMENT AND COLLAR

4. MAINTAIN 3¾" COVER ON REINFORCEMENT
NOTES:

1. REINFORCEMENT SHALL BE SINGLE LINE STEEL WIRE FABRIC HAVING AN AREA OF NOT LESS THAN 0.12 SQ. IN. PER FOOT OF HEIGHT.

2. STEPS REQUIRED IN MANHOLE STRUCTURES MORE THAN 4' DEEP. STRUCTURE STEPS SHALL BE SPACED 16" ON CENTER OVER DOWNSTREAM OUTLET. NEENAH R-1980E OR SIMILAR.
NOTES:

1. VALVE BOX PRODUCTS TO BE AS SHOWN ABOVE OR APPROVED EQUAL.
2. ALL BOLTS INCLUDING T-BOLTS SHALL BE COR-BLUE.
3. RESTRAIN TEE AND VALVE WITH MEGALUG THRUST RESTRAINTS.
4. 7.5' MINIMUM COVER REQUIRED OVER TOP OF WATER MAIN.
5. LID TO BE FLUSH WITH GRADE UNLESS SPECIFIED IN UMN STANDARDS DIVISION 33 10 00.
6. BOX TO BE SET TO PROVIDE 12" OF ADJUSTMENT.
7. CONCRETE COLLAR TO ENCASE VALVE BOX WHEN LOCATED IN PAVERS, CLASS V, OR GRAVEL AREAS.
8. CONCRETE COLLAR SHALL BE CIRCULAR OR SQUARE

NOT TO SCALE
NOT TO SCALE

WATER STRUCTURE COVER CASTING

NOTES

NEENAH FOUNDRY CASTING NO. R-1733-0806 OR SIMILAR

EQUIPMENT NOS.: NEW COPE AND DRAG

MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B

FINISH: NO PAINT UNLESS SPECIFIED ON PURCHASE ORDER

WEIGHT: APPROX. 150 LBS.
NOTES:

1. REINFORCEMENT SHALL BE SINGLE LINE STEEL WIRE FABRIC HAVING AN AREA OF NOT LESS THAN 0.12 SQ. IN. PER FOOT OF HEIGHT

2. NO PIPE OR STRUCTURE ALLOWED ABOVE TOP OF CONE

3. THE ELEVATION OF LINE A SHALL BE EQUAL TO OR ABOVE LINE B

4. STEPS REQUIRED IN MANHOLE STRUCTURES MORE THAN 4' DEEP. STRUCTURE STEPS SHALL BE SPACED 16" ON CENTER OVER DOWNSTREAM OUTLET. NEENAH R-1980E OR SIMILAR.

5. EXTERNAL CHIMNEY SEALS SHALL EXTEND FROM THE CASTING TO THE CONE

SANITARY SEWER STRUCTURE
STANDARD 48"
ECCENTRIC CONE

NOT TO SCALE

PUBLISHED: 04/30/2024
NOTES:

1. REINFORCEMENT SHALL BE SINGLE LINE STEEL WIRE FABRIC HAVING AN AREA OF NOT LESS THAN 0.12 SQ. IN. PER FOOT OF HEIGHT.

2. NO PIPE ALLOWED WITHIN CONE SECTION.

3. STRUCTURE STEPS SHALL BE SPACED 16" ON CENTER OVER DOWNSRREAM OUTLET. NEENAH R-1980E OR SIMILAR.

4. EXTERNAL CHIMNEY SEALS SHALL EXTEND FROM THE CASTING TO THE CONE.
NOTES:

1. ALL PIPING SHALL BE PVC
2. CONCRETE COLLAR TO ENCASE CLEANOUT FRAME WHEN LOCATED IN PAVERS, CLASS V, OR GRAVEL AREAS
3. CONCRETE COLLAR SHALL BE CIRCULAR OR SQUARE
4. SEAL JOINT BETWEEN PAVEMENT AND COLLAR
5. CAST IRON CLEANOUT FRAME SHALL BE EJ 1574, OR APPROVED EQUAL
6. CAST IRON CLEANOUT LID SHALL BE EJ 1574A SW VC WITH THE WORD "SEWER" STAMPED ON THE LID, OR APPROVED EQUAL

EXISTING GROUND

PVC FEMALE CLEANOUT ADAPTER WITH INVERTED DUT SCREW CAP OR FLAT SLOTTED SCREW CAP

KOR-N-SEAL NO. S406-10 AWS WITH 10 1/4" BAND

SECTION AA

NOT TO SCALE
3/4" RAISED FLUSH LETTERING

RAISED MINNESOTA 'M' LOGO

1" RAISED FLUSH LETTERING

RAISED KNOBS

BLOCK 'M' LOGO DETAIL

(1) 1 1/4" DIA. LIFT HOLE

25 3/4"

3/16"

14"

2 1/2"

5/8"

7/8"

1/4"

1/4"

3/8"

TREADS 3/16" HIGH

SURFACE DESIGN

NOTES

NEENAH FOUNDRY CASTING NO. R-1733-0804 OR SIMILAR

EQUIPMENT NOS.: NEW COPE AND DRAG

MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B

FINISH: NO PAINT UNLESS SPECIFIED ON PURCHASE ORDER

WEIGHT: APPROX. 150 LBS.

NOT TO SCALE

SANITARY SEWER STRUCTURE
COVER CASTING

UNIVERSITY OF MINNESOTA
FACILITIES MANAGEMENT
ENGINEERING & UTILITIES
PUBLISHED: 03/17/2023

STANDARD PLATE NO.

SAN-1001
NOTES:

1. REINFORCEMENT SHALL BE SINGLE LINE STEEL WIRE FABRIC HAVING AN AREA OF NOT LESS THAN 0.12 SQ. IN. PER FOOT OF HEIGHT

2. NO PIPE OR STRUCTURE ALLOWED ABOVE TOP OF CONE

3. THE ELEVATION OF LINE A SHALL BE EQUAL TO OR ABOVE LINE B

4. STEPS REQUIRED IN MANHOLE STRUCTURES MORE THAN 4' DEEP. STRUCTURE STEPS SHALL BE SPACED 16" ON CENTER OVER DOWNSTREAM OUTLET. NEENAH R-1980E OR SIMILAR.

5. WHEN REQUIRED, FULLY WATERTIGHT PIPE CONNECTIONS SHALL BE GASKETED JOINTS.
NOTES:

1. REINFORCEMENT SHALL BE SINGLE LINE STEEL WIRE FABRIC HAVING AN AREA OF NOT LESS THAN 0.12 SQ. IN. PER FOOT OF HEIGHT

2. PROVIDE MORTAR FILLETS TO FIT THE BOTTOM PORTION OF PIPE TO DIRECT FLOW TO OUTLET

3. THE ELEVATION OF INLET INVERTS SHALL BE ABOVE THE OUTLET INVERT ELEVATION

4. ADJUSTING RINGS TO HAVE A FULL BED OF MORTAR BETWEEN RINGS AND AROUND THE OUTSIDE OF RINGS

5. INSIDE DIMENSIONS OF 2.00' X 3.00' (STRENGTH DESIGN OF BASE SLAB AND STRUCTURE PER MANUFACTURER.)

6. WHEN REQUIRED, FULLY WATERTIGHT PIPE CONNECTIONS SHALL BE GASKETED JOINTS.
NOTES:

1. REINFORCEMENT SHALL BE SINGLE LINE STEEL WIRE FABRIC HAVING AN AREA OF NOT LESS THAN 0.12 SQ. IN. PER FOOT OF HEIGHT.

2. PROVIDE MORTAR FILLETS TO FIT THE BOTTOM PORTION OF PIPE TO DIRECT FLOW TO OUTLET.

3. ADJUSTING RINGS TO HAVE A FULL BED OF MORTAR BETWEEN RINGS AND AROUND THE OUTSIDE OF RINGS.

4. FOR USE WHERE THERE ARE NO INLET PIPES.

5. WHEN REQUIRED, FULLY WATERTIGHT CONNECTIONS SHALL BE GASKETED JOINTS.
NOTES:

1. REINFORCEMENT SHALL BE SINGLE LINE STEEL WIRE FABRIC HAVING AN AREA OF NOT LESS THAN 0.12 SQ. IN. PER FOOT OF HEIGHT

2. NO PIPE OR STRUCTURE ALLOWED ABOVE TOP OF CONE

3. THE ELEVATION OF LINE A SHALL BE EQUAL TO OR ABOVE LINE B

4. STRUCTURE STEPS SHALL BE SPACED 16" ON CENTER OVER DOWNSTREAM OUTLET. NEENAH R-1980E OR SIMILAR.

5. SUMP DEPTH TO BE DESIGNED BY THE ENGINEER OF RECORD

6. SUMP STRUCTURES TO HAVE A MAXIMUM OF 1 INLET PIPE, TYP.

7. OUTLET INVERT TO HAVE A SKIMMER AND/OR FLOW DISSIPATION DEVICE. SKIMMER SHALL HAVE A PORT THAT ALLOWS ACCESS TO THE OUTLET PIPE, AND AN ANTI-SIPHON DEVICE.

8. WHEN REQUIRED, FULLY WATERTIGHT PIPE CONNECTIONS SHALL BE GASKETED JOINTS.
NOTES:

1. TWO ROPES OF BUTYL SEALANT, ALL AROUND

2. EXTERIOR JOINT WRAP, TOP AND SIDES (CONSEAL CS212 OR EQUAL)

3. TIE ALL JOINTS
TYPE 5 NON-WOVEN GEOTEXTILE FABRIC WRAP ENTIRELY AROUND, WITH 1 FT OVERLAP FROM TOP OF STRUCTURE. TAPE TOP OF FABRIC TO CASTING THEN BACKFILL.
3/4" RAISED FLUSH LETTERING

RAISED MINNESOTA 'M' LOGO

EST. 1851

STORM SEWER

1" RAISED_FLUSH LETTERING

RAISED KNOBS

(1) 1 1/4" DIA. LIFT HOLE

NOTES

NEENAH FOUNDRY CASTING NO. R-1733-0805 OR SIMILAR

EQUIPMENT NOS.: NEW COPE AND DRAG
MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B
FINISH: NO PAINT UNLESS SPECIFIED ON PURCHASE ORDER
WEIGHT: APPROX. 150 LBS.

NOT TO SCALE

STORM SEWER STRUCTURE
SOLID COVER CASTING

UNIVERSITY OF MINNESOTA
FACILITIES MANAGEMENT
ENGINEERING & UTILITIES
PUBLISHED: 03/17/2023

STANDARD PLATE NO.
STM-1001
NOTES:

1. FOR USE WITHIN THE URBANIZED AREA OF THE UNIVERSITY OF MINNESOTA DULUTH (UMD) CAMPUS ONLY.
2. UMD USES THE SAME STAMP AS CITY OF DULUTH. A CUTTER STAMP CAN BE BORROWED FROM UMD FACILITIES MANAGEMENT IF NECESSARY.
3. IMPRINT SHOULD BE APPROXIMATELY ¹⁄₁₆ (ONE QUARTER) INCH IN DEPTH, NOT SO DEEP SO AS TO MAKE FRAME MARKS IN THE CONCRETE, BUT DEEP ENOUGH THAT WHEN STAMP IS REMOVED THE TEXT IS LEGIBLE.
4. A SINGLE STAMP SHOULD BE PLACED ON THE UPGRADE SIDE OF THE CATCH BASIN SO THAT IT IS READABLE FROM THE STREET.
5. WHEN ADJACENT TO A SIDEWALK AND/OR THE GUTTER IS SLOPED TOWARD THE CATCH BASIN IN BOTH DIRECTIONS, A SECOND STAMP SHOULD BE PLACED SO THAT IT IS READABLE FROM THE BACK OF CURB.