METROPOLITAN UTILITIES DISTRICT
OMAHA, NEBRASKA

SPECIFICATIONS FOR PRECAST CONCRETE MANHOLES

Section 1 - General

1.1 These specifications govern precast concrete manhole sections for use as underground vaults. Manhole sections shall comply with these specifications, latest version of ASTM C478, and attached drawing 416235.

1.2 Manholes may be installed in traveled right-of-way and shall withstand H-20 live loading.

1.3 The manufacturer shall submit, with the Proposal, three (3) sets of detailed drawings showing dimensions, type of reinforcing, type of steps, maximum load design and the other materials used in the construction of the manhole sections.

Section 2 - Material

2.1 Concrete shall have a minimum 4000 psi compressive strength at 28 days.

2.2 Reinforcing mesh shall conform to latest version of ASTM A-185.

Section 3 – Manhole Sections

3.1 Wall thickness shall be as shown in Drawing 416235.

3.2 Precast manholes shall have internal diameters of 30", 48", 54", 60" or 72", as specified in the bid documents or construction drawings.

3.3 Section height will be specified at the time of purchase/Invitation. Height of cone and flat top sections shall comply with Drawing 416235.

3.4 Bottom sections shall have a base flange cast with the section.

3.5 Special bottom sections shall have a full bottom with a 4" minimum thickness and a capped 6" x 12" long steel pipe sump, cast in the center of the bottom.

3.6 Section joints shall be as shown in Drawing 416235.

3.7 Bottom sections shall be provided with a straight through pipe pass as specified in the Invitation to Bid/construction drawings. Pipe pass designation and dimensions are as follows:

<table>
<thead>
<tr>
<th>OPENING</th>
<th>Height (A)</th>
<th>Width (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 1</td>
<td>1’ – 0”</td>
<td>1’ – 2”</td>
</tr>
<tr>
<td>No. 2</td>
<td>1’ – 6”</td>
<td>1’ – 8”</td>
</tr>
<tr>
<td>No. 3</td>
<td>2’ – 1”</td>
<td>2’ – 3”</td>
</tr>
<tr>
<td>No. 4</td>
<td>2’ – 8”</td>
<td>2’ – 10”</td>
</tr>
<tr>
<td>No. 5</td>
<td>3’ – 3”</td>
<td>3’ – 5”</td>
</tr>
</tbody>
</table>

* Denotes Change to DWG 416235 pg 9/11
3.8 Wall sleeves shall be standard weight steel pipe per the specified schedule. Sleeves shall be grouted and sealed until watertight.

### STEEL WALL SLEEVE SIZE

<table>
<thead>
<tr>
<th>Schedule</th>
<th>Pipe Size</th>
<th>Wall Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4”</td>
<td>0.237”</td>
</tr>
<tr>
<td>2</td>
<td>6”</td>
<td>0.280”</td>
</tr>
<tr>
<td>3</td>
<td>10”</td>
<td>0.365”</td>
</tr>
<tr>
<td>4</td>
<td>12”</td>
<td>0.375”</td>
</tr>
</tbody>
</table>

#### Section 4 – Steps

4.1 All 48”, 54”, 60” and 72” sections shall be furnished with steps spaced at 16” centers and located as shown on Drawing 416235.

4.2 Steps shall be polypropylene (per ASTM D4101) injection molded around a ½” ASTM A615 Grade 60 steel reinforcing bar. Steps shall meet all requirements of ASTM C478.

#### Section 5 - Handling

5.1 All sections, except flat tops, shall have a minimum of two 1½” diameter lifting holes cast in the walls. The lifting holes shall be directly opposite one another and centered vertically on the section. Sections with pipe passes, sections with wall sleeves and special barrel sections for butterfly valves shall have lifting holes located 90° from the cut out as shown on Drawing 416235.

All special bottom sections for butterfly valves and 60” and 72” barrel sections, except special barrel sections for butterfly valves, shall have three 1 ½” diameter lifting holes cast in the walls. The first lifting hole shall be 60° from the steps. The two other lifting holes shall be located to provide a 120° separation between lifting holes. The lifting holes shall be centered vertically on the section.

5.2 Flat top sections shall have 3 - ¾” diameter (minimum) lifting cables cast in the tops. The lifting cables shall be spaced approximately 120° apart and in from the outside edge of the flat top section at least 1’- 0”. The lifting cables shall be placed in a pattern as to create a nearly level position while top is being lifted and not interfere with the flange of the cast iron manhole frame. The layout of the lifting cables shall comply with Drawing 416235.

* Denotes Change to DWG 416235 pg 9/11
30" DIAMETER VAULTS

LAP JOINT DETAIL

TONGUE & GROOVE
26" RISER, 30" BARREL AND BOTTOM SECTIONS,
30" X 26" TAPERED RISER,
48" X 26" ECCENTRIC TOP CONE

SPECIAL BOTTOM

METROPOLITAN UTILITY DISTRICT
OMAHA, NEBRASKA

SCALE: NONE
DRAWN BY: W.J.T.
DATE: 3-2001
ENG'D CHK'ED: MKM
REVISED DATE: 10-2005
DRAWING 416235
PAGE 1 OF 11

30", 48", 64", 80" AND 72" PRECAST MANHOLE SECTIONS
54" DIAMETER VAULTS

NOTE: ON ALL 48", 54", 60" AND 72" VAULT SECTIONS WITH PIPE PASSES, THE STEPS SHALL BE AT A 60° ANGLE FROM THE RUN OF THE PIPE PASSES.

LAP JOINT DETAIL

1% 4½"
5½"

54" DIAMETER SECTIONS

54" x 15" BARREL SECTION
19-100-48

54" x 16" BARREL SECTION
19-100-47

54" x 12" BARREL SECTION
19-100-52

54" x 48" BARREL SECTION
19-100-52

TOP VIEW OF FLAT TOP SECTION

METROPOLITAN UTILITY DISTRICT
OMAHA, NEBRASKA

SCALE: NONE
DRAWN BY: W.P.T.
DATE: 3-2001

39", 48", 54", 60" AND 72" PRECAST MANHOLE SECTIONS
PAGE 4 OF 11

DRAWING 416238
REV. CHK BY: McM

INSTALL 2 LIFTING CABLES ON ALL 48", 54", 60" AND 72" CV, AT OPPOSITE 90° ANGLES.
THE CABLES SHALL BE AT LEAST 10" DEEP;
THE CABLES SHALL NOT INTERSECT EACH OTHER OR INTERFERE WITH ALIGNMENT OR MANHOLE VENTS OR COVERS.
NOTE: ON ALL 48", 54", 60 AND 72" VAULT SECTIONS WITH PIPE PASSES, THE STEPS SHALL BE AT A 60° ANGLE FROM THE RIN OF THE PIPE PASSES.
NOTE: ON ALL 48", 64", 60" AND 72" VAULT SECTIONS WITH PIPE PASSES, THE STEPS SHALL BE AT A 60° ANGLE FROM THE RUN OF THE PIPE PASSES.

*72" DIAMETER VAULTS

LAP JOINT DETAIL

72" x 32" BOTTOM SECTION
W/ # 1 PIPE PASS
19-100-75

72" x 48" BOTTOM SECTION
W/ # 1 PIPE PASS
19-100-75

72" x 48" BOTTOM SECTION
W/ # 1 PIPE PASS
19-100-75

METROPOLITAN UTILITY DISTRICT
OMAHA, NEBRASKA

30", 48", 64", 60" AND 72" PRECAST MANHOLE SECTIONS

PAGE 7 OF 11

DRAWING 416235

SCALE: NONE

DRAWN BY: JAZ

DATE: 10-2001

ENG. CHK. BY:

REVISED DATE: 10-2008

REV. CHK. BY: MKM
*60" REGULATOR VAULTS*

NOTE: ON ALL REGULATOR VAULT SECTIONS WITH WALL SLEEVES, THE STEPS SHOULD BE AT A 90° ANGLE FROM THE RUN OF THE PIPE SLEEVES.

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**WALL SLEEVE FOR 60" REGULATOR VAULTS**

<table>
<thead>
<tr>
<th>SCHEDULE</th>
<th>4&quot;</th>
<th>6&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>WALL 1</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>WALL 2</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

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**METROPOLITAN UTILITY DISTRICT**

**OMAHA, NEBRASKA**

**DATE:** 10-2008

**ENG'T CHK BY:**

**REVISED DATE:** 10-2008

**DRAWING 416235**

**PAGE 10 OF 11**

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**SCALE:** NONE
NOTE: ON ALL REGULATOR VAULT SECTIONS WITH WALL SLEEVES, THE STEPS SHOULD BE AT A 90° ANGLE FROM THE RUN OF THE PIPE SLEEVES.