SECTION A–A

SLOPE 2" PER FOOT

FLEXIBLE BUTYL RESIN SEALING COMPOUND

SECTION B–B

#4 Ø12", EACH WAY

3" CLR. TYP.

NOTES:
1. JOINTS TO BE SET IN FLEXIBLE BUTYL RESIN SEALING COMPOUND AND GROUTED WITH NON-SHRINK GROUT INSIDE AND OUTSIDE.
2. SQUARE BASES ARE ACCEPTABLE.
3. FOR PIPE LARGER THAN 36", OR WHERE CONDITIONS SUCH AS MULTIPLE PIPES WARRANT, A CONCRETE BOX BASE WILL BE REQUIRED. (SEE CDOT STANDARD DRAWING M–604–20)
1. All joints to be set in flexible butyl resin, sealing compound, and plastered with mortar 5/8" thick and extending 4" each side of joint inside and outside.

2. Mortar on riser rings is acceptable.

3. Manholes installed outside of street right-of-way shall have locking covers.

4. "Sewer" to be imprinted on cover.

5. For pipe larger than 36" or where conditions such as multiple pipes warrant, a concrete box base will be required. (See CDOT standard drawing M-604-20)

CITY of WESTMINSTER
4800 WEST 92ND AVENUE
WESTMINSTER, COLO. 80031

MANHOLE BARRELS AND ALTERNATE TOPS

DATE: JUNE 2019 SHEET ST 2
NOTES:

1. THIS DETAIL IS TO BE USED UNDER NORMAL CONDITIONS. WHERE EXCESSIVE GROUND WATER IS PRESENT, AN ALTERNATE DESIGN WILL BE REQUIRED.
### Table One ~ Bar List for Curb Inlets, Type "R"

<table>
<thead>
<tr>
<th>&quot;H&quot;</th>
<th>LENGTH</th>
<th>L = 5 FT.</th>
<th>L = 10 FT.</th>
<th>L = 15 FT.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NO. REQD.</td>
<td>NO. REQD.</td>
<td>CONC. CU. YDS.</td>
<td>STEEL LBS.</td>
</tr>
<tr>
<td></td>
<td>REGULAR</td>
<td>DROP BOX</td>
<td>401</td>
<td>402</td>
</tr>
<tr>
<td>3-00</td>
<td>2-8&quot;</td>
<td>1-8&quot;</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>3-60</td>
<td>3-2&quot;</td>
<td>2-2&quot;</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>4-00</td>
<td>3-8&quot;</td>
<td>2-8&quot;</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>5-00</td>
<td>4-2&quot;</td>
<td>3-2&quot;</td>
<td>14</td>
<td>11</td>
</tr>
<tr>
<td>6-00</td>
<td>5-2&quot;</td>
<td>4-2&quot;</td>
<td>16</td>
<td>13</td>
</tr>
<tr>
<td>6-00</td>
<td>5-4&quot;</td>
<td>4-8&quot;</td>
<td>5-11</td>
<td>16</td>
</tr>
<tr>
<td>6-60</td>
<td>6-2&quot;</td>
<td>5-2&quot;</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>7-00</td>
<td>6-8&quot;</td>
<td>5-8&quot;</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>7-60</td>
<td>7-2&quot;</td>
<td>6-2&quot;</td>
<td>10</td>
<td>8</td>
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<td>10</td>
<td>8</td>
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<td>10</td>
<td>8</td>
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<td>8-2&quot;</td>
<td>10</td>
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<td>8-8&quot;</td>
<td>10</td>
<td>8</td>
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<tr>
<td>10-50</td>
<td>10-2&quot;</td>
<td>9-2&quot;</td>
<td>10</td>
<td>8</td>
</tr>
</tbody>
</table>

*Note: For L = 10' and L = 15', use the next larger size bar.*

### Table Two ~ Bars and Quantities with "H"

<table>
<thead>
<tr>
<th>Type III</th>
<th>Type IV</th>
<th>Type V</th>
<th>Type VI</th>
<th>Type VII</th>
<th>Type VIII</th>
<th>Type X</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Type III Diagram" /></td>
<td><img src="image2" alt="Type IV Diagram" /></td>
<td><img src="image3" alt="Type V Diagram" /></td>
<td><img src="image4" alt="Type VI Diagram" /></td>
<td><img src="image5" alt="Type VII Diagram" /></td>
<td><img src="image6" alt="Type VIII Diagram" /></td>
<td><img src="image7" alt="Type X Diagram" /></td>
</tr>
</tbody>
</table>

### Bar Bending Diagrams ~ (Dimensions are Out-to-Out of Bar)
GENERAL NOTES:
1. CONCRETE SHALL BE CLASS B INLET MAY BE CAST-IN-PLACE OR PRECAST.
2. CONCRETE WALLS SHALL BE FORMED ON BOTH SIDES AND SHALL BE 8 IN. THICK.
3. INLET STEPS SHALL BE IN CONFORMANCE WITH AASHTO M 196.
4. CURB FACE ASSEMBLY SHALL BE GALVANIZED AFTER WELDING.
5. EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED 1/2 IN. CURB AND GUTTER CORNERS SHALL BE FINISHED TO MATCH THE EXISTING CURB AND GUTTER BEYOND THE TRANSITION GUTTER.
6. REINFORCING BARS SHALL BE DEFORMED AND SHALL HAVE A 2 IN MINIMUM CLEARANCE. ALL REINFORCING BARS SHALL BE EPOXY COATED.
7. DIMENSIONS AND WEIGHTS OF TYPICAL MANHOLE RING AND COVER ARE NOMINAL.
8. MATERIAL FOR MANHOLE RINGS AND COVERS SHALL BE GRAY OR DUCTILE CAST IRON IN ACCORDANCE WITH SUBSECTION 722.06.
9. PIPE ENTRIES INTO THE INLET ARE VARIABLE, THE DIMENSIONS SHOWN ARE TYPICAL. ACTUAL DIMENSIONS AND QUANTITIES FOR CONCRETE AND REINFORCEMENT SHALL BE AS REQUIRED IN THE WORK. QUANTITIES INCLUDE VOLUMES OCCUPIED BY PIPES.
10. STRUCTURAL STEEL SHALL BE GALVANIZED AND SHALL BE IN ACCORDANCE WITH SUBSECTION 722.06.
11. ALL MANHOLE COVERS SHALL BE CAST WITH A "NO DUMPING DRAINS TO STREAM" MESSAGE AND A FISH SYMBOL. THE SURFACE OF THE MANHOLE COVER SHALL HAVE A NON-SLIP PATTERN.

CHANNEL LAYOUT DETAILS
SEE CURB FACE ASSEMBLY ON SHEET 1.

MATERIALS: GRAY IRON (CL35B)
LOAD RATING: HS-20
DESIGN LOAD: HEAVY DUTY (40,000-100,000 LBS)
ESTIMATED WEIGHT: 148 LBS
ASTM A48

V MACHINED SURFACE

EAST JORDAN IRON WORKS #2405A
PRODUCT #240586

CITY of WESTMINSTER
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TYPE R INLET AND MANHOLE COVER DETAIL

DATE: JUNE 2019

SHEET 4 OF 4
STORM OR SANITARY SEWER CROSSING UNDER WATER MAIN

STORM OR SANITARY SEWER CROSSING OVER TOP OF WATER MAIN

NOTES:

1. CONCRETE TO BE CAST AGAINST UNDISTURBED SOIL OR SHORING.
2. LENGTH OF ENCASEMENT SHALL EXTEND AT LEAST 9 FEET EACH SIDE OF WATER MAIN.
3. FILLER MATERIAL BETWEEN CONDUITS TO BE APPROVED COMPRESSIBLE MATERIAL SUCH AS STYROFOAM, ETC. IF d≤6".
   COMPACTED BACKFILL, IF d>6".
4. SHORING OR SHEETING, IF USED, TO BE CUT OFF AT TOP OF ENCASEMENT
5. A REINFORCED ENCASEMENT IS REQUIRED FOR ALL CONDUITS CROSSING OVER WATERMANS BUT ENCASEMENTS ARE NOT REQUIRED TO BE REINFORCED IF CROSSING UNDER WATERMANS.

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ENCASEMENT FOR CONDUIT CROSSINGS

DATE: JUNE 2019 SHEET ST 9