NOTES:

1. CONTRACTOR SHALL INSTALL A 3/4" PVC SCHEDULE 80 CONDUIT WITH STRING WHOEVER THE DISTANCE BETWEEN METER BOXES (2 TO 12 MULTIPLE METER BOXES) IS 4'-0" OR LESS (EDGE TO EDGE). CONDUIT SHALL EXTEND 2" WITHIN METER BOX, KEEP BOTH ENDS EXPOSED, PLUG OR TAPE TO PREVENT SOIL INTRUSION, AS REQUIRED. SAW CUT TRENCH AS REQUIRED AND REPAIR TO MATCH EXISTING CONDITIONS. FOR CONCRETE SLAB, REPAIR TRENCH WITH EPOXY MORTAR, LEVEL AND FINISH TO MATCH EXISTING.

2. INSTALL ELBOWS AND PIPE EXTENSIONS BEFORE METERS TO PROVIDE 18-INCH MINIMUM COVER FOR SERVICE LATERALS, AS REQUIRED.
THE PURPOSE OF THIS FIGURE IS TO SIMPLIFY THE DESIGNATION OF SERVICE LATERALS AND CONNECTIONS ON CONSTRUCTION PLANS. THE SIZE COMBINATIONS SHOWN HEREON ARE THOSE MOST COMMONLY USED, BUT THIS FIGURE IS NOT INTENDED TO LIMIT THE COMBINATIONS WHICH MAY BE USED.
NOTE: SEE L26 FOR MATERIALS AND NOTES
<table>
<thead>
<tr>
<th>TYPE</th>
<th>METER SIZE</th>
<th>①</th>
<th>②</th>
<th>③</th>
<th>④</th>
<th>⑤</th>
<th>⑥</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>CORP. STOP</td>
<td>COPPER ADAPTER</td>
<td>COPPER SERVICE TUBING</td>
<td>BRONZE BALL VALVE</td>
<td>BRASS NIPPLE</td>
<td>BRASS FITTING</td>
</tr>
<tr>
<td>A</td>
<td>5/8&quot; x 3/4&quot;</td>
<td>1&quot; AWWA THREAD x FEMALE I.P.T. FB 1600-4</td>
<td>1&quot; MALE I.P.T. x COPPER</td>
<td>1&quot;</td>
<td>1&quot; FEMALE I.P.T. B 11-444</td>
<td>1&quot; x 4&quot;</td>
<td>N/A</td>
</tr>
<tr>
<td>A</td>
<td>3/4&quot; x 3/4&quot;</td>
<td>1&quot; AWWA THREAD x FEMALE I.P.T. FB 1600-4</td>
<td>1&quot; MALE I.P.T. x COPPER</td>
<td>1&quot;</td>
<td>1&quot; FEMALE I.P.T. B 11-444</td>
<td>1&quot; x 4&quot;</td>
<td>1&quot; x 45' ELBOW W/ CLOSE NIPPLE OR 45' STREET ELBOW</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>TYPE</th>
<th>METER SIZE</th>
<th>⑦</th>
<th>⑧</th>
<th>⑨</th>
<th>⑩</th>
<th>⑪</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>CAST IRON METER BOX</td>
<td>COPPER ADAPTER</td>
<td>COPPER SERVICE TUBING</td>
<td>BRONZE BALL VALVE</td>
<td>PLASTIC VALVE BOX</td>
<td>DIELECTRIC COUPLING</td>
</tr>
</tbody>
</table>

**NOTES**

1. ALL FITTINGS AND MATERIALS SHALL BE AS LISTED BY BRAND NAME OR APPROVED EQUAL.
2. FOR CONDITION OTHER THAN STANDARD CONDITION SHOWN, ENGINEER SHALL SUBMIT MODIFIED DETAIL FOR APPROVAL.
3. WHERE THERE IS NO SIDEWALK, THE 4" CONCRETE PAD SHALL MEASURE 42" FRONT-TO-BACK AND 36" ALONG THE PROPERTY LINE, WITH TOP ELEVATION 2" ABOVE THE GRADED SHOULDER.
4. REPLACE PLASTIC VALVE BOX WITH CAST IRON FRAME & COVER IF SUBJECT TO TRAFFIC.

**DENOTES FORD METER BOX MANUFACTURING CO. NUMBER.**
NOTE: SEE L28 FOR MATERIALS AND NOTES
### MAUI

**TYPE** | **METER SIZE** | **1** | **2** | **3** | **4** | **5** | **6**
---|---|---|---|---|---|---|---
| | | BALL STOP CORP. | COPPER ADAPTER | COPPER SERVICE TUBING | BRONZE BALL VALVE | COPPER ADAPTER | COPPER TEE |
| A-1 | \(\frac{5}{8}\)" x \(\frac{3}{4}\)" | 1 1/2" AWWA THREAD x FEMALE I.P.T. FB 1600-6 | 1 1/2" MALE I.P.T. x COPPER | SIZES AS NOTED ON L27 | 1 1/2" FEMALE I.P.T. x COPPER (SPIGOT) | 1 1/2" MALE I.P.T. x COPPER (SPIGOT) | 1" x 1 1/2" x C x C x C |
| A-1 | \(\frac{3}{4}\)" x \(\frac{3}{4}\)" | 1 1/2" AWWA THREAD x FEMALE I.P.T. FB 1600-6 | 1 1/2" MALE I.P.T. x COPPER | SIZES AS NOTED ON L27 | 1 1/2" FEMALE I.P.T. x COPPER (SPIGOT) | 1 1/2" MALE I.P.T. x COPPER (SPIGOT) | 1" x 1 1/2" x C x C x C |

### DOUBLE SERVICE LATERAL (TYPE "A," 5/8" & 3/4" METERS)

**TYPE** | **METER SIZE** | **7** | **8** | **9** | **10** | **11** | **12** | **13**
---|---|---|---|---|---|---|---|---
| | | COPPER 90° ELLS | COPPER ADAPTER | CAST IRON METER BOX | COPPER ADAPTER | BRONZE BALL VALVE | PLASTIC VALVE BOX | DIELECTRIC COUPLING |
| A-1 | \(\frac{5}{8}\)" x \(\frac{3}{4}\)" | 1" C x C | 1" MALE I.P.T. x COPPER (SPIGOT) | 1" FEMALE I.P.T. INLET LYLE 111-243-TP (METER SHUTOFF AND DUAL CHECK VALVE INCLUDED) | 3/4" MALE I.P.T. x COPPER | 3/4" FEMALE I.P.T. x COPPER | 10" AMETEK 10-181-014 W/ GREEN COVER 10-181-015 | 3/4" BRASS WITH CLOSE NIPPLE |
| A-1 | \(\frac{3}{4}\)" x \(\frac{3}{4}\)" (ROTATED 45°) | 1" C x C | 1" MALE I.P.T. x COPPER (SPIGOT) | 1" FEMALE I.P.T. INLET LYLE 211-343-TP (METER SHUTOFF AND DUAL CHECK VALVE INCLUDED) | 3/4" MALE I.P.T. x COPPER | 3/4" FEMALE I.P.T. x COPPER | 10" AMETEK 10-181-014 W/ GREEN COVER 10-181-015 | 3/4" BRASS WITH CLOSE NIPPLE |

**NOTES**

1. ALL FITTINGS AND MATERIALS SHALL BE AS LISTED BY BRAND NAME OR APPROVED EQUAL.
   FOR CONDITION OTHER THAN STANDARD CONDITION SHOWN, ENGINEER SHALL SUBMIT MODIFIED DETAIL FOR APPROVAL.
2. SEE L27 FOR PLAN VIEW
3. WHERE THERE IS NO SIDEWALK, THE 4" CONCRETE PAD SHALL MEASURE 42" FRONT-TO-BACK AND 60" ALONG THE PROPERTY LINE, WITH TOP ELEVATION 2" ABOVE THE GRADED SHOULDER.
4. REPLACE PLASTIC VALVE BOX WITH CAST IRON FRAME & COVER IF SUBJECT TO TRAFFIC.
<table>
<thead>
<tr>
<th>Type</th>
<th>Meter Size</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Corp. Stop</td>
<td>Copper Adapter</td>
<td>Copper Service Tubing</td>
<td>Bronze Ball Valve</td>
<td>Brass Bushing</td>
<td>Brass Nipple</td>
<td>Cast Iron Meter Box</td>
</tr>
<tr>
<td>B</td>
<td>1&quot;</td>
<td>1 1/2&quot; AWWA Thread x Female I.P.T. FB 1600-6</td>
<td>1 1/2&quot; Male I.P.T. x Copper</td>
<td>Sizes as Noted on L29</td>
<td>1 1/2&quot; Female I.P.T. x 1 1/2&quot; Male I.P.T. B 11-666</td>
<td>1&quot; Female I.P.T. C 18-46</td>
<td>1&quot; x 4&quot;</td>
<td>Inlet-Outlet 1&quot; Female I.P.T. (Meter Shutoff Included) YLB 111-444-TP</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>Meter Size</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Brass Check Valve</td>
<td>Copper Adapter</td>
<td>Bronze Ball Valve</td>
<td>Plastic Valve Box</td>
<td>Dielectric Coupling</td>
</tr>
<tr>
<td>B</td>
<td>1&quot;</td>
<td>1&quot; In-Line Spring HS 11-444</td>
<td>1&quot; Male I.P.T. x Copper</td>
<td>1&quot; Female I.P.T. B 11-444 HB 34S</td>
<td>10&quot; AMTEK 10-181-014 W/ Green Cover 10-181-015</td>
<td>1&quot; Brass with Close Nipple</td>
</tr>
</tbody>
</table>

**Notes**

1. All fittings and materials shall be as listed by brand name or approved equal. For condition other than standard condition shown, engineer shall submit modified detail for approval.
2. See L29 for plan view.
3. Where there is no sidewalk, the 4" concrete pad shall measure 42" front-to-back and 36" along the property line, with top elevation 2" above the graded shoulder.
4. Replace plastic valve box with cast iron frame & cover if subject to traffic.
NOTE: SEE L32 FOR MATERIALS AND NOTES.
<table>
<thead>
<tr>
<th>Type</th>
<th>Meter Size</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<tbody>
<tr>
<td>B-1</td>
<td>1&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 1/2&quot; AWWA Thread x Female I.P.T. FB 1600-6</td>
<td>1 1/2&quot; Male I.P.T. x Copper</td>
<td>Sizes as Noted on L31</td>
<td>1 1/2&quot; Female I.P.T. B 11-666</td>
<td>1 1/2&quot; Male I.P.T. x Copper (Spigot)</td>
<td>1&quot; x 1&quot; x 1/2&quot; C x C x C</td>
<td>1&quot; C x C</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>Meter Size</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>B-1</td>
<td>1&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Copper Adapter</td>
<td>Cast Iron Meter Box</td>
<td>Brass Nipple</td>
<td>Brass Check Valve</td>
<td>Copper Adapter</td>
<td>Bronze Ball Valve</td>
<td>Plastic Valve Box</td>
<td>Dielectric Coupling</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1&quot; Male I.P.T. x Copper (Spigot)</td>
<td>Inlet-Outlet</td>
<td>1&quot; Female I.P.T. (Meter Shut-Off Included) YLB 111-444-TP</td>
<td>1&quot; x 4&quot;</td>
<td>1&quot; In-Line Spring HS 11-444</td>
<td>1&quot; Male I.P.T. x Copper</td>
<td>1&quot; Female I.P.T. B 11-444 HB-34S</td>
<td>10&quot; AMETEK 10-181-014 W/Green Cover 10-181-015</td>
</tr>
</tbody>
</table>

**Notes**

1. All fittings and materials shall be as listed by brand name or approved equal. For condition other than standard condition shown, engineer shall submit modified detail for approval.

2. See L31 for plan view.

3. Where there is no sidewalk, the 4" concrete pad shall measure 42" front-to-back and 60" along the property line, with top elevation 2" above the graded shoulder.

4. Replace plastic valve box with cast iron frame & cover if subject to traffic.

* Denotes Ford Meter Box Manufacturing Co. number.
### Single Service Lateral (Type C-1 1/2" Meter)

<table>
<thead>
<tr>
<th>Type</th>
<th>Size</th>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tbody>
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<td>1 1/2&quot;</td>
<td>5/8&quot;</td>
<td>5/8&quot; x 2 1/2&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>COPPER STOP</td>
<td>COPPER SERVICE TUBING</td>
<td>BRONZE BALL VALVE</td>
<td>BRASS BUSHING</td>
<td>BRASS NIPPLE</td>
<td>METER VALVE</td>
<td>STAINLESS STL. BOLTS/NUTS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2&quot; AWWA THREAD x FEMALE I.P.T.</td>
<td>MALE I.P.T. x COPPER</td>
<td>2&quot; FEMALE I.P.T. B 11-777</td>
<td>1 1/2&quot; x 49&quot; (OR LENGTH TO FIT)</td>
<td>1 1/2&quot; x FLANGE BF 13-666</td>
<td>TYPE 304</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>Size</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>1 1/2&quot;</td>
<td>1 1/2&quot; x 13&quot;</td>
<td>1 1/2&quot; x 6&quot;</td>
<td>1 1/2&quot; x 14&quot;</td>
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<td>1 1/2&quot; x 14&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>METAL IDLER</td>
<td>METAL COUPLING</td>
<td>BRASS NIPPLE</td>
<td>BRASS CHECK VALVE</td>
<td>BRASS NIPPLE</td>
<td>BRONZE BALL VALVE</td>
<td>PLASTIC VALVE BOX</td>
<td>DIELECTRIC COUPLING</td>
</tr>
<tr>
<td></td>
<td>1 1/2&quot; FLG. x FLG. ONE END PLUGGED</td>
<td>1 1/2&quot; IN-LINE SPRING HS 11-666</td>
<td>10&quot; AMETEK 10-181-014 W/ GREEN COVER 10-181-015</td>
<td></td>
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</tbody>
</table>

**NOTES:**

1. ALL FITTINGS AND MATERIALS LISTED BY BRAND NAMES OR APPROVED EQUAL.
2. SEE PLATE M23 FOR TRANSPONDER BRACKET INSTALLATION.
3. SEE L33 FOR PLAN VIEW

DENOTES FORD METER BOX MANUFACTURING CO. NUMBER.
<table>
<thead>
<tr>
<th>MAUI Type</th>
<th>Meter Size</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-1</td>
<td>1 1/2&quot;</td>
<td>2&quot; AWWA THREAD x FEMALE I.P.T. FB 1600-7</td>
<td>2&quot; MALE I.P.T. x COPPER</td>
<td>SIZES AS NOTED ON L35</td>
<td>2&quot; FEMALE I.P.T. B 11-777</td>
<td>2&quot; MALE I.P.T. x C (SPIGOT)</td>
<td>1 1/2&quot; x 1 1/2&quot; x 2&quot; C x C x C</td>
<td>1 1/2&quot; C x C</td>
<td>1 1/2&quot; MALE I.P.T. x COPPER</td>
</tr>
<tr>
<td>DOUBLE SERVICE LATERAL (TYPE C-1, 1 1/2&quot; METER)</td>
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</tr>
<tr>
<td>9</td>
<td>Meter Valve</td>
<td>1 1/2&quot; FEMALE I.P.T. x FLANGE BF 13-666</td>
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</tr>
<tr>
<td>10</td>
<td>Stainless STL. Bolts/Nuts</td>
<td>5/8&quot; x 2 1/2&quot; TYPE 304</td>
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<tr>
<td>11</td>
<td>Meter Idler</td>
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<td></td>
</tr>
<tr>
<td>12</td>
<td>Meter Coupling</td>
<td>1 1/2&quot; FLG. x LOK-PAK</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>13</td>
<td>Brass Nipple</td>
<td>1 1/2&quot; x 6&quot;</td>
<td></td>
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</tr>
<tr>
<td>14</td>
<td>Brass Check Valve</td>
<td>1 1/2&quot; IN-LINE SPRING HS 11-666</td>
<td></td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>15</td>
<td>Brass Nipple</td>
<td>1 1/2&quot; x 14&quot;</td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>16</td>
<td>Bronze Ball Valve</td>
<td>1 1/2&quot; FEMALE I.P.T. B 11-666 HB-675</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>17</td>
<td>Plastic Valve Box</td>
<td>10&quot; AMETEK 10-181-014 W/COVER 10-181-015</td>
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<td></td>
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</tr>
<tr>
<td>18</td>
<td>Dielectric Coupling</td>
<td>1 1/2&quot; BRASS WITH ADAPTER AND CLOSE NIPPLE</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

NOTES:

ALL FITTINGS AND MATERIALS LISTED BY BRAND NAMES OR APPROVED EQUAL.

SEE PLATE M23 FOR TRANSPLIER BRACKET INSTALLATION.

SEE L35 FOR PLAN VIEW

DENOTES FORD METER BOX MANUFACTURING CO. NUMBER.
SINGLE SERVICE LATERAL
(TYPE "D", 2" METER)
SCALE: NTS

NOTE: SEE L38 FOR MATERIALS AND NOTES
<table>
<thead>
<tr>
<th>TYPE</th>
<th>METER SIZE</th>
<th>1</th>
<th>2 *</th>
<th>3 *</th>
<th>4 *</th>
<th>5 *</th>
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</thead>
<tbody>
<tr>
<td>D</td>
<td>2&quot;</td>
<td></td>
<td>2&quot; x 4&quot;</td>
<td>2 1/2&quot; x 2&quot; C 11-87</td>
<td>2 1/2&quot; * (OR 2&quot;) MALE I.P.T. x COPPER</td>
<td>2 1/2&quot; * (OR 2&quot;)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>BRONZE BALL VALVE</th>
<th>BRASS NIPPLE</th>
<th>VALVE METER</th>
<th>STAINLESS STL. BOLTS/NUTS</th>
<th>METER IDLER</th>
<th>METER COUPLING</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>2&quot; FEMALE I.P.T. B 11-777 (OR LENGTH TO FIT)</td>
<td>2&quot; x 48&quot;</td>
<td>2&quot; FEMALE I.P.T. x FLANGE BF 13-777</td>
<td>5/8&quot; x 3&quot; TYPE 304</td>
<td>2&quot; x 17&quot; FLG. x FLG. ONE END PLUGGED</td>
<td>2&quot; FLG. x LOK PAK</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>BRASS NIPPLE</th>
<th>BRASS CHECK VALVE</th>
<th>BRASS NIPPLE</th>
<th>BRONZE BALL VALVE</th>
<th>PLASTIC VALVE BOX</th>
<th>DIELECTRIC COUPLING</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td></td>
<td>2&quot; IN-LINE SPRING HS 11-777</td>
<td></td>
<td>2&quot; FEMALE I.P.T. B 11-777 HB-67 S</td>
<td>10&quot; AMETEK 10-181-014 W/ GREEN COVER 10-181-015</td>
<td>2&quot; BRASS WITH ADAPTER AND CLOSE NIPPLE</td>
</tr>
</tbody>
</table>

**NOTES:**
1. ALL FITTINGS AND MATERIALS LISTED BY BRAND NAMES OR APPROVED EQUAL.
2. SEE PLATE M23 FOR TRANSPONDER BRACKET INSTALLATION.
3. IF LENGTH OF SERVICE LATERAL IS LESS THAN 15 FEET, DELETE ITEMS 2 AND 3 AND USE 2" SIZE FOR ITEMS 4 AND 5.
4. SEE L37 FOR PLAN VIEW

[F] DENOTES FORD METER BOX MANUFACTURING CO. NUMBER.
CONCRETE BOX

NOTES:

1. ACCOMMODATES 5/8" OR 3/4" METERS.
   (KAUA'I AND HAWAII ONLY)
   AND 2" AND 2-1/2"
   PROPERTY VALVES
   (FOR OAHU)

2. ACCOMMODATES 2"
   & 2-1/2" VALVES.

3. SEE PLATE M2 FOR
   C.I. COVER DETAILS.

4. FOR OAHU AND HAWAII,
   FIBER REINFORCED
   CONC. IS ALLOWED.

5. INSTALL 6" WIDE X 4"
   THICK CONCRETE COLLAR
   WITH WIRE MESH IN
   NON-CONCRETE/SIDEWALK
   AREA WHERE APPLICABLE.
NOTE:
METAL THICKNESS DIMENSIONS ARE NET.
USE 1/2" HIGH VERTICAL LETTERS.
METER COVER SHALL BE GRAY CAST IRON,
FREE OF BLISTER, BLOWHOLES, WARPAGE
AND COLD SHUTS.
NOTES:
1. THICKNESS DIMENSIONS ARE NET. ADD 1/8" FOR RAISED SURFACE. RAISED SURFACE USE 3/4" HIGH LETTERS.
2. TYPE "X" METER BOX FOR 5/8", 3/4", & 1" METERS.
3. FOR "HAWAII" TYPE "X" METER BOX IS FOR 1" METER AND FOR 5/8" METERS INSTALLED IN A.C. OR CONCRETE PAVED AREA.
4. FOR OAHU AND HAWAII, FIBER REINFORCED CONCRETE IS ALLOWED.
5. SEE PLATE M24 FOR READING HOLE COVER DETAIL.
6. INSTALL 6" WIDE X 4" THICK CONC COLLAR IN NON-CONCRETE/SIDWALK AREAS WHERE APPLICABLE.
**NOTE:**
1. INSTALL 12” WIDE x 4” THICK CONCRETE COLLAR (REINFORCING AS SHOWN) IN NON-CONCRETE/SIDEWALK AREAS
2. DWS 3500 CONCRETE, 1500 PSI CMU AND GRADE 60 REINFORCEMENT STEELS
3. DESIGN IS BASED ON: 250 PSF LIVE LOAD, 0 FEET SURCHARGE: 60 PCF/FT AT REST PRESSURE AND WATER TABLE BELOW BOTTOM OF METER BOX PER ASSHTO LRFD BRIDGE SPECIFICATION (1998). NON TRAFFIC TYPE
4. ALL CELLS SHALL BE GROUTED SOLID WITH 2500 PSI GROUT, TYPE M MORTAR

* FOR 1½” AND 2” METERS ON OAHU, 2” METERS ON KAUA'I

---

**KAUA'I**

**METER BOX TYPE III**

**FOR 1 1/2" & 2" METERS**

**SCALE: NTS**

**STANDARD DETAILS**

**M4**

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**FINISH GRADE 2"**

**BELOW COVER (KAUA'I ONLY)**

**OPENING**
NOTE:
1. INSTALL 12" wide x 4" thick concrete collar (reinforcing as shown) in non-concrete/sidewalk areas
2. DWS 3500 concrete and grade 60 reinforcing steel
3. DESIGN IS BASED ON: 250 PSF LIVE LOAD, 0 FEET SURCHARGE: 60 PCF/FT AT REST PRESSURE AND WATER TABLE BELOW BOTTOM OF METER BOX PER ASSHTO LRFD BRIDGE SPECIFICATION (1998) NON TRAFFIC TYPE

* FOR 1½" AND 2" METERS ON OAHU, 2" METERS ON KAUA'I

KAUA'I
OAHU

METER BOX TYPE III
FOR 1 1/2" & 2" METERS
SCALE: NTS

STANDARD DETAILS

M5

2002
REVISION
NOTE:
THICKNESS DIMENSIONS ARE NET.
ADD 1/8" FOR RAISED SURFACE.
PLAN VIEW OF CAST IRON FRAME
FOR 24"x42"x3/4" PLATE

SEE PLATE M24 FOR READING HOLE COVER AND DETAILS OF RAISED SURFACE.

PLAN VIEW OF 24"x42"x3/4"
CAST IRON PLATE

KAUAII
OAHU

METER BOX FRAME & COVER
CAST IRON, TYPE IV FOR 3" & 4" METERS
SCALE: NTS

STANDARD DETAILS M7

2002
REVISION
BOTTOM VIEW OF 24"x42"x3/4" CAST IRON PLATE

SECTION "A-A"
(SEE M7)

SECTION "E-E"

SECTION "D-D"
(SEE M7)

KAUAI  
OAHU  

METER BOX COVER  
CAST IRON, TYPE IV  
SCALE: NTS  

2002  
REVISION  

M8  

STANDARD DETAILS
PLAN VIEW OF CAST IRON FRAME FOR 36”x52”x3/4" PLATE

CHECKERED PATTERN OF RAISED SURFACE TO MATCH WITH PATTERN OF PLATE. (SEE M24)

PLAN VIEW OF 36”x52”x3/4” CAST IRON PLATE

SEE DETAILS OF RAISED SURFACES PLATE M24

1” HIGH LETTERS

3/4” HIGH LETTERS

SEE M24 FOR READING HOLE COVER DETAILS.
PLATE HOLD-DOWN ANCHOR
2 EACH PLATE COVER,
1/2" S.S. BOLT W/ PENTAD HEAD **
INTO EMBEDDED INSERT.

1/4" CHECKERED S. STL. PLATE COVER

SECTION "F-F"

1/4" CHECKERED S. STL. PLATE COVER

SECTION "D-D"

* ALTERNATE = PROVIDE DESIGN WITH ANODIZED ALUMINUM COVER.
** USE HEX HEAD FOR DETECTOR CHECK MANHOLES.

PLAN OF STAINLESS (316)
STEEL MANHOLE COVER

1/4" CHECKERED S. STL. PLATE COVER

SECTION "E-E"

COAT TOP OF CHANNEL IRON
(SEE NOTE 1.)

3/8" x 4" x 12" PLATE W/ 2 1/2" x 3"

7/8" HOLE IN COVER

1/4" CHECKERED S. STL. PLATE COVER

HANDLE
SEE DETAIL

NOTES:
1. COAT CONTACT POINT OF DISSIMILAR METALS W/ CHEVRON INDUSTRIAL MEMBRANE (ELASTOMERIC MEMBRANE) OR EQUAL.
2. ALL WILD STEEL SHALL BE HOT-DIPPED GALVANIZED.
ELEVATION

NOTE:
REFER TO PLATE L10 FOR SCHEDULE OF COPPER FITTINGS. FOR SERVICE SADDLE REQUIREMENT, SEE DIMENSION 100, SECTION 104.02, OF THE WATER SYSTEM STANDARDS. FOR 1-1/2" AND 2" METERS, INSTALL FORB "LOK-PAK" METER COUPLING AND NECESSARY ADAPTERS.

<table>
<thead>
<tr>
<th>METER BOX DIMENSIONS (IN INCHES)</th>
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HAWAII

STANDARD 1", 1 1/2", & 2" METER AND BOX INSTALLATION
SCALE: NTS

2002
REVISION

M13
COVER PLATE DIMENSIONS (IN INCHES)

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ALL PLATES USS MULTI-GRIFF OR CHECKER STEEL, 3/8" THICK

* COVER PLATE DETAILS FOR 1" METER SHALL BE SIMILAR TO SHOWN BELOW EXCEPT 2-16"x16"x3/8" PLATES REQUIRED

SECTION "X-X"

SECTION "Y-Y"

NOTE:
ALL IRONS AND PLATES SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION.

STANDARD METER COVERS

HAWAII

SCALE: NTS

M14

REVISION 2002
READING COVER FOR:
COMPOUND METER BOX COVER SEE PLATES M16 & M17
MFM-MCT METER BOX COVER SEE PLATES M21 & M22 DETECTOR
CHECK METER BOX COVER SEE PLATES M18 & M20
**Plan**

- If tapping sleeve and tapping valve used, copper lateral shall be tapped to water main.
- If meter unit is installed on the opposite side of the road, as the waterline, an additional gate valve and valve box is required between the box and the 90° bend. Center of valve shall be 2'-6" from edge of box. Also relocate copper lateral just upstream of valve (between valve & 90° bend).

**Elevation**

- 6" hollow tile cells filled w/concrete
- Bend alt. legs
- 2-#4 continuous
- #4 at 16" o.c.
- #4 cont. at 16" o.c.
- Compacted base course
- Brick support
- Flange coupling adapter
- Cover plate see M17
- Conc. block
- Conc. block
FOR 3", 4", & 6" COMPOUND METERS

SECTION "Y-Y"
3/8" USS MULTI-GRIP STEEL PLATE
C3x5 FRAME

CONCRETE CAP AND FRAME DETAILS

SECTION "X-X"
3/8" USS MULTI-GRIP STEEL PLATE
L3"x2"x3/8" COVER SUPPORT 3 SIDES

DIMENSION TABLE

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*= MIN.

NOTES:
1. ALL ANGLES, CHANNELS, AND COVER PLATES SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION.
2. FOR DIMENSIONS, SEE TABLE ABOVE.
3. FOR METER INSTALLATIONS LARGER THAN 6", SUBMIT DRAWINGS TO MANAGER FOR APPROVAL.
4. SEE M15 FOR READING COVER DETAIL.
**Cover Plates 10" DC Meter**

**Cover Plates 3", 4", 6", and 8" DC Meters**

**3/8" Lift Hole**

**3/8" USS Multi-Grip Steel Plate**

**Reading Cover Section "X-X"**

See Plate M15 for details.

**3/8" USS Multi-Grip Steel Plate**

**L2 1/2x2 1/2x1/4" Frame**

**4x7.7 S-Shape I-Beam**

**L2 1/2x2 1/2x1/4"**

**Cross Beam Section "Y-Y"**

**Frame and Cover Details**

**Note:**
1. All angles, channels, and cover plates shall be hot-dipped galvanized after fabrication.

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**Detector Check and DC Valve Table (in inches)**

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**2002 Revision**

**Hawaii**

**Detector Check Cover Details**

**Standard Details**

**M18**
DETECTOR CHECK METER DETAIL

DETAIL OF WORK TO BE DONE BY CONTRACTOR IN ORDER TO RAISE AND CENTER BY-PASS METER

NOTES:
1. ITEMS UNDERLINED TO BE FURNISHED BY CONTRACTOR
2. ALL ITEMS TO BE RED BRASS OR BRONZE.
3. ALL WORK TO BE DONE BY THE CONTRACTOR.
4. (*) THESE ITEMS ARE PART OF DETECTOR CHECK ASSEMBLY.
5. DASHED LINE INDICATES BY-PASS METER LOCATION AS FURNISHED BY MANUFACTURER.
6. BY-PASS PIPING ASSEMBLY SHALL BE CONFIGURED TO CENTER THE BY-PASS METER UNDER THE READING COVERS.
FOR DIMENSIONS, SEE TABLE, M18

NOTES:
1. TAPPING SLEEVE AND TAPPING VALVE MAY BE USED WITH THE APPROVAL OF THE MANAGER.
2. FOR 3" DC METER INSTALLATIONS A 3" X 4" F.E. REDUCER SHALL BE INSTALLED AT BOTH ENDS OF DC METER.

ELEVATION

MODEL DC DETECTOR CHECK INSTALLATION
SCALE: NTS

HAWAII
STANDARD DETAILS
M20

2002
REVISION
NOTES:
1. READING COVERS SHALL BE LOCATED DIRECTLY OVER THE METER REGISTERS. LOCATIONS WILL VARY W/ THE TYPE OF METER TO BE INSTALLED.
2. SEE M15 FOR READING COVER DETAILS.
3. ALL ANGLES, CHANNELS, & COVER PLATES SHALL BE HOT DIPPED GALV. AFTER FABRICATION.
4. FOR 2-1/2" COPPER BYPASS LINES, INSTALL 2" BALL CORP. WITH APPROPRIATE 2"x2-1/2" FITTINGS.

DIMENSION TABLE

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NOTES:
1. READING COVERS SHALL BE LOCATED DIRECTLY OVER THE METER REGISTERS. LOCATIONS WILL VARY WITH THE TYPE OF METER TO BE INSTALLED.
2. SEE M15 FOR READING COVER DETAILS.
3. ALL ANGLES, CHANNELS, & COVER PLATES SHALL BE HOT DIPPED GALV. AFTER FABRICATION.
4. FOR 2-1/2" COPPER BYPASS LINES, INSTALL 2" BALL CORP. WITH APPROPRIATE 2"x2-1/2" FITTINGS.

### DIMENSION TABLE

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<thead>
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<td>T</td>
<td>18 7/8</td>
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<tr>
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<td>21 1/4</td>
<td>20 3/8</td>
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<tr>
<td>V</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>12</td>
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</table>
CHECKERED TO MATCH METER BOX COVER

3/8" Ø HOLES

1/2"

9/16"

1/8"

DETAILS OF RAISED SURFACE

CAST IRON READING-HOLE COVER

KAUAI OAHU

READING HOLE COVER
RAISED SURFACE DETAIL
SCALE: NTS

STANDARD DETAILS

M24
COMBINATION OF SINGLE COMPOUND AND SINGLE DETECTOR CHECK METERS

NOTE:
1. REFER TO M19, M30 AND M31 FOR DETECTOR CHECK METER INSTALLATION DETAILS.
2. REFER TO M27 - M29 FOR COMPOUND METER INSTALLATION DETAILS.
3. INSTALL ADDITIONAL FLANGED SPOOLS, AS REQUIRED.
**NOTES:**

1. REFER TO THE FOLLOWING DETAILS FOR BOX DIMENSIONS:
   - M27-M29 FOR COMPOUND METERS, M19, M30 & M31 FOR DC METERS, M32 & M33 FOR TURBINE METERS.
2. CONCRETE SHALL BE DWS 3500.
3. REINFORCING STEEL SHALL BE ASTM A615 GRADE 60.
4. DESIGN IS BASED ON: 250 PSF LIVE LOAD; 0 SURCHARGE; 60 PCF/FT AT REST PRESSURE, AND WATER TABLE BELOW BOTTOM SLAB, PER ASHTE LRFD BRIDGE DESIGN SPECIFICATIONS (1998), NON-TRAFFIC TYPE.
5. FOR CMU WALL:
   INSTALL 8" CMU W/ #5 @ 16" E.W. CENTERED. SEE MH12 FOR ADDITIONAL DETAIL.

**PLAN**

- **METER BOX COVER FRAME**
- **GROUT (EPoxy MORTAR)**
- **POCKET FOR FRAME**
- **3/4" CHAMFER**
- **1 1/2" CLR (TYP.)**
- **(2) #4 TOP**
- **#4 AT 12" AT METER BOX COVER, TYP**
- **4-#4 TYP ALL AROUND**
- **30# ROOFING PAPER BOND BREAKER**
- **ADD 1-#4 BAR**

**DETAIL "A"**

**TYPICAL SECTION**

**METER BOX COVER**

- **PRECAST, CAST-IN-PLACE WALL**
- **#5 AT 10" EW**
- **4" DIA. DRAIN HOLES (2 REQ'D)**
- **#4 AT 12" E.W.**
- **3" CLR**
- **1'-6"**
- **"A" OR "B"**

**OAHU**

**METER BOX DETAIL**

FOR COMPOUND, DC AND TURBINE METERS

SCALE: NTS

<table>
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<tr>
<th>STANDARD DETAILS</th>
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**2002 REVISION**
NEW PVC PIPE (3ft MAX)

DOUBLE HUB TEE

GATE VALVE & VALVE BOX (NOTE 5)

8" CMU W/ #5 AT 16" EW CENTERED. SEE MH12 FOR ADDITIONAL DETAIL

CONC. BLK. BOTTOM ELBOW

BALL STOP FLANGED COUPLING ADAPTER

CURB

BWS APPROVED BACKFLOW PREVENTION ASSEMBLY PER BWS STANDARD DETAIL V9 (SEE NOTE 6)

BY OTHERS

BALL CORP.

UNION, COPPER TO N.P.T.I.

ELBOW, COPPER TO COPPER

G = COPPER BY-PASS

CONC. BLOCK

BALL STOP

FLANGED SPIGOT PIPE

PROPERTY LINE VARIABLE (12" MIN)

X SEE PLATE M29

F.L. 1/4 BENDS

F.L. x BE PIPE 24" LONG

C.

F 19" MIN.

A

MAY BE IN SAME TRENCH

Q OF WATER MAIN

UNION, COPPER TO N.P.T.I.

TEE

CONC. BLOCK

SLEEVE

NIPPLE AS REQ'D

NOTE:
1. SEE TABLE ON M28 FOR DIMENSIONS BASED ON METER SIZE.
2. TAPPING SLEEVE/ TAPPING VALVE ASSEMBLY MAY BE USED.
3. ALL PIPING SHALL BE DUCTILE IRON PIPE UNLESS OTHERWISE NOTED.
4. MIN. DISTANCE OF TAP FOR BY-PASS TO TEE SHALL BE 36" CENTER TO CENTER.
5. OUTLET GATE VALVE MUST REMAIN
6. BACKFLOW PREVENTION ASSEMBLY TYPE TO BE DETERMINE BY BWS, IF REQUIRED.
NOTES:
1. SEE M7, M8, M9 AND M10 FOR METER BOX FRAME AND COVER DETAILS. SEE M26 FOR METER BOX DETAIL.
2. THE PROJECT SHALL PAY THE APPLICABLE WATER SYSTEM FACILITIES CHARGE AND FOR THE METER WHICH WILL BE FURNISHED BY BWS AND INSTALLED BY THE CONTRACTOR WHEN THE LATERAL IS INSTALLED.
3. LOCATE BY-PASS BALL STOP IN METER BOX WITH ENOUGH SPACE BETWEEN METER AND WALL FOR TEMPORARY BY-PASS STANDPIPE TO BE HOOKED UP.
4. ELIMINATE 4” DRAINHOLES FOR WATERPROOFED MANHOLES.
5. CONTRACTOR SHALL NOTIFY CUSTOMER SERVICE DIVISION IN WRITING AFTER THE PLAN IS APPROVED, NO LATER THAN 120 DAYS, PRIOR TO WITHDRAWING METER FROM THE BWS STOREYARD. SUCH NOTICE SHALL INDICATE NUMBER, SIZE, AND TYPE OF METER AND APPROXIMATE MONTH AND YEAR METER IS ANTICIPATED TO BE DRAWN OUT. IF THE APPROVED PLAN IS ALLOWED TO LAPSE, THE 120-DAY NOTICE WILL BE VOIDED.
6. ALL METERS SHALL BE INSTALLED IN THE CONCRETE OR DIRT SIDEWALK AREA WITH CONCRETE SLAB (SEE PLATE M43).

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<td>3’-11 1/2”</td>
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<td>X H</td>
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<tr>
<td>Y H</td>
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<td>Z H</td>
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<tr>
<td>A 0</td>
<td>4”</td>
</tr>
<tr>
<td>B 0</td>
<td>4” OR 6”</td>
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<tr>
<td>C 0</td>
<td>6” OR 8”</td>
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<th>SINGLE COMPOUND METER INSTALLATION-NOTES AND TABLES</th>
<th>STANDARD DETAILS</th>
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<tr>
<td></td>
<td>SCALE NTS</td>
<td>M28</td>
</tr>
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</table>

2002
REVISION
SEE DETAIL "A" AT M26

L = C.I. FRAME & COVER

N

M

1" OPENING AROUND PIPE TO BE PACKED W/ 1" CLOSED CELL NEOPRENE STRIP.

FOR METERS IN DIRT AREAS INSTALL 4" THK. x 12" WIDE CONC. SLAB ALL AROUND.

SECTION "X-X"

ELBOW, CU. TO N.P.T.I. BRASS PIPE, CUT TO FIT BALL STOP (SEE NOTE 3)

INSERT FLANGED FILLER PIECE WHEN REQUIRED

C.I. FL. 90° ELBOW

C.I. FL. 90° RED. ELBOW

CONC.

DIAM. DRAINHOLES

TEMPORARY BLIND SPLICE, SEE DETAIL BELOW

CONC. FLOOR SLAB REINF. W/#4@12" EW

REDUCING COMPANION FLANGE

SEE M28 FOR NOTES AND TABLE

DETAIL OF TEMPORARY BLIND SPLICE

GALV. PIPE CUT AND THREAD BOTH ENDS

WELD ROUND PLATE AT END OF PIPE AND SEAL

DRILL 1/4" AIR HOLE
MATERIALS FOR TESTING AS REQUIRED:
1- BLIND FLANGE WITH CLEANOUT OR,
1- BLIND SPLICE

8" CMU W/ #5 AT 16"
EW CENTERED SEE MH12
FOR ADDITIONAL DETAILS.
FOR BOTTOM AND TOP
SLAB REFER TO M26

PROPERTY LINE

FLANGED
SPIGOT PIPE

3'-0"

FLANGE 1/4 BEND WITH
CONC. BLOCK

FE X B PIPE,
24" LONG

FLANGED COUPLING
ADAPTER

Y

Y

12" MIN. CLR.

GATE VALVE & VALVE BOX

24" MIN.

CENTER LINE OF
WATER MAIN

MIN. 24" NIPPLE
AS REQUIRED

CONC. BLOCK WITH
STRUCTURAL STRUTS

SLEEVE

NOTES:
1. ALL METERS SHALL BE INSTALLED IN THE CONCRETE OR DIRT SIDEWALK AREA WITH CONCRETE SLAB (SEE PLATE M43).
2. CONTRACTOR SHALL NOTIFY CUSTOMER SERVICE DIVISION IN WRITING AFTER PLAN IS APPROVED, NO LATER THAN 120
   DAYS, PRIOR TO WITHDRAWING METER THE FROM THE BWS STOREYARD. SUCH NOTICE SHALL INDICATE NUMBER, SIZE,
   AND TYPE OF METER AND APPROXIMATE MONTH AND YEAR METER IS ANTICIPATED TO BE DRAWN OUT. IF THE
   APPROVED PLAN IS ALLOWED TO LAPSE, THE 120-DAY NOTICE WILL BE VOIDED.
3. THE PROJECT SHALL PAY THE APPLICABLE ONE-TIME SERVICE CHARGE AND FOR THE METER WHICH WILL BE FURNISHED
   BY BWS AND INSTALLED BY THE CONTRACTOR WHEN THE LATERAL IS INSTALLED.
4. TAPPING SLEEVE/ TAPPING VALVE ASSEMBLY MAY BE USED.
5. FOR DETAILS, SECTIONS AND TABLE SEE PLATES M19 AND M31.
6. CONCRETE SHALL BE DWS 3500.
7. REINFORCING STEEL SHALL BE ASTM A615 GRADE 60.
8. DESIGN IS BASED ON: 250 PSF LIVE LOAD; 0 SURCHARGE; 60 PCF/FT AT REST PRESSURE; AND WATER
   TABLE BELOW BOTTOM SLAB, PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS (1998). NON-TRAFFIC TYPE.
9. SEE DETAIL M26 FOR METER BOX DETAIL.
### Single Detector Check Meter Installation

**SECTION "Y-Y"**

- **6" Top Slab W/ #4 At 6" EW**
- **Concrete Sidewalk Area**
  - For Precast/Cast-In-Place Wall, see M26. For CMU Wall, see MH10
- **Flanged Coupling Adapter**
- **C.I. Fl. Elbow**
- **90° Flanged Elbow**
- **Bricks**
- **Concrete Floor Slab Reinforced W/#4 At 12" E.W.**
- **4" DIA Drainholes**
- **4" DIA Reinforcing Detail**
  - See M26
- **1" Opening Around Pipe To Be Packed With "Elastite" Expansion Joint**

**SECTION "X-X"**

---

### Standard Details

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<th>A Size</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E (min.)</th>
<th>F (min.)</th>
<th>G (min.)</th>
<th>H</th>
<th>Cl. F &amp; C</th>
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<td>1'-6&quot;</td>
<td>36&quot;</td>
<td>52&quot;</td>
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### Notes:
1. Max. Depth for "E", "F", & "G" shall be 1'-0" more than shown in table.
NOTES:
1. SEE M7, M8, M9 AND M10 FOR METER BOX FRAME AND COVER DETAILS. SEE DETAIL M26 FOR METER BOX DETAIL.
2. THE PROJECT SHALL PAY THE APPLICABLE WATER SYSTEM FACILITIES CHARGE AND FOR THE METER WHICH WILL BE FURNISHED BY BWS AND INSTALLED BY THE CONTRACTOR WHEN THE LATERAL IS INSTALLED.
3. LOCATE BY-PASS BALL STOP IN METER BOX WITH ENOUGH SPACE BETWEEN METER AND WALL FOR TEMPORARY BY-PASS STANDPIPE TO BE HOOKED UP.
4. ELIMINATE 4” DRAINHOLES FOR WATERPROOFED MANHOLES.
5. CENTER DIAL UNDER READING COVER.
6. CONTRACTOR SHALL NOTIFY CUSTOMER SERVICE DIVISION IN WRITING AFTER THE PLAN IS APPROVED, NO LATER THAN 120 DAYS, PRIOR TO WITHDRAWING METER FROM THE BWS STOREYARD. SUCH NOTICE SHALL INDICATE NUMBER, SIZE, AND TYPE OF METER AND APPROXIMATE MONTH AND YEAR METER IS ANTICIPATED TO BE DRAWN OUT. IF THE APPROVED PLAN IS ALLOWED TO LAPSE, THE 120-DAY NOTICE WILL BE VOIDED.
7. ALL METERS SHALL BE INSTALLED IN THE CONCRETE OR DIRT SIDEWALK AREA WITH CONCRETE SLAB. (SEE PLATE M43)
8. CONCRETE SHALL BE DWS 3500.
9. REINFORCING STEEL SHALL BE ASTM A615 GRADE 60.
10. DESIGN IS BASED ON: 250 PSF LIVE LOAD; 0 SURCHARGE; 60 PCF/FT AT REST PRESSURE; AND WATER TABLE BELOW BOTTOM SLAB, PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS (1998). NON–TRAFFIC TYPE.
11. SPECIAL INSPECTION SHALL BE PROVIDED DURING CONSTRUCTION FOR CMU WALL.
12. STRUCTURAL STEEL SHAPES SHALL BE ASTM A–36. HOT DIP GALVANIZED AFTER FABRICATION.

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NOTES FOR CMU WALL MANHOLE

1. BWS 3500 CONCRETE, 1500 PSI CMU AND GRADE 60 REINFORCING STEEL

2. DESIGN IS BASED ON: 250 PSF LIVE LOAD; 0 SURCHARGE; 60 PCF/FT AT REST PRESSURE; AND WATER
   TABLE BELOW BOTTOM SLAB; PER AASHTO LRFD BRIDGE DESIGN SPECIFICATION (1998) NON–TRAFFIC TYPE.

3. ALL CELLS SHALL BE GROUTED SOLID WITH 2500 PSI GROUT. TYPE M MORTAR

4. SPECIAL INSPECTION SHALL BE PROVIDED DURING CONSTRUCTION FOR CMU WALL.

SECTION "A1–A1"

NOTE:
COMBINED DOMESTIC AND FIRE FLOW
REQUIREMENT = NOT TO EXCEED 3,500 GPM

CMU WALLS
NOTE:
1. COMBINE MAIN BYPASS TAP WITH 8-INCH LATERAL IF TAPPING TRANSMISSION MAIN OR IF LONG LATERAL RUNS ACROSS A WIDE STREET, A LARGER SIZE LATERAL MAYBE REQUIRED.
2. BACKFLOW PREVENTION ASSEMBLY TYPE TO BE DETERMINED BY BWS, IF REQUIRED.
3. OUTLET GATE VALVE MUST REMAIN

#4 AT 12" OC BOTH WAYS PUT VERT. BARS AT MIDDLE OF WALLS

DIRECTION OF NORMAL FLOW

CONC. BLOCK

8" FLANGED, 1/4 BEND (H & TV)

8" FLANGED BEND (DEGREE OF BEND TO FIT FIELD CONDITIONS)

CONC. BLOCK

F.E. X BELL PIPE
24" LONG

8" TAPPING SLEEVE WITH TAPPING GATE VALVE & BOX

NOTE:
MAY OMIT ONE VALVE ON BY-PASS LINE WHEN CONNECTING TO NEW MAIN

PLAN VIEW OF GALV. STEEL FRAME AND REMOVABLE SUPPORT

PRECAST/CAST IN PLACE WALLS

FOR SECTIONS SEE M38, M39 AND M40
NOTES FOR PRECAST/CAST-IN-PLACE WALL MANHOLE

1. BWS 3500 CONCRETE AND GRADE 60 REINFORCING STEEL

2. DESIGN IS BASED ON: 250 PSF LVE LOAD; 0 SURCHARGE; 60 PCF/FT AT REST PRESSURE; AND WATER TABLE BELOW BOTTOM SLAB, PER AASHTO LRFD BRIDGE DESIGN SPECIFICATION (1998). NON-TRAFFIC TYPE.

PRECAST/CAST IN PLACE WALLS
SEE DETAIL C, M35

CHECKERED PATTERN OF RAISED SURFACE TO MATCH WITH PATTERN OF PLATE (SEE M24)

SEE HANDLE DETAIL, M36

NOTES:
1. CONTRACTOR TO VERIFY ALL DIMENSIONS PRIOR TO FABRICATION.
2. LOCATION OF READING LID SHALL BE VERIFIED BY CONTRACTOR.

PLAN – FM METER COVER
NOT TO SCALE

DETAIL "D"
REMOVABLE SUPPORT
NOT TO SCALE

SECTION "F-F"
NOT TO SCALE

8" X 2" FM METER & BOX
COVER PLATE & SUPPORT DETAILS
SCALE: NTS

OAHU

STANDARD DETAILS

M40
3/4" RAISED SHARP-FACED LETTERS ON CAST IRON INSERT

3/8" Ø X 3/4" S.S. CAP SCREWS, 8 REQUIRED PER ASSEMBLY-DRILL & TAP CAST IRON INSERT AND FLAT PLATE (PER INSERT)

1/8" L 1 Ø 4 TYP

3" X 9" X 3/8" FLAT BAR

8 1/4"

1/2" 1/2"

1/2" 1/2"

3" X 9" X 3/8" FLAT BAR

CUT OUT IN PLATE COVER

WATER METER

DETAIL B

GALVANIZED CAST IRON, 1 REQUIRED PER UNIT, 3/8" THICK

6 1/2" X 9" X 3/8" STEEL PLATE WELDED TO BOTTOM OF COVER

1 7/8" 4 1/2" 1 7/8"

1/2" 1/2"

CUT OUT IN PLATE COVER

BOARD OF WATER SUPPLY

3 1/4"

2 3/4"

8 1/4"

GALVANIZED CAST IRON, 3 REQUIRED PER UNIT, 3/8" THICK

(2) 5/8" X 1" SLOTTED HOLES FOR 1/2" EXPANSION ANCHORS WITH GALVANIZED HEXAGON HEAD BOLTS

SECTION "D-D"

2" X 2" X 3/8" ANGLE

3/8" F.B. STIFFENERS

4 REQUIRED PER UNIT

8" X 2" FM METER & BOX
IDENTIFICATION INSERTS AND CLIP DETAILS
SCALE: NTS

M41

2002
REVISION

OAHU
STANDARD DETAILS
3/8" CHECKERED PLATE READING LID

SECTION OF DETAIL A

1/4" SMOOTH PLATE RING CUT DIA, 6 7/8" I.D., 8 7/8" O.D.
1/2"x1/2"x3/4" LONG STEEL Stops TYPICAL TWO PLACES
1/8"x3/4" F.B. LUGS WELDED TO COVERS

5/8" DIA. (2 HOLES)

ROTATE FOR REMOVAL PROVIDE (2) SLOTS 1"x9/16" 180° IN SEATING RING

DETAIL A PLAN

1 1/2"
1/2"
1/8"
1"

3/8" CHECKERED PLATE

1"x3/8" TRIM BAR (MITER AT CORNERS)

2 1/2"x2 1/2"x3/8" FRAME ANGLE

(18) DRILL AND COUNTERSINK CHECKERED PLATE. DRILL AND TAP ANGLE FOR 3/8" S.S. FLAT HEAD MACHINE SCREWS.

3/8" DIA x4" LONG NAIL STUD (12 REQ'D. AT 24" O.C.) / (14 REQUIRED AS INDICATED)

DETAIL E

1 1/2"
1/2"
1/8"

3/8" CHECKERED PLATE

1"x3/8" TRIM BAR

TYP. 1/4"

2 1/2"x2 1/2"x3/8" FRAME ANGLE

(18) DRILL AND COUNTERSINK CHECKERED PLATE. DRILL AND TAP ANGLE FOR 3/8" S.S. FLAT HEAD MACHINE SCREWS.

3/8"x2" FLAT BAR

3/8"x1 3/4" FLAT BAR FILLER, 4 3/4" LONG

SECTION "C-C"

(8) 1/2" EXPANSION ANCHORS WITH GALVANIZED HEX-HEAD BOLTS. (WELD BOLTS TO ANGLE AFTER INSTALLATION)

CLIP-SEE PLATE M41
WATER METER BOX DETAIL FOR NON-SIDEWALK AREAS

NOTES:
1. AVOID PLACEMENT OF METERS IN SWALE AREAS OR LOW POINTS.

2. METER/CONC. SLAB DETAIL MAY BE ROTATED 90° TO FIT IN TIGHT AREAS. INSTALL FL x BELL PIECE WITH CONCRETE BEAM, AS REQUIRED.

3. RETAINING WALL REQUIRED IF EXISTING OR FINISH GROUND HAS SLOPE GREATER THAN 1/4" PER FOOT.

4. PROVIDE 4" THICK BY 12" WIDE (MIN.) WITH 1-#4 REBAR, CONCRETE SLAB AROUND METER BOX FOR 3" AND LARGER METERS.

5. PROVIDE GUARD POSTS WHEREVER POSSIBLE 2 FEET MINIMUM CLEAR FROM METER BOX.

18" MIN. (3FT FOR 3" AND LARGER METERS)

METER BOX

RETAINING WALL
(AS REQUIRED)

VALVE BOX

5' MAX.

GUARD POST

CONC. SLAB

GUARD POST SEE PLATE FH10
(IN FLAT AREAS ONLY WHERE RETAINING WALL IS NOT REQUIRED)

1/4" PER FT.
MAX. SLOPE

VARIABLE

4" THK. CONC. PAD
(TYPICAL)

WATER METER BOX FOR NON-SIDEWALK AREAS

SCALE: NTS

2002 REVISION

OAHU

STANDARD DETAILS

M43