<table>
<thead>
<tr>
<th>Detail</th>
<th>Description</th>
<th>Board Review</th>
<th>Revised Date</th>
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<tbody>
<tr>
<td>SD 1</td>
<td>Water Main, Service Line and Lateral Trench Details</td>
<td>3-10-10</td>
<td>10-30-12</td>
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<tr>
<td>SD 2</td>
<td>Thrust Blocks (SD3*)</td>
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<td>SD 3</td>
<td>Locating Wire (SD4*)</td>
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<td>SD 4</td>
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<tr>
<td>SD 5</td>
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<td>SD 6</td>
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<td>SD 7</td>
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<td>Guide Marker and Valve Operating Shaft Extension</td>
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<td>SD 10</td>
<td>Meter Box Location</td>
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</tr>
<tr>
<td>SD 11HP</td>
<td>5/8&quot; , ¾&quot; , and 1&quot; Meter Assembly-High Pressure</td>
<td>4-13-16</td>
<td>4-16-18</td>
</tr>
<tr>
<td>SD 12</td>
<td>5/8&quot; and ¾&quot; Meter Assembly with a 1&quot; Fire Service Meter (SD11A*)</td>
<td>11-30-11</td>
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<tr>
<td>SD 12HP</td>
<td>5/8&quot; and ¾&quot; Meter Assembly with a 1&quot; Fire Service Meter-High Pressure</td>
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<td>Private Fire Service-Reduced Pressure (SD13RP*)</td>
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<td>SD 16</td>
<td>Private Fire Service-Double Detector Check (SD14*)</td>
<td>3-10-10</td>
<td>1-12-11</td>
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<tr>
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<td>Description</td>
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<td>Revised Date</td>
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<tr>
<td>SD 17</td>
<td>Barrier Posts (SD16*)</td>
<td>3-10-10</td>
<td>6-27-14</td>
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<tr>
<td>SD 18</td>
<td>End of Main with Future Extension (SD22*)</td>
<td>3-10-10</td>
<td>11-6-12</td>
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<tr>
<td>SD 19</td>
<td>Anchor Block (SD23*)</td>
<td>3-10-10</td>
<td>6-27-14</td>
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<tr>
<td>SD 20</td>
<td>2&quot; thru 4&quot; Temporary Construction Water Supply (SD26*)</td>
<td>8-25-10</td>
<td>6-27-14</td>
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<tr>
<td>SD 21</td>
<td>Solar Bllge Pump (SD27*)</td>
<td>7-27-11</td>
<td>6-27-14</td>
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<tr>
<td>SD 22</td>
<td>Backflow Prevention Device (SD28*)</td>
<td>12-11-13</td>
<td>4-16-18</td>
</tr>
<tr>
<td>SD 23</td>
<td>Backflow Prevention Device (SD29*)</td>
<td>12-11-13</td>
<td>4-16-18</td>
</tr>
<tr>
<td>SD 24</td>
<td>Spillway Facility (Two Pages) (SD30*)</td>
<td>12-11-13</td>
<td>6-27-14</td>
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<tr>
<td>SD 25</td>
<td>Canal Culvert Installation (Two Pages) (SD21*)</td>
<td>3-10-10</td>
<td>10-15-18</td>
</tr>
<tr>
<td>SD 26</td>
<td>Canal Utility Crossing (Under) (SD17*)</td>
<td>2-5-14</td>
<td>6-27-14</td>
</tr>
<tr>
<td>SD 27</td>
<td>Canal Utility Crossing (Over) (SD18*)</td>
<td>2-5-14</td>
<td>6-27-14</td>
</tr>
<tr>
<td>SD 28</td>
<td>Canal Sewer Crossing (Under) (SD19*)</td>
<td>2-5-14</td>
<td>6-27-14</td>
</tr>
<tr>
<td>SD 29</td>
<td>Canal Storm Water Crossing (Overshot) (SD24*)</td>
<td>3-10-10</td>
<td>6-27-14</td>
</tr>
<tr>
<td>SD 30</td>
<td>Canal Storm Water Crossing (Undershot) (SD25*)</td>
<td>3-10-10</td>
<td>6-27-14</td>
</tr>
<tr>
<td>SD 31</td>
<td>Canal Fence Crossing</td>
<td>2-26-14</td>
<td>6-27-16</td>
</tr>
<tr>
<td>SD 32</td>
<td>Footbridge Crossing</td>
<td>2-26-14</td>
<td></td>
</tr>
<tr>
<td>SD 33</td>
<td>Encroachment Guide Marker</td>
<td>8-12-14</td>
<td></td>
</tr>
<tr>
<td>SD 34</td>
<td>Canal Storm Water Crossing</td>
<td>3-8-17</td>
<td></td>
</tr>
</tbody>
</table>

Canal Sewer Crossing (Over) (SD20*) No Longer Available
1. ALL MATERIALS AND INSTALLATION SHALL CONFORM TO "WATERMANS" AND "SERVICE ASSEMBLIES" IN THE SPECIFICATIONS.
2. TRENCH DETAILS FOR PIPELINES LOCATED ALONG OR ACROSS ROADWAYS SHALL CONFORM TO REQUESTS OF THE APPROPRIATE REGULATORY BODY.
3. TRENCHES LOCATED OUTSIDE OF ROADWAYS SHALL HAVE BACKFILL SLIGHTLY MOUNDED OVER THE TRENCH UNLESS DETERMINED BY THE DISTRICT ENGINEER THAT A MOUND IS NOT NECESSARY.
4. LOCATING WIRE SHALL BE COATED TO GAUGE SOLID COPPER AND SHALL CONFORM TO DRAWING NID SD1.
5. LOCATING WIRE SHOULD BE TAPED TO PIPE.
6. COMMON TRENCH WITH OTHER UTILITIES WILL NOT BE ALLOWED.

**METALLIC WATERMAIN**

**METALLIC SERVICE LINE, ARV & B/O LATERALS**

---

**NOTES:**

- **TRENCH WIDTH 'W' SCHEDULE**
  - WATERMAIN SIZE
    - 10" & LARGER: O.D. + 16"  
    - 8" & 6": 24"  
    - 4": 18"  
    - LESS THAN 1000' RADIUS: 24"  
    - LESS THAN 1000' RADIUS: 30"  
    - LESS THAN 1000' RADIUS: O.D. + 16"

- **BACKFILL CLASSIFICATION**
  - **CLASS #1**
    - CLEAN SAND—FREE FROM DELETERIOUS MATERIAL
      - SOIL SIZE: 1/4"  
      - NATURAL SAND: 75-100  
      - CRUSHED SAND: 100  
      - DECOMPOSED GRANITE: 100
  - **CLASS #2**
    - SELECT EARTH FREE FROM DELETERIOUS MATERIAL AND PASSING 1" SCREEN
  - **CLASS #3**
    - SELECT EARTH FREE FROM DELETERIOUS MATERIAL AND PASSING 2" SCREEN
  - **CLASS #4**
    - SELECT EARTH FREE FROM DELETERIOUS MATERIAL AND PASSING 4" SCREEN

- **TRENCH BACKFILL COMPACTION SCHEDULE**
  - **ITEM**
    - WATERMAIN: 95% MIN.
    - SERVICE LINES & ARV LATERALS: 95% MIN.
    - HYDRANT LATERAL: 95% MIN.

---

**WATERMAIN, SERVICE LINE AND LATERAL TRENCH DETAILS**

**NOT TO SCALE**

**NID SD1**
NOTES:
1. MATERIALS AND INSTALLATION SHALL CONFORM TO REACTION BLOCKING FOR "WATERMANS" IN THE SPECIFICATIONS.
2. THRUST BLOCKS SHALL BE PLACED AT ALL HORIZONTAL DEFLECTIONS IN EXCESS OF 6° AND ALL DOWNWARD VERTICAL DEFLECTIONS IN EXCESS OF 6°.
3. MAXIMUM ESTIMATED SOIL BEARING CAPACITY SHALL NOT EXCEED 2,000 P.S.F. UNLESS OTHERWISE APPROVED BY DISTRICT ENGINEER.
4. MINIMUM SOIL BEARING AREAS ARE BASED ON A WORKING PRESSURE 150 P.S.I. WITH A 1.5 SAFETY FACTOR PLUS 75 P.S.I. SURGE (TOTAL 300 P.S.I.) CALCULATION FOR BEARING AREAS FOR WORKING PRESSURE HIGHER THAN 150 P.S.I. MUST BE APPROVED BY THE DISTRICT ENGINEER.
5. CONCRETE SHALL BE PLACED BETWEEN THE FITTING AND UNDISTURBED SOIL.
6. THRUST BLOCKS SHALL BE NEATLY FORMED USING WOOD OR SAND. FORMING MATERIALS SHALL BE REMOVED UPON INITIAL CURE OF CONCRETE PRIOR TO BACKFILLING.
7. THRUST BLOCKS SHALL BE CONSTRUCTED OF 2,000 PSI CONCRETE.
8. CONCRETE SHALL NOT BE PLACED ON OR AROUND PIPE, BELLS, FLANGES OR OTHER JOINTS. IF UNAVOIDABLE, AND WITH APPROVAL OF THE DISTRICT ENGINEER, THESE AREAS SHALL BE PROTECTED WITH A DOUBLE WRAP OF 6 MIL POLYETHYLENE FILM.
9. THRUST BLOCKS PLACED ON BLIND FLANGES ADJACENT TO OTHER THRUST BLOCKS ON THE SAME FITTING SHALL BE SEPARATED FROM THE PERMANENT THRUST BLOCKS WITH A PLYWOOD DIVIDER IN ORDER TO FACILITATE ITS REMOVAL.

THRUST BLOCK SCHEDULE

<table>
<thead>
<tr>
<th>PIPE SIZE</th>
<th>MAX. SOIL BEARING CAPACITY (1,000 P.S.F.)</th>
<th>REQUIRED SOIL BEARING (SQ. FT.) — SEE NOTE #4.</th>
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</thead>
<tbody>
<tr>
<td>4&quot; 6&quot;</td>
<td>10</td>
<td>2 2 2 1 1 1 1 2</td>
</tr>
<tr>
<td>8&quot;</td>
<td>10</td>
<td>2 3 2 1 1 9 1 3</td>
</tr>
<tr>
<td>10&quot;</td>
<td>10</td>
<td>2 3 2 1 1 9 1 3</td>
</tr>
<tr>
<td>12&quot;</td>
<td>10</td>
<td>2 3 2 1 1 9 1 3</td>
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SOIL DESCRIPTION

<table>
<thead>
<tr>
<th>SOIL TYPE</th>
<th>10 HARD, SLOW SHEAR</th>
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<tbody>
<tr>
<td>4 SAND &amp; GRAVEL CEMENTED WITH CLAY — HARD TO PICK</td>
<td></td>
</tr>
<tr>
<td>2 SANDY MEDIUM CLAY — CAN BE SPADED</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>DEPTH OF SOIL BEARING SURFACE</th>
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</thead>
<tbody>
<tr>
<td>1' DEPTH OF SOIL BEARING SURFACE</td>
</tr>
<tr>
<td>2&quot; PIPE SIZE, USE 25% OF THE TABLE VALUE FOR 4&quot;</td>
</tr>
</tbody>
</table>

NOT TO SCALE

NID SD2
NOTES:
1. ALL MATERIALS AND INSTALLATION SHALL CONFORM TO LOCATING WIRE AND CONNECTORS FOR "WATER MAINS" IN THE SPECIFICATIONS.
2. LOCATING WIRE SHALL BE COATED 10 GAUGE SOLID COPPER.
3. LOCATING WIRE SHALL BE PLACED ABOVE AND CENTERED OVER ALL NON-METALLIC PIPE AND OVER ALL METALLIC PIPE USING 'O' RING JOINTS WITHOUT BONDING STRAPS.
4. LOCATING WIRE SHALL BE PLACED OVER ALL SERVICE LINES INCLUDING PRIVATE FIRE SERVICE LATERALS AND AIR RELEASE VALVE LATERALS.
5. ALL CONNECTORS FOR SPLICES AND OTHER CONNECTIONS TO THE LOCATING WIRES SHALL BE MADE WITH SPLIT BOLT OR PARALLEL CONNECTORS — (NO WIRE NUTS). ALL SPLICES AND CONNECTIONS AND THE CONNECTOR SHALL BE WRAPPED THOROUGHLY WITH VINYL ELECTRICAL TAPES.
6. VALVE LOOPS ARE REQUIRED FOR ONLY ONE VALVE IN A CLUSTER OF VALVES PROVIDING THEY ARE ALL WITHIN A 2' RADIUS.
7. ALL BLOWOFF VALVES AND AIR RELEASE LATERAL SHUTOFF VALVES (IF REQUIRED) SHALL BE INSTALLED WITH A LOCATING WIRE VALVE LOOP.
8. ALL LOCATING WIRE SHALL BE TESTED FOR CONTINUITY.

LOCATING WIRE

CONNECTOR DETAIL

NID SD3
**NOTES:**

1. All materials and installations shall conform to "mainline valves" in the specifications.
2. Valves shall be of the type allowed in the specifications.
3. Joints may be flanged, mechanical or 'O' ring push on joints except where specific types of joints are shown on the plans or designated in the specifications. All joints shall be protected from corrosion as required in the specifications.
4. Valve boxes shall be Christy G5 with a galvanized cast iron lid marked "water." Box extensions shall be precast concrete or 8" smooth wall P.V.C. pipe with Min. S.D.R. of 35 and ends cut square. Box extensions shall be centered over the valve operating nut and concentric with the valve stem.
5. Valve box pads shall be 3,000 P.S.I. concrete.
6. A valve operator extension shaft shall be furnished and installed for all valves with operating nuts placed 36" or more below the top of the valve box. Refer to NID SD9.
7. Place stone slope protection of No. 3 backing rock per Caltrans Sec. 72, on all cut slopes surrounding valve assemblies as directed.
8. A guide marker shall be furnished and installed as directed. Refer to Drawing NID SD9.

**MAINLINE VALVE ASSEMBLY**

**INSIDE ROAD ASSEMBLY**

**OUTSIDE ROAD ASSEMBLY**
TYPE 'B' BLOWOFF ASSEMBLY W/ RISER

1. 2" BRASS NIPPLE
2. 2" RESILIENT SEAT CAST IRON VALVE
3. 2" GALVANIZED IRON PIPE
4. 2" 90° ELBOW, GALVANIZED
5. 2" COUPLING, GALVANIZED
6. 2" PLUG, SCH 40 PVC – HAND TIGHT

NOTES:
1. ALL MATERIALS AND INSTALLATION SHALL CONFORM TO "BLOWOFF VALVE ASSEMBLIES" IN THE SPECIFICATIONS.
2. THE TYPE OF BLOWOFF ASSEMBLY SHALL BE AS NOTED ON THE PLANS FOR EACH LOCATION.
3. THE TAP AND SADDLE FOR THE CONNECTION TO THE WATERMAIN SHALL CONFORM TO "WATERMAIN TAPS" IN THE SPECIFICATIONS.
4. PIPE, SADDLE, AND FITTINGS SHALL BE PRIMED AND WRAPPED FOR CORROSION PROTECTION AS DESCRIBED IN THE SPECIFICATIONS.
5. DISCHARGE FROM TYPE 'A' BLOWOFFS SHALL BE DIRECTED DOWN SLOPE OR TO STONE SLOPE PROTECTION OR DIRECTED INTO DRAINAGE STRUCTURES, SUCH AS CULVERTS OR DROP INLETS, ALL AS SHOWN ON THE PLANS OR AS DIRECTED.
6. PLACE STONE SLOPE PROTECTION OF NO. 2 BACKING ROCK PER CALTRANS SEC. 72, ON ALL CUT SLOPES SURROUNDING BLOWOFF VALVE ASSEMBLIES, AS DIRECTED.
8. REFER TO DRAWING NID SD1 FOR TRENCH DETAILS.
9. LOCATE VALVE AND RISER SO AS NOT TO INTERFERE WITH ROADSIDE DRAINAGE OR OTHER STRUCTURES.

TYPE 'A' BLOWOFF ASSEMBLY

2" BLOWOFF ASSEMBLY – TYPE A & B

NOT TO SCALE

NID SD6
4" OR LARGER RAW WATER BLOWOFF ASSEMBLY – TYPE A & B

NOTES:
1. ALL MATERIALS AND INSTALLATION SHALL CONFORM TO "BLOWOFF VALVE ASSEMBLIES" IN THE SPECIFICATIONS.
2. ALL FITTINGS, VALVES AND PIPE SHALL BE OF THE SAME NOMINAL SIZE AS SHOWN ON THE PLANS. ALL FITTINGS, VALVES AND PIPE JOINTS SHALL RECEIVE POSITIVE RESTRAINT AS DESCRIBED IN THE SPECIFICATIONS.
3. FITTINGS SHALL BE PRIMED AND WRAPPED FOR CORROSION PROTECTION AS DESCRIBED IN THE SPECIFICATIONS.
4. DISCHARGE FROM 4" OR LARGER TYPE A BLOWOFFS SHALL BE DIRECTED HORIZONTALLY TO MAINTAIN FULL FLAP VALVE CLOSURE. STONE SLOPE PROTECTION SHALL BE EXTENDED AS REQUIRED TO PROTECT SLOPE AT IMPACT POINT. BLOWOFFS MAY ALSO BE DIRECTED INTO DRAINAGE STRUCTURES, SUCH AS CULVERTS OR DROP INLETS AS SHOWN ON THE PLANS OR AS DIRECTED.
5. PLACE STONE SLOPE PROTECTION OF NO. 1 BACKING ROCK PER CALTRANS SEC. 72 ON ALL CUT SLOPES SURROUNDING BLOWOFF VALVE ASSEMBLIES, AS DIRECTED.
7. REFER TO DRAWING NID SD1 FOR TRENCH DETAILS.
8. LOCATE VALVE AT 36" MAXIMUM FROM MAIN (MAY BE EXCEEDED WITH APPROVAL OF DISTRICT ENGINEER), SO AS NOT TO INTERFERE WITH ROADSIDE DRAINAGE OR OTHER STRUCTURES.
9. ALTERNATIVE 'A' SHALL BE USED WITH 4" BLOWOFFS ON MAINS UP TO 8" DIAMETER, 6" BLOWOFFS ON MAINS UP TO 10" DIAMETER AND 8" BLOWOFFS ON MAINS UP TO 12" DIAMETER. ALL OTHER SIZE COMBINATIONS USE ALTERNATIVE 'B'.

4" OR LARGER FLG'D. DUCTILE IRON SPOOL BETWEEN TEE AND GATE VALVE, SEE NOTE #8
4" OR LARGER FLG'D. x M.J. GATE VALVE
4" OR LARGER M.J. DUCTILE IRON PIPE w/ RETAINER GLANDS, LENGTH AS REQUIRED
4" OR LARGER FLG'D. 90° ELBOW
4" OR LARGER FLG'D. FLAP VALVE w/ SERIES 210G EBAA MEGAFLANGE
4" OR LARGER M.J. ELBOW w/ RETAINER GLANDS (45° OR LESS)
4" OR LARGER FLG'D. x P.E. DUCTILE IRON SPOOL, LENGTH AS REQUIRED
4" OR LARGER FLG'D. ELBOW (45° OR LESS)
4" OR LARGER M.J. 90° ELBOW w/ RETAINER GLANDS
BLIND FLANGE w/ 2" PLUG. PLUG AND FLANGE BOLTS FINGER TIGHT ONLY
VALVE BOXES SHALL BE CHRISTY G5 FOR 4" AND CHRISTY GB FOR 6" AND 8" BLOWOFF VALVES.
NOTES:
1. ALL MATERIALS AND INSTALLATION SHALL CONFORM TO "FIRE HYDRANT ASSEMBLIES" IN THE SPECIFICATIONS.
2. FIRE HYDRANTS SHALL BE AWWA CS502 HAVING ONE 4½'' STEAMER NOZZLE AND TWO 2½'' HOSE NOZZLES WITH 250 PSI RATING. THE HYDRANT MAIN VALVE OPENING SHALL BE 5¼''. FIRE HYDRANTS SHALL BE ONE OF THE FOLLOWING MODELS:
   CLOW F–2545 (MEDALLION)
   M & H 929 (RELIANT)
   MUELLER SUPER CENTURION 250
   WATEROUS PACER 68–67–250
3. FIRE HYDRANT BARRELS SHALL BE EXTENDED WHERE UNAVOIDABLE IN ORDER TO MAKE PROPER GRADE, STACKING EXTENSIONS (USING MORE THAN ONE) WILL NOT BE ALLOWED.
4. FIRE HYDRANT LATERALS SHALL BE DUCTILE IRON WITH FLANGED JOINTS, RESTRAINED MECHANICAL JOINTS, OR RESTRAINED JOINTS AS REQUIRED FOR "WATER MAINS" IN THE DISTRICT'S STANDARD SPECIFICATIONS. THE LATERAL SHALL BE PROVIDED WITH POSITIVE RESTRAINT BETWEEN THE SHUTOFF VALVE AND THE FIRE HYDRANT. REFER TO DRAWING NID SD1 FOR TRENCH DETAILS.
5. WHEN POURING THE THRUST BLOCK, CARE SHALL BE TAKEN NOT TO ALLOW CONCRETE TO PLUG OR INTERFERE WITH THE HYDRANT DRAIN HOLES.
6. THE PERMEABLE BACKFILL PLACED IN THE DRAIN PIT SHALL BE COMPLETELY COVERED WITH A LAYER OF 15# FELT ROOFING PAPER OR 6 MIL POLYETHYLENE FILM.
7. THE FIRE HYDRANT PAD SHALL BE CONSTRUCTED IN ACCORDANCE WITH CALTRANS SECTION 19 "EARTHWORK" AND COMPACTED TO 95% RELATIVE COMPACTION. PAD REQUIREMENTS SHALL APPLY TO ALL FIRE HYDRANT LOCATIONS.
8. JUTE NETTING AND SEEDING ON SLOPED AREAS.
9. FIRE HYDRANT TO BE PAINTED WITH ENAMEL PAINT IN "OSHA YELLOW" ON ALL ITEMS ABOVE THE GROUND AND CONFIRMING ALL FITTINGS WILL WORK AFTER PAINTING.

FIRE HYDRANT LOCATION
GUIDE MARKER DETAIL

GUIDE MARKER & VALVE OPERATING SHAFT EXTENSION

NOT TO SCALE

NID SD9
NOTES:
1. ALL MATERIALS AND INSTALLATION SHALL COMPLY WITH SERVICE ASSEMBLIES IN THE SPECIFICATIONS.
2. METER BOXES SHALL BE LOCATED AS SHOWN ON THE PLANS OR AS DIRECTED.
4. CUT SLOPE AND FILL SLOPE INSTALLATIONS SHALL ALSO BE USED IN COMBINATION WITH SIDEWALK AND CURB INSTALLATIONS IF NECESSARY.
5. REFER TO NID SD11 FOR ADDITIONAL ASSEMBLY REQUIREMENTS.
6. METER BOX LOCATIONS SHOWN ARE FOR NON-TRAFFIC AREAS ONLY.

SIDEWALK INSTALLATION

NOTE: SET METER BOX Flush WITH SURROUNDING GROUND IN LAWN AREA

PUE'S AND PROPERTY LINES

METER BOX LOCATION

METER BOX PAD

METE RO BOX PAD
1 1/2:1 Fill SLOPES, COMPACT TO 95% R.C.

1'-6" Min.
5'-0" MAX

- SLOPE (2%)
NOTES:
1. ALL MATERIALS AND INSTALLATION SHALL CONFORM TO "SERVICE ASSEMBLIES" IN THE SPECIFICATIONS.
2. METER ASSEMBLIES SHOWN ARE FOR NON-TAFFIC AREAS ONLY. ASSEMBLIES LOCATED IN TRAFFIC AREAS SHALL USE BOXES, LIDS, AND SLABS ALL RATED FOR AN H20 LOAD AND CONFORMING TO THE SPECIFICATIONS AND SHALL BE FLUSH W/GRADE.
3. THE LOCATION OF METER BOXES SHALL BE AS SHOWN ON THE PLANS AND PER NID SD10.
4. THE CONNECTION TO THE WATERMAIN SHALL CONFORM TO "WATERMAIN TAPS" IN THE SPECIFICATIONS. F.I. PIPE - ROMAC STYLE 202, FORD STYLE F202 OR APPROVED EQUAL. PVC PIPE - ROMAC STYLE 202S, FORD STYLE FS202 OR APPROVED EQUAL.
5. THE SADDLE, BRASS COUPLINGS, PIPE AND FITTINGS SHALL BE PRIMED AND WRAPPED FOR CORROSION PROTECTION AS DESCRIBED IN THE SPECIFICATIONS.
6. REFER TO DRAWINGS NID SD1 FOR TRENCH DETAILS AND NID SD3 FOR LOCATING WIRE DETAILS.
7. FORD AND CHRISTY CATALOG NUMBERS ARE GIVEN FOR COMPARISON PURPOSES. SUBSTITUTES CONFORMING TO THE SPECIFICATIONS MUST BE APPROVED BY THE DISTRICT ENGINEER.
8. SERVICE LINES SHALL BE ONE CONTINUOUS PIECE OF PIPE. REMNANT PIECES JOINED BY COUPLINGS WILL NOT BE ALLOWED.
9. ALL METER VALVES SHALL BE SUPPLIED WITH LOCKING WINGS.
10. METERS TO BE PARALLEL AND LEVEL RELATIVE TO CENTERLINE OF METER BOX.

<table>
<thead>
<tr>
<th>I.D. NO.</th>
<th>DESCRIPTION</th>
<th>SINGLE</th>
<th>DOUBLE</th>
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<td></td>
<td></td>
<td>FORD</td>
<td>FORD</td>
</tr>
<tr>
<td>1.</td>
<td>CORPORATION STOP = MIP x MIP</td>
<td>1.50</td>
<td>1.50</td>
</tr>
<tr>
<td>2.</td>
<td>BRASS NIPPLE THD.</td>
<td>1.50</td>
<td>1.50</td>
</tr>
<tr>
<td>3.</td>
<td>BRASS ELBOW</td>
<td>1.50</td>
<td>1.50</td>
</tr>
<tr>
<td>4.</td>
<td>MIP x IPS P.E. Pack Joint w/ Stiffener</td>
<td>1.50</td>
<td>1.50</td>
</tr>
<tr>
<td>5.</td>
<td>PC200 (DR7) Polyethylene Pipe PE3608 (One Piece)</td>
<td>1.50</td>
<td>1.50</td>
</tr>
<tr>
<td>6.</td>
<td>1-1/2&quot; FI x (TWO) 1&quot; MIP U&quot; Branch w/ 9&quot; Spacing N/A</td>
<td>1.50x1</td>
<td>1.50x1</td>
</tr>
<tr>
<td>7.</td>
<td>ANGLE BALL VALVE (FI x METER SWIVEL NUT)</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>8.</td>
<td>6&quot; COMPACTED AGG BASE</td>
<td>1.50</td>
<td>1.50</td>
</tr>
<tr>
<td>9.</td>
<td>TEMPORARY 2&quot; x 4&quot; STAKE FOR VERTICAL AND SPACING</td>
<td>1.50</td>
<td>1.50</td>
</tr>
<tr>
<td>10.</td>
<td>BRASS 45&quot; ELBOW</td>
<td>1.50</td>
<td>1.50</td>
</tr>
<tr>
<td>11.</td>
<td>BRASS SPOOK</td>
<td>1.50</td>
<td>1.50</td>
</tr>
<tr>
<td>12.</td>
<td>1 1/2&quot; x 1&quot; BELL REDUCER AND 1&quot; CLOSE NIPPLE</td>
<td>1.50</td>
<td>1.50</td>
</tr>
<tr>
<td></td>
<td>LOADING WIRE (SEE NID SD9)</td>
<td>1.50</td>
<td>1.50</td>
</tr>
<tr>
<td></td>
<td>CONNECTION TO WATER MAIN. (SEE NOTE #4)</td>
<td>1.50</td>
<td>1.50</td>
</tr>
</tbody>
</table>

5/8", 3/4" & 1" METER ASSEMBLIES - SINGLE & DOUBLE NOT TO SCALE NID SD11
**Plan View**

1. **Notes:**
   1. All materials and installation shall conform to "Service Assemblies" in the specifications.
   2. Meter assemblies shown are for non-traffic areas only. Assemblies located in traffic areas shall use boxes, lids, and slabs all rated for an H2O loading and conforming to the specifications and shall be flush w/grade.
   3. The location of meter boxes shall be as shown on the plans and per NID SD10.
   4. The connection to the watermain shall conform to "Watermain Taps" in the specifications. Di: Pipe: Romac Style 202, Ford Style F-202 or Approved Equal. PVC pipe: Romac Style 202 or 202N, Ford Style FS202 or FS202 or Approved Equal.
   5. The saddle, brass couplings, pipe and fittings shall be primed and wrapped for corrosion protection as described in the specifications.
   6. Refer to drawings NID SD1 for trench details and NID SD3 for locating wire details except copper pipe requires 6" bedding and cover with Class #1 material.
   7. Ford and Christy Catalog Numbers are given for comparison purposes. Substitutes conforming to the specifications must be approved by the District Engineer.
   8. Service lines shall be one continuous piece of pipe. Remnant pieces joined by couplings will not be allowed.
   9. All meter valves shall be supplied with locking wangs.
   10. Meters to be parallel and level relative to centerline of meter box.
   11. Gate valve to match meter size except use 11/2" valve for 5/8" meter service.
   12. Installation of high pressure services (HP) are at the discretion of the engineering manager.

### 5/8", 3/4" & 1" Meter Assemblies

<table>
<thead>
<tr>
<th>Description</th>
<th>Single</th>
<th>Double</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ID</strong></td>
<td><strong>Size</strong></td>
<td><strong>Ford Cat. No.</strong></td>
</tr>
<tr>
<td>1. Corporation Stop - MIP x MIP</td>
<td>1.50</td>
<td>FB500-6</td>
</tr>
<tr>
<td>2. Brass Nipple THD.</td>
<td>1.50</td>
<td>1.50</td>
</tr>
<tr>
<td>3. Brass Elbow</td>
<td>1.50</td>
<td>1.50</td>
</tr>
<tr>
<td>4. MIP x IPS 300 PSI Pack Joint</td>
<td>1.50</td>
<td>CB4-44-G-NL</td>
</tr>
<tr>
<td>5. Copper Pipe Type K</td>
<td>1.50</td>
<td></td>
</tr>
<tr>
<td>6. 1/2&quot; x 8&quot; Spool</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Angle Ball Valve (FB x MIP)</td>
<td>1.00</td>
<td>BA13-444-NL</td>
</tr>
<tr>
<td>8. 6&quot; Compacted AG Base</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Temporary 2&quot; x 4&quot; stake for vertical and spacing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Brass 45&quot; Elbow</td>
<td>1.50</td>
<td>1.50</td>
</tr>
<tr>
<td>11. Brass Spool</td>
<td>1.50</td>
<td>1.50</td>
</tr>
<tr>
<td>12. Meter: Zener HP or equiv.</td>
<td>1.50</td>
<td>1.50</td>
</tr>
<tr>
<td>13. 3/4&quot; x 1 1/2&quot; Reducer and 1&quot; close nipple</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 1" Meter Assemblies

<table>
<thead>
<tr>
<th>Description</th>
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<th>Double</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ID</strong></td>
<td><strong>Size</strong></td>
<td><strong>Ford Cat. No.</strong></td>
</tr>
<tr>
<td>14. ARMORCAST #AG000497-T-H10/#AG000491T-H10H10</td>
<td>H10-11 x 21&quot;</td>
<td>B16</td>
</tr>
</tbody>
</table>

1. Set meter valves parallel to meter box centerline.
2. Set box so that long dimension of reading lid sets perpendicular to meters.

---

**5/8", 3/4" & 1" Meter Assembly - Single & Double**

Not to Scale

**NID SD11HP**
NOTES:

1. ALL MATERIALS AND INSTALLATION SHALL CONFORM TO "SERVICE ASSEMBLIES" IN THE SPECIFICATIONS.
2. METER ASSEMBLIES SHOWN ARE FOR NON-TRAFFIC AREAS ONLY. ASSEMBLIES LOCATED IN TRAFFIC AREAS SHALL USE BOXES, LIDS, AND SLABS ALL RATED FOR AN H20 LOADING AND CONFORMING TO THE SPECIFICATIONS AND SHALL BE FLUSH W/GRADE.
3. THE LOCATION OF METER BOXES SHALL BE AS SHOWN ON THE PLANS AND PER NID SD10.
4. THE CONNECTION TO THE WATERMAIN SHALL CONFORM TO "WATERMAIN TAPS" IN THE SPECIFICATIONS.
5. PVC PIPE: ROMAC STYLE 2022, FORD STYLE F202 OR APPROVED EQUAL.
6. THE SADDLE, BRASS COUPLINGS, PIPE AND FITTINGS SHALL BE PRIMED AND WRAPPED FOR CORROSION PROTECTION AS DESCRIBED IN THE SPECIFICATIONS.
7. REFER TO DRAWINGS NID SD1 FOR TRENCH DETAILS AND NID SD3 FOR LOCATING WIRE DETAILS.
8. PED AND CHRISTY CATALOG NUMBERS ARE GIVEN FOR COMPARISON PURPOSES. SUBSTITUTES CONFORMING TO THE SPECIFICATIONS MUST BE APPROVED BY THE DISTRICT ENGINEER.
9. ALL METER VALVES SHALL BE SUPPLIED WITH LOCKING WINGS.
10. METERS TO BE PARALLEL AND LEVEL RELATIVE TO CENTERLINE OR METER BOX.

SECTION (SEE NOTE #2)

12" LONG LOOP, STRIP 2" OFF END, MUST BE ABLE TO BE EXTENDED BEYOND TOP OF BOX.

PLAN VIEW

5/8" & 3/4" METER ASSY WITH 1" FIRE SERVICE METER

NOT TO SCALE

NID SD12

<table>
<thead>
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<th>I.D. NO.</th>
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<tbody>
<tr>
<td>1</td>
<td>CORPORATION STOP - MIP x MIP</td>
<td>FB500-6-NL</td>
<td>FB500-6-NL</td>
</tr>
<tr>
<td>2</td>
<td>BRASS NIPPLE - THREADED</td>
<td>1.50</td>
<td>1.50</td>
</tr>
<tr>
<td>3</td>
<td>BRASS ELBOW</td>
<td>1.50</td>
<td>1.50</td>
</tr>
<tr>
<td>4</td>
<td>MIP x IPS P.E. PACK JOINT w STIFFENER</td>
<td>CB6-65-NL</td>
<td>CB6-65-1DR7-NL</td>
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<tr>
<td>5</td>
<td>PC200 (1DR7) POLYETHYLENE PIPE PE3408</td>
<td>1.50</td>
<td>1.50</td>
</tr>
<tr>
<td>6</td>
<td>BRASS TEE</td>
<td>N/A</td>
<td>1.50</td>
</tr>
<tr>
<td>7</td>
<td>ANGLE BALL VALVE (FIP x FIP)</td>
<td>BA11-444W-NL</td>
<td>N/A</td>
</tr>
<tr>
<td>8</td>
<td>BUSHING</td>
<td>1.5x1</td>
<td>1.5x1</td>
</tr>
<tr>
<td>9</td>
<td>6&quot; COMPACTED AGG BASE</td>
<td>N/A</td>
<td>1.00</td>
</tr>
<tr>
<td>10</td>
<td>BRASS BUSHING</td>
<td>N/A</td>
<td>1.00</td>
</tr>
<tr>
<td>11</td>
<td>BRASS SPOOL - 8&quot; LONG - THREADED</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>12</td>
<td>CURB STOP - FIP x FIP</td>
<td>BB1-444W-NL</td>
<td>BB1-444W-NL</td>
</tr>
<tr>
<td>13</td>
<td>BRASS TEE</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>14</td>
<td>BRASS NIPPLE - THREADED</td>
<td>1x.75</td>
<td>1x.75</td>
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<tr>
<td>15</td>
<td>ANGLE METER COUPLING 1.00 x 0.75</td>
<td>L31-24-NL</td>
<td>L31-24-NL</td>
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<tr>
<td>16</td>
<td>TEMPORARY 2&quot; x 4&quot; STAKE FOR VERTICAL AND SPACING</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>17</td>
<td>METER COUPLING</td>
<td>1.50</td>
<td>1.50</td>
</tr>
<tr>
<td>18</td>
<td>BRASS 45 ELBOW</td>
<td>1.50</td>
<td>1.50</td>
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<tr>
<td>19</td>
<td>BRASS SPOOL</td>
<td>1.50</td>
<td>1.50</td>
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<tr>
<td>20</td>
<td>1 1/2&quot; x 1&quot; BELL REDUCER AND 1&quot; CLOSE NIPPLE</td>
<td>H101H10-18&quot; x 19&quot;</td>
<td>H101H10-18&quot; x 19&quot;</td>
</tr>
<tr>
<td>21</td>
<td>ARMORCAST #60004911-H10H10</td>
<td>B24</td>
<td>B24</td>
</tr>
<tr>
<td>22</td>
<td>CHRISTY METER BOX</td>
<td>B24</td>
<td>B24</td>
</tr>
</tbody>
</table>

1/ SET BOX SO THAT LONG DIMENSION OF READING LID SETS PERPENDICULAR TO METERS.
5/8” & 3/4” METER ASSY WITH 1” FIRE SERVICE METER

NOTES:
1. ALL MATERIALS AND INSTALLATION SHALL CONFORM TO “SERVICE ASSEMBLIES” IN THE SPECIFICATIONS.
2. METER ASSEMBLIES SHOWN ARE FOR NON-TRAFFIC AREAS ONLY. ASSEMBLIES LOCATED IN TRAFFIC AREAS SHALL USE BOXES, LIDS, AND SLABS ALL RATED FOR AN H2O LOADING AND CONFORMING TO THE SPECIFICATIONS AND SHALL BE FLUSH W/GRD.
3. THE LOCATION OF METER BOXES SHALL BE AS SHOWN ON THE PLANS AND PER NID SD10.
4. THE CONNECTION TO THE WATERMAIN SHALL CONFORM TO “WATERMAIN TAPS” IN THE SPECIFICATIONS.
5. PIPE: ROMAC STYLE 202, FORD STYLE F202 OR APPROVED EQUAL.
6. PVC PIPE: ROMAC STYLE 202S OR 202N, FORD STYLE FS202 OR FC202 OR APPROVED EQUAL.
7. THE SADDLE, BRASS COUPLINGS, PIPE AND FITTINGS SHALL BE PRIMED AND WRAPPED FOR CORROSION PROTECTION AS DESCRIBED IN THE SPECIFICATIONS.
8. REFER TO DRAWINGS NID SD1 FOR TRENCH DETAILS AND NID SD3 FOR LOCATING WIRE DETAILS.
9. FORD AND CHRISTY CATALOG NUMBERS ARE GIVEN FOR COMPARISON PURPOSES, SUBSTITUTES CONFORMING TO THE SPECIFICATIONS MUST BE APPROVED BY THE DISTRICT ENGINEER.
10. ALL METER VALVES SHALL BE SUPPLIED WITH LOCKING WINGS.
11. METERS TO BE PARALLEL AND LEVEL RELATIVE TO CENTERLINE OR METER BOX.
12. INSTALLATION OF HIGH PRESSURE SERVICES (HP) ARE AT THE DISCRETION OF THE ENGINEERING MANAGER.

<table>
<thead>
<tr>
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<td>BRASS NIPPLE - THREADED</td>
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<td>1.50</td>
</tr>
<tr>
<td>3</td>
<td>BRASS ELBOW</td>
<td>1.50</td>
<td>1.50</td>
</tr>
<tr>
<td>4</td>
<td>MIP x IPS 300 PSI PACK JOINT</td>
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<tr>
<td>5</td>
<td>COPPER PIPE TYPE K</td>
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</tr>
<tr>
<td>6</td>
<td>BRASS TEE</td>
<td>N/A</td>
<td>1.50</td>
</tr>
<tr>
<td>7</td>
<td>ANGLE BALL VALVE (FIP x FIP)</td>
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<td>1.00</td>
</tr>
<tr>
<td>8</td>
<td>BUSHING</td>
<td>1.5x1</td>
<td>1.5x1</td>
</tr>
<tr>
<td>9</td>
<td>6&quot; COMPACTED AGG BASE</td>
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<td>1.5x1</td>
</tr>
<tr>
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<td>BRASS BUSHING</td>
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<tr>
<td>11</td>
<td>BRASS SPOOL - 8&quot; LONG - THREADED</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>12</td>
<td>CURB STOP - FIP x FIP</td>
<td>1.00</td>
<td>1.00</td>
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<tr>
<td>13</td>
<td>BRASS TEE</td>
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<td>14</td>
<td>BRASS NIPPLE - THREADED</td>
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</tr>
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<td>15</td>
<td>ANGLE METER COUPLING 1.00 x 0.75</td>
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<td>1.00</td>
</tr>
<tr>
<td>16</td>
<td>TEMPORARY 2&quot; x 4&quot; STAKE FOR VERTICAL AND SPACING</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>17</td>
<td>METER COUPLING</td>
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<tr>
<td>18</td>
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<td>1.50</td>
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</tr>
<tr>
<td>20</td>
<td>METER: ZENNER HP OR EQUIV.</td>
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<td>1.50</td>
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<tr>
<td>21</td>
<td>1 1/2&quot; x 1&quot; BELL REDUCER AND 1&quot; CLOSE NIPPLE</td>
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<tr>
<td>22</td>
<td>ARMORCAST 16000491T-H10H10</td>
<td>H10H10</td>
<td>H10H10</td>
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<tr>
<td>23</td>
<td>CHRISTY METER BOX J</td>
<td>B24</td>
<td>B24</td>
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</tbody>
</table>

1/ SET BOX SO THAT LONG DIMENSION OF READING LID SETS PERPENDICULAR TO METERS.

5/8", 3/4" METER ASSEMBLIES WITH 1" FIRE SERVICE METER
NOTES:
1. ALL MATERIALS AND INSTALLATION SHALL CONFORM TO "SERVICE ASSEMBLIES" IN THE SPECIFICATIONS.
2. METER ASSEMBLIES SHOWN ARE FOR NON–TRAFFIC AREAS ONLY. ASSEMBLIES LOCATED IN TRAFFIC AREAS SHALL USE BOXES, LIDS, AND SLABS ALL RATED FOR AN H2O LOADING AND CONFORMING TO THE SPECIFICATIONS AND SHALL BE FLUSH W/GRADE.
3. THE LOCATION OF METER BOXES SHALL BE AS SHOWN ON THE PLANS AND PER NID SD10.
4. THE CONNECTION TO THE WATERMAIN SHALL CONFORM TO "WATERMAIN TAPS" IN THE SPECIFICATIONS. PVC PIPE: ROMAC STYLE 202, FORD STYLE F202 OR APPROVED EQUAL.
5. PVC PIPE: ROMAC STYLE 202 OR 202N, FORD STYLE FS202 OR FC202 OR APPROVED EQUAL.
6. THE SADDLE, BRASS COUPLINGS, PIPE AND FITTINGS SHALL BE PRIMED AND WRAPPED FOR CORROSION PROTECTION AS DESCRIBED IN THE SPECIFICATIONS.
7. REFER TO DRAWINGS NID SD1 FOR TRENCH DETAILS AND NID SD3 FOR LOCATING WIRE DETAILS.
8. FORD AND CHRISTY CATALOG NUMBERS ARE GIVEN FOR COMPARISON PURPOSES. SUBSTITUTES CONFORMING TO THE SPECIFICATIONS MUST BE APPROVED BY THE DISTRICT ENGINEER.
9. SERVICE LINES SHALL BE ONE CONTINUOUS PIECE OF PIPE, IF LENGTH EXCEEDS ONE 20' JOINT, USE FORD C77–77 STRAIGHT COUPLING, NO GLUED JOINTS.
10. ALL METER VALVES SHALL BE SUPPLIED WITH LOCKING WINGS.
11. CENTER METER BOX OVER METER VALVE AS SHOWN.

<table>
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<th>DESCRIPTION</th>
<th>FORD CAT. NO.</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>CORPORATION STOP – 2&quot; MIP x 2&quot; MIP</td>
<td>FB500–7</td>
</tr>
<tr>
<td>2</td>
<td>2&quot; BRASS NIPPLE THD</td>
<td></td>
</tr>
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<td>3</td>
<td>2&quot; BRASS ELBOW</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>2&quot; MIP x 2&quot; PVC. PACK JOINT</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>2&quot; PVC PIPE SCH 80 (ONE PIECE, IF LENGTH EXCEEDS ONE 20' JOINT, USE FORD C77–77 STRAIGHT COUPLING, NO GLUED JOINTS)</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>CHRISTY B36G LID w/ 5&quot;x8&quot; CI HINGED READING LID</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>CHRISTY B36 METER BOX</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>6&quot; COMPACTED AGG BASE</td>
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<table>
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<tbody>
<tr>
<td>9</td>
<td>2&quot; x 1-1/2&quot; BRASS REDUCING ELBOW</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>1-1/2&quot; BRASS SPOOL THD</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>1-1/2&quot; ANGLE BALL VALVE (1-1/2&quot; FIP x 1-1/2&quot; METER FLANGE)</td>
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<tr>
<th>I.D. NO.</th>
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<th>FORD CAT. NO.</th>
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<td>2&quot; BRASS ELBOW</td>
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<td>10</td>
<td>2&quot; BRASS SPOOL THD</td>
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<tr>
<td>11</td>
<td>2&quot; ANGLE BALL VALVE (2&quot; FIP x 2&quot; METER FLANGE)</td>
<td></td>
</tr>
</tbody>
</table>

\[\text{1/ SET METER VALVES PARALLEL TO METER BOX CENTERLINE.}\]

1-1/2” & 2” METER ASSEMBLY

NOT TO SCALE

NID SD13
PRIVATE FIRE SERVICE—DOUBLE DETECTOR CHECK

NOT TO SCALE

NID SD16

PLANT VIEW

NOT TO SCALE

SECTION A—A

VAULT COVER

NOT TO SCALE
NOTES:
1. PIPE DIAMETER AS SPECIFIED ON PLANS, MINIMUM OF 4-INCH DIAMETER.
2. PRIOR TO PAINTING, GRIND SHARP EDGES THAT WILL BE EXPOSED.
3. ALTERNATE MATERIALS:
   A. SCH 40 GALVANIZED STEEL PIPE WITH 3" WIDE REFLECTIVE TAPE (TWO STRIPS PER BARRIER POST).
   B. SCH 40 GALVANIZED STEEL PIPE, EXTERIOR ETCHED AND PAINTED WITH TRAFFIC YELLOW.
   C. SCH 40 BLACK STEEL, EXTERIOR DE-GREASED, WIRE BRUSHED, PRIMED AND PAINTED WITH TRAFFIC YELLOW.
4. ALL BARRIER POSTS TO MATCH IN APPEARANCE AT ONE INSTALLATION.

**STANDARD BARRIER POST**

**REMOVABLE BARRIER POST**
END OF MAIN WITH FUTURE EXTENSION
ANCHOR BLOCK

TYPICAL ANCHOR BLOCK DETAIL

NOT TO SCALE

 ANCHOR BLOCK

NOT TO SCALE

NID SD19
NOTES:
1. CONTRACTOR/CUSTOMER SHALL APPLY AT NID FOR TEMPORARY WATER SERVICE FIVE DAYS PRIOR TO REQUIRED SERVICE DATE.
2. THE METER ONLY WILL BE FURNISHED BY NID AND INSTALLED BY THE CONTRACTOR/CUSTOMER AND INSPECTED BY NID.
3. ALL FITTINGS, PIPING, VALVES AND MATERIALS INCLUDING THE APPROVED REDUCED PRESSURE (RP) BACKFLOW PREVENTION DEVICE SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR/CUSTOMER.
4. CONTRACTOR/CUSTOMER FURNISHED REDUCED PRESSURE (RP) BACKFLOW PREVENTION DEVICE MUST BE AT SITE WHEN INSPECTED BY NID. THE APPROVED BACKFLOW PREVENTION DEVICE SHALL BE TESTED AND CERTIFIED BY A CERTIFIED BACKFLOW PREVENTION TECHNICIAN (FURNISHED BY CONTRACTOR/CUSTOMER) AT TIME OF METER INSTALLATION. PROOF OF TESTING AND CERTIFICATION SHALL BE PROVIDED TO THE DISTRICT.
5. CONTRACTOR/CUSTOMER SHALL PROVIDE PROTECTION FOR ASSEMBLY FROM DAMAGE, COLD WEATHER, THEFT, ETC.
6. TEMPORARY CONSTRUCTION METER TO REMAIN UNTIL REMOVAL IS APPROVED BY NID IN WRITING.
7. WHEN THE NEW SYSTEM IS ACCEPTED, THE TEMPORARY CONSTRUCTION METER ASSEMBLY IS TO BE COMpletely REMOVED FROM MJ SOLID SLEEVE TO MJ SOLID SLEEVE AND NEW WATER MAIN PIPE INSTALLED AND CHLORINATED PER AWWA STANDARDS.
8. BY APPLYING FOR SERVICE, CONTRACTOR/CUSTOMER AGREES TO TAKE WATER SERVICE FROM NID IN ACCORDANCE WITH THE APPROPRIATE RATE SCHEDULE AND IN ACCORDANCE WITH COMPANY RULES AND REGULATIONS, OR ANY SUPERCEDED RATE SCHEDULE AND/OR RULES AND REGULATIONS.
9. ALL FIRE HYDRANTS SUPPORTED BY THIS FACILITY SHALL BE INDICATED AS "OUT OF SERVICE" IN A MANNER ACCEPTABLE TO THE LOCAL FIRE DISTRICT. THE INDICATORS OF "OUT OF SERVICE" SHALL NOT BE REMOVED UNTIL PERMANENT CONNECTION IS COMPLETE.
10. A TEMPORARY CONNECTION SHALL BE AT ALL CONNECTIONS TO THE EXISTING WATER SYSTEM. LOCATION OF TEMPORARY CONNECTION SHALL BE INDICATED ON APPROVED DEVELOPMENT. ANY CHANGES SUBJECT TO APPROVAL BY ENGINEERING MANAGER.

2" THROUGH 4" TEMPORARY CONSTRUCTION WATER SERVICE NOT TO SCALE NID SD20
VAULT SECTION VIEW

SOLAR BILGE PUMP

NOT TO SCALE

NID SD21
NOTES:
1. REDUCED PRESSURE AND DOUBLE CHECK VALVE BACKFLOW PREVENTERS SHALL BE APPROVED BY THE DISTRICT
2. MATERIALS AND INSTALLATION FOR PIPE, FITTINGS AND VALVES SHALL BE IN ACCORDANCE WITH DISTRICT SPECIFICATIONS
3. ALL ABOVE GROUND JOINTS FOR 3" OR LARGER PIPE SHALL BE FLANGED
4. BACKFLOW PREVENTION DEVICES SHALL BE INSTALLED LEVEL
5. BACKFLOW PREVENTION DEVICES SHALL NOT BE INSTALLED IN A VAULT UNLESS OTHERWISE NOTED
6. BACKFLOW PREVENTION DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS INSTALLATION INSTRUCTIONS AND WITH THE STANDARD DETAILS
7. SYMBOL ON DETAILS REPRESENTS TEST PORT

INSTALL INSULATED BOX WITH DRAIN LINE AND LATCH FOR LOCK OVER ASSEMBLY. HEAT TAPE TO BE INSTALLED IF NECESSARY.

TEST PORT UPSTREAM OF SHUT OFF VALVE (INCLUDED IN ASSEMBLY)

PROPERTY LINE AND/OR RIGHT OF WAY LINE

ALL PIPING AND FITTINGS ARE BRASS OR SCH 80 PVC SOLVENT WELD

METER BOX

FLOW

UNIONS, SLAB AND FLEX SLEEVE ARE REQUIRED

CUSTOMER INSTALLED
DISTRICT OWNED AND MAINTAINED
3/4" TO 2" REDUCED PRESSURE BACKFLOW PREVENTION DEVICE INSTALLATION

WARNING
BACKFLOW PREVENTERS INSTALLED ON CLOSED SYSTEMS WITH WATER HEATERS MAY CAUSE EXCESSIVE PRESSURE INCREASES DUE TO THERMAL WATER EXPANSION AND/OR WATER HAMMER DOWNSTREAM OF THE BACKFLOW PREVENTER. EXCESSIVE PRESSURE INCREASES MAY CAUSE DAMAGE OR FAILURE TO WATER HEATERS WHICH MAY BE HAZARDOUS. THE CUSTOMER OR THE PLUMBING CONTRACTOR SHOULD INSTALL ADEQUATE THERMAL EXPANSION DEVICES TO PREVENT POSSIBLE EXCESSIVE PRESSURE INCREASES WITHIN WATER HEATERS

1 1/2" THICK ARMOR FLEX SLEEVE
2 UNION
3 RESILIENT GATE OR BRONZE BALL VALVE
4 TEST PORT
5 TEST PORT
6 4" CONCRETE x 18" WIDE
NOTES:
1. REDUCED PRESSURE AND DOUBLE CHECK VALVE BACKFLOW PREVENTERS SHALL BE APPROVED BY THE DISTRICT
2. MATERIALS AND INSTALLATION FOR PIPE, FITTINGS AND VALVES SHALL BE IN ACCORDANCE WITH DISTRICT SPECIFICATIONS
3. ALL ABOVE GROUND JOINTS FOR 3" OR LARGER PIPE SHALL BE FLANGED
4. BACKFLOW PREVENTION DEVICES SHALL BE INSTALLED LEVEL
5. BACKFLOW PREVENTION DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS INSTALLATION INSTRUCTIONS AND WITH THE STANDARD DETAILS
6. ● SYMBOL ON DETAILS REPRESENTS TEST PORT

WARNING
BACKFLOW PREVENTERS INSTALLED ON CLOSED SYSTEMS WITH WATER HEATERS MAY CAUSE EXCESSIVE PRESSURE INCREASES DUE TO THERMAL WATER EXPANSION AND/OR WATER HAMMER DOWNSTREAM OF THE BACKFLOW PREVENTER. EXCESSIVE PRESSURE INCREASES MAY CAUSE DAMAGE OR FAILURE TO WATER HEATERS WHICH MAY BE HAZARDOUS. THE CUSTOMER OR THE PLUMBING CONTRACTOR SHOULD INSTALL ADEQUATE THERMAL EXPANSION DEVICES TO PREVENT POSSIBLE EXCESSIVE PRESSURE INCREASES WITHIN WATER HEATERS

3/4" & 1" DOUBLE CHECK VALVE BACKFLOW PREVENTION INSTALLATION FOR SINGLE FAMILY RESIDENTIAL UNITS

BACKFLOW PREVENTION DEVICE

NOT TO SCALE

NID SD23
1. Endwalls shall be constructed of burlap sacks (no paper sacks) filled with concrete or approved equal such as reinforced concrete walls or concreted rock walls.

2. All concrete shall be a minimum of five sack per yard mix.

3. All drainage created by new construction shall be diverted over the canal ditches and/or overshot culverts shall be placed as approved by district. No drainage will be allowed in canal.

4. Round, double walled high density polyethylene (HDPE) pipe or arched vinyl coated galvanized corrugated pipe may be used. Steel, aluminum or other pipes can be used with special approval of the district engineer.

5. Culvert size shall be determined by the district engineer, but shall be 18” minimum or equal.

<table>
<thead>
<tr>
<th>Pipe Arch Equivalent Width</th>
<th>Min. Cover</th>
<th>CMP</th>
<th>HDPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>21” x 18”</td>
<td>12</td>
<td>12</td>
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<tr>
<td>21</td>
<td>24” x 18”</td>
<td>12</td>
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<td>24</td>
<td>28” x 20”</td>
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<td>30</td>
<td>35” x 24”</td>
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<td>36</td>
<td>42” x 20”</td>
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<td>42</td>
<td>49” x 33”</td>
<td>12</td>
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<td>48</td>
<td>57” x 36”</td>
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<td>12</td>
</tr>
<tr>
<td>54</td>
<td>64” x 43”</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>60</td>
<td>71” x 47”</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>66</td>
<td>77” x 52”</td>
<td>12</td>
<td>n.a.</td>
</tr>
<tr>
<td>72</td>
<td>83” x 57”</td>
<td>12</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

*Top of pipe to bottom of flexible pavement (such as gravel)
*Top of pipe to top of rigid pavement

5. If this is a replacement, the length of culvert replacement will be agreed upon between NID and the land owner.

6. Except for replacements, culvert length will be determined by owner. The following formula can be used:

\[ L = W + 3 + 2(H/11) \]

Where:
- \( L \): Length of culvert
- \( W \): Desired road width plus drainage ditches
- \( H \): Height of road surface from bottom of pipe (rise of pipe plus cover over pipe)

7. Use of manufactured flared end section is optional. Flared end section will not replace rear for RPR+RAP.

8. Minor modifications to meet field conditions subject to approval by engineering manager.

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**CANAL CULVERT INSTALLATION**

**NOT TO SCALE**

**NID SD25**

1 of 2
NOTES:

1. CROSS THE CANAL UNDER A CULVERT WHEREVER PRACTICAL. CENTER THE CROSSING ON THE CULVERT PIPE.

2. WATERLINE, ELECTRICAL AND TELECOM CAN CROSS IN THE SAME CASING PIPE. ELECTRICAL AND TELECOM MUST BE ENCLOSED IN SEPARATE PIPES WITHIN THE CASING.

3. CASING PIPE SHALL BE EITHER CONTINUOUS #10 GAUGE DIPPED AND WRAPPED STEEL OR CMP WITH #16 GAUGE FOR STEEL AND #14 GAUGE FOR ALUMINUM OR C-900 PVC. A CASING SHALL BE AT LEAST TWO INCHES LARGER INTERIOR DIAMETER THAN THE EXTERIOR WATER PIPE DIAMETER, WITH A MINIMUM OF FOUR INCHES. EXTEND CASING PIPE ON UPHILL SIDE TO ABOVE THE ELEVATION OF THE MAXIMUM WATER LEVEL.

4. CANAL OUTAGES MUST BE APPROVED BY THE DISTRICT IN ADVANCE. IF A CASING PIPE ELBOW IS TO BE INSTALLED, IT MUST BE FABRICATED BEFORE THE OUTAGE IS SCHEDULED (MINIMUM TWO WEEKS NOTIFICATION). EFFORT WILL BE MADE TO REDUCE TURBIDITY IN CANAL AFTER INSTALLATION.

5. THE CANAL CROSS SECTION MUST BE RECONSTRUCTED TO ITS ORIGINAL SHAPE. BACKFILL MATERIAL MUST BE SIMILAR TO THE EXCAVATED MATERIAL AND BE COMPACTED TO ITS ORIGINAL DENSITY OR HIGHER. RECONSTRUCTION IN UNNEEDED SECTIONS WILL REQUIRE SPECIAL ATTENTION AS DIRECTED BY NID.

6. THE CASING PIPE MAY REQUIRE EXTENDING BEYOND THE PRESENT CANAL CROSS SECTION IF IT IS ANTICIPATED THAT THE CANAL WILL BE ENLARGED.

7. SEAL BOTH ENDS OF CASING WITH BURLAP SACKS FILLED WITH CONCRETE OR AN APPROVED EQUIVALENT.

8. GUIDE MARKERS SHALL BE INSTALLED BY THE PERMITTEE AS DIRECTED BY NID. SEE NID SD33 FOR DETAILS.

9. CLEARANCE:
   1'-6" MINIMUM UNDER CANAL AS DETERMINED BY DISTRICT
   1'-0" MINIMUM UNDER CULVERT AS DETERMINED BY DISTRICT
   DISTRICT MAY REQUIRE FLOW FILL

   * MUST BE LONGER THAN EQUIPMENT TRAVEL WAY ON BERM

SD NUMBER REVISED 6-27-14
BOARD REVIEW: 2-5-14

CANAL UTILITY CROSSING (UNDER) NOT TO SCALE NID SD26
NOTES:

1. UTILITY CROSSINGS INSTALLED OVER THE CANAL WILL NOT BE APPROVED UNLESS PHYSICAL CONSTRAINTS PRECLUDE AN UNDER CANAL INSTALLATION. ALL OVER CANAL CROSSINGS SHALL BE REVIEWED AND APPROVED ON AN INDIVIDUAL BASIS.

2. WATERLINE, ELECTRICAL AND TELECOM CAN CROSS IN THE SAME CASING PIPE. ELECTRICAL AND TELECOM MUST BE ENCLOSED IN A SEPARATE PIPE WITHIN THE CASING.

3. CASING PIPE SHALL BE EITHER CONTINUOUS #10 GAUGE DIPPED AND WRAPPED STEEL PIPE OR CMP WITH #16 GAUGE FOR STEEL AND #14 GAUGE FOR ALUMINUM. A CASING SHALL BE AT LEAST TWO INCHES LARGER IN INTERIOR DIAMETER THAN THE EXTERIOR WATER PIPE DIAMETER, WITH A MINIMUM OF FOUR INCHES.

4. THE CANAL CROSS SECTION MUST BE RECONSTRUCTED TO ITS ORIGINAL SHAPE. BACKFILL MATERIAL MUST BE SIMILAR TO THE EXCAVATED MATERIAL AND BE COMPACTED TO ITS ORIGINAL DENSITY OR GREATER. RECONSTRUCTION IN GUNITE SECTIONS WILL REQUIRE SPECIAL ATTENTION AS DIRECTED BY NID.

5. THE CASING PIPE MAY REQUIRE EXTENDING BEYOND THE PRESENT CANAL CROSS SECTION IF IT IS ANTICIPATED THAT THE CANAL WILL BE ENLARGED.

6. GUIDE MARKERS SHALL BE INSTALLED BY THE PERMITTEE AS DIRECTED BY NID. SEE NID SD33 FOR DETAILS.

7. 12" ABOVE HIGH WATER MARK OR GREATER.

* MUST BE LONGER THAN EQUIPMENT TRAVEL WAY ON BERM.
NOTES:

1. CROSS THE CANAL UNDER A CULVERT WHEREVER PRACTICAL. CENTER THE CROSSING ON THE CULVERT PIPE.

2. CASING PIPE SHALL BE EITHER CONTINUOUS #10 GAUGE DIPPED AND WRAPPED STEEL OR CMP WITH #16 GAUGE FOR STEEL AND #14 GAUGE FOR ALUMINUM OR C-900 PVC. A CASING SHALL BE AT LEAST TWO INCHES LARGER INTERIOR DIAMETER THAN THE EXTERIOR WATER PIPE DIAMETER, WITH A minimum OF FOUR INCHES. EXTEND CASING PIPE ON UPHILL SIDE TO ABOVE THE ELEVATION OF THE MAXIMUM CANAL WATER LEVEL.

3. CANAL OUTAGES MUST BE APPROVED BY THE DISTRICT IN ADVANCE. IF A CASING PIPE ELBOW IS TO BE INSTALLED, IT MUST BE FABRICATED BEFORE THE OUTAGE IS SCHEDULED.

4. THE CANAL CROSS SECTION MUST BE RECONSTRUCTED TO ITS ORIGINAL SHAPE. BACKFILL MATERIAL MUST BE SIMILAR TO THE EXCAVATED MATERIAL AND BE COMPACTED TO ITS ORIGINAL DENSITY. RECONSTRUCTION IN BUFFERED SECTIONS WILL REQUIRE SPECIAL ATTENTION AS DIRECTED BY NID.

5. THE CASING PIPE MAY REQUIRE EXTENDING BEYOND THE PRESENT CANAL CROSS SECTION IF IT IS ANTICIPATED THAT THE CANAL WILL BE ENLARGED.

6. SEAL BOTH ENDS OF CASING PIPE WITH BURLAP SACKS FILLED WITH CONCRETE OR AN APPROVED EQUIVALENT. (NOT SHOWN)

7. GUIDE MARKERS SHALL BE INSTALLED BY THE PERMITTEE AS DIRECTED BY NID. SEE NID SD33 FOR DETAILS.

8. CLEARANCE:
   1. 1'-6" MINIMUM UNDER CANAL AS DETERMINED BY DISTRICT
   2. 1'-0" MINIMUM UNDER CULVERT AS DETERMINED BY DISTRICT

CUT-OFF COLLAR SEE DETAIL 'A'

1/2" DRAIN PIPE GALVANIZED IRON OR PVC

1" GALVANIZED VENT PIPE WITH RETURN ELBOW

HIGH WATER MARK

UNEAR AT CULVERT WHEREVER PRACTICAL

BOARD REVIEW 2-5-14
SD NUMBER REvised 6-27-14

CANAL SEWER CROSSING (UNDER) NOT TO SCALE NID SD28
NOTES:
1. OWNER REQUESTED (BY DISTRICT ENGINEER APPROVAL ONLY).
2. OVERHEAD UTILITY CROSSINGS WILL NOT NORMALLY BE ALLOWED.
   REQUESTS FOR THESE TYPES OF CROSSINGS WILL BE REVIEWED
   ON AN INDIVIDUAL BASIS IF APPROVED.
3. OWNER SHALL BE RESPONSIBLE FOR SIZING OVERSHOT PIPE FOR BOTH
   DIAMETER AND BEAM STRENGTH.
4. PIPE SHALL BE RIGID SUCH THAT MINIMAL DEFLECTION OCCURS WHEN
   FULLY LOADED WITH WATER.
5. OVERSHOT PIPE SHALL BE MINIMUM #12 GAUGE CMP OR APPROVED
   EQUIVALENT.
6. THE CANAL CROSS SECTION MUST BE RECONSTRUCTED TO ITS ORIGINAL
   SHAPE. BACKFILL MATERIAL MUST BE SIMILAR TO THE EXCAVATED MATERIAL
   AND BE COMPACTED TO ITS ORIGINAL DENSITY OR GREATER. RECONSTRUCTION
   IN UNEQUAL SECTIONS WILL REQUIRE SPECIAL ATTENTION AS DIRECTED BY NID.
7. INLET TO OVERSHOT SHALL HAVE APPROPRIATE SIZED FLARED END SECTION
   OR SACKED HEADWALL TO DIRECT FLOW INTO PIPE. RIP RAP ENERGY
   DISSIPATOR SHALL BE PLACED AT THE OUTLET OF PIPE AT TOE OF
   CANAL BERM PER NID SD25.
8. THE OVERSHOT MAY REQUIRE EXTENDING BEYOND THE PRESENT CANAL
   CROSS SECTION IF IT IS ANTICIPATED THAT THE CANAL WILL BE
   ENLARGED.

CANAL STORM WATER CROSSING (OVERSHOT)
NOTES:
1. OWNER REQUESTED (BY DISTRICT ENGINEER APPROVAL ONLY).
2. OWNER SHALL BE RESPONSIBLE FOR SIZING UNDERSHOT PIPE.
3. UNDERSHOT PIPE SHALL BE MINIMUM #12 GAUGE CMP OR APPROVED EQUIVALENT.
4. THE CANAL CROSS SECTION MUST BE RECONSTRUCTED TO ITS ORIGINAL SHAPE. BACKFILL MATERIAL MUST BE SIMILAR TO THE EXCAVATED MATERIAL AND BE COMPACTED TO ITS ORIGINAL DENSITY OR GREATER. RECONSTRUCTION IN GUNITE SECTIONS WILL REQUIRE SPECIAL ATTENTION AS DIRECTED BY NID.
5. INLET TO UNDERSHOT SHALL HAVE APPROPRIATE SIZED SACKED HEADWALL TO DIRECT FLOW INTO PIPE. RIP RAP ENERGY DISSIPATOR SHALL BE PLACED AT THE OUTLET OF PIPE AT TOE OF CANAL BERM.
6. THE UNDERSHOT MAY REQUIRE EXTENDING BEYOND THE PRESENT CANAL CROSS SECTION IF IT IS ANTICIPATED THAT THE CANAL WILL BE ENLARGED.
7. CLEARANCE:
   1'-6" MINIMUM UNDER DITCH
   1'-0" MINIMUM UNDER CULVERT

CANAL STORM WATER CROSSING (UNDERSHOT)  NOT TO SCALE  NID SD30
NOTES:

1. GATES SHALL BE ALUMINUM CHANNEL, FARM GATES OR STEEL GATES MADE OF 1" O.D. GALVANIZED STEEL FRAME #3 GAUGE GALVANIZED STEEL FABRIC WITH 2" x 2" MESH.

2. GATES SHALL SWING FREELY, BE OFF THE GROUND, AND REMAIN OPEN WHEN OPENED.

3. IF YOU DESIRE TO LOCK YOUR GATE, A CHAIN WILL BE REQUIRED SO A DISTRICT LOCK CAN BE LINKED WITH YOUR LOCK. PLEASE CONTACT YOUR SERVICE WORKER AFTER INSTALLATION FOR DISTRICT LOCK.

4. INSTALLATION OF GATES SHALL BE PER MANUFACTURERS SPECIFICATIONS.

CANAL FENCE CROSSING

NOT TO SCALE

NID SD31
NOTES:

1. THIS DRAWING ILLUSTRATES GENERAL FEATURES OF A TYPICAL FOOTBRIDGE. DESIGN DRAWINGS SHOULD BE SUBMITTED TO THE DISTRICT FOR REVIEW. CONSIDERATION WILL BE GIVEN DURING REVIEW PROCESS AS TO SIZE OF CANAL, ETC., IN DETERMINING ACTUAL REQUIREMENTS.

2. SUPPORT BEAMS MUST BE ON CONCRETE FOOTINGS AND NOT IN CONTACT WITH GROUND. DECKING, SUPPORT BEAMS AND OTHER BRIDGE FEATURES MAY BE MADE OF METAL AND/OR WEATHER PROTECTED WOOD.

3. WATER OR ELECTRICAL CROSSINGS MAY BE ATTACHED TO THE UNDERSIDE OF THE BRIDGE. SUCH CROSSINGS MUST BE ENCASED. SEE NID SD18.


5. THE BERM MUST BE WIDENED IN THE AREA OF THE BRIDGE TO PROVIDE THE SAME UNENCUMBERED WIDTH THAT THE DISTRICT ENJOYED PRIOR TO BRIDGE INSTALLATION. THIS REQUIREMENT MAY BE WAIVED BY THE DISTRICT.

6. THE LENGTH OF THE BRIDGE MAY BE REQUIRED TO BE EXTENDED BEYOND THE PRESENT CANAL CROSS SECTION IF AN ENLARGEMENT OF THE CANAL IS ANTICIPATED.

7. A MINIMUM OF ONE HANDRAIL WILL BE REQUIRED.

FOOTBRIDGE CROSSING

NOT TO SCALE

NID SD32
GUIDE MARKER DETAIL

NOTES:

1. ALL MATERIALS AND INSTALLATIONS SHALL CONFORM TO THE SPECIFICATIONS.
2. GUIDE MARKERS SHALL BE FURNISHED AND INSTALLED AS SHOWN ON THE PLANS OR AS DIRECTED BY THE DISTRICT ENGINEER.
3. POSTS SHALL BE TYPE 'M' AND SHALL CONFORM TO CALTRANS SECTION B2.
4. ALL NUMBERS AND LETTERS SHALL BE BLOCK STYLE AND STENCILLED IN BLACK ON A WHITE BACKGROUND.
5. ALL UNDERGROUND ENCROACHMENTS SHALL BE MARKED PER DISTRICT STANDARDS.
NOTES:

1. THE CROSSING SHALL ALLOW STORM WATER FLOWS TO PASS OVER A PIPED SECTION OF CANAL.

2. STORM WATER SHALL BE DIRECTED AS NEAR AS PRACTICABLE TO FLOW IN ITS HISTORICAL PATH OF DRAINAGE.

3. POSITIVE DRAINAGE ACROSS CANAL SHALL BE MAINTAINED.

4. INSTALLATION OF CANAL PIPE SHALL MEET NID STANDARD DETAIL SD25 A/B.

5. SURFACE OVER CANAL SHALL BE OF SUCH MATERIAL TO ELIMINATE EROSION, SUCH AS ANGULAR ROCK, ANCHORED FILTER FABRIC, ESTABLISHED VEGETATION, CONCRETE OR IMPERVIOUS SURFACES BY DISTRICT APPROVAL ONLY.

SECTION A–A

CANAL STORM WATER CROSSING

NOT TO SCALE

NID SD34