**CUSTOMER ENGINEERING AND METERING REQUIREMENTS INDEX**

For more information or if you have questions on these requirements please contact our Benton PUD Engineering Department at 509-582-1230

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**Notes:**

1. Manual block by pass required on all 200 Amp non-residential installations, and all 320 Amp installations.
2. No automatic, plunger, or lever type by pass devices allowed.
3. Meters are required to be mounted external to the building. Exceptions will need to be approved by District Engineering and Metering Departments prior to construction.
4. Sockets A,B,D, will be provided by the customer.
5. Sockets C & E will be provided by the District for the customer to install.
6. The meter base for single phase, two wire service, shall be the same as a single phase, three wire service, with the upper right terminal tied to the neutral. Three phase, three wire service shall be metered as a three phase four wire service.
7. Socket B will have the 9 o'clock terminal position tied to the neutral.
8. Ringless meter bases will not be approved by the District.
9. The addition of customer owned equipment between the socket and utility owned electric meter, such as an intermediate internal transfer switch, is not allowed.
### Service and Conduit Requirements

<table>
<thead>
<tr>
<th>Residential UG Services</th>
<th>Meter Base Type</th>
<th>Minimum Conduit Size, Type</th>
<th>Maximum Service Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>200A</td>
<td>Self Contained</td>
<td>3&quot; Sch 40</td>
<td>200FT *</td>
</tr>
<tr>
<td>400A, (320A Class)</td>
<td>Self Contained</td>
<td>3&quot; Sch 40</td>
<td>250FT *</td>
</tr>
<tr>
<td>400A - 600A</td>
<td>CT Meter</td>
<td>4&quot; Sch 40</td>
<td>250FT *</td>
</tr>
<tr>
<td>800A and Over</td>
<td>CT Meter</td>
<td>See Note 6</td>
<td></td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Commercial UG Services</th>
<th>Meter Base Type</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>400A, 1Ø</td>
<td>CT Meter</td>
</tr>
<tr>
<td>Over 400A, 1Ø</td>
<td>CT Meter</td>
</tr>
<tr>
<td>200A, 3Ø</td>
<td>Self Contained</td>
</tr>
<tr>
<td>Over 200A, 3Ø</td>
<td>CT Meter</td>
</tr>
</tbody>
</table>

* Distances are based on measurements from the padmount transformer, subtract 50 feet for pole mount transformer installations.

### Notes:

1. Details shown are minimum District standards and are not intended to depict the Washington State Labor and Industries requirements.
2. Conduit may not exceed maximum allowable length, or have bends exceeding 270 degrees including sweeps at the meter base and transformer or pole.
3. Customer owned and installed service wires for single phase services are limited to (4) sets of conductors and shall not exceed 500 kcmil aluminum or copper.
4. Customer owned and installed service wires for three phase services are limited to (6) sets of conductors and shall not exceed 750 kcmil aluminum or copper.
5. Commercial underground service entrance conductor is considered to be customer owned and installed for both self-contained and instrument rated metering (CT metering) regardless of the meter location (i.e. transformer, CT cabinet, or other self-contained unit), and is subject to the requirements of currently adopted National Electrical Code and Washington Administrative Code for size (amperage requirement) and voltage drop.
6. Residential services 800A and above will be customer owned and installed service conductor.
7. The District will supply conductor for overhead services up to 400A, if adequate supports structures are available and service length does not exceed calculated limits.
Notes:

1.) Before permanent service is connected raised letters and numbers (1" min. height) or engraved placard as approved by the District must be permanently attached to the meter base, apartment door and apartment panel. No adhesive non-raised letters or numbers allowed.
Notes:

1. Details shown are minimum District specifications and are not intended to depict Washington State Labor and Industries requirements.
2. Permanent service will not be connected without proper meter base identification, refer to Q-1C for meter base identification requirements.
3. Access to supply conductors must be capable of being sealed by the District.
4. District approval must be obtained in writing for any of the following:
   A. If any disconnect is installed on the delivery side of meters.
   B. If meter installation is over 4' from the front, on the side of the building.
   C. If other than outside installation.
5. All multi-pack meter bases must be pre-approved by District Engineers.
6. All service Conductor is to be furnished and installed by the customer.
Notes:

1. Reducer (supplied by customer) 3" x 2-1/2" x 8" shall not have sharp internal edges.
2. Carlon adapters are supplied by customer and must be pre-approved to meet District requirements.
Notes:
1. Details shown are minimum District specifications and are not intended to depict Washington State Labor and Industries requirements.
2. Clearance space will be measured from the front of meter enclosure.
3. 250V or less requires 36" total minimum clearance.
4. Over 250V requires 48" total minimum clearance.
5. Minimum clearance of 36" from meter base to door and window openings.
6. Minimum clearance of 9" above meter must be maintained free of obstructions.
7. Minimum clearance of 36" from gas meter.
8. Meter base must be located within 48" of the front of the building.
9. Minimum clearance requirements will be from property line or any obstructions.

Minimum Clearance Requirements
For Self Contained Meter Installations

Q-1F
Notes:

1. Details shown are minimum District specifications and are not intended to depict Washington State Labor and Industries requirements.
2. Applications for temporary service are required in advance of the service being requested.
3. All temporary power installations will be metered and will not exceed one year.
4. Customer's temporary service pole may be of 4" x 4" solid lumber or two 2" x 4" lumber laminated together.
5. Braces will consist of 2" x 4" lumber with stakes solidly driven into the ground and firmly attached to braces.
6. All clearances must meet or exceed the National Electrical Safety Code.
7. Contact 811 to request utility locates two days prior to digging.
Notes:

1. Details shown are minimum District specifications and are not intended to depict Washington State Labor and Industries requirements.
2. Applications for temporary service are required in advance of the service being requested.
3. All temporary power installations will be metered and will not exceed one year.
4. Customer's shall provide all trenching, backfill and sufficient conductor plus 6' to reach District facilities.
5. Permanent service stub-outs may not be utilized for temporary power conductor.
6. Customer's temporary service pole may be of 4" x 4" solid lumber or two 2" x 4" lumber laminated together.
7. Braces will consist of 2" x 4" lumber with stakes solidly driven into the ground and firmly attached to braces.
8. All clearances must meet or exceed the National Electrical Safety Code.
9. Contact 811 to request utility locates two days prior to digging.
The District installs 90° sewer elbow for stub-up.

Example of a stub-up.

The District shall determine if hand hole is required for conductor installation.

1. The District shall determine if hand hole is required for conductor installation.
2. Customer will install District supplied or other pre-approved hand hole to grade as well as necessary sweeps and conduit prior to temporary or permanent service inspections.
OVERHEAD SERVICE
Brace/roof connection will have sharp bend with no radius

1/4" x 4" x 4" Galvanized washer

Cyclone fence collars 3/8" min.

Detail

Push Bracing
(Required for masts over 26")

Secure conduit to rafter with u-bolt

Galvanized thimble and guy clamp

Dead end insulator supplied by customer

Weatherhead

45° Min.

4' Max.

18' Min.

Minimum 2" x 6" solid blocking between rafters
(at service lead-in) and
wallplates drilled for
steel conduit

2" Dia., 5/16" u-bolts for all conduit fasteners
length as required

2" x 4" installed solid
between studs and
rough siding

2" Rigid steel conduit

Notes:

1. Details shown are minimum District specifications and are not intended to depict Washington State Labor and Industries requirements. Ref. WAC 296-46B-230-028.

2. Service drops must maintain minimum ground line clearance requirements at lowest point per the National Electrical Safety Code, Rule 232.
Notes:

1. Details shown are minimum District standards and are not intended to depict Washington State Labor and Industries requirements.
2. Service drops must maintain minimum ground line clearance requirements at lowest point per the National Electrical Safety Code, Rule 232.
Notes:

1. Details shown are minimum District standards and are not intended to depict Washington State Labor and Industries requirements.
2. Customer shall contact Customer Engineering prior to installation.
3. The customer shall supply mast, service entrance conductors and meter base.
4. Meter base must be installed, plumb and solid, and bonded to customer neutral per the NEC, when required.
5. Ringless meter bases will not be approved by the District.
6. No conduit type fittings to be installed in conduit containing service conductors.
7. All self-contained services, 200A and below, must use meter sockets rated for 200A continuous duty.

Customer to furnish and install conduit per the NEC

Service entrance conductors furnished and installed by customer per the NEC

Note 4

Overhead Feed
Single Phase Meter Base
200 Amp, 240/480 Volt 3 Wire
Non-Typical
1. Details shown are minimum District standards and are not intended to depict Washington State Labor and Industries requirements.
2. Customer shall contact Customer Engineering prior to installation.
3. The customer shall supply mast, service entrance conductors and meter base.
4. Meter base must be installed, plumb and solid, and bonded to customer neutral per the NEC, when required.
5. For pre-approved meter bases, see document Standard Q-4M.
6. Ringless meter bases will not be approved by the District.
7. No conduit type fittings to be installed in conduit containing service conductors.
8. All self-contained services, 200A and below, must use meter sockets rated for 200A continuous duty.

Notes:

2" Knockouts

Service entrance conductors furnished and installed by customer per the NEC

Conduit to be furnished and installed by customer per the NEC

Top View

Front View

Note 4
2" Knockouts

Service entrance conductors furnished and installed by customer per the NEC

Conduit to be furnished and installed by customer per the NEC

This lug is to be in 9 o'clock position only, and bonded to neutral.

Note 4

Notes:
1. Details shown are minimum District standards and are not intended to depict Washington State Labor and Industries requirements.
2. Customer shall contact Customer Engineering prior to installation.
3. The customer shall supply mast, service entrance conductors and meter base.
4. Meter base must be installed, plumb and solid, and bonded to customer neutral per the NEC, when required.
5. For pre-approved meter bases, see document Standard Q-4M.
6. Ringless meter bases will not be approved by the District.
7. No conduit type fittings to be installed in conduit containing service conductors.
8. All self-contained services, 200A and below, must use meter sockets rated for 200A continuous duty.
Notes:

1. Details shown are minimum District standards and are not intended to depict Washington State Labor and Industries requirements.
2. Customer shall contact Customer Engineering prior to installation.
3. The customer shall supply mast, service entrance conductors and meter base.
4. Meter base must be installed, plumb and solid, and bonded to customer neutral per the NEC, when required.
5. For pre-approved meter bases, see document Standard Q-4M.
6. Ringless meter bases and safety socket by-passes will not be approved by the District.
7. No conduit type fittings to be installed in conduit containing service conductors.
9. All self-contained services, 200A and below, must use meter sockets rated for 200A continuous duty.
Notes:

1. Details shown are minimum District standards and are not intended to depict Washington State Labor and Industries requirements.
2. Customer shall contact Customer Engineering prior to installation.
3. The customer shall supply mast, service entrance conductors and meter base.
4. Meter base must be installed, plumb and solid, and bonded to customer neutral per the NEC, when required.
5. For pre-approved meter bases, see document Standard Q-4M.
6. Ringless meter bases and safety socket by-passes will not be approved by the District.
7. No conduit type fittings to be installed in conduit containing service conductors.
9. All self-contained services, 200A and below, must use meter sockets rated for 200A continuous duty.
Conduit to be furnished and installed by customer per the NEC

Manual circuit closing by-pass stud for by-pass clip

Service entrance conductors furnished and installed by customer per the NEC

Notes:
1. Details shown are minimum District standards and are not intended to depict Washington State Labor and Industries requirements.
2. Customer shall contact Customer Engineering prior to installation.
3. The customer shall supply mast, service entrance conductors and meter base.
4. Meter base must be installed, plumb and solid, and bonded to customer neutral per the NEC, when required.
5. For pre-approved meter bases, see document Standard Q-4M.
6. Ringless meter bases, and safety socket and lever by-passes will not be approved by the District.
7. All self-contained 320A services must use meter sockets rated for 320A continuous duty.
8. No conduit type fittings to be installed in conduit containing service conductors.
10. Doubling of wires is allowed with factory provided, UL approved connectors, only when conductor type and size are the same.
Notes:

1. Details shown are minimum District standards and are not intended to depict Washington State Labor and Industries requirements.
2. Customer shall contact Customer Engineering prior to installation.
3. The customer shall supply mast, service entrance conductors and meter base.
4. Meter base must be installed, plumb and solid, and bonded to customer neutral per the NEC, when required.
5. For pre-approved meter bases, see document Standard Q-4M.
6. Ringless meter bases and safety socket by-passes will not be approved by the District.
7. No conduit type fittings to be installed in conduit containing service conductors.
9. All self-contained services, 200A and below, must use meter sockets rated for 200A continuous duty.
10. Power conductor (high leg, color coded orange).
### Provided And Installed By Customer

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Meter Base</td>
</tr>
<tr>
<td>4</td>
<td>3&quot; Rigid PVC Conduit</td>
</tr>
<tr>
<td>5</td>
<td>Sweep 3&quot; sch. 40 PVC 36&quot; radius</td>
</tr>
<tr>
<td>6</td>
<td>Conduit-3&quot; Sch. 40 PVC</td>
</tr>
<tr>
<td>7</td>
<td>3&quot; to 2-1/2&quot; adapter for 200A meter base only refer to Q-1E standard</td>
</tr>
<tr>
<td>8</td>
<td>Conduit Straps</td>
</tr>
</tbody>
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<td>Conductors</td>
</tr>
<tr>
<td>2</td>
<td>Meter</td>
</tr>
</tbody>
</table>

### Notes:

1. Details shown are minimum District standards and are not intended to depict Washington State Labor and Industries requirements.
2. The District's service conductors will connect at the meter socket line terminals.
3. Meter base must be installed, plumb and solid, and bonded to customer neutral per NEC, as required.
4. For pre-approved meter bases and details, ref. District standards Q4-C through Q-4M.
5. Reference District standards Q-7A and Q-7B for trenching details.
6. 320A meter bases may only be utilized for single phase installations.
7. Ringless meter bases will not be approved by the District.
8. No conduit type fittings to be installed in conduit containing service conductors.
Customer to install flush mounted meter base so face cover is easily removable

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Notes:

1. Details shown are minimum District standards and are not intended to depict Washington State Labor and Industries requirements.
2. The District's service conductors will connect at the meter socket line terminals.
3. Meter base must be installed, plumb and solid, and bonded to customer neutral per NEC, as required.
4. For pre-approved meter bases and details, ref. District standards Q4-C through Q-4M.
5. Reference District standards Q-7A and Q-7B for trenching details.
6. 320A meter bases may only be utilized for single phase installations.
7. Ringless meter bases will not be approved by the District.
8. No conduit type fittings to be installed in conduit containing service conductors.

Service Entrance
Flush Mounted Underground
400 Amp or Less

Q-4B
Notes:

1. Details shown are minimum District standards and are not intended to depict Washington State Labor and Industries requirements.
2. Meter base must be installed, plumb and solid, and bonded to customer neutral per the NEC, when required.
3. For pre-approved meter bases, see document Standard Q-4M.
4. Ringless meter bases will not be approved by the District.
5. No conduit type fittings to be installed in conduit containing service conductors.
6. Meter base must have lugs which will accept #4/0 aluminum conductors.
7. All self-contained services, 200A and below, must use meter sockets rated for 200A continuous duty.
District service conductors

The fifth lug is required in the 9 o'clock position and bonded to the neutral

Do not use knock-outs on this side due to conflicts with District conductors

3" conduit may require adapter see Q-1E

District service conductors #4/0 AL furnished and installed by the District

Note 2

Preferred Customer Entrance

Front View

2-1/2" Min. Knock-Out

Preferred Customer Entrance

Bottom View

Notes:

1. Details shown are minimum District standards and are not intended to depict Washington State Labor and Industries requirements.
2. Meter base must be installed, plumb and solid, and bonded to customer neutral per the NEC, when required.
3. For pre-approved meter bases, see document Standard Q-4M.
4. Ringless meter bases will not be approved by the District.
5. No conduit type fittings to be installed in conduit containing service conductors.
6. Meter base must have lugs which will accept #4/0 aluminum conductors.
7. All self-contained services, 200A and below, must use meter sockets rated for 200A continuous duty.

Underground Feed
200 Amp Meter Base
Network, 120/208 Volt
Residential
Notes:

1. Details shown are minimum District standards and are not intended to depict Washington State Labor and Industries requirements.
2. Meter base must be installed, plumb and solid, and bonded to customer neutral per the NEC, when required.
3. For pre-approved meter bases, see document Standard Q-4M.
4. Ringless meter bases and safety socket by-passes will not be approved by the District.
5. No conduit type fittings to be installed in conduit containing service conductors.
7. All self-contained services, 200A and below, must use meter sockets rated for 200A continuous duty.
The fifth lug is required in the 9 o'clock position and bonded to the neutral.

Block type by-pass stud for by-pass clip (TYP.)

3" rigid conduit furnished and installed by the customer

Service conductor furnished and installed by customer per NEC

Front View

Bottom View

Notes:
1. Details shown are minimum District standards and are not intended to depict Washington State Labor and Industries requirements.
2. Meter base must be installed, plumb and solid, and bonded to customer neutral per the NEC, when required.
3. For pre-approved meter bases, see document Standard Q-4M.
4. Ringless meter bases and safety socket by-passes will not be approved by the District.
5. No conduit type fittings to be installed in conduit containing service conductors.
7. All self-contained services, 200A and below, must use meter sockets rated for 200A continuous duty.
Notes:
1. Details shown are minimum District standards and are not intended to depict Washington State Labor and Industries requirements.
2. Meter base must be installed, plumb and solid, and bonded to customer neutral per the NEC, when required.
3. For pre-approved meter bases, see document Standard Q-4M.
4. All self-contained 320A services must use meter sockets rated for 320A continuous duty.
5. Ringless meter bases, and safety socket and lever by-passes will not be approved by the District.
6. No conduit type fittings to be installed in conduit containing service conductors.
7. Manual block type by-pass is required for 320A services.
For Delta Service Power Conductor (High Leg)

Block type by-pass stud for by-pass clip (TYP.)

Bond to neutral

Note 2

3" conduit may require adapter see District standard Q-1E

Service conductor furnished and installed by customer per NEC

3" Knock-Outs

Notes:

1. Details shown are minimum District standards and are not intended to depict Washington State Labor and Industries requirements.
2. Meter base must be installed, plumb and solid, and bonded to customer neutral per the NEC, when required.
3. For pre-approved meter bases, see document Standard Q-4M.
4. Ringless meter bases and safety socket by-passes will not be approved by the District.
5. No conduit type fittings to be installed in conduit containing service conductors.
7. All self-contained services, 200A and below, must use meter sockets rated for 200A continuous duty.
8. Power conductor (high leg, color coded orange).

Underground Feed
200 Amp Meter Base
Three Phase
Non - Residential

Q-4H

REV: TMG
REV DATE: 8/29/2020
REV NO: 2
DRAWN: JAD
DRAW DATE: 02/26/01
Notes:

1. Details shown are minimum District standards and are not intended to depict Washington State Labor and Industries requirements.
2. Disconnect distance between manufactured (or mobile) homes must meet NEC requirements.
3. Meter base pedestal must be installed in concrete to finished grade, plumb and solid, and bonded to customer neutral per NEC, as required.
4. Reference District standards Q-7A and Q-7B for trenching details.
5. Ringless meter bases will not be approved by the District.
6. Meter base must have lugs which will accept #4/0 aluminum conductors.
7. All self-contained services, 200A and below, must use meter sockets rated for 200A continuous duty.
8. No conduit type fittings to be installed in conduit containing service conductors.
9. Multi-unit mobile home communities must have address identification permanently attached to the front of the meter base, per District standard Q-1C.
10. Service conductor and conduit will be customer supplied and installed for services located within mobile home communities.
Notes:

1. Details shown are minimum District standards and are not intended to depict Washington State Labor and Industries requirements.
2. Disconnect distance between manufactured (or mobile) homes must meet NEC requirements.
3. Meter base vertical structural components must be adequately installed in concrete to finished grade, plumb and solid, and must also be bonded to customer neutral per NEC, as required.
4. Reference District standards Q-7A and Q-7B for trenching details.
5. Ringless meter bases will not be approved by the District.
6. All self-contained services, 200A and below, must use meter sockets rated for 200A continuous duty.
7. No conduit type fittings to be installed in conduit containing service conductors.
8. Multi-unit mobile home communities must have address identification permanently attached to the front of the meter base, per District standard Q-1C.
9. Service conductor and conduit will be customer supplied and installed for services located within mobile home communities.

200 Amp Component
Meter Pedestal
(Mounted on Uni-Strut)
Notes:

1. Details shown are minimum District standards and are not intended to depict Washington State Labor and Industries requirements.
2. Meter base vertical structural components must be adequately installed in concrete to finished grade, plumb and solid, and must also be bonded to customer neutral per NEC, as required.
3. Reference District standards Q-7A and Q-7B for trenching details.
4. Ringless meter bases will not be approved by the District.
5. All self-contained 320A services must use meter sockets rated for 320A continuous duty.
6. No conduit type fittings to be installed in conduit containing service conductors.
<table>
<thead>
<tr>
<th>Q-3D</th>
<th>Q-4C</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overhead Feed 200A</strong></td>
<td><strong>Overhead Feed 200A</strong></td>
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<tr>
<td><strong>Single Phase, 120/240V (Residential)</strong></td>
<td><strong>Single Phase, 120/240V (Residential)</strong></td>
</tr>
<tr>
<td>B-Line 2M2R (OH)</td>
<td>B-Line U2M2R (UG)</td>
</tr>
<tr>
<td>B-Line 204 MS68 (OH)</td>
<td>B-Line U204 (UG)</td>
</tr>
<tr>
<td>Milbank U4517-DL-M4 (OH)</td>
<td>Milbank U4518-O-W (UG)</td>
</tr>
<tr>
<td>Milbank U4518-XL-W (OH/UG)</td>
<td>Milbank U4518-XL-W (OH/UG)</td>
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<tr>
<td>Milbank U5169-XTL-200 (OH/UG)</td>
<td>Milbank U5169-XTL-200 (OH/UG)</td>
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<td><strong>Overhead Feed 200A</strong></td>
<td><strong>Underground Feed 200A</strong></td>
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<tr>
<td><strong>Network, 120/208V (Residential)</strong></td>
<td><strong>Network, 120/208V (Residential)</strong></td>
</tr>
<tr>
<td>B-Line 204 MS68 w/50365 (5th Jaw Kit) (OH)</td>
<td>B-Line U204 w/50365 (5th Jaw Kit) (UG)</td>
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<tr>
<td>Milbank U4517-DL-M4 w/K5T (5th Jaw Kit) (OH)</td>
<td>Milbank U4518-O-W w/K5T (5th Jaw Kit) (UG)</td>
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<tr>
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<td>Milbank U4518-XL-W w/K5T (5th Jaw Kit) (OH/UG)</td>
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<td><strong>Underground Feed 200A</strong></td>
</tr>
<tr>
<td><strong>Single Phase, 120/240V (Non-Residential)</strong></td>
<td><strong>Single Phase, 120/240V (Non-Residential)</strong></td>
</tr>
<tr>
<td>B-Line U264 (OH/UG)</td>
<td>B-Line U264 (OH/UG)</td>
</tr>
<tr>
<td>Milbank U3514-XL (OH/UG)</td>
<td>Milbank U3514-XL (OH/UG)</td>
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<table>
<thead>
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<th>Q-3G</th>
<th>Q-4F</th>
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<td><strong>Overhead Feed 200A</strong></td>
<td><strong>Underground Feed 200A</strong></td>
</tr>
<tr>
<td><strong>Network, 120/208V (Non-Residential)</strong></td>
<td><strong>Network, 120/208V (Non-Residential)</strong></td>
</tr>
<tr>
<td>B-Line U264 w/50365 (5th Jaw Kit) (OH/UG)</td>
<td>B-Line U264 w/50365 (5th Jaw Kit) (OH/UG)</td>
</tr>
<tr>
<td>Milbank U3514-XL w/K5T (5th Jaw Kit) (OH/UG)</td>
<td>Milbank U3514-XL w/K5T (5th Jaw Kit) (OH/UG)</td>
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<th>Q-4G</th>
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<tr>
<td><strong>Overhead Feed 320A</strong></td>
<td><strong>Underground Feed 320A</strong></td>
</tr>
<tr>
<td><strong>Single Phase, 120/240V (Residential/Commercial)</strong></td>
<td><strong>Single Phase, 120/240V (Residential/Commercial)</strong></td>
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<tr>
<td>B-Line 4642MCC (UG)</td>
<td>B-Line 324N (OH/UG)</td>
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<tr>
<td>B-Line 324N (OH/UG)</td>
<td>Milbank U3548-X (OH/UG)</td>
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<td>Milbank U3548-X (OH/UG)</td>
<td>Siemans MM0404L14005C5 (OH/UG)</td>
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<th>Q-3J</th>
<th>Q-4H</th>
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<tr>
<td><strong>Overhead Feed 200A</strong></td>
<td><strong>Underground Feed 200A</strong></td>
</tr>
<tr>
<td><strong>Three Phase (Non-Residential)</strong></td>
<td><strong>Three Phase (Non-Residential)</strong></td>
</tr>
<tr>
<td>B-Line U287 (OH/UG)</td>
<td>B-Line U267 (OH/UG)</td>
</tr>
<tr>
<td>Milbank U3517-XL (OH/UG)</td>
<td>Milbank 3517-XL (OH/UG)</td>
</tr>
</tbody>
</table>

**Notes:**

1. Specifications for meter bases not listed may be submitted for review by the District.
Notes:

1. Details shown are minimum District standards and are not intended to depict Washington State Labor and Industries requirements.
2. Meter base vertical structural components must be adequately installed in concrete to finished grade.
3. Current transformer enclosure and mounting base to be supplied and installed by the customer.
4. Reference District standard Q-1B for conduit and conductor requirements
5. Reference District standards Q-5B, Q-5E & Q-5F for current transformer enclosure specifications.
6. No conduit type fittings to be installed in conduit containing service conductors.
Hinges on CT cabinet must be on the side opposite the meter base.

Mounting base for current transformers (by customer, see table on pg. 2)

Conduit(s) to transformer

Prefered
Alternate

Final Grade

1" Conduit

6' Max. 5' Min.

2' Max.
8' Min.

Current Transformer (CT)
Enclosure Requirements for Single Phase Services
400-800 Amps
<table>
<thead>
<tr>
<th>Service Size</th>
<th>Number of Load Conductors</th>
<th>Cabinet Dimensions</th>
<th>CT Cabinets</th>
<th>CT Mounting Bases</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Width</td>
<td>Height</td>
<td>Depth</td>
<td>Cooper B-Line Part #</td>
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<tr>
<td>400A</td>
<td>1-2</td>
<td>24&quot;</td>
<td>48&quot;</td>
<td>11&quot;</td>
<td>244811 HRTCT</td>
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<tr>
<td>400-800A</td>
<td>1-4</td>
<td>36&quot;</td>
<td>48&quot;</td>
<td>11&quot;</td>
<td>364811 HRTCT</td>
</tr>
</tbody>
</table>

**Notes:**

1. Details shown are minimum District standards and are not intended to depict Washington State Labor and Industries requirements.
2. Current transformer enclosure and mounting base to be supplied and installed by the customer.
3. Customer shall ensure the load conductors are compatible with the connectors on the EUSERC 328B style current transformer mounting base. All mechanical cable termination blocks shall be provided by the customer.
4. Current transformers to be supplied and installed by District.
5. The current transformer mounting base shall have a 50,000 Amp minimum fault current rating.
6. The enclosure shall be raintight, with a sealable, hinged, cover.
7. Reference District standard Q-1B for conduit and conductor requirements.
8. Customer owned and installed service wires for single phase services are limited to (4) sets of conductors and shall not exceed 500 kcmil aluminum or copper.
9. The customer shall make up and terminate the load side connections in the current transformer enclosure.
10. The customer service entrance conduits must exit the enclosure on the load side of the current transformer mounting base. The District will not allow customer conductors or conduit in the District's terminating and pull space.
11. A pre-wired meter base shall be provided by the District and installed by customer.
12. Bonding must be in accordance with the current NEC requirements.
13. Meter sockets shall be installed within 24" of non-hinge side of enclosure.
14. If estimated load is over 50kVA and current transformer metering is needed to facilitate known additional load growth, customer may be allowed to install current transformer enclosure.
15. Current transformer metering may be allowed within the secondary compartment of the transformer at the discretion of the District if circumstances are non-typical and minimum requirements are met.
Hinges on CT cabinet must be on the side opposite the meter base.

Mounting base for current transformers (by customer, see table on sheet 2).

Conduit(s) to transformer:
- Preferred
- Alternate

Finished Grade
### Pre-Approved Three Phase Current Transformer Cabinet & Mounting Bases

<table>
<thead>
<tr>
<th>CT Service Type</th>
<th>Cabinet Dimensions</th>
<th>CT Cabinets</th>
<th>CT Mounting Bases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Width</td>
<td>Height</td>
<td>Depth</td>
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<tr>
<td>400A</td>
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<td>48&quot;</td>
<td>11&quot;</td>
</tr>
<tr>
<td>400-800A</td>
<td>38&quot;</td>
<td>48&quot;</td>
<td>11&quot;</td>
</tr>
</tbody>
</table>

**Notes:**

1. Details shown are minimum District standards and are not intended to depict Washington State Labor and Industries requirements.
2. Current transformer enclosure and mounting base to be supplied and installed by the customer.
3. Customer shall ensure the load conductors are compatible with the connectors on the EUSERC 328B style current transformer mounting base. All mechanical cable termination blocks shall be provided by the customer.
4. Current transformers to be supplied and installed by District.
5. The current transformer mounting base shall have a 50,000 Amp minimum fault current rating.
6. The enclosure shall be rain tight, with a sealable, hinged cover.
7. Reference District standard Q-1B for conduit and conductor requirements.
8. Customer owned and installed service wires for single phase services are limited to (6) sets of conductors and shall not exceed 750 kcmil aluminum or copper.
9. The customer shall make up and terminate the load side connections in the current transformer enclosure.
10. The customer service entrance conduits must exit the enclosure on the load side of the current transformer mounting base. The District will not allow customer conduits or conduit in the District's terminating and pull space.
11. A pre-wired meter base shall be provided by the District and installed by customer.
12. Bonding must be in accordance with the current NEC requirements.
13. Meter sockets shall be installed within 24" of non-hinge side of enclosure.
14. If estimated load is over 75kVA (120/208V) or 150kVA (277/480V) and current transformer metering is needed to facilitate known additional load growth, customer may be allowed to install current transformer enclosure.
15. Current transformer metering may be allowed within the secondary compartment of the transformer at the discretion of the District if estimated load is at least 100kVA. Current transformer metering, specifically for services which are fed by a District 75kVA or smaller transformer shall be metered within a current transformer enclosure.
Bus bar kit to be installed by customer

Source

Load

8" Min.
2' Max.

6' Max.
5' Min.

1" Conduit

Conduit(s) to transformer

1' Min.

Final Grade

Current Transformer (CT)
Enclosure Requirements for
Commercial Three Phase Services
1200-2500 Amps
# Pre-Approved Three Phase Current Transformer Enclosure & Mounting Bases

<table>
<thead>
<tr>
<th>CT Service Type</th>
<th>Number of Load Conductors</th>
<th>Cabinet Dimensions</th>
<th>CT Cabinets with Mounting Bases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>Width</td>
<td>Height</td>
</tr>
<tr>
<td>1200A</td>
<td>3</td>
<td>55&quot;</td>
<td>64&quot;</td>
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<tr>
<td>1600A</td>
<td>4</td>
<td>61&quot;</td>
<td>64&quot;</td>
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<tr>
<td>2000A</td>
<td>5</td>
<td>65&quot;</td>
<td>64&quot;</td>
</tr>
<tr>
<td>2500A</td>
<td>7</td>
<td>65&quot;</td>
<td>64'</td>
</tr>
</tbody>
</table>

* INCLUDES SIDE GUTTER
** MUST CONTACT BENTON PUD PRIOR TO PURCHASE (NON-STANDARD)

**Notes:**

1. Details shown are minimum District standards and are not intended to depict Washington State Labor and Industries requirements.
2. Current transformer enclosure and mounting base to be supplied and installed by the customer.
3. Customer shall ensure the load conductors are compatible with the connectors on the EUSERC 328B style current transformer mounting base. All mechanical cable termination blocks shall be provided by the customer.
4. Current transformers to be supplied and installed by District.
5. The current transformer mounting base shall have a 85,000 Amp minimum fault current rating.
6. The enclosure shall be raintight, with a sealable, hinged, cover.
7. Reference District standard Q-1B for conduit and conductor requirements.
8. Customer owned and installed service wires for single phase services are limited to (6) sets of conductors and shall not exceed 750 kcmil aluminum or copper.
9. The customer shall make up and terminate the load side connections in the current transformer enclosure.
10. The customer service entrance conduits must exit the enclosure on the load side of the current transformer mounting base. The District will not allow customer conductors or conduit in the District's terminating and pull space.
11. A pre-wired meter base shall be provided by the District and installed by customer.
12. Bonding must be in accordance with the current NEC requirements.
13. Meter sockets shall be installed within 24" of non-hinge side of enclosure.
14. Customer will install bus bar and perch for window style current transformers.
15. Current transformer metering may be allowed within the secondary compartment of the transformer at the discretion of the District if estimated load is at least 100 kVA. Current transformer metering, specifically for services which are fed by a District 75 kVA or smaller transformer shall be metered within a current transformer enclosure.

---

**Current Transformer (CT) Enclosure Requirements for Commercial Three Phase Services 1200-2500 Amps**
1. Details shown are minimum District standards and are not intended to depict Washington State Labor and Industries requirements.
2. Meter base vertical structural components must be adequately be installed in concrete to finished grade.
3. The District will provide a pre-wired meter base mounted on uni-strut to be installed by the customer.
4. Refer to transformer pad details, District standards UG6-C, or UG6-C2.
5. Refer to District standards Q-5B, Q-5E and Q-5F for current transformer requirements.
6. Customer shall install 1" conduit from meter to secondary compartment of the transformer, conduit run may not be more than 25' in length or exceed (4) total bends totaling 360 degrees.
7. No conduit type fittings to be installed in conduit containing service conductors or low voltage wires.
8. Current transformer metering may be allowed within the secondary compartment of the transformer at the discretion of the District.

**Notes:**
- Install pedestal to avoid interference when transformer door is open.
- Center pedestal in concrete. Can be part of transformer pad.
- District installed CT wires
- Concrete post holes
- See note 3
- Customer installed 1" rigid conduit with sweep
- Finished Grade

**Plan View**
- 12" Dia. x 24" Typ.
- Concrete post holes
- See note 3
- Customer installed 1" rigid conduit with sweep

**Elevation View**
- District installed CT wires
- Concrete post holes
- See note 3
- Customer installed 1" rigid conduit with sweep

---

**Title:**
Self Supported CT Meter Pedestal with CT's installed in Secondary Compartment of District Transformer

**REV:**
TMG

**DATE:**
03/27/01

**REV NO.:**
3

**ENG NO.:**
32

**DRAW DATE:**
03/27/01

**Q-5G**
Notes:

1. Contact Engineering regarding all switchgear installations for prior approval.
2. Busways must remain in position when the removable bus link "B" is removed.
3. Set the direction of feed from the top. No other customer conductors shall pass through this compartment.
4. Bus clearance dimension measured to inside edge of the compartment access opening.
5. Reference EUSERC 320 and 322.
6. Customer to install and terminate all conductors.
7. Current transformers to be supplied and wired by the District.
8. Customer shall remove bus links to facilitate CT installation and shall re-torque following completion.
TRANSFORMER
PADS AND
CLEARANCES
Non combustible building, fence, retaining wall, pole, or mailbox.

Combustible Building

Pad

Front

District grid numbers

Clear Zone
To Be Unobstructed

12' CLEAR-ZONE

RESIDENTIAL DIMENSIONS

(COMMERCIAL) (DIMENSIONS)

Notes:
1. All dimensions are minimum.
2. No obstructions are allowed over transformer.
3. Landscaping must maintain a 12' clearance from the front and a 3' clearance from all other sides. The District shall not be responsible for damages to landscaping violating the minimum clearance requirements.
4. Installation must not violate WAC-296-46B-450 transformers.
Customer to install 6 - 6" Sch 40 PVC conduits and 6 - 6" Sch 40 PVC sweeps. District to install wire between transformer and secondary cabinet.

Plan
Concrete pads by customer

**Notes:**

1. Secondary termination cabinet shall be installed within 10' of transformer pad and be lockable.
2. Terminations of customer owned wire in secondary cabinet will be made by the customer.
3. Reference transformer pad details, District standard UG6-C or UG6-C2.
4. Reference CT meter base construction, District standard Q-5G.
5. Primary cable area conduit and ground wire will be District supplied and customer installed.
6. When required by the District current transformers may be installed in the secondary compartment of transformer.
7. Termination cabinet grounds shall be bonded with transformer pad grounds.
8. See UG6-C or UG6-C2 for transformer pad details.
9. Termination cabinet specifications shall be submitted to the District for approval prior to installation.
(2) Ground rods required; District supplied customer installed (See Note 5 & 9)

#4 Copper ground loop District Supplied customer installed (See Note 5)

(Secondary cable area) Conduit and wire; customer supplied wire & installed. Alignment must be to the right of the opening.

Transformer Pad

Primary Compartment

Secondary Compartment

#3 rebar @ 6" on center both ways

(Primary cable area) 4" conduit sweep; District supplied and customer installed. Alignment must be to the left of the opening

Plan View
Concrete Transformer Pad by Customer

1/2" radius on all Exposed pad edges

Refer to Q-5G for 1" conduit required for current transformer wiring; customer installed

Section A-A

36" Radius 4" PVC sweep District supplied customer installed (See Note 5)

Transformer Pad
500 kVA & Below
Three Phase Pad Details
## Notes:

1. Ground under pad shall be 95% minimum compaction.
2. Concrete shall be Portland Cement concrete, 5 sack mix, attaining 3000 P.S.I. at 28 days.
3. Top of pad shall be level and finished smooth. Surface shall not contain honeycomb or segregation.
4. Barricade traffic bollards provided and installed by customer - contact District engineering to determine location of posts. When required, bollards shall not interfere with swing of transformer doors.
5. Customer to pick up 4" primary conduit sweep, 2 ground rods, and #4 Str. bare CU. ground wire from the District warehouse located at 1500 S. Ely street, Kennewick.
6. Maximum number of 6 conductors per phase of 750 kcmil. Contact the District if additional conductors per phase will be required.
7. For pad location, reference District standard Q-6C for clearance to existing structures.
8. For pads located near regulated bodies of water contact the District for an alternative design with oil containment provisions.
9. Exterior ground rod shall be driven flush with grade or in such a manner that eliminates possible tripping hazards and allows for future inspection with minimal effort. Interior ground rod shall be driven such that no more than 4" extends above grade.
10. District personnel may be required to assist in pulling conductor into transformer compartment and will make all transformer terminations.
11. Current transformer installation and wiring to be completed by District personnel when required.
(2) Ground rods required; District supplied and customer installed (See Note 5 & 9)

#3 rebar @ 6" on center both ways

(Primary cable area) 4" conduit sweep; District supplied and customer installed. Alignment must be to the left of the opening.

#4 Copper ground loop District supplied customer installed (See Note 5)

(Secondary cable area) Conduit and wire; customer supplied & installed Alignment must be to the right of the opening.

Transformer Pad
Primary Compartment
Secondary Compartment
No conduit zone

Plan View
Concrete Transformer Pad by Customer

1/2" radius on all exposed pad edges

Finished Grade

See Note 9 (Exterior)

36" Radius 4" PVC sweep District supplied customer installed (See Note 5)

See Note 9 (Interior)

Section A-A

Transformer Pad
750 kVA & Above
Three Phase Pad Details

UG6-C2
<table>
<thead>
<tr>
<th>Item</th>
<th>Qty.</th>
<th>Description</th>
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<tbody>
<tr>
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<td>2</td>
<td>5/8&quot; x8&quot; Ground Rod</td>
<td>337381</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>4&quot; Diameter PVC Sch. 40 36&quot; Radius Sweep</td>
<td>633651</td>
</tr>
<tr>
<td>3</td>
<td>50'</td>
<td>Wire #4 MHDB 7 Str.</td>
<td>400300</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>5/8&quot; Ground Rod Clamp</td>
<td>327100</td>
</tr>
</tbody>
</table>

**Notes:**

1. Ground under pad shall be 95% minimum compaction.
2. Concrete shall be Portland Cement concrete, 5 sack mix, attaining 3000 P.S.I. at 28 days.
3. Top of pad shall be level and finished smooth. Surface shall not contain honeycomb or segregation.
4. Barricade traffic bollards provided and installed by customer - contact District engineering to determine location of posts. When required, bollards shall not interfere with swing of transformer doors.
5. Customer to pick up 4" primary conduit sweep, 2 ground rods, and #4 Str. bare CU. ground wire from the District warehouse located at 1500 S. Ely street, Kennewick.
6. Maximum number of 6 conductors per phase of 750 kcmil. Contact the District if additional conductors per phase will be required.
7. For pad location, reference District standard Q-6C for clearance to existing structures.
8. For pads located near regulated bodies of water contact the District for an alternative design with oil containment provisions.
9. Exterior ground rod shall be driven flush with grade or in such a manner that eliminates possible tripping hazards and allows for future inspection with minimal effort. Interior ground rod shall be driven such that no more than 4" extends above grade.
10. District personnel may be required to assist in pulling conductor into transformer compartment and will make all transformer terminations.
11. Current transformer installation and wiring to be completed by District personnel when required.
TRENCHING

Q-7 Series
When no stub-out exists, customer to dig a 3'W x 3'L x 3'D work pit for District use and supply a 36" radius sweep to be installed by the District.

**Plan**

Power cable in conduit

Phone/TV

Gas/Water

Installed by District

Installed by customer

Self contained meter base furnished and installed by customer

12" separation req. between power and all other utilities

30" Min.

Spoil Pile

6" Min.

Section A-A

Selectve backfill

Customer supplied 36" radius PVC sweep

When a stub-out exists, customer will remove temporary sewer 90° and connect to existing District stub-out. If no stub-out exists see plan view diagram above.

**Elevation**

6" Min.

Conduit per District standard Q-1B

Customer supplied 36" radius PVC sweep

Customer provided trenching, backfill, and conduit

District supplied transformer or pedestal

District furnished and installed meter

Notes:

1. Details shown are minimum District specifications and are not intended to depict Washington State Labor and Industries requirements.
2. Conduit may not exceed maximum allowable length, or have bends exceeding 270 degrees including sweeps at the meter base and transformer or pole.
3. Trenches are subject to inspection by the District and must obtain minimum standards prior to backfill.
4. Open conduit shall be capped or sealed in a manner to prevent dirt from entering.
5. Contact 811 to request utility locates two days prior to digging.
Unless otherwise instructed, extend service conduit to within 8" of pole. (see elevation)

Plan

By District By Customer

Section A-A

Power cable in conduit

30" Min.

6" Min.

Selective backfill

12" separation req. between power and all other utilities.

District supplied pole

Stand-off bracket "conduit 4"-8" from pole

Self contained meter base furnished and installed by customer.

District furnished and installed meter

Customer provided trenching and backfill

Customer supplied 36" radius PVC sweep

Customer to remove temporary sewer 90° and connect to existing District stub-out. If no stub-out exists, see plan view above.

Notes:

1. Details shown are minimum District specifications and are not intended to depict Washington State Labor and Industries requirements.
2. Conduit may not exceed maximum allowable length, or have bends exceeding 270 degrees including sweeps at the meter base and transformer or pole.
3. Trenches are subject to inspection by the District and must obtain minimum standards prior to backfill.
4. Open conduit shall be capped or sealed in a manner to prevent dirt from entering.
5. For poles less than 35' the customer shall dig to within 2' of the pole, the District shall provide remaining trenching.
6. Contact 811 to request utility locates two days prior to digging.

Elevation

Conduit per standard Q-1B

Customer supplied 36" radius PVC sweep

Customer supplied 36" radius PVC sweep

Notes:

1. Details shown are minimum District specifications and are not intended to depict Washington State Labor and Industries requirements.
2. Conduit may not exceed maximum allowable length, or have bends exceeding 270 degrees including sweeps at the meter base and transformer or pole.
3. Trenches are subject to inspection by the District and must obtain minimum standards prior to backfill.
4. Open conduit shall be capped or sealed in a manner to prevent dirt from entering.
5. For poles less than 35' the customer shall dig to within 2' of the pole, the District shall provide remaining trenching.
6. Contact 811 to request utility locates two days prior to digging.

Trenching & Conduit Details for Typical Underground, Service Installation from Overhead Transformer
Notes:

1. Connecting customer generation equipment to the Benton PUD (BPUD) distribution system requires completion of a Net Metering Application and signing of a Net Metering Interconnection Agreement.

2. This standard represents a typical arrangement for a net metering installation. The details shown are not intended to depict Washington State Department of Labor and Industries (L&I) requirements. L&I approval of installation is required prior to customer receiving approval from BPUD for final interconnection of generator to the BPUD distribution system. Customer shall provide BPUD with a copy of the documentation of L&I approval.

3. Customer's must provide a one-line electrical schematic drawing to BPUD which is specific to the proposed installation.

4. BPUD does not require a utility disconnect switch for customer generation equipment utilizing Underwriter's Laboratory (UL) 1741 listed inverter equipment. Contact the BPUD engineering department for review and approval of other interconnection methods.

5. Upon receiving L&I approval, BPUD will complete a field inspection of the customer's net metering installation. Approved installations will be documented by BPUD’s completion of a Generating Facility Certificate of Completion. This certificate represents the customer's authorization to energize their generation equipment and interconnect their net metering installation to the BPUD distribution system.

6. AC production meter base shall be labeled, "CUSTOMER GENERATOR, PRODUCTION METER", with engraved phenolic placards; 3/8" white capitalized lettering on a red background.

7. Main electric service (Net Meter) meter base shall be labeled "NET METER, CUSTOMER GENERATOR CONNECTED TO THIS SERVICE", with engraved phenolic placards; 3/8" white capitalized lettering on a red background.

8. When the production meter is not within line of sight of the net meter, an engraved placard showing both meter locations shall be installed next to the production meter.
FIBER SERVICES

FIBER SERVICES
Q-9 Series
Notes:
1. All dimensions are minimum.
2. No obstructions are allowed over transformer or fiber hand hole.
3. Refer to District planting guide for landscaping.

Customer to install 2" sch 40 PVC from communications room and connect to 2" stub-out or hand hole as provided by the District.

Transformer

District grid numbers

12' Clear Zone

10' Min Clear Zone

District to install 2" Sch 40 PVC and stub-up

Installation Practices for Customer Fiber Services
WORK AREA CLEARANCES
Work Area Clearance
Utility Poles and Junction Boxes

Typical Overhead

Typical Underground