Redbook
Customer Engineering Standards And Metering Requirements

October 2020

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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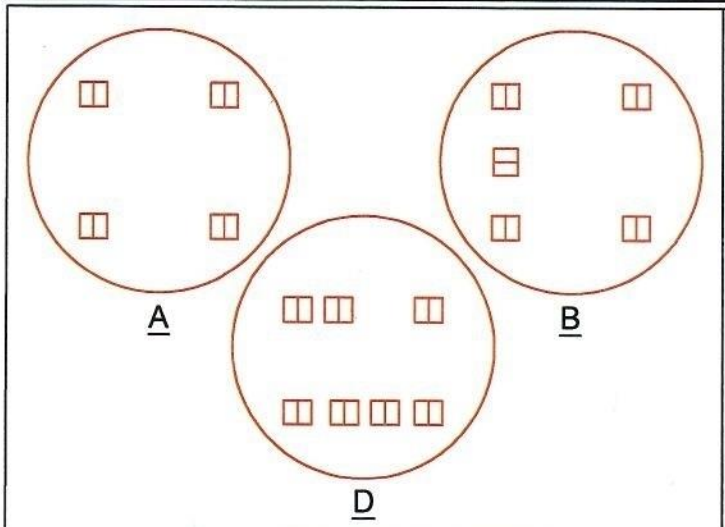
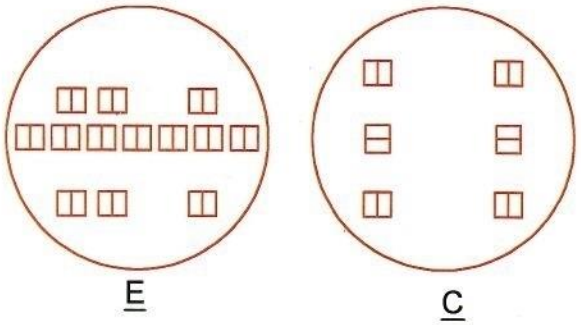
GENERAL INFORMATION

BENTON PUD	TITLE: GENERAL INFORMATION Q-1 Series	REV BY: JWV	SHT. 1 of 1
		REV DATE: 10/01/13	
		REV NO: 1	DIR. ENG. DATE: 1/14
DRAWN BY: JAD		DWG. NO. Q-1	
DRAW DATE: 03/05/04			

Voltage	Wires	Self Contained Meter Base (Furnished and provided by customer)			Current Transformer Meter Base (Provided by District)		
		Max Amp.	No. Clips	Socket	No. CT.	No. Clips	Socket
Single Phase							
120/240	3	200 Res / Comm'l	4	A	2	6	C/Test SW
120/240	3	320 Res / Comm'l	4	A			
240/480	3	200	4	A			
Network							
120/208	3	200	5	B			
Three Phase							
208/120	4	200	7	D	3	13	E/Test SW
240/120	4	200	7	D	3	13	E/Test SW
240/480	4	200	7	D	3	13	E/Test SW
480/277	4	200	7	D	3	13	E/Test SW



Purchased From Vendor



Provided by District

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.

BENTON PUD

DRAWN BY: JAD

DRAW DATE: 02/16/01

TITLE:

Meter Socket
Terminal Clip Configuration

REV BY: TMG | SHT. 1 of 1

REV DATE: 9/14/2020

REV No: 1 | DIR. ENG. [signature] | DATE: 9/22/20

DWG. NO.

Q-1A

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Service and Conduit Requirements			
Residential UG Services	**Meter Base Type**	**Minimum Conduit Size, Type**	**Maximum Service Length**
200A	Self Contained	3" Sch 40	200FT *
400A, (320A Class)	Self Contained	3" Sch 40	250FT *
400A - 600A	CT Meter	4" Sch 40	250FT *
800A and Over	CT Meter	See Note 6	See Note 6

Service Requirements	
Commercial UG Services	**Meter Base Type**
200A, 1Ø	Self Contained
400A, 1Ø (320A Class)	Self Contained
400A, 1Ø	CT Meter
Over 400A, 1Ø	CT Meter
200A, 3Ø	Self Contained
Over 200A, 3Ø	CT Meter

* 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.

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BENTON PUD

DRAWN BY: SWT

DRAW DATE: 02/26/01

TITLE: Residential & Commercial Services Maximum Lengths & Required Conduit Sizes

REV BY: TMG

REV DATE: 9/14/2020

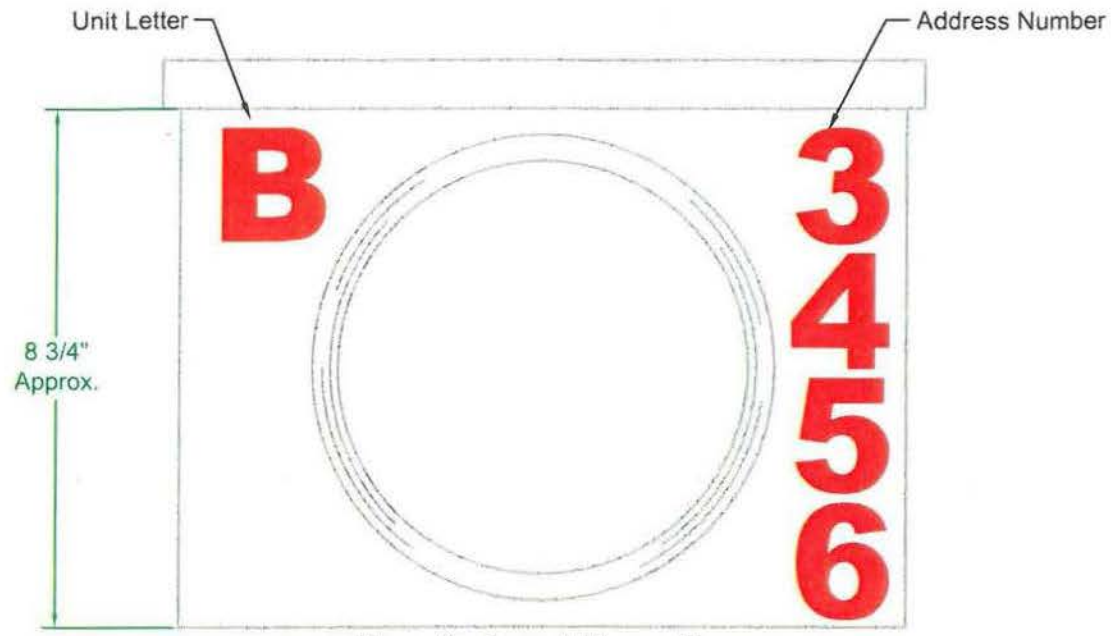
SHT. 1 of 1

REV No: 3

DIR. ENG. [signature]

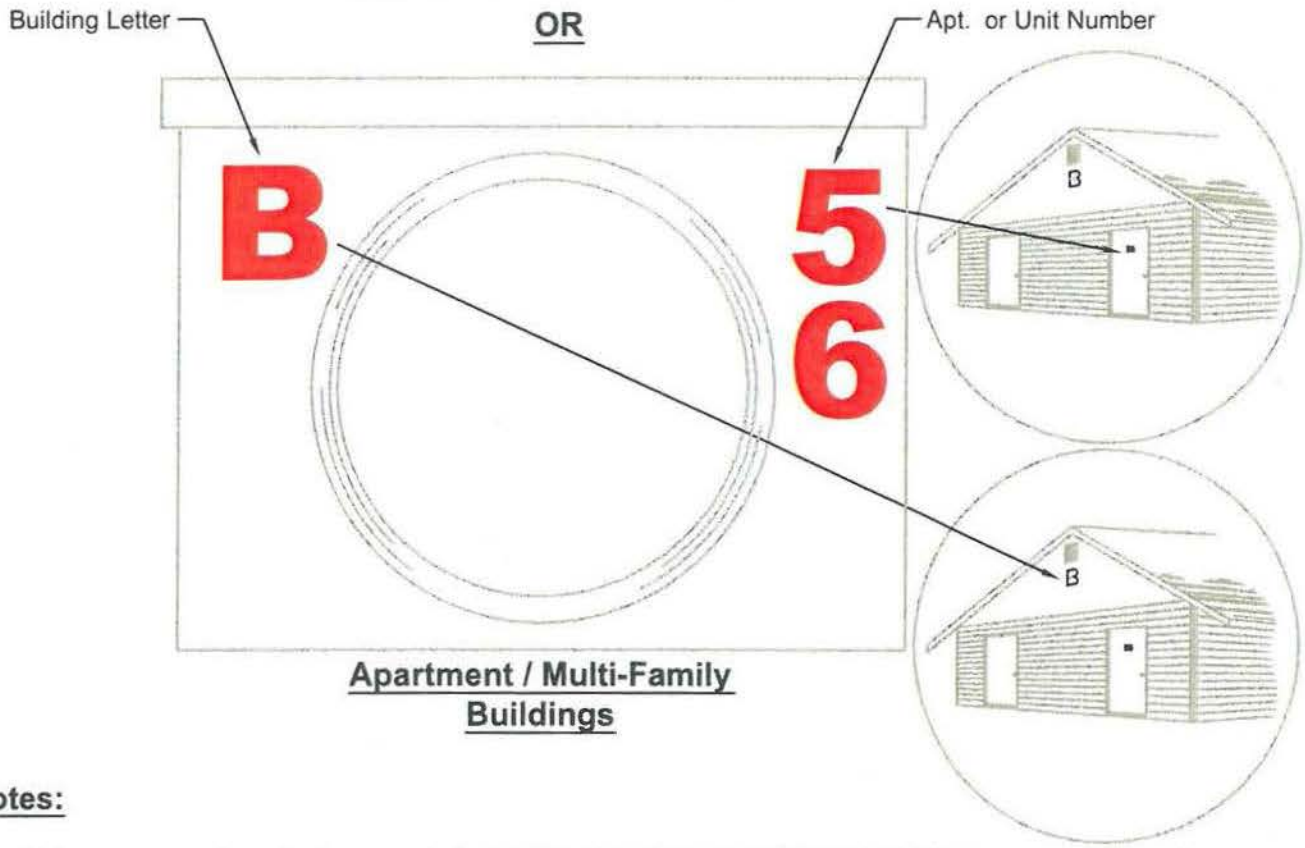
DATE: 9/21/20

DWG. NO. **Q-1B**



Manufactured Home Type

OR

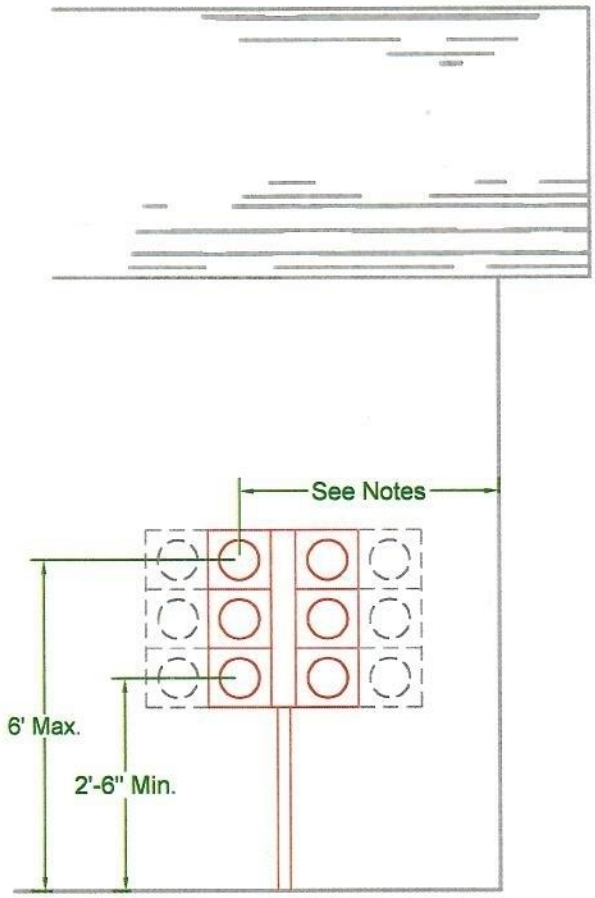


Apartment / Multi-Family Buildings

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.

BENTON PUD	TITLE: Multiple Meter Base Identification Numbering Requirements for Multi- Unit Mobile Home Parks & Multi Unit Buildings	REV BY: JWV; REV DATE: 10/01/13; REV No: 1; DIR. ENG.; DATE: 1/14; SHT. 1 of 1; DWG. NO. Q-1C
DRAWN BY: SWT; DRAW DATE: 03/27/01		



Side Of Building

Acceptable
Installation

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.

BENTON PUD

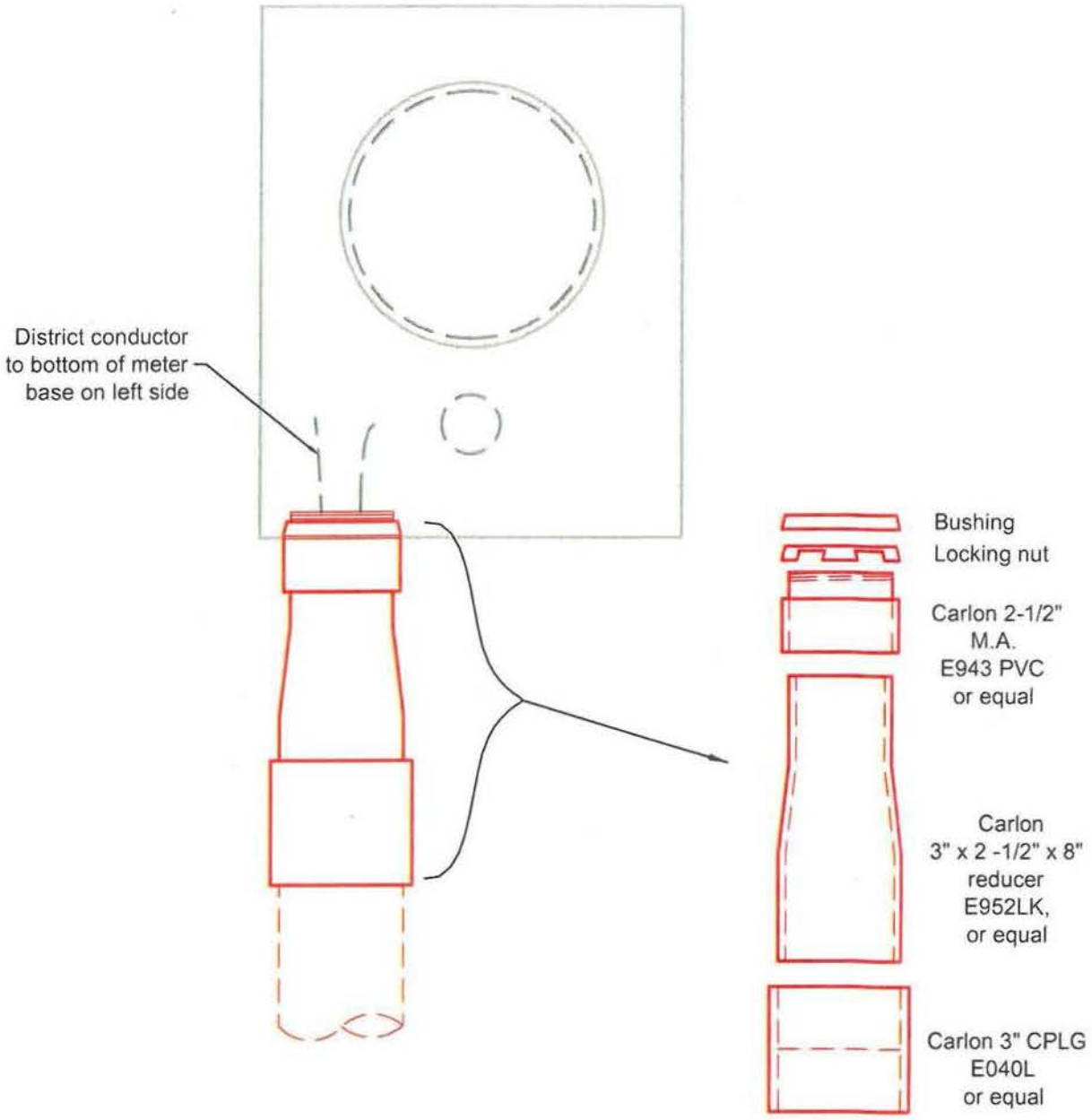
DRAWN BY: SWT

DRAW DATE: 02/25/01

TITLE:

Multi-Tennant Meter Base Installation
For Apartments, Strip Malls, etc.

REV BY: TMG		SHT. 1 of 1	
REV DATE: 9/14/2020			
REV NO: 2	DIR. ENG.	DATE: 9/21/20	
DWG. NO. Q-1D			



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.

BENTON PUD

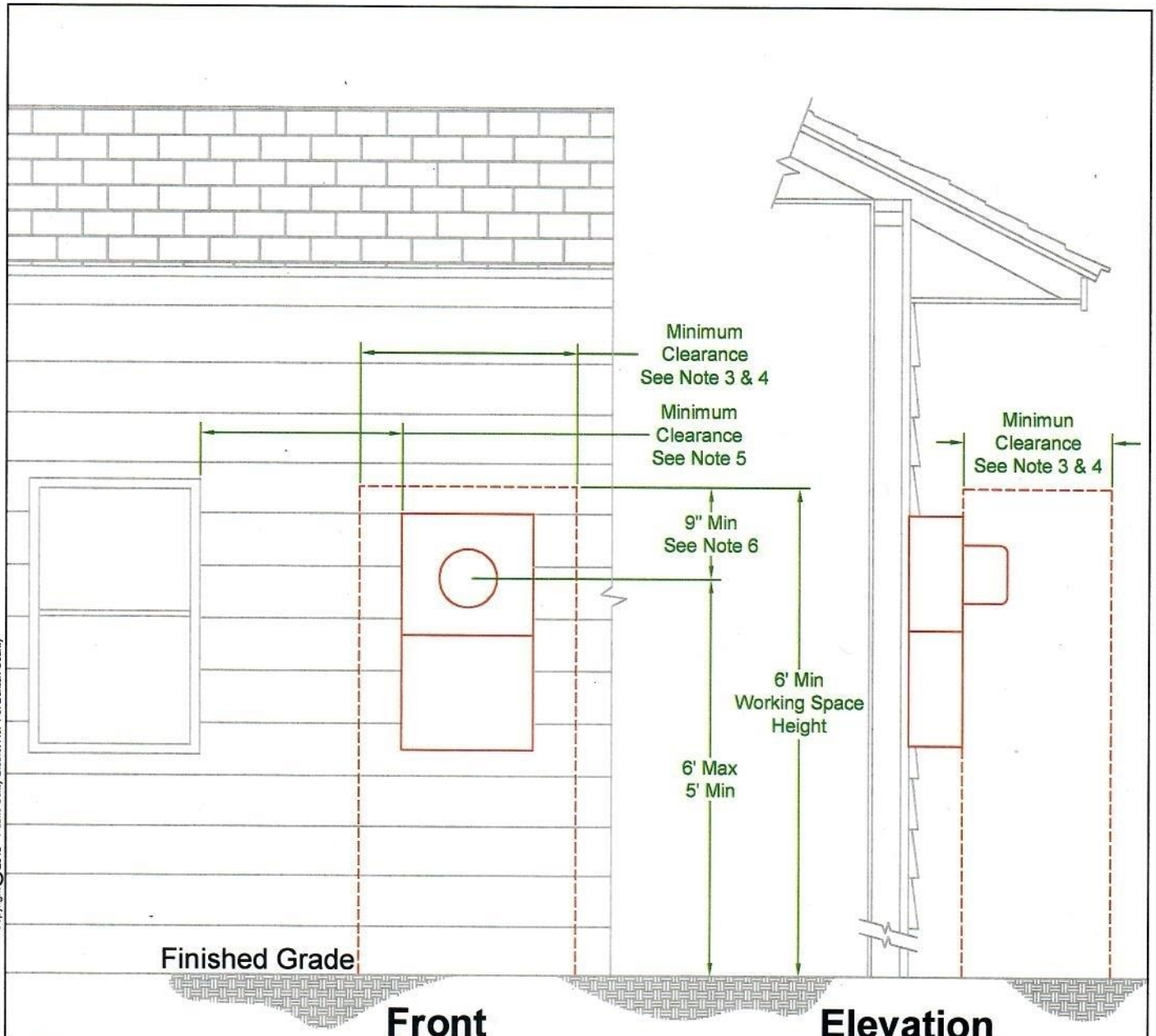
DRAWN BY: SWT

DRAW DATE: 12/20/00

TITLE:

2 1/2" x 3" Conduit Adapter for 200 Amp Meter Base

REV BY: JWV		SHT. 1 of 1
REV DATE: 10/01/13		
REV No: 1	DIR. ENG.	DATE: 1/14
DWG. NO. Q-1E		



Front Elevation

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.

BENTON PUD

DRAWN BY: JAD

DRAW DATE: 03/27/11

TITLE:

Minimum Clearance Requirements For Self Contained Meter Installations

REV BY: TMG		SHT.	1 of 1
REV DATE: 8/29/2020			
REV No: 2	DIR. ENG.	DATE:	9/21/20
DWG. NO.	Q-1F		

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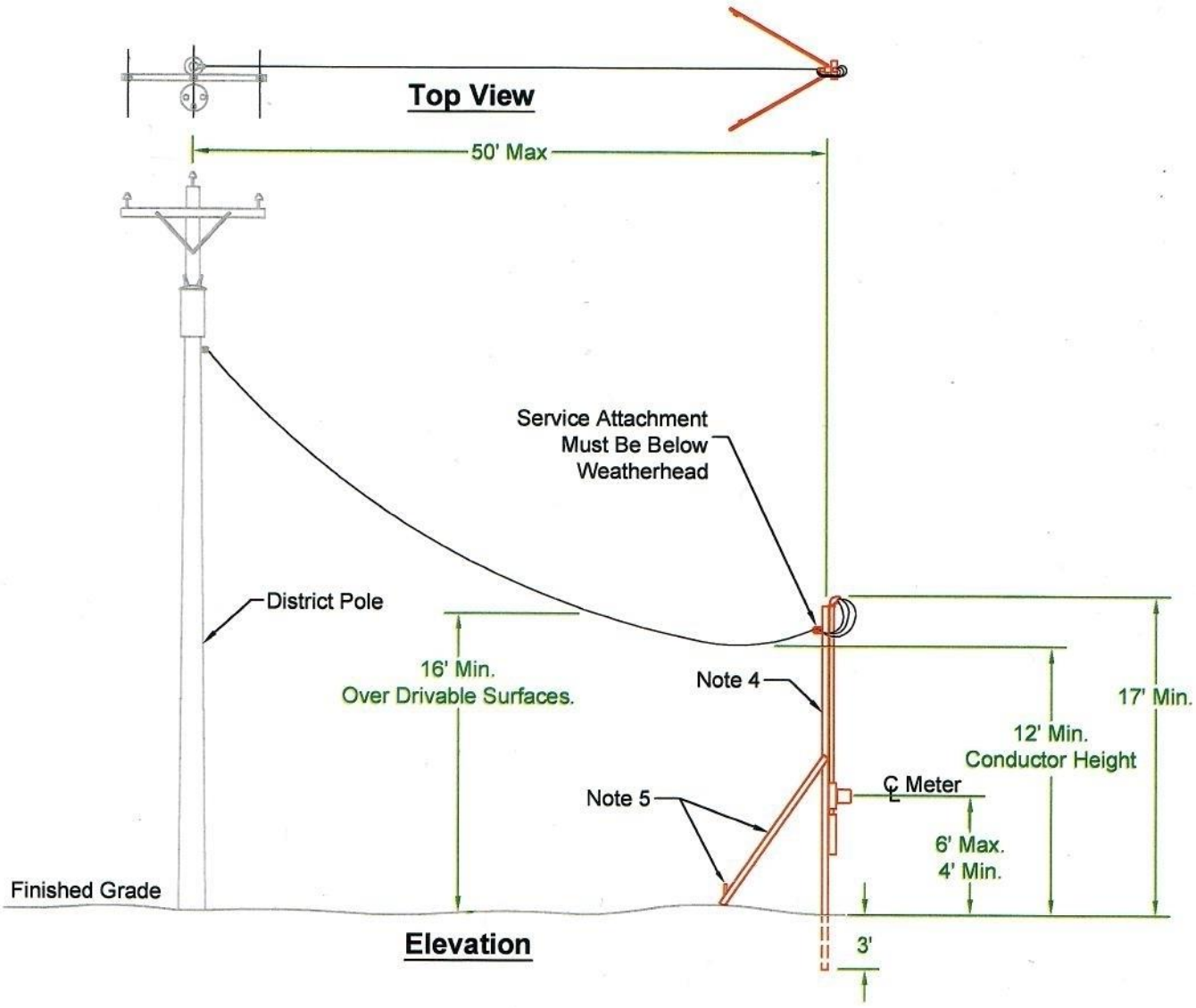
TEMPORARY SERVICE

BENTON PUD	TITLE: TEMPORARY SERVICE Q-2 Series	REV BY: JWV	SHT. 1 of 1
		REV DATE: 10/01/13	
		REV NO: 1	DIR. ENG. DATE: 1/14
DRAWN BY: JAD		DWG. NO. Q-2	
DRAW DATE: 03/05/04			



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.

BENTON PUD

DRAWN BY: JAD

DRAW DATE: 3/28/01

TITLE:

Temporary Service Requirements Overhead Services

REV BY: TMG		SHT. 1 of 1
REV DATE: 8/29/2020		
REV No: 2	DIR. ENG.	DATE: 9/21/20
DWG. NO.		

Q-2A

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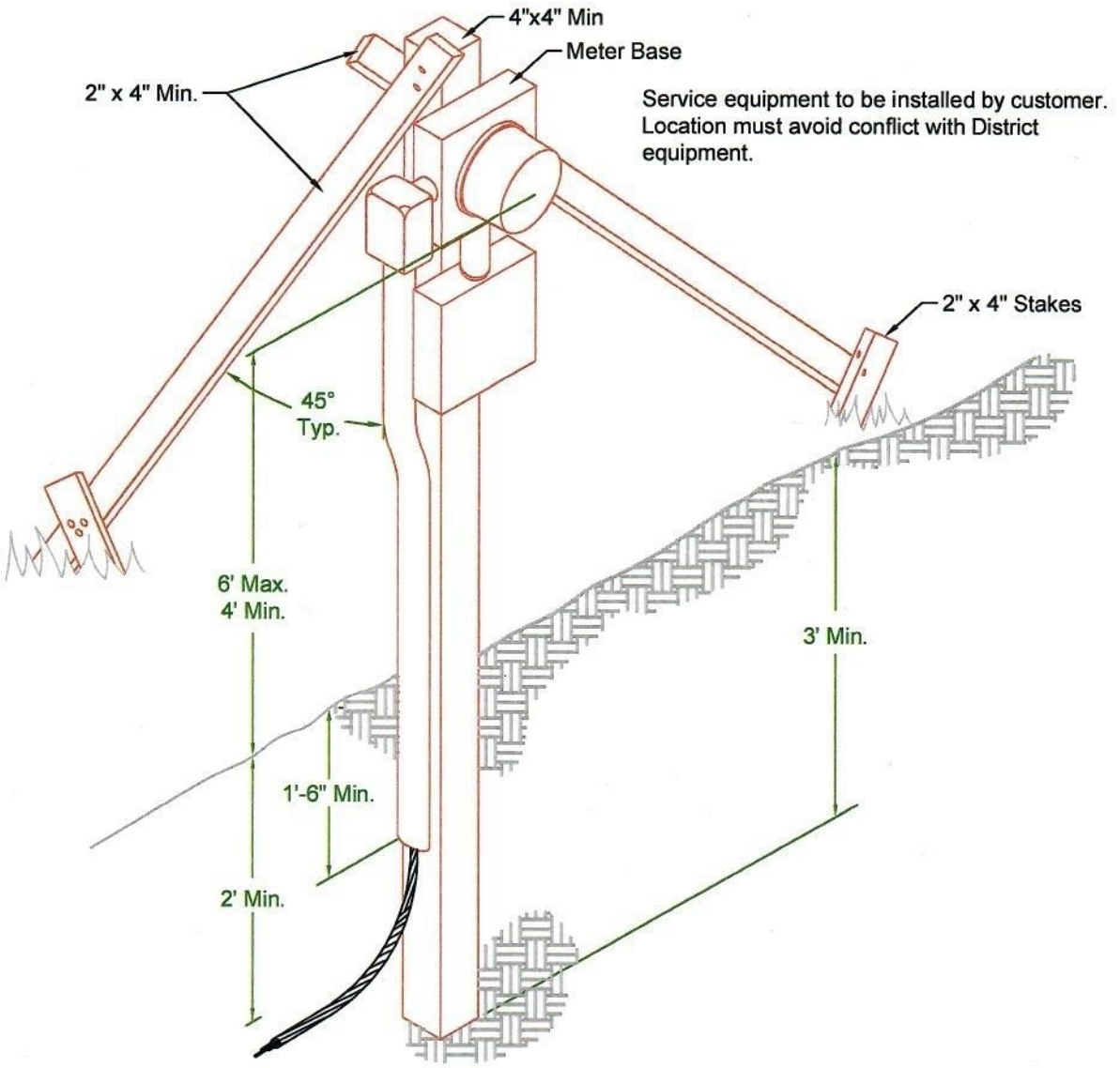

Notes:

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.

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BENTON PUD

DRAWN BY: JAD

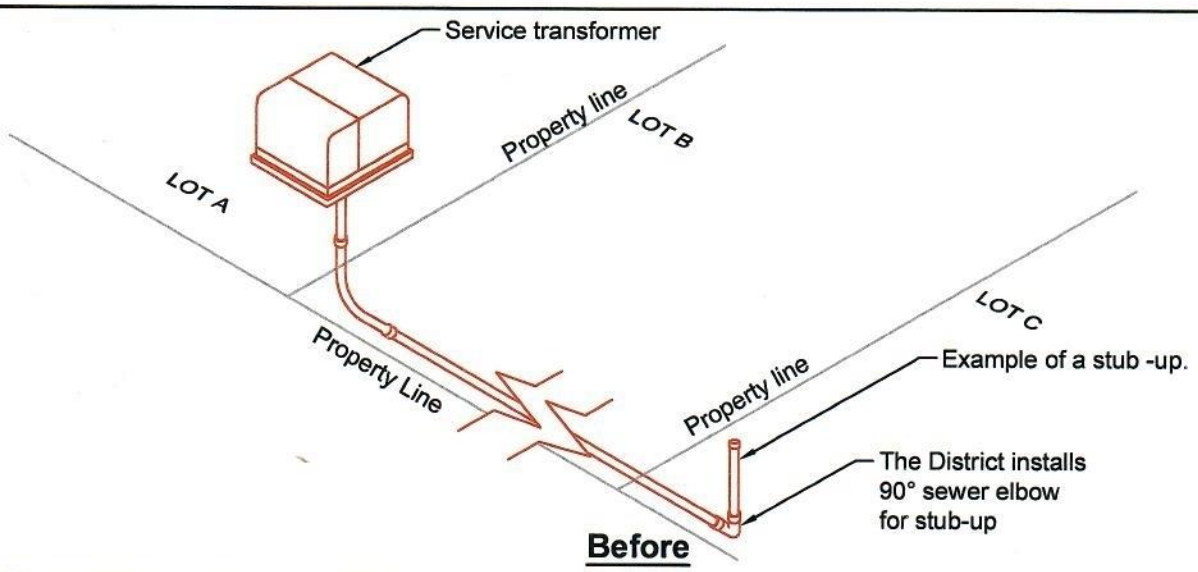
DRAW DATE: 4/10/12

TITLE:

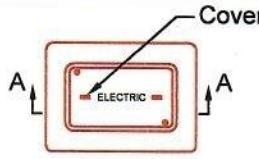
Temporary Service Requirements Underground Services

REV BY: TMG		SHT. 1 of 1
REV DATE: 8/29/2020		
REV No: 2	DIR. ENG. JA	DATE: 9/21/20
DWG. NO.		

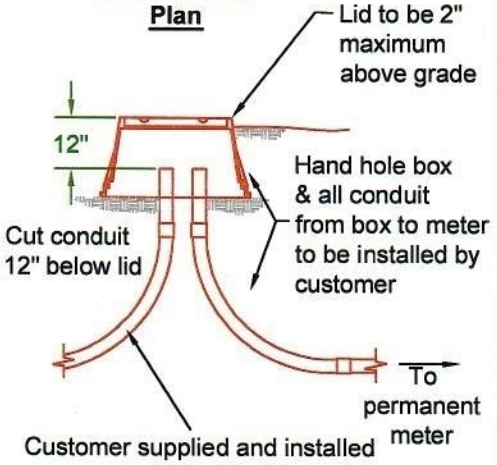
Q-2B



Before

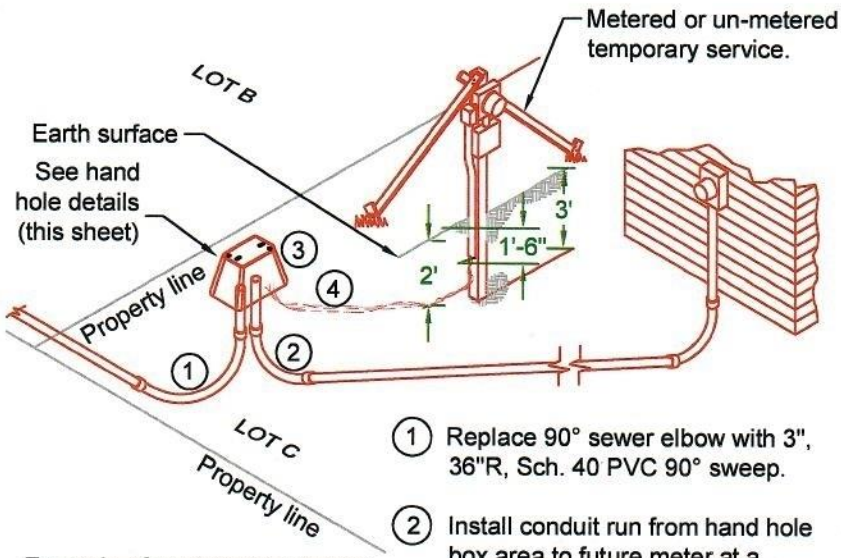


Plan



Section A-A

Hand Hole Details



Example of a temporary service install.
Hand hole and connecting conduit are required.
Temporary panel must be within 5 ft. of hand hole.

After

1. Replace 90° sewer elbow with 3", 36"R, Sch. 40 PVC 90° sweep.
2. Install conduit run from hand hole box area to future meter at a home/building
3. Install hand hole box and connect both conduit runs.
4. Direct bury temp wires to hand hole box entry way and prepare wire for temp service.

Notes:

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.

BENTON PUD

DRAWN BY: JWV

DRAW DATE: 10/01/13

TITLE:

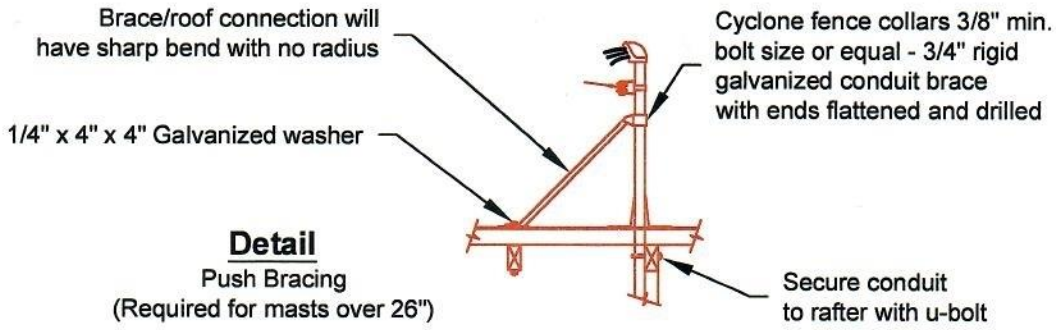
Alternate Temporary Services Installation Guidelines

REV BY: TMG		SHT. 1 of 1
REV DATE: 8/29/2020		
REV No: 1	DIR. ENG.	DATE: 9/21/20
DWG. NO.		

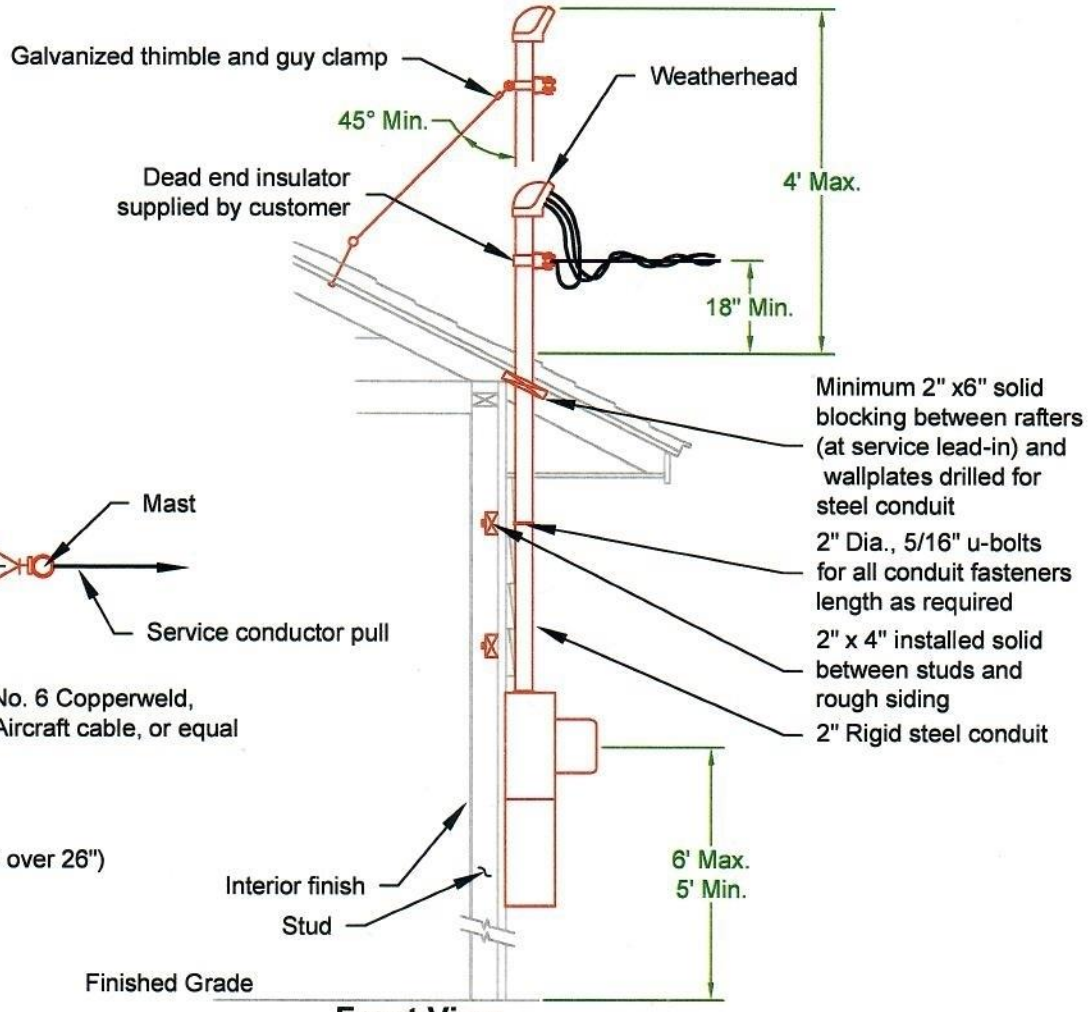
Q-2C

OVERHEAD SERVICE

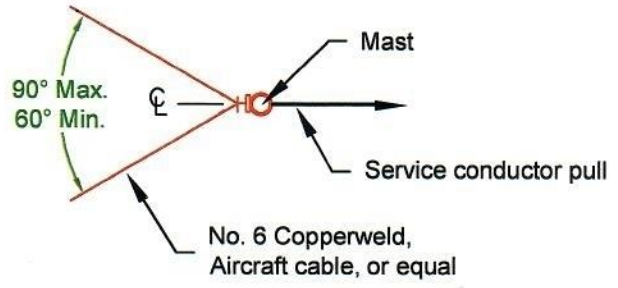
BENTON PUD	TITLE: OVERHEAD SERVICES Q-3 Series	REV BY: JWV	SHT. 1 of 1
		REV DATE: 10/01/13	
		REV NO: 1 DIR. ENG. DATE: 1/14	
DRAWN BY: JAD		DWG. NO. Q-3	
DRAW DATE: 03/05/04			



Detail
Push Bracing
(Required for masts over 26")



Front View



Plan
Guying
(Required for masts over 26")

Notes:

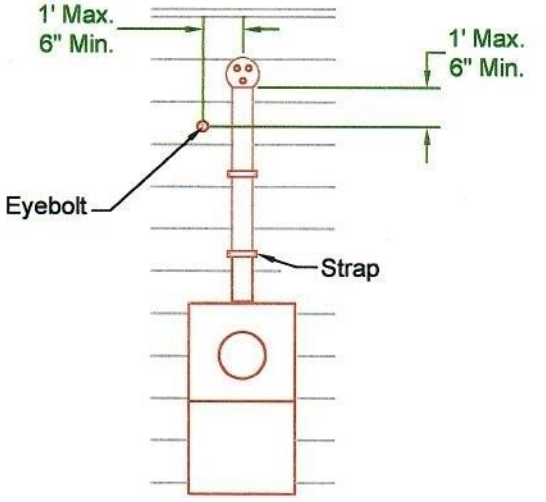
1. Details shown are minimum District specifications and are not intended to depict Washington State Labor and Industries requirements. Ref. WAC 296-46B-230-028.
2. Service drops must maintain minimum ground line clearance requirements at lowest point per the National Electrical Safety Code, Rule 232.

BENTON PUD

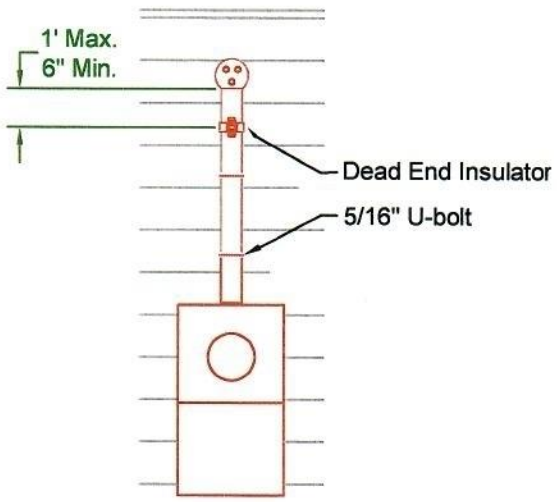
DRAWN BY: JAD
DRAW DATE: 02/28/01

TITLE: New and/or Altered Service Through Roof 200 Amp or Less

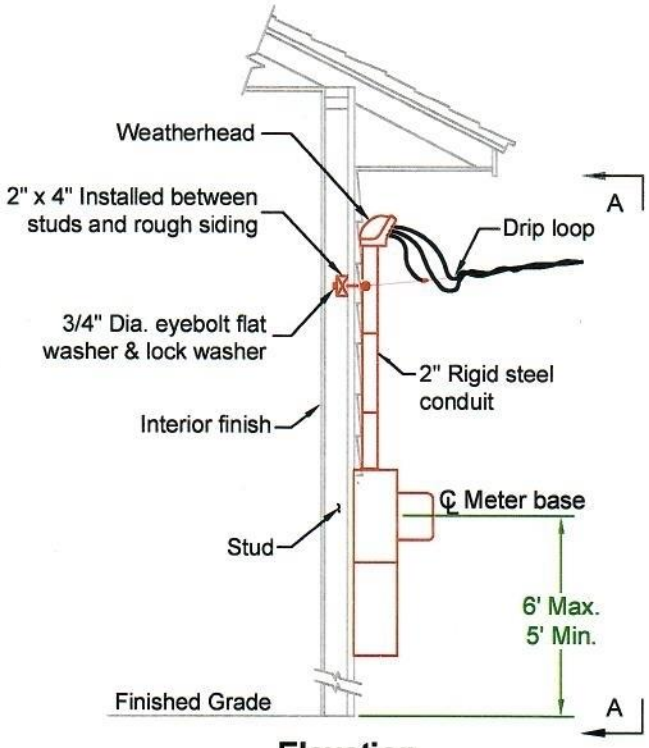
REV BY: TMG		SHT. 1 of 1
REV DATE: 9/14/2020		
REV No: 3	DIR. ENG.	DATE: 9/21/20
DWG. NO. Q-3A		



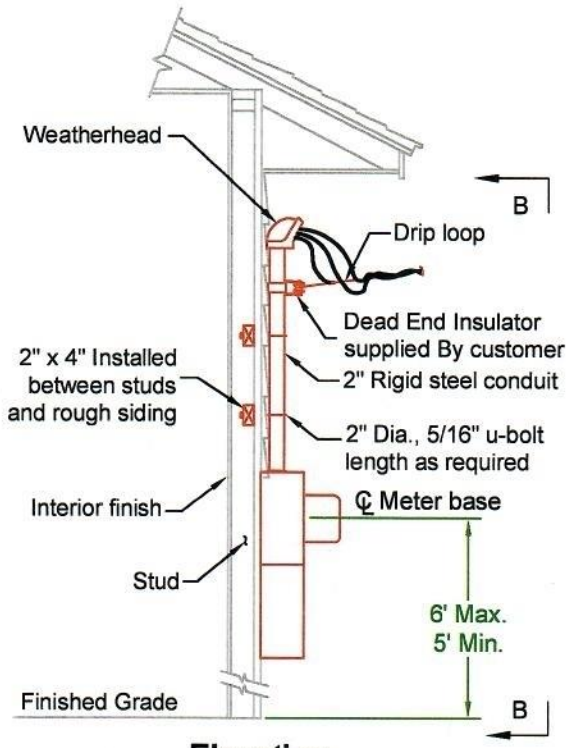
View A-A



View B-B



Elevation
Guy Attached To Eye bolt



Elevation
Guy Attached To Rigid Conduit

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.

BENTON PUD

DRAWN BY: JAD
DRAW DATE: 03/27/11

TITLE: New and/or Altered Service Below Roof Mast Installation 200 Amp or Less

REV BY: TMG		SHT. 1 of 1
REV DATE: 8/19/2020		
REV No: 2	DIR. ENG.	DATE: 9/21/20
DWG. NO. Q-3B		

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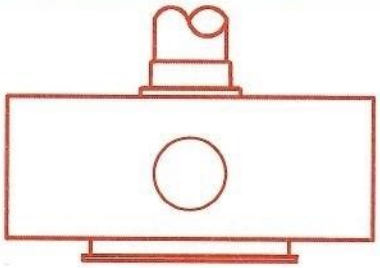
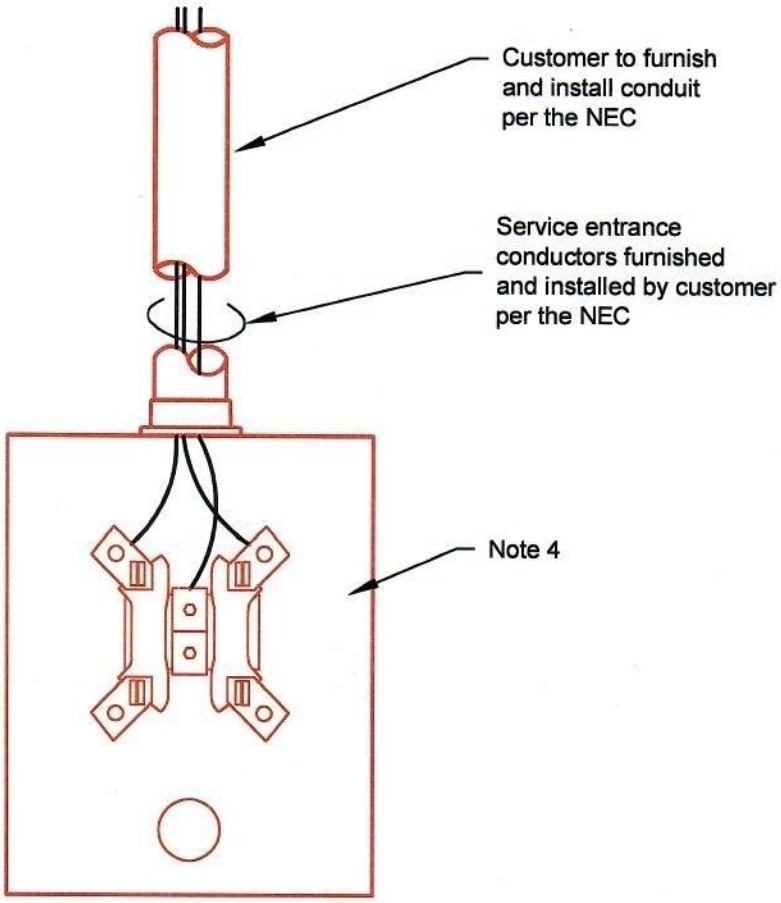


Top View



Front View

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 condulet 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.

BENTON PUD

DRAWN BY: JAD

DRAW DATE: 02/26/01

TITLE:

Overhead Feed
Single Phase Meter Base
200 Amp, 240/480 Volt 3 Wire
Non-Typical

REV BY: TMG		SHT. 1 of 1
REV DATE: 8/29/2020		
REV No: 3	DIR. ENG.	DATE: 9/21/20
DWG. NO. Q-3C		

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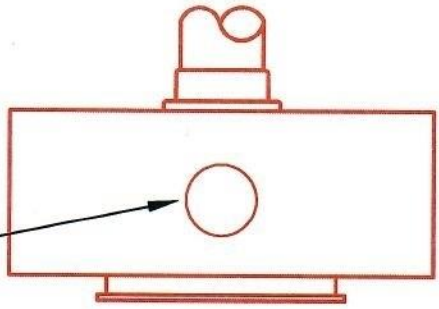
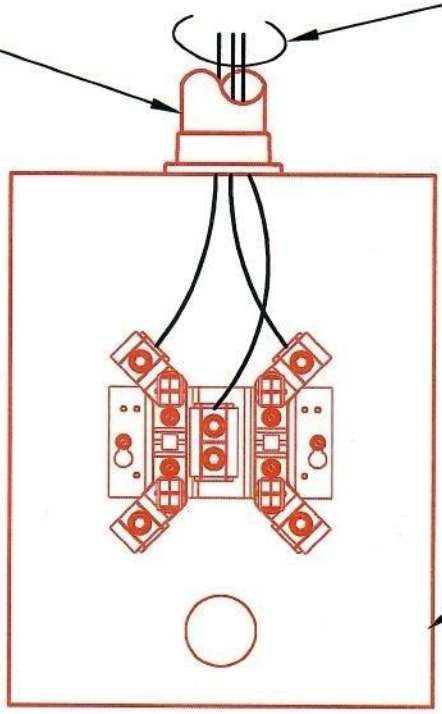


Top View



Front View

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 condulet 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.

BENTON PUD

DRAWN BY: JAD

DRAW DATE: 02/26/01

TITLE:

Overhead Feed
200 Amp or Less Meter Base
Single Phase, 120/240 Volt
Residential

REV BY: TMG		SHT. 1 of 1
REV DATE: 8/19/2020		
REV No: 3	DIR. ENG.	DATE: 9/21/20
DWG. NO.		

Q-3D

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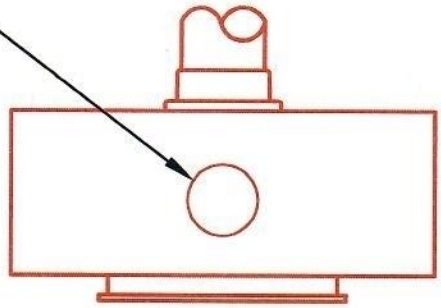
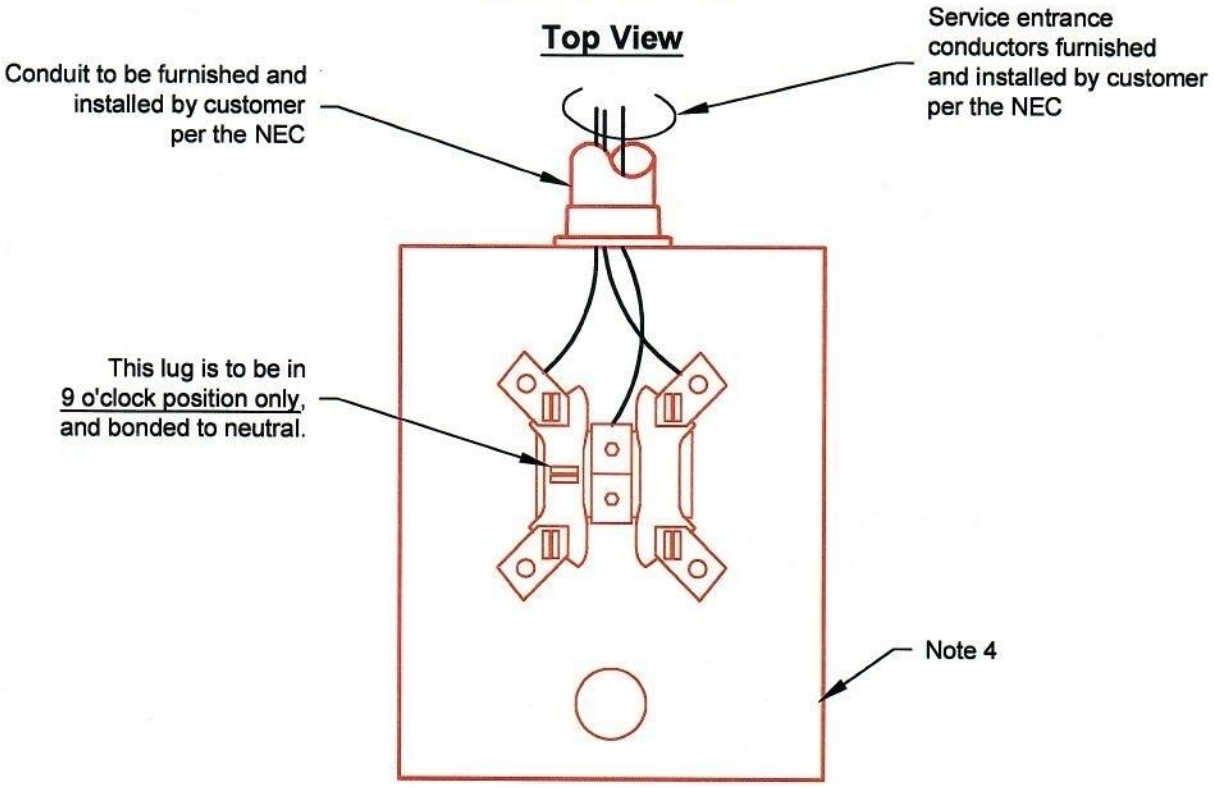


Top View



Front View

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 condulet 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.

BENTON PUD

DRAWN BY: JAD

DRAW DATE: 02/16/01

TITLE:

Overhead Feed
200 Amp or Less Meter Base
Network 120/208 Volt
Residential

REV BY: TMG		SHT.	1 of 1
REV DATE: 8/19/2020			
REV NO: 2	DIR. ENG.	DATE:	7/21/20
DWG. NO.			

Q-3E

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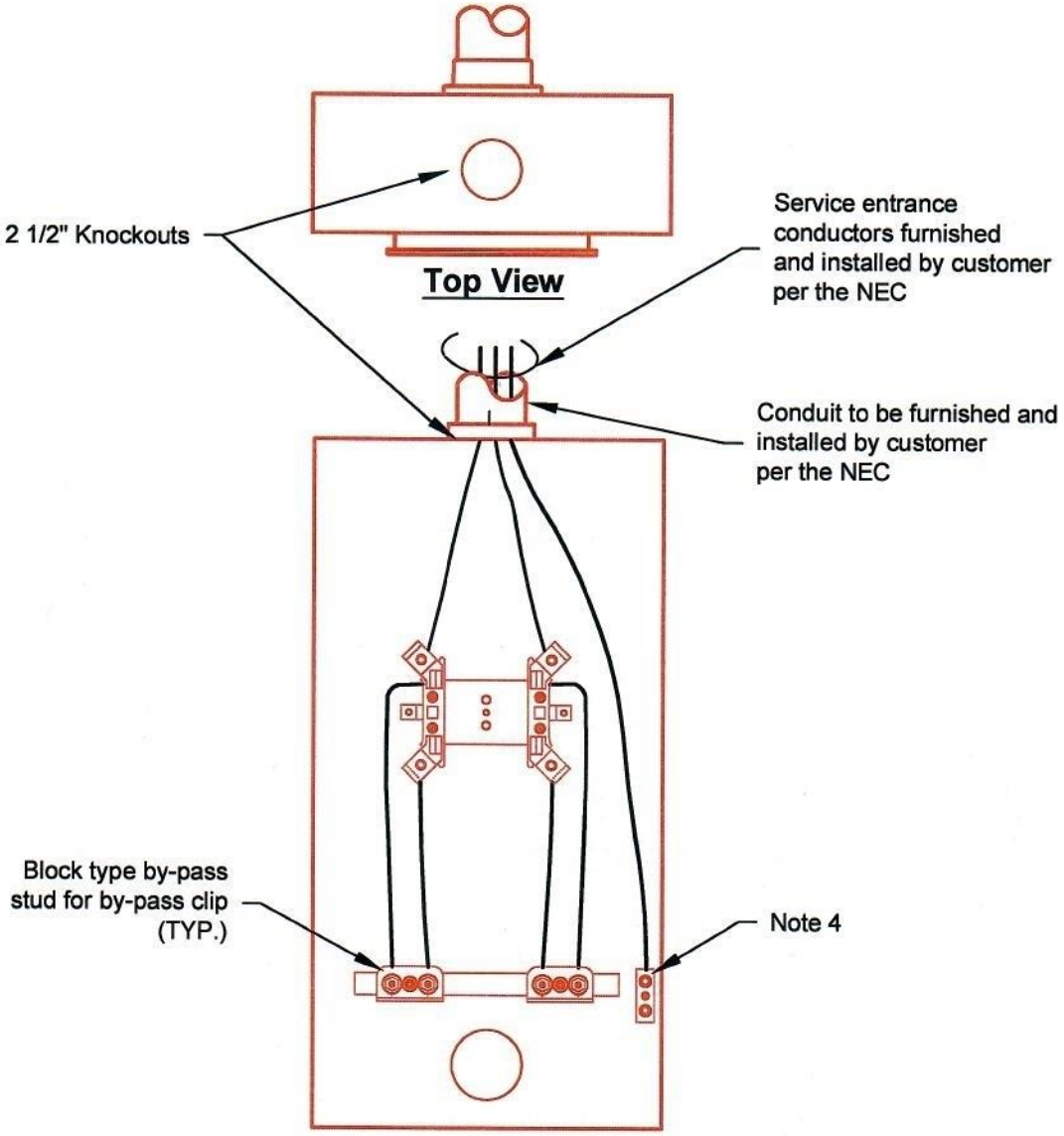

Notes:

1. Details shown are minimum District standards and are not intended to depict Washington State Labor and Industries requirements.
2. 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 condulet type fittings to be installed in conduit containing service conductors.
8. Manual block type by-pass is required for 200A non-residential services.
7. All self-contained services, 200A and below, must use meter sockets rated for 200A continuous duty.

BENTON PUD

DRAWN BY: JAD

DRAW DATE: 02/26/01

TITLE:

Overhead Feed
200 Amp Meter Base
Single Phase 120/240 Volt
Non-Residential

REV BY: TMG		SHT. 1 of 1
REV DATE: 8/19/2020		
REV NO: 2	DIR. ENG. JAS	DATE: 9/21/20
DWG. NO.		Q-3F

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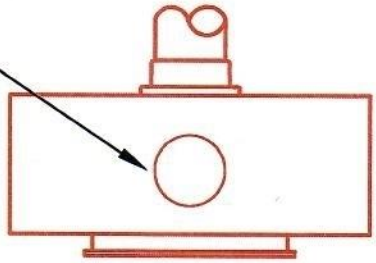
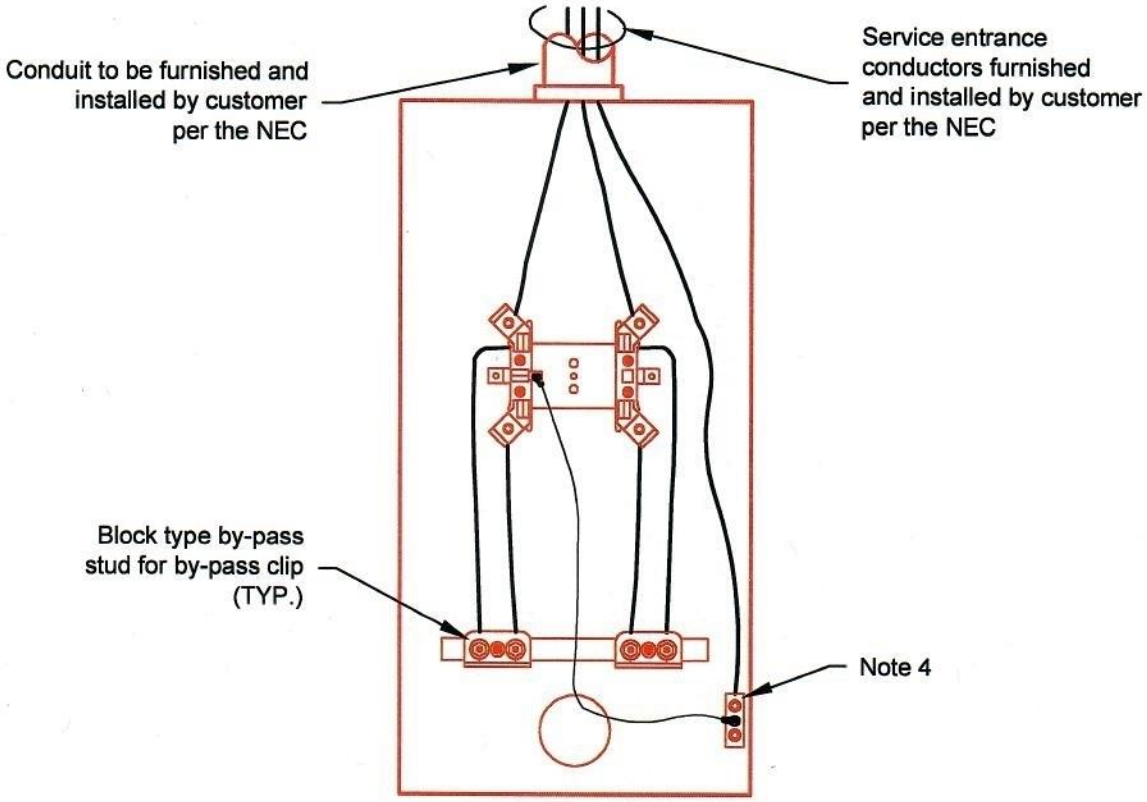


Top View



Front View

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 condulet type fittings to be installed in conduit containing service conductors.
8. Manual block type by-pass is required for 200A non-residential services.
9. All self-contained services, 200A and below, must use meter sockets rated for 200A continuous duty.

BENTON PUD

DRAWN BY: JAD

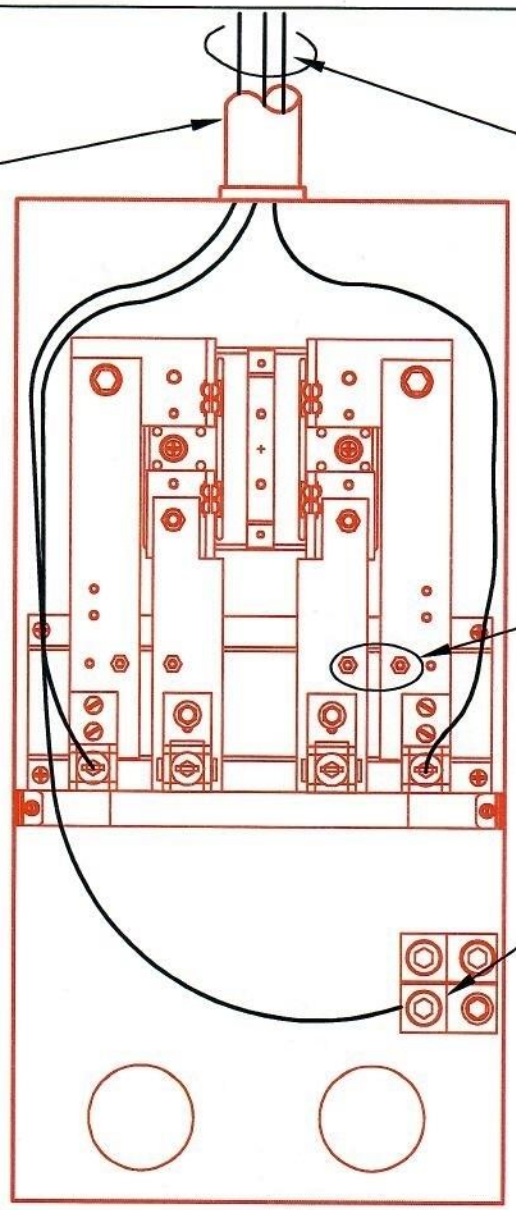
DRAW DATE: 02/26/01

TITLE:

Overhead Feed
200 Amp Meter Base
Network 120/208 Volt
Non-Residential

REV BY: TMG		SHT. 1 of 1
REV DATE: 8/19/2020		
REV NO: 2	DIR. ENG.	DATE: 9/21/20
DWG. NO.		

Q-3G



Front View

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 condulet type fittings to be installed in conduit containing service conductors.
9. Manual block type by-pass is required for 320A services.
10. Doubling of wires is allowed with factory provided, UL approved connectors, only when conductor type and size are the same.

BENTON PUD

DRAWN BY: JAD

DRAW DATE: 03/27/01

TITLE:

Overhead Feed
320 Amp Meter Base
Single Phase, 120/240 Volt
Residential and Commerical

REV BY: TMG		SHT. 1 of 1
REV DATE: 8/19/2020		
REV NO: 2	DIR. ENG.	DATE: 9/21/20
DWG. NO.		

Q-3H

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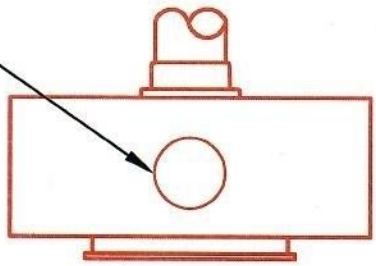
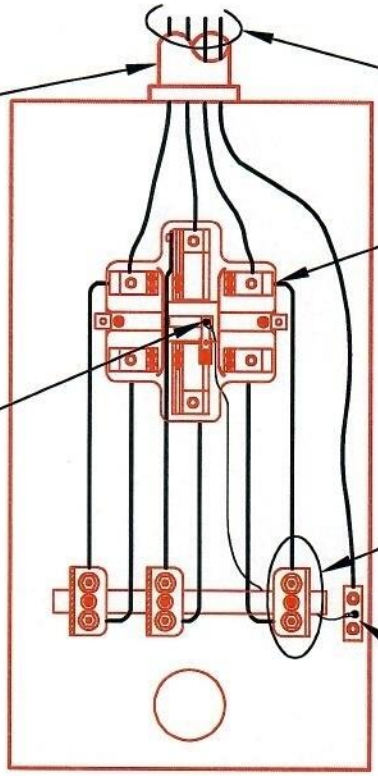


Top View



Front View

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 condulet type fittings to be installed in conduit containing service conductors.
8. Manual block type by-pass is required for 200A non-residential services.
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).

BENTON PUD

DRAWN BY: JAD

DRAW DATE: 02/26/01

TITLE:

Overhead Feed
200 Amp Meter Base
Three Phase
Non-Residential

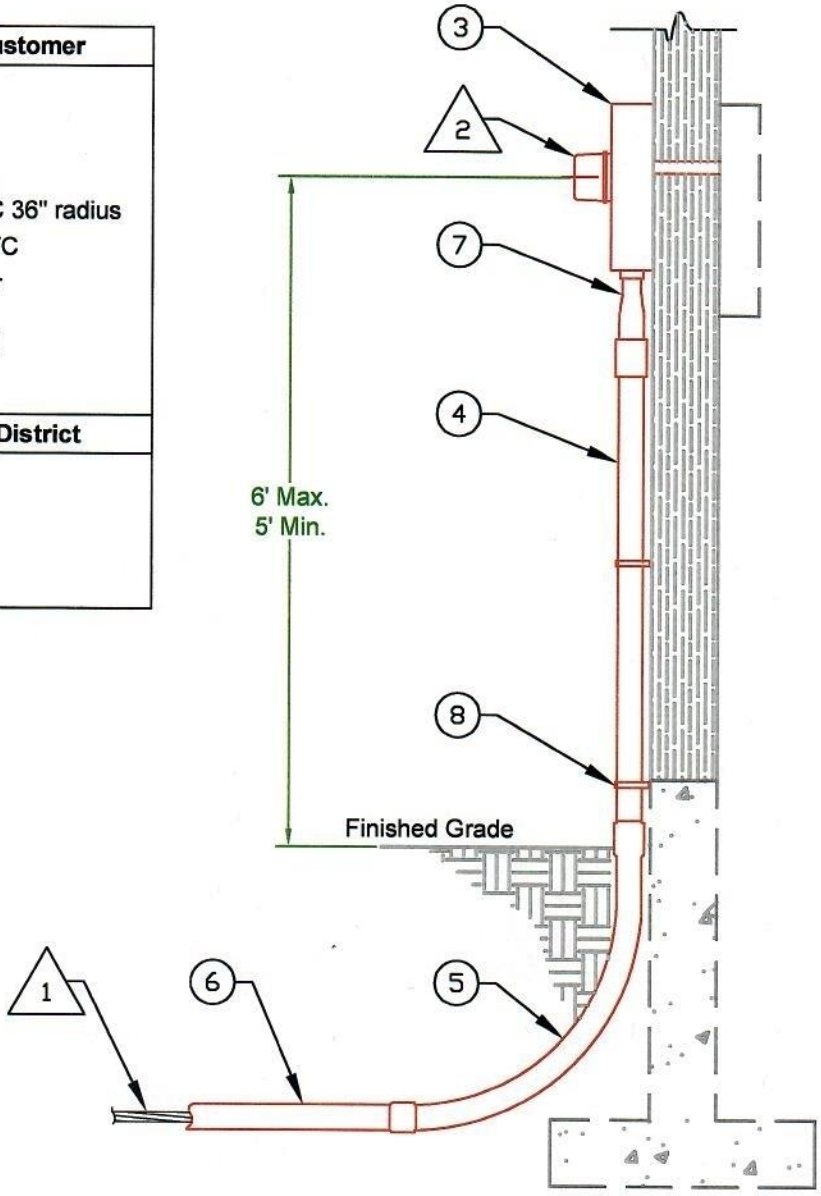
REV BY: TMG		SHT. 1 of 1
REV DATE: 8/19/2020		
REV NO: 2	DIR. ENG.	DATE: 9/21/20
DWG. NO. Q-3J		

UNDERGROUND SERVICES

BENTON PUD	TITLE: UNDERGROUND SERVICES Q-4 Series	REV BY: JWV	SHT. 1 of 1
		REV DATE: 10/01/13	
		REV NO: 1	DIR. ENG. DATE: 1/14
DRAWN BY: JAD		DWG. NO. Q-4	
DRAW DATE: 03/05/04			

Provided And Installed By Customer	
Item No.	Description
③	Meter Base
④	3" Rigid PVC Conduit
⑤	Sweep 3" sch. 40 PVC 36" radius
⑥	Conduit-3" Sch. 40 PVC
⑦	3" to 2-1/2" adapter for 200A meter base only refer to Q-1E standard
⑧	Conduit Straps

Provided And Installed By District	
Item No.	Description
△1	Conductors
△2	Meter



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 condulet type fittings to be installed in conduit containing service conductors.

BENTON PUD

DRAWN BY: JAD

DRAW DATE: 03/22/01

TITLE:

Service Entrance
Surface Mounted Underground
400 Amp or Less

REV BY: TMG		SHT. 1 of 1	
REV DATE: 8/19/2020			
REV NO: 3	DIR. ENG.	DATE: 9/21/20	
DWG. NO. Q-4A			

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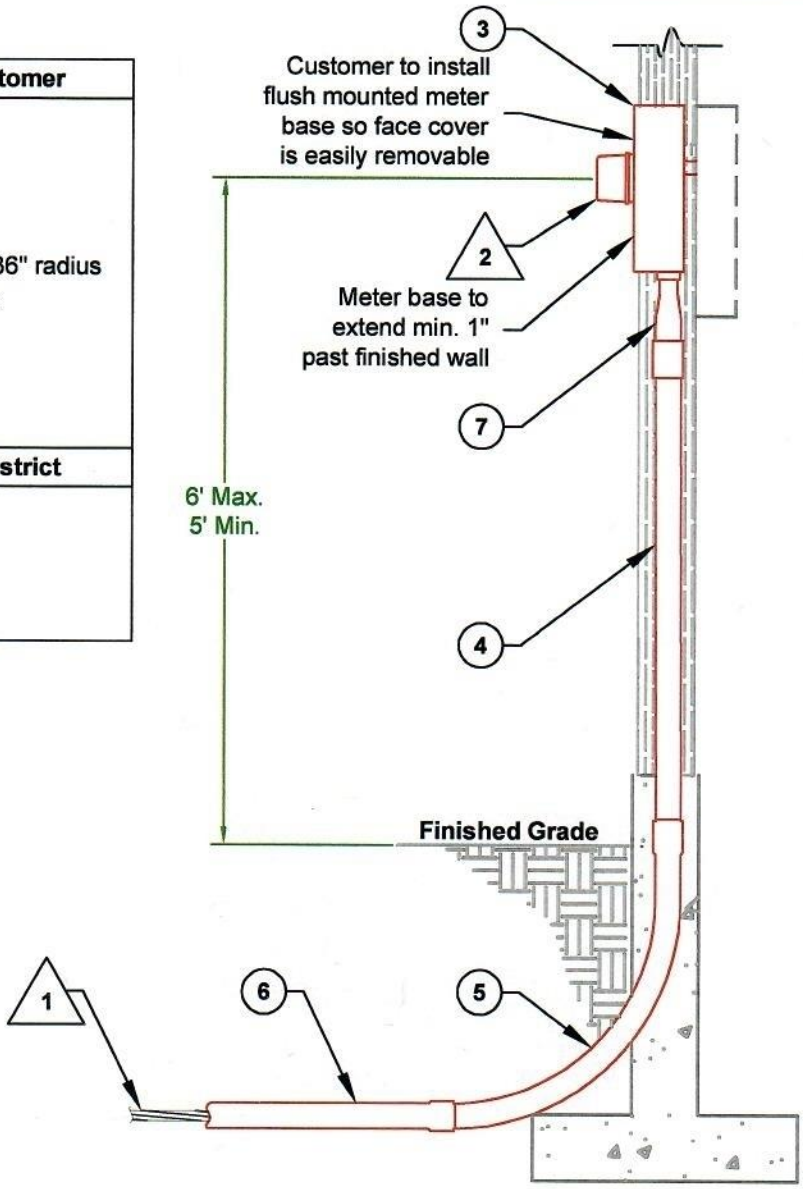
Provided And Installed By Customer	
Item No.	Description
3	Meter Base
4	3" Rigid PVC Conduit
5	Sweep 3" sch. 40 PVC 36" radius
6	Conduit-3" Sch. 40 PVC
7	3" to 2-1/2" adapter for 200A meter base only refer to Q-1E standard

Provided And Installed By District	
Item No.	Description
1	Conductors
2	Meter



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 condulet type fittings to be installed in conduit containing service conductors.

BENTON PUD

DRAWN BY: JAD

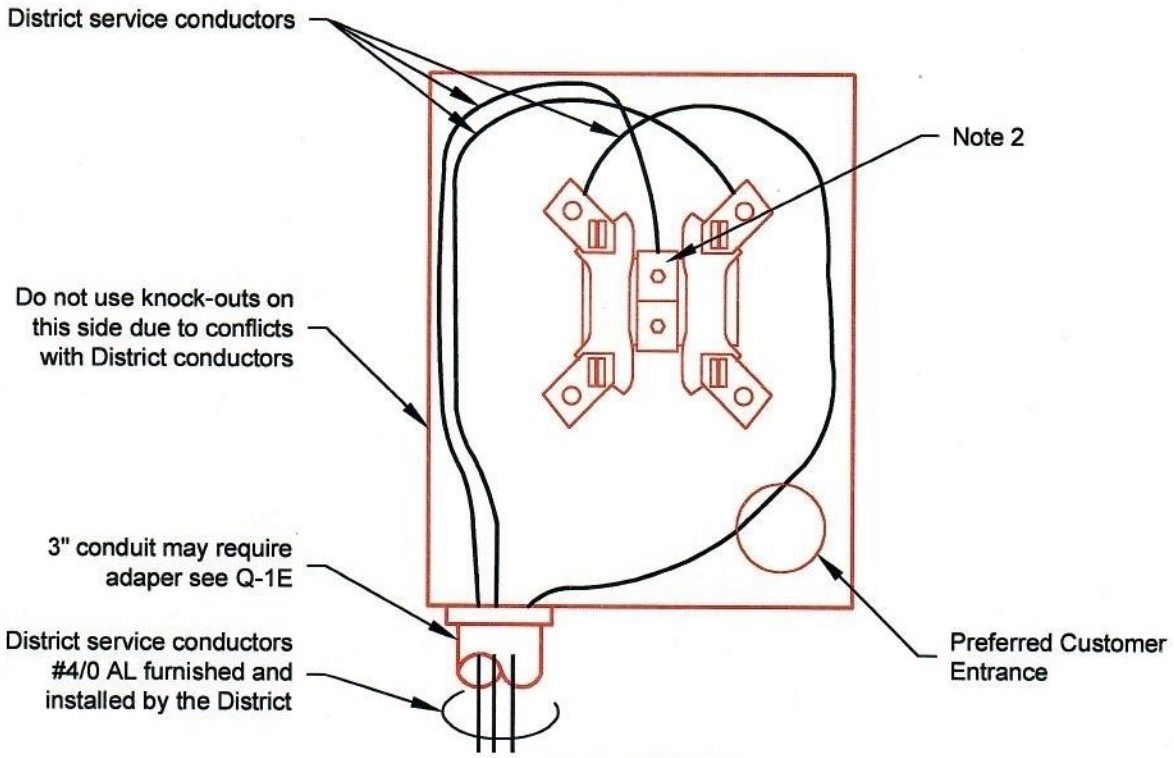
DRAW DATE: 03/22/01

TITLE:

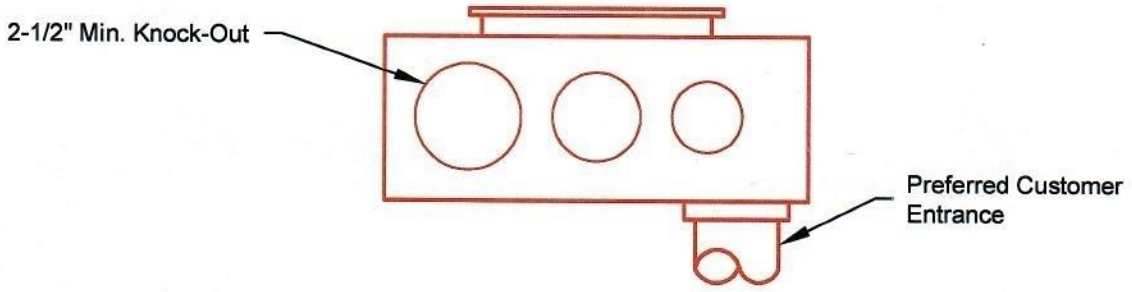
Service Entrance
Flush Mounted Underground
400 Amp or Less

REV BY: TMG		SHT. 1 of 1
REV DATE: 8/19/2020		
REV NO: 3	DIR. ENG. JA	DATE 9/21/20
DWG. NO.		

Q-4B



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 will not be approved by the District.
5. No condulet 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.

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BENTON PUD

DRAWN BY: JAD

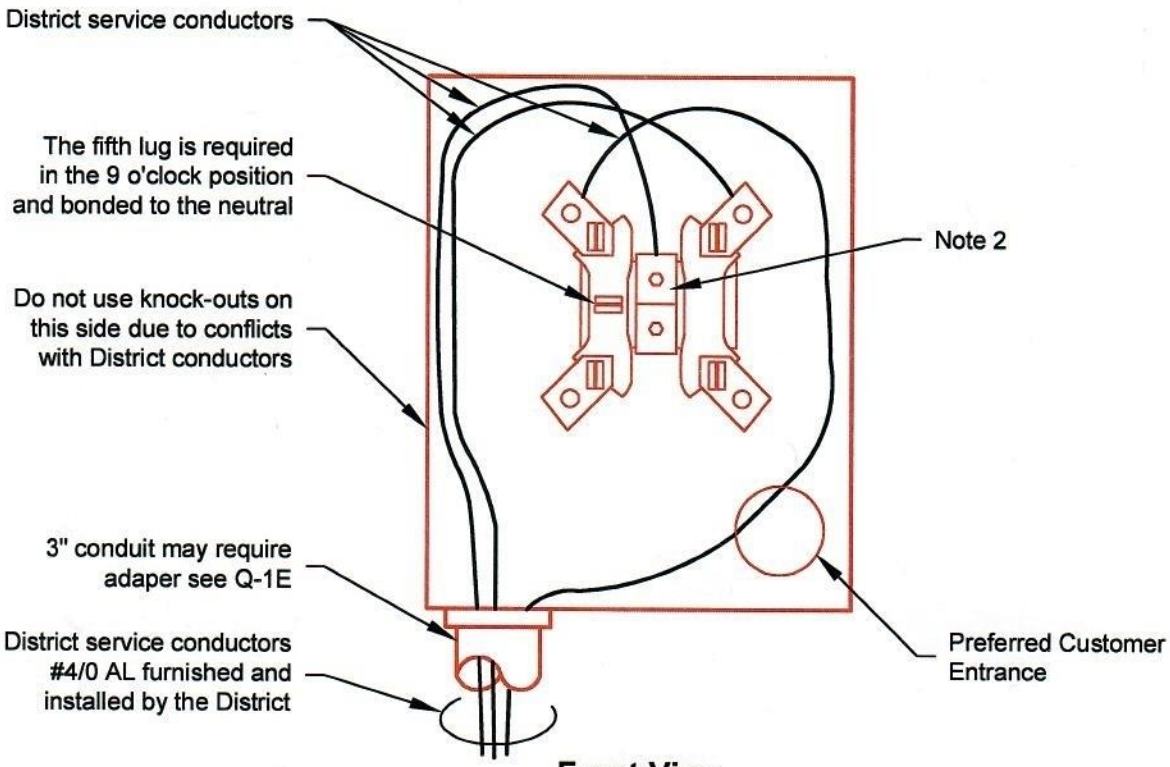
DRAW DATE: 07/10/03

TITLE:

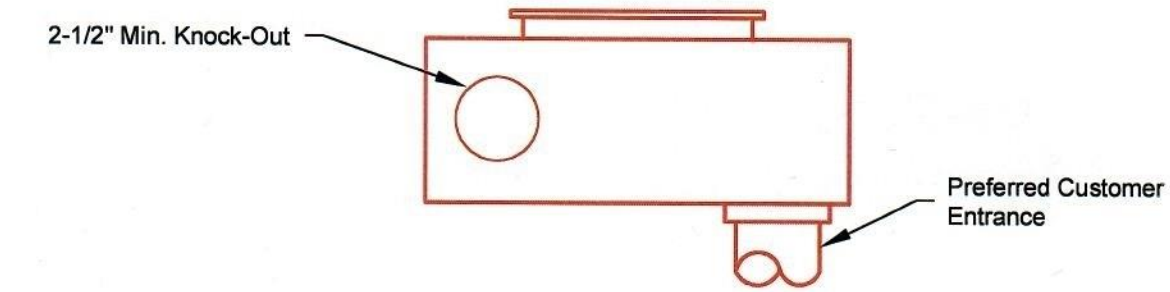
Underground Feed
200 Amp Meter Base
Single Phase 120/240 Volt
Residential

REV BY: TMG		SHT. 1 of 1
REV DATE: 8/19/2020		
REV NO: 2	DIR. ENG.	DATE: 9/1/20
DWG. NO.		

Q-4C



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 will not be approved by the District.
5. No condulet 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.

BENTON PUD

DRAWN BY: JAD

DRAW DATE: 02/26/01

TITLE:

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

REV BY: TMG

REV DATE: 8/19/2020

REV NO: 2

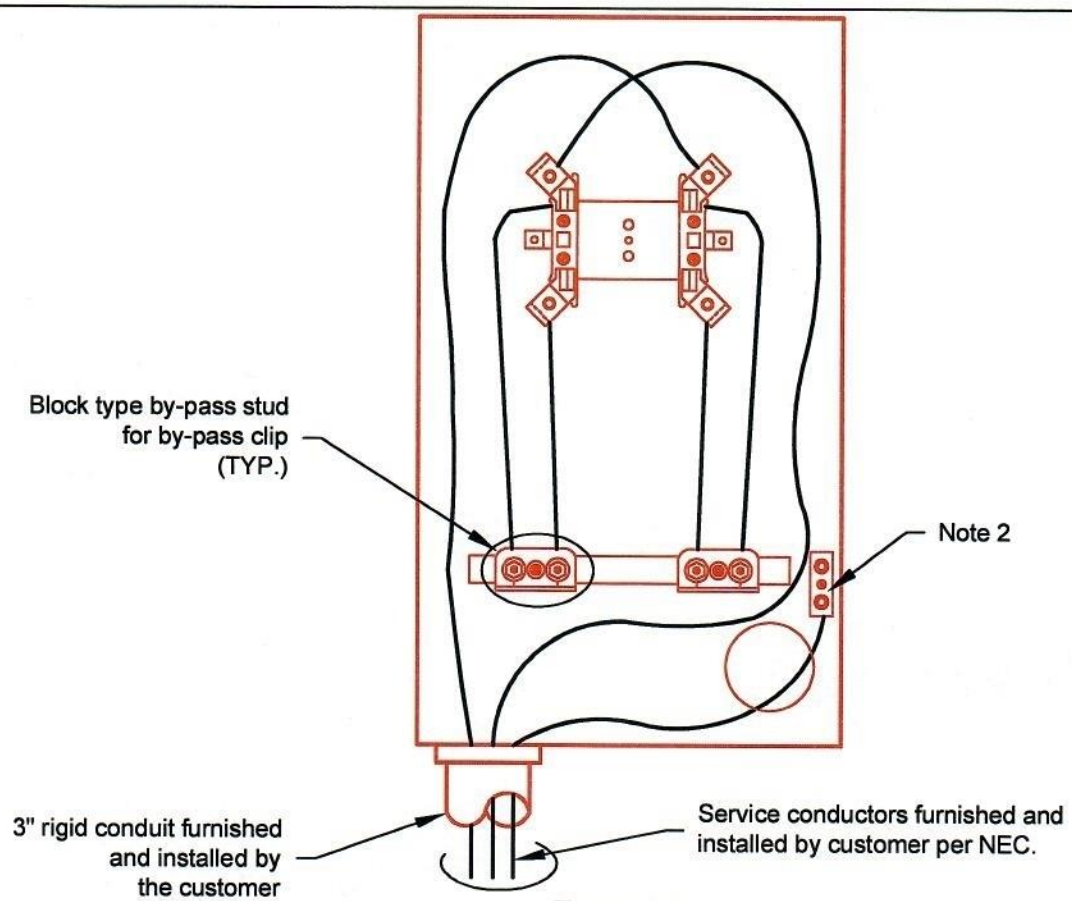
DIR. ENG.

DATE: 9/1/20

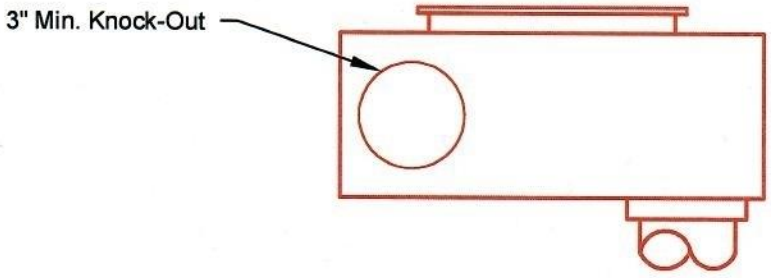
SHT. 1 of 1

DWG. NO.

Q-4D



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 condulet type fittings to be installed in conduit containing service conductors.
6. Manual block type by-pass is required for 200A non-residential services.
7. All self-contained services, 200A and below, must use meter sockets rated for 200A continuous duty.

BENTON PUD

DRAWN BY: JAD

DRAW DATE: 02/26/01

TITLE:

Underground Feed
200 Amp Meter Base
Single Phase, 120/240 Volt
Non- Residential

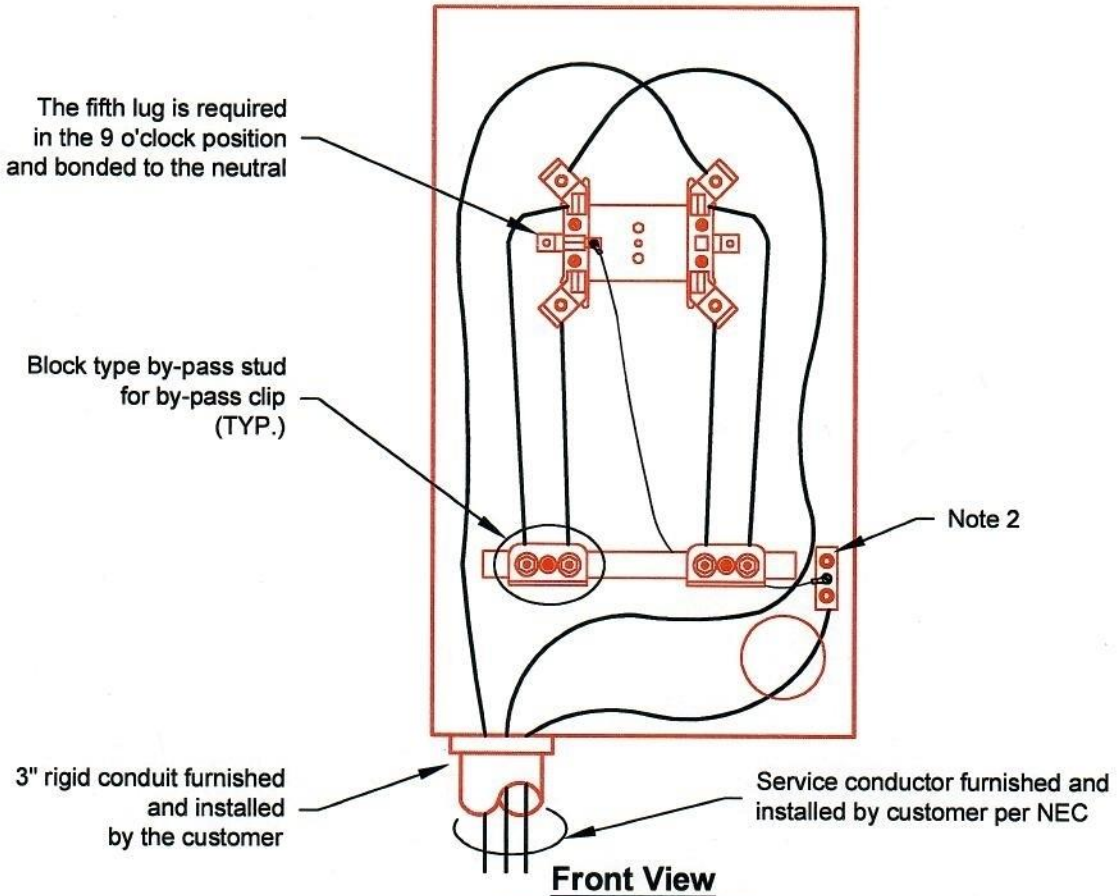
REV BY: TMG | SHT. 1 of 1

REV DATE: 8/19/2020

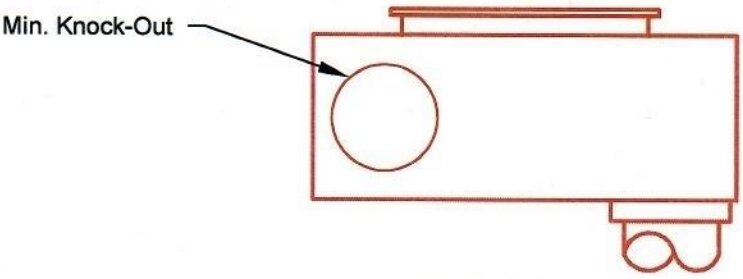
REV NO: 2 | DIR. ENG. | DATE: 9/2/20

DWG. NO.

Q-4E



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 condulet type fittings to be installed in conduit containing service conductors.
6. Manual block type by-pass is required for 200A non-residential services.
7. All self-contained services, 200A and below, must use meter sockets rated for 200A continuous duty.

BENTON PUD

DRAWN BY: JAD

DRAW DATE: 02/26/01

TITLE:

Underground Feed
200 Amp Meter Base
Network, 120/208 Volt
Non - Residential

REV BY: TMG		SHT. 1 of 1
REV DATE: 8/19/2020		
REV NO: 2	DIR. ENG.	DATE: 9/21/20
DWG. NO.		

Q-4F

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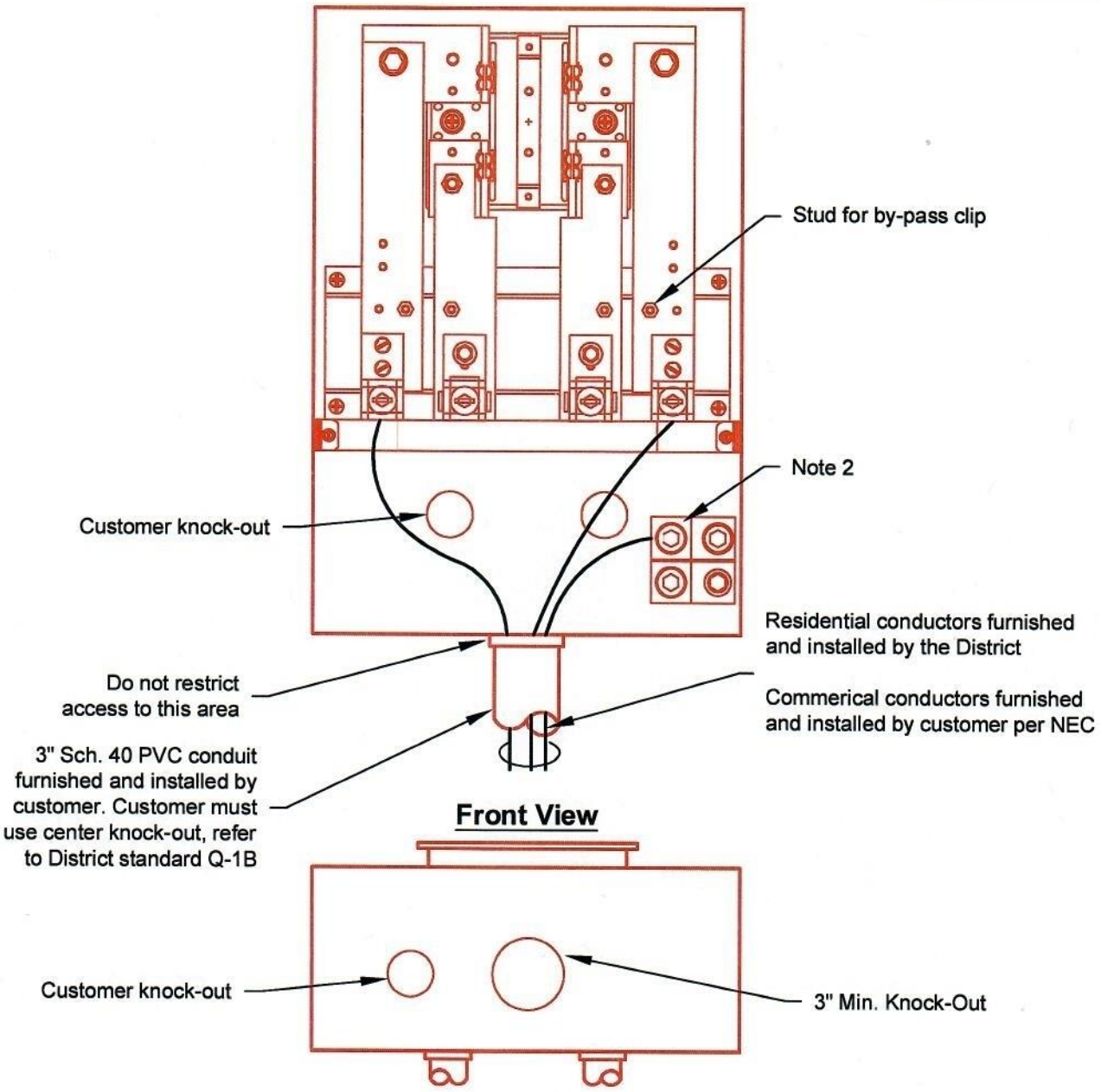


Notes:

1. Details shown are minimum District standards and are not intended to depict Washington State Labor and Industries requirements.
2. 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 condulet type fittings to be installed in conduit containing service conductors.
7. Manual block type by-pass is required for 320A services.

BENTON PUD

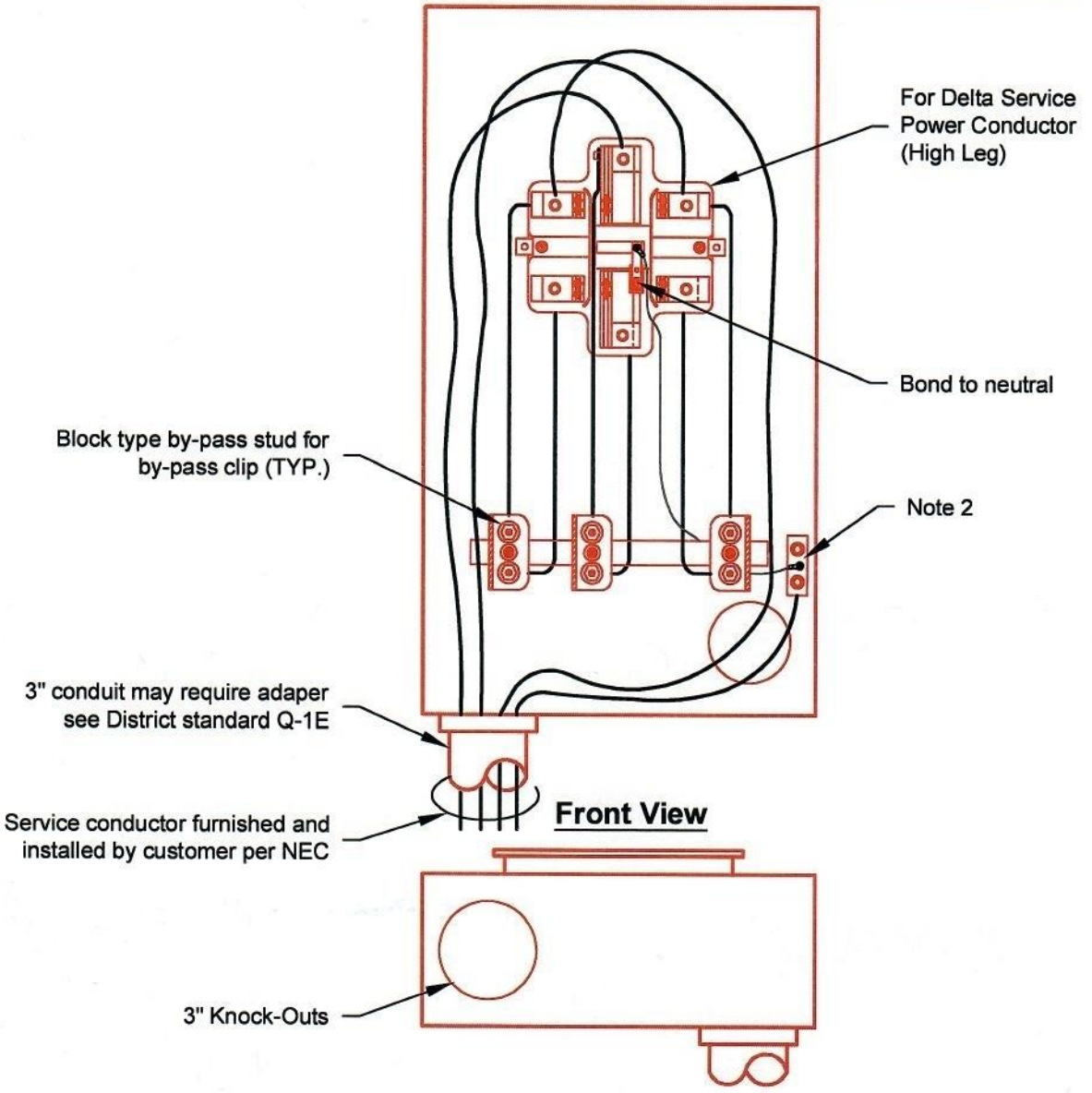
DRAWN BY: JAD

DRAW DATE: 04/10/01

TITLE:

Underground Feed
320 Amp Meter Base
Single Phase, 120/240 Volt
Residential or Commercial

REV BY: TMG		SHT. 1 of 1
REV DATE: 8/19/2020		
REV NO: 2	DIR. ENG.	DATE: 9/1/20
DWG. NO. Q-4G		



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 condulet type fittings to be installed in conduit containing service conductors.
6. Manual block type by-pass is required for 200A non-residential services.
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).

BENTON PUD

DRAWN BY: JAD

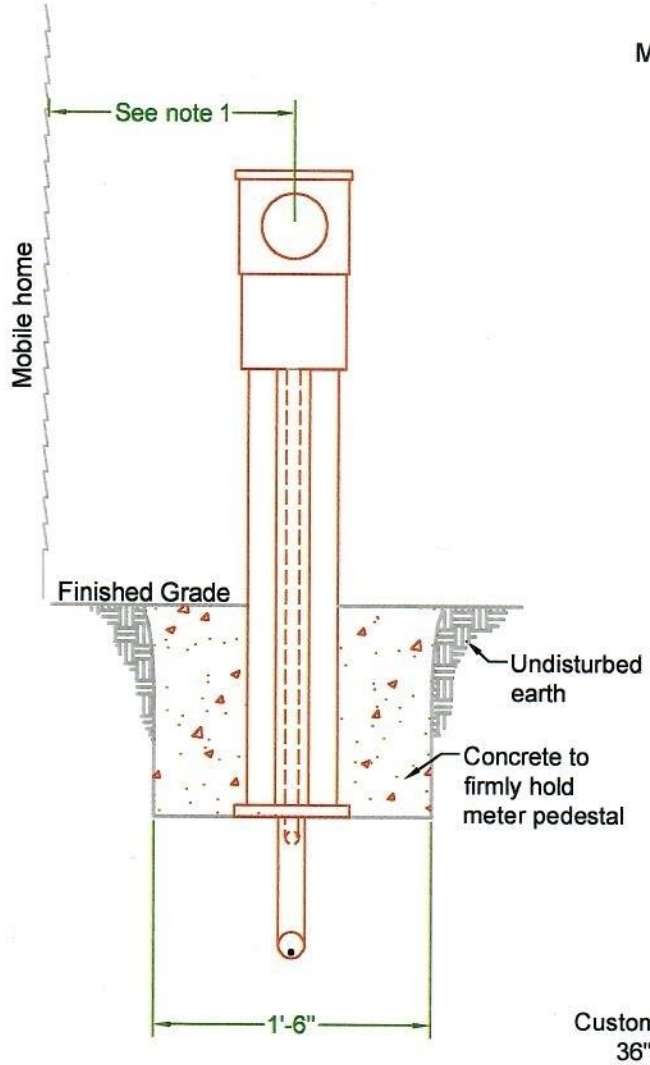
DRAW DATE: 02/26/01

TITLE:

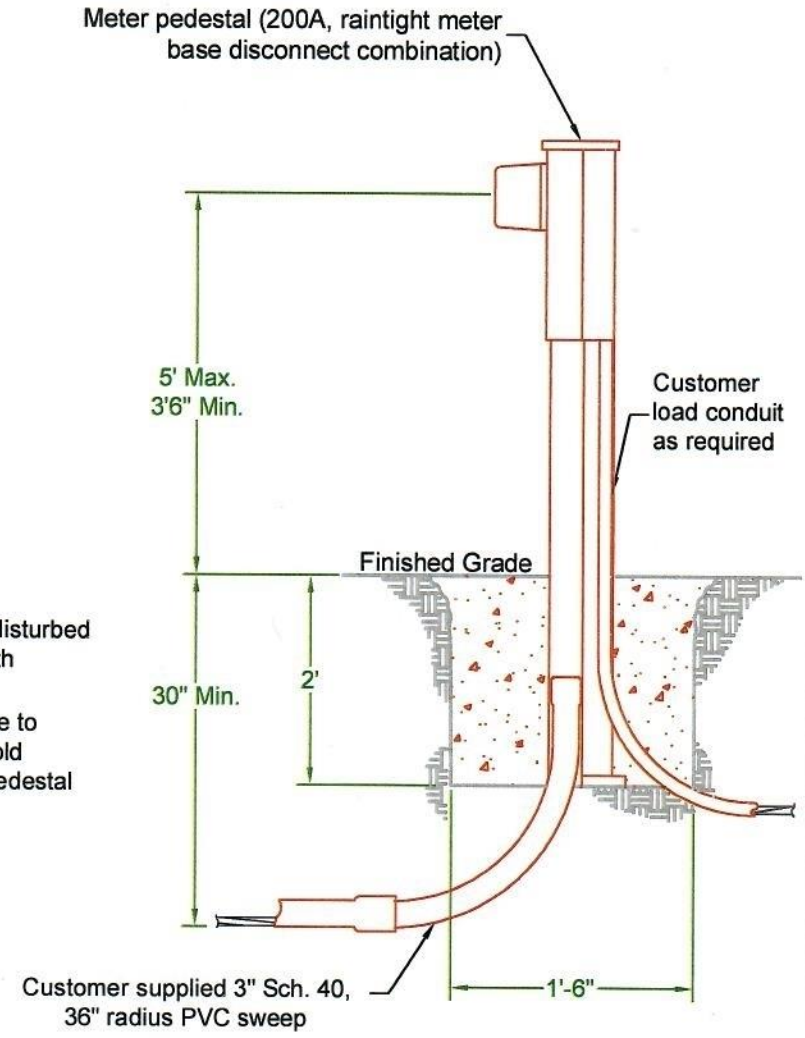
Underground Feed
200 Amp Meter Base
Three Phase
Non - Residential

REV BY: TMG		SHT. 1 of 1
REV DATE: 8/29/2020		
REV NO: 2	DIR. ENG.	DATE: 9/21/20
DWG. NO.		

Q-4H



Front View



Side View

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 condulet 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.

BENTON PUD

DRAWN BY: JAD

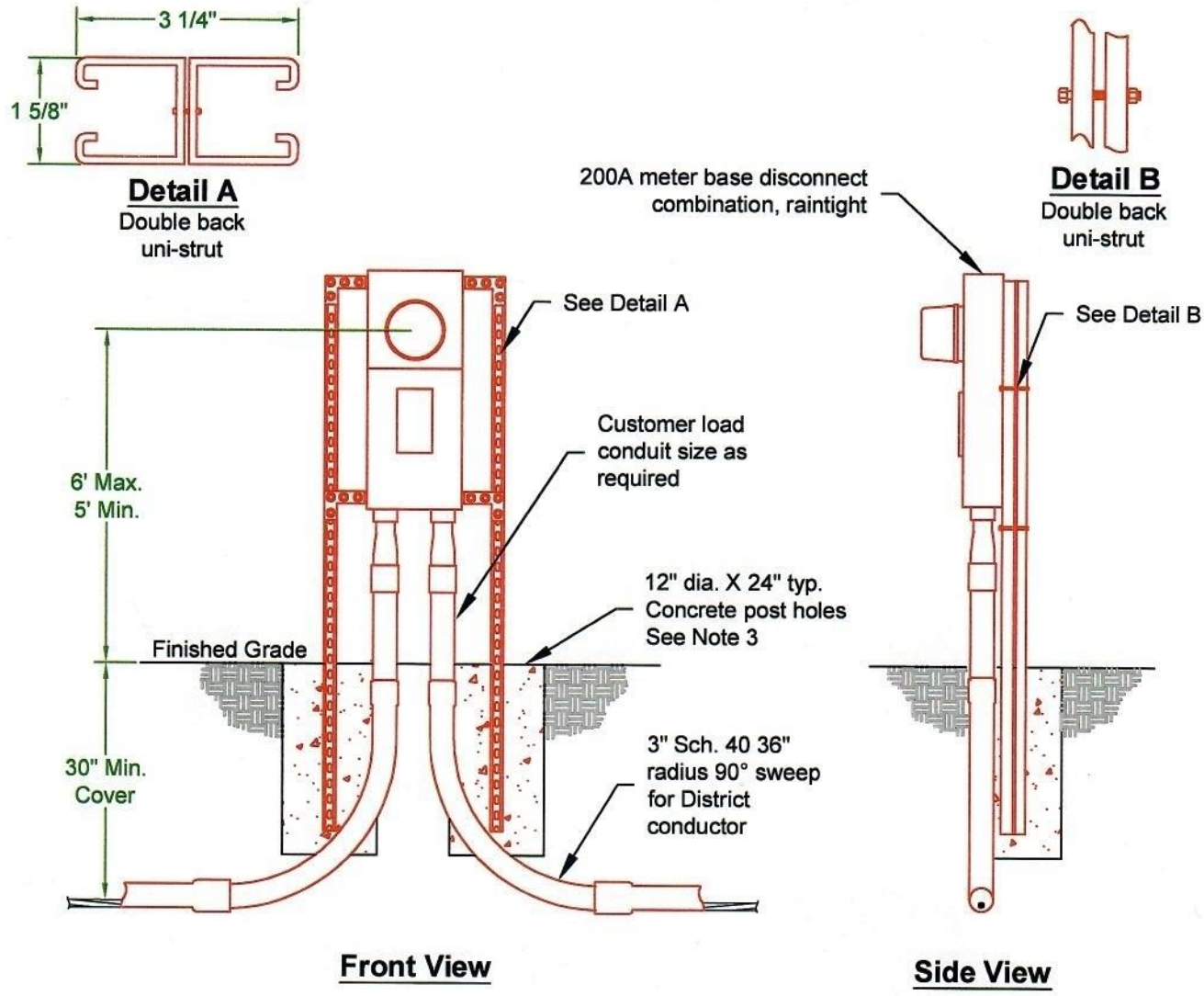
DRAW DATE: 03/27/01

TITLE:

Underground Service 200 Amp Metered Pedestal

REV BY: TMG		SHT. 1 of 1
REV DATE: 8/29/2020		
REV NO: 1	DIR. ENG. JAS	DATE: 9/21/20
DWG. NO.		

Q-4J



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 condulet 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.

BENTON PUD

DRAWN BY: SWT

DRAW DATE: 03/27/01

TITLE:

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

REV BY: TMG		SHT. 1 of 1
REV DATE: 8/19/2020		
REV NO: 3	DIR. ENG.	DATE: 9/21/20
DWG. NO. Q-4K		

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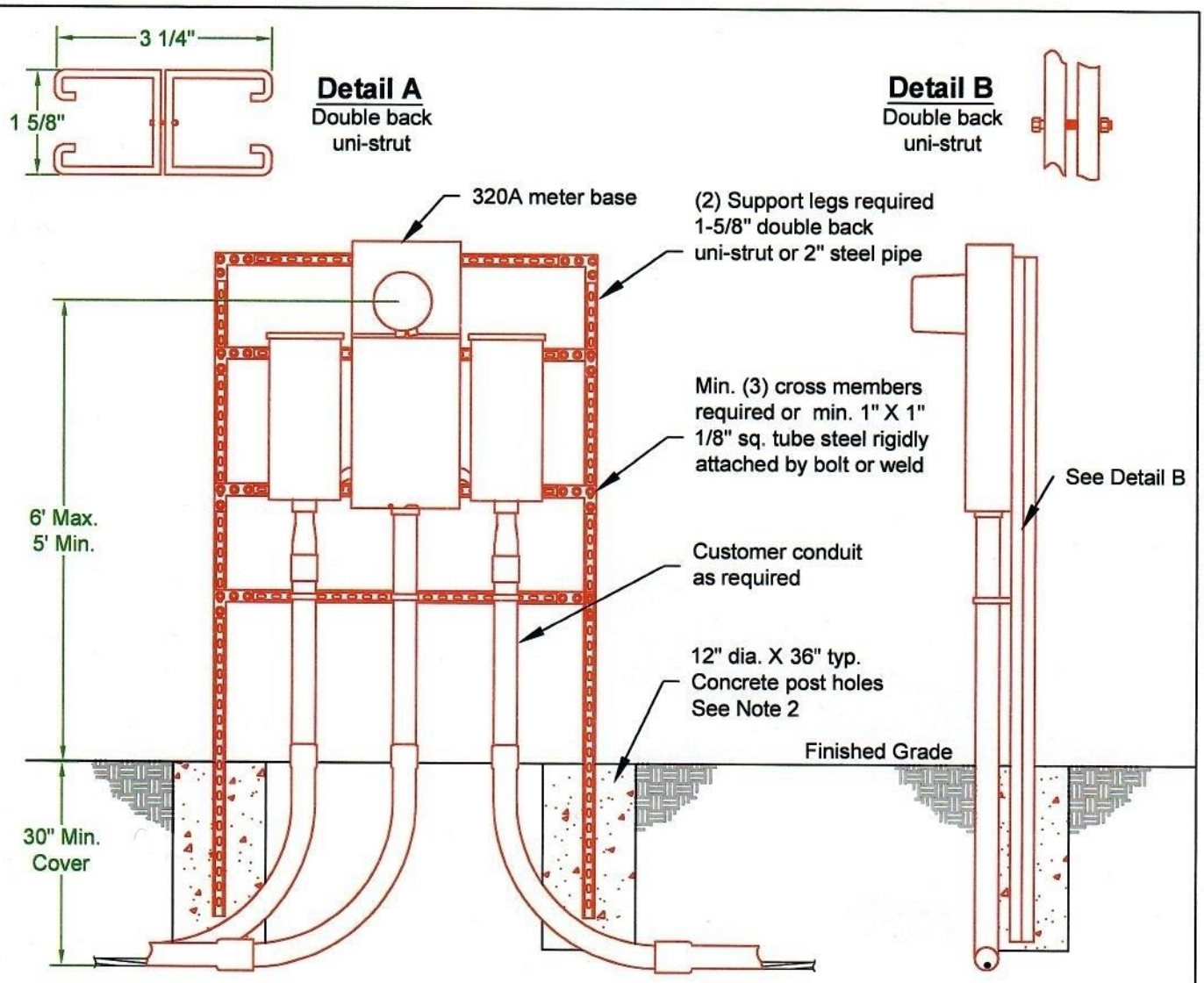


Notes:

1. Details shown are minimum District standards and are not intended to depict Washington State Labor and Industries requirements.
2. 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 condulet type fittings to be installed in conduit containing service conductors.

BENTON PUD

DRAWN BY: DDB

DRAW DATE: 06/04/10

TITLE:

320 Amp Component
Meter Pedestal
(Mounted on Uni-Strut)

REV BY: TMG		SHT. 1 of 1
REV DATE: 8/29/2020		
REV NO: 2	DIR. ENG.	DATE 9/21/20
DWG. NO. Q-4L		

Q-3D

Overhead Feed 200A Single Phase, 120/240V (Residential)
B-Line 2M2R (OH) B-Line 204 MS68 (OH) Milbank U4517-DL-M4 (OH) Milbank U4518-XL-W (OH/UG) Milbank U5169-XTL-200 (OH/UG)

Q-3E

Overhead Feed 200A Network, 120/208V (Residential)
B-Line 204 MS68 w/50365 (5th Jaw Kit) (OH) Milbank U4517-DL-M4 w/K5T (5th Jaw Kit) (OH) Milbank U4518-XL-W w/K5T (5th Jaw Kit) (OH/UG)

Q-3F

Overhead Feed 200A Single Phase, 120/240V (Non-Residential)
B-Line U264 (OH/UG) Milbank U3514-XL (OH/UG)

Q-3G

Overhead Feed 200A Network, 120/208V (Non-Residential)
B-Line U264 w/50365 (5th Jaw Kit) (OH/UG) Milbank U3514-XL w/K5T (5th Jaw Kit) (OH/UG)

Q-3H

Overhead Feed 320A Single Phase, 120/240V (Residential/Commercial)
B-Line 324N (OH/UG) Milbank X3548-X (OH/UG) Siemens MM0404L1400SCS (OH/UG)

Q-3J

Overhead Feed 200A Three Phase (Non-Residential)
B-Line U267 (OH/UG) Milbank U3517-XL (OH/UG)

Q-4C

Underground Feed 200A Single Phase, 120/240V (Residential)
B-Line U2M2R (UG) B-Line U204 (UG) Milbank U4518-O-W (UG) Milbank U4518-XL-W (OH/UG) Milbank U5169-XTL-200 (OH/UG)

Q-4D

Underground Feed 200A Network, 120/208V (Residential)
B-Line U204 w/50365 (5th Jaw Kit) (UG) Milbank U4518-O-W w/K5T (5th Jaw Kit) (UG) Milbank U4518-XL-W w/K5T (5th Jaw Kit) (OH/UG)

Q-4E

Underground Feed 200A Single Phase, 120/240V (Non-Residential)
B-Line U264 (OH/UG) Milbank U3514-XL (OH/UG)

Q-4F

Underground Feed 200A Network, 120/208V (Non-Residential)
B-Line U264 w/50365 (5th Jaw Kit) (OH/UG) Milbank U3514-XL w/K5T (5th Jaw Kit) (OH/UG)

Q-4G

Underground Feed 320A Single Phase, 120/240V (Residential/Commercial)
B-Line 324N (OH/UG), B-Line U4042MCC (UG) Milbank U3548-X (OH/UG) Milbank U3251-O-200-CB (UG) Siemens MM0404L1400SCS (OH/UG)

Q-4H

Underground Feed 200A Three Phase (Non-Residential)
B-Line U267 (OH/UG) Milbank 3517-XL (OH/UG)

Notes:

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

BENTON PUD

DRAWN BY: JWV

DRAW DATE: 10/01/13

TITLE:

Pre-Approved
Meter Bases

REV BY: TMG

REV DATE: 10/30/2020

REV NO: 3

DIR. ENG.

DATE: 11/2/20

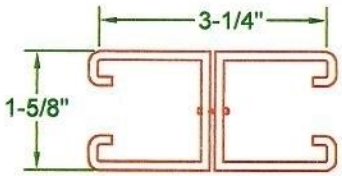
SHT. 1 of 1

DWG. NO.

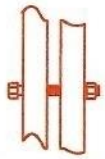
Q-4M

CURRENT TRANSFORMERS

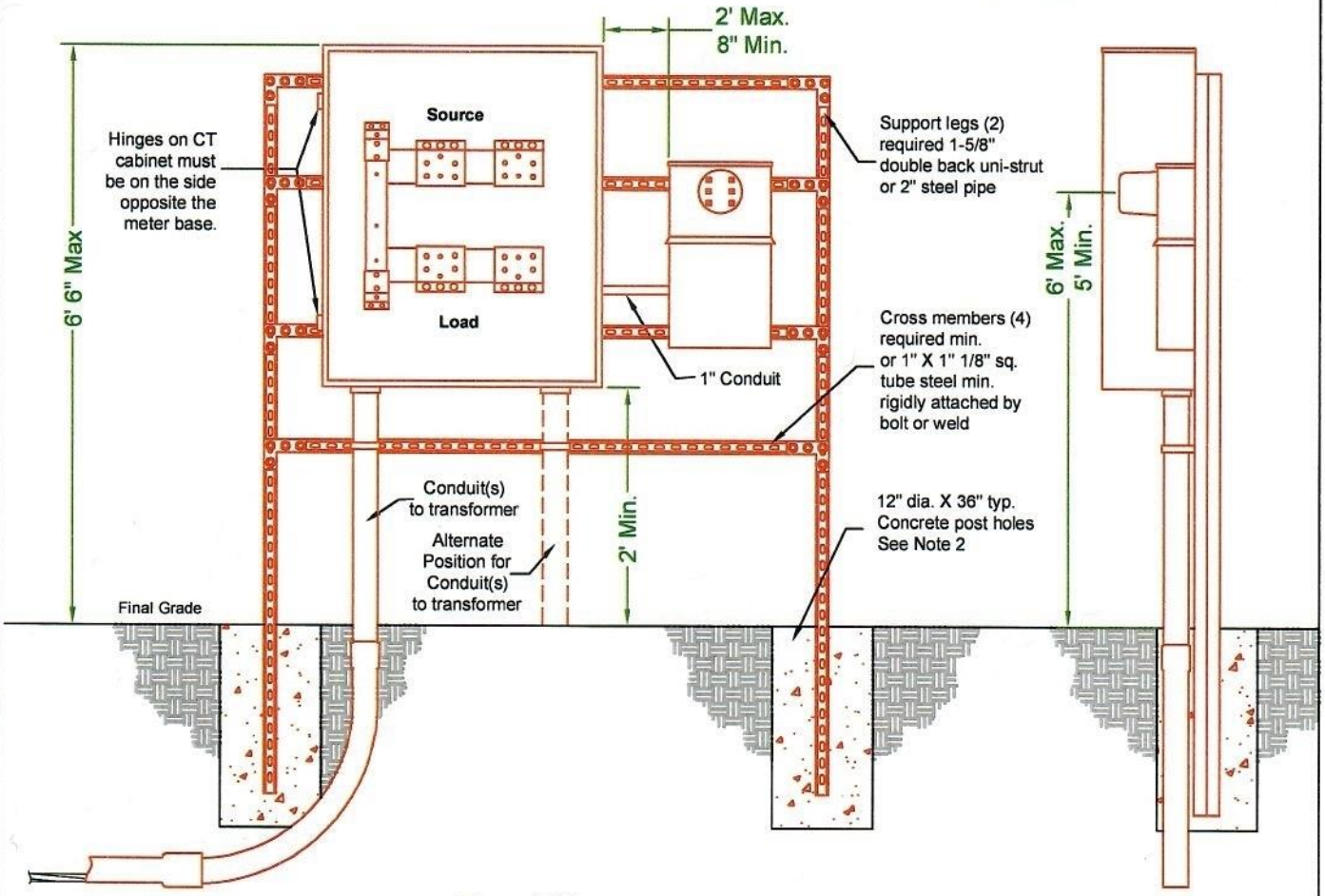
BENTON PUD	TITLE: CURRENT TRANSFORMERS Q-5 Series	REV BY: JWV	SHT. 1 of 1
		REV DATE: 10/01/13	
		REV NO: 1 DIR. ENG. DATE: 1/14	
DRAWN BY: JAD		DWG. NO. Q-5	
DRAW DATE: 03/05/04			



Detail A
Double back uni-strut



Detail B
Double back uni-strut



Front View

Side View

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 condulet type fittings to be installed in conduit containing service conductors.

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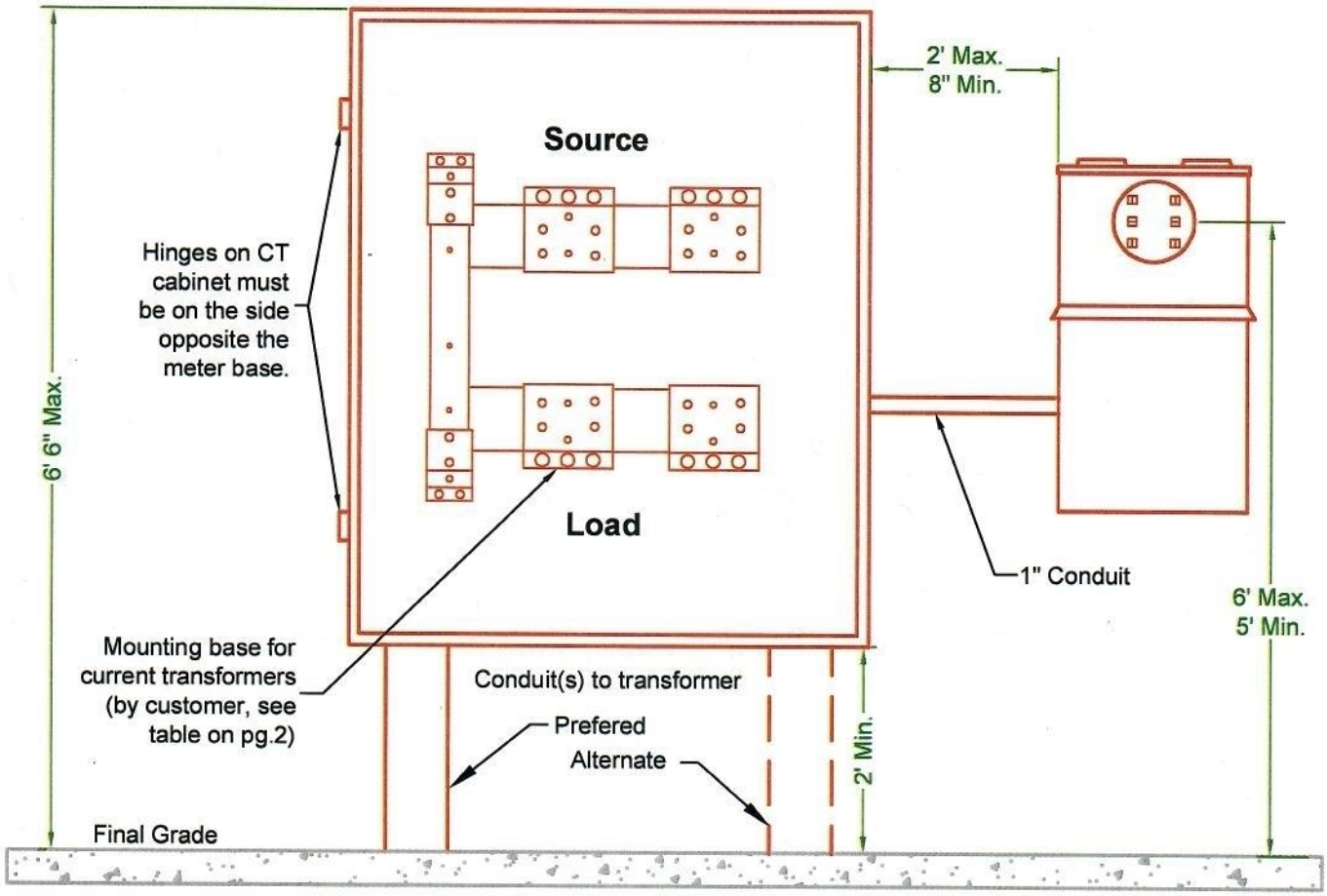
BENTON PUD

DRAWN BY: TKS
DRAW DATE: 8/20/2020

TITLE:

Current Transformer Enclosure (Mounted on Uni-Strut)

REV BY: TMG	SHT. 1 of 1
REV DATE: 8/29/2020	
REV NO: 0	DIR. ENG. DATE 9/21/20
DWG. NO.	Q-5A



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BENTON PUD

DRAWN BY: JAD

DRAW DATE: 03/07/01

TITLE:

Current Transformer (CT) Enclosure Requirements for Single Phase Services 400-800 Amps

REV BY: TMG		SHT. 1 of 2
REV DATE: 8/29/2020		
REV NO: 2	DIR. ENG.	DATE: 9/21/20
DWG. NO.		

Q-5B

Pre-Approved Single Phase Current Transformer Enclosure & Mounting Bases									
CT Service Type		Cabinet Dimensions			CT Cabinets		CT Mounting Bases		
Service Size	Number of Load Conductors	Width	Height	Depth	Cooper B-Line Part #	Milbank Part #	Cooper B-Line Part #	Milbank Part #	EUSERC Drawing #
400A	1-2	24" min	48"	11"	244811 HRTCT or 304811 HRTCT	CT244811HC or CT304811HC	6019HA or 6019HAL	K4797 or K4903	328A or 328B
400-800A	1-4	36"	48"	11"	364811 HRTCT	CT364811HC	6019HE or 6019HEL	K4797 or K4729	

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.

BENTON PUD

DRAWN BY: JAD

DRAW DATE: 03/07/01

TITLE: Current Transformer (CT) Enclosure Requirement for Single Phase Services 201-800 Amps (Cont.)

REV BY: TMG

REV DATE: 8/21/2020

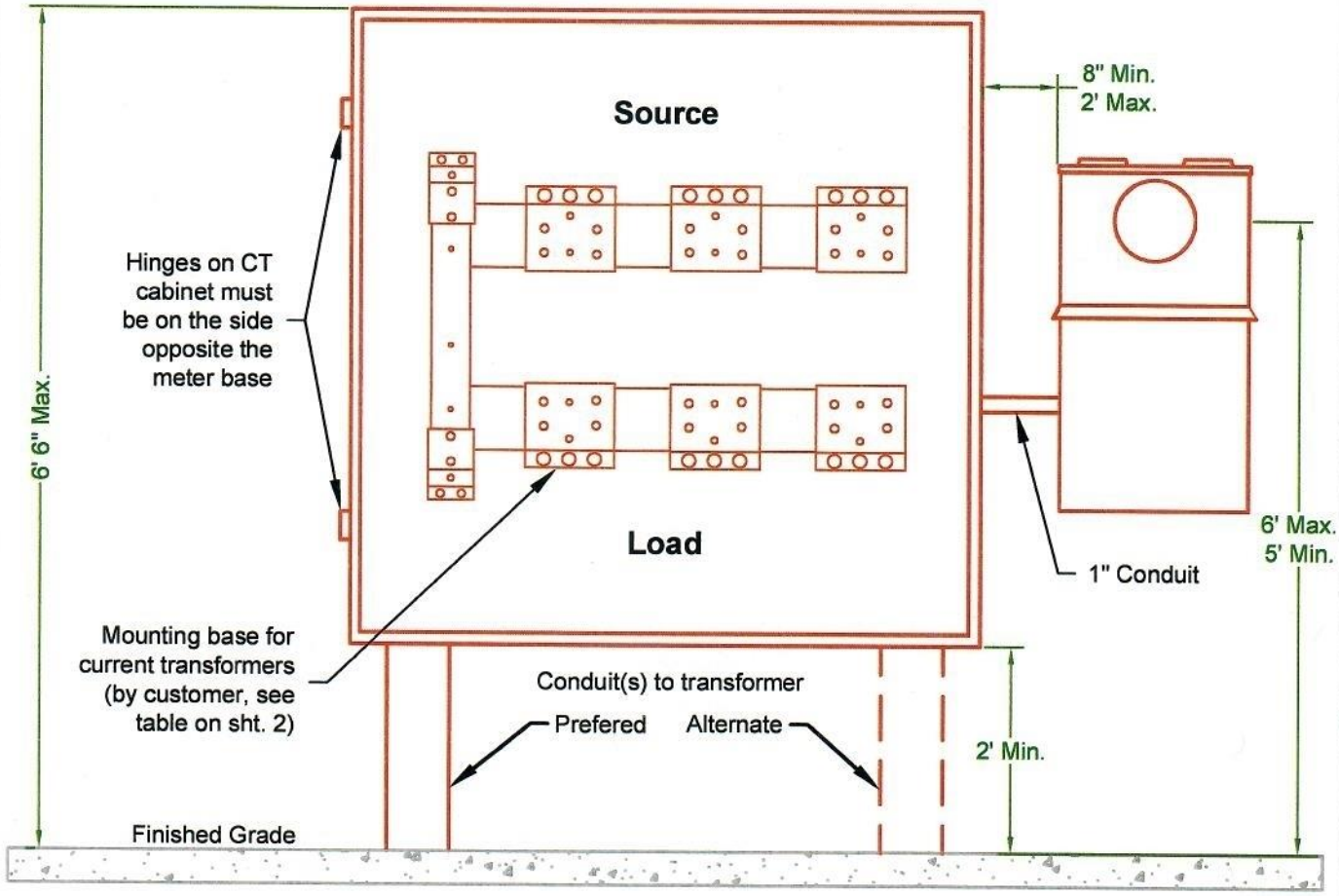
REV NO: 2

DIR. ENG.

DATE: 9/21/20

SHT. 2 of 2

DWG. NO. **Q-5B (Cont.)**



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BENTON PUD

DRAWN BY: JAD

DRAW DATE: 03/26/10

TITLE:

Current Transformer (CT) Enclosure Requirements for Three Phase Services 400-800 Amps

REV BY: TMG		SHT. 1 of 2
REV DATE: 8/29/2020		
REV NO: 3	DIR. ENG. JAS	DATE: 9/21/20
DWG. NO.		

Q-5E

Pre-Approved Three Phase Current Transformer Cabinet & Mounting Bases									
CT Service Type		Cabinet Dimensions			CT Cabinets		CT Mounting Bases		
Service Size	Number of Load Conductors	Width	Height	Depth	Cooper B-Line Part #	Milbank Part #	Cooper B-Line Part #	Milbank Part #	EUSERC Drawing #
400A	1-2	30"	48"	11"	304811HRTCT	CT304811-HC	6067HA or 6067HAL	K4798 or K4904	329A or 329B
400-800A	1-4	36"	48"	11"	364811HRTCT	CT364811-HC	6067HEE or 6067HEEL	K4798 or K4722	

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 (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. 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.

BENTON PUD

DRAWN BY: JAD

DRAW DATE: 03/26/10

TITLE: Current Transformer (CT) Enclosure Requirement fror Three Phase Services 400- 800 Amps

REV BY: TMG

REV DATE: 8/29/2020

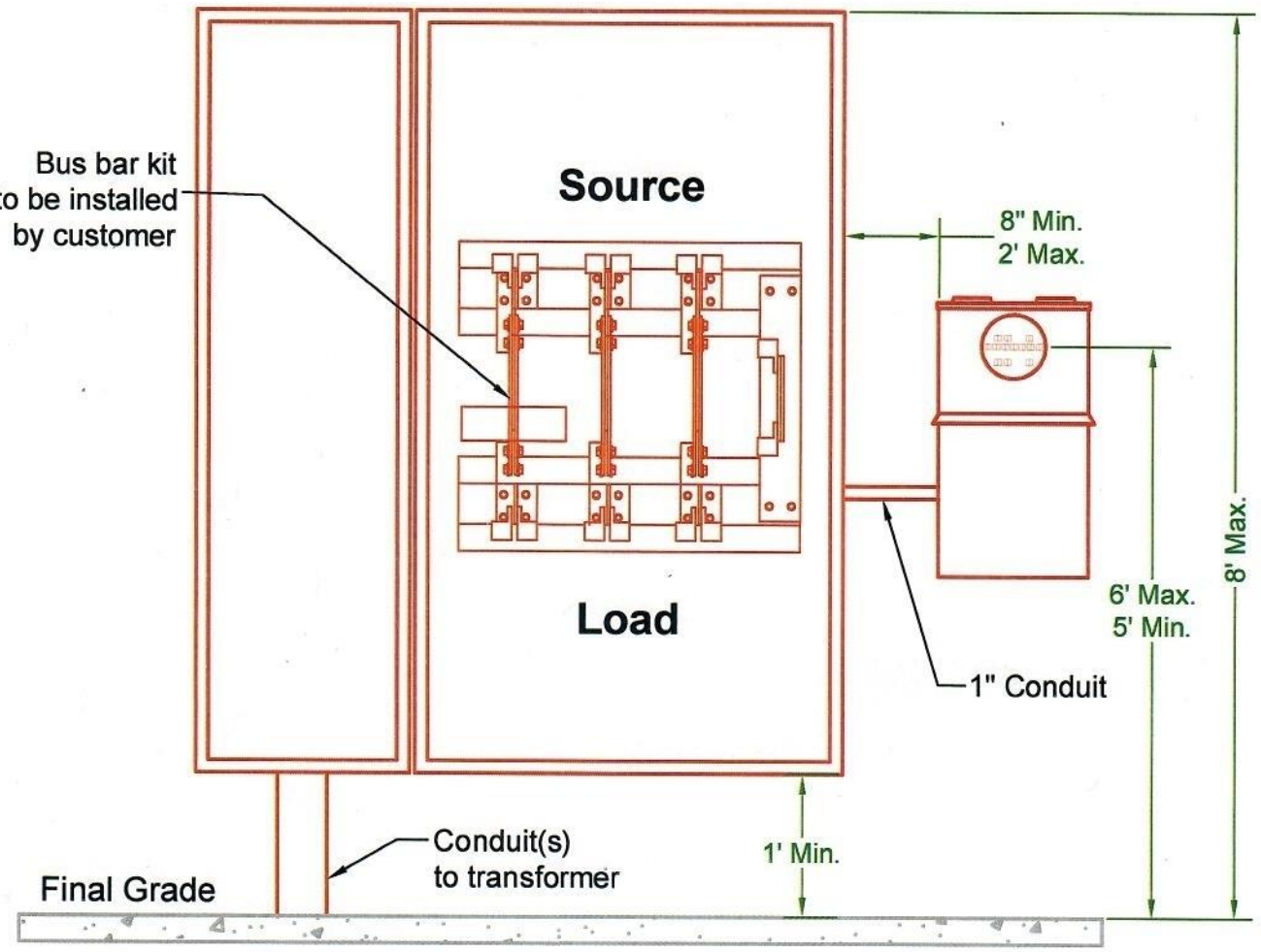
REV NO: 3

DIR. ENG.

DATE: 9/21/20

SHT. 2 of 2

DWG. NO. **Q-5E (Cont.)**



BENTON PUD

DRAWN BY: SWT

DRAW DATE: 05/12/10

TITLE:

Current Transformer (CT) Enclosure Requirements for Commercial Three Phase Services 1200-2500 Amps

REV BY: TMG		SHT. 1 of 2
REV DATE: 8/21/2020		
REV NO: 2	DIR. ENG.	DATE 9/21/20
DWG. NO. Q-5F		

Pre -Approved Three Phase Current Transformer Enclosure & Mounting Bases						
CT Service Type		Cabinet Dimensions			CT Cabinets with Mounting Bases	
Service Size	Number of Load Conductors	Width	Height	Depth	Erickson Bulletin Numbers	Erickson Catalog Numbers
1200A	3	55"*	64"	15"	BPCT-07A	CT-124-BP-SG
1600A	4	61"*	64"	15"	BPCT-07A	CT-164-BP-SG
2000A	5	65"*	64"	15"	BPCT-07A	CT-204-BP-SG**
2500A	7	65"*	64"	15"	BPCT-07A	CT-254-BP-SG**

* 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 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.

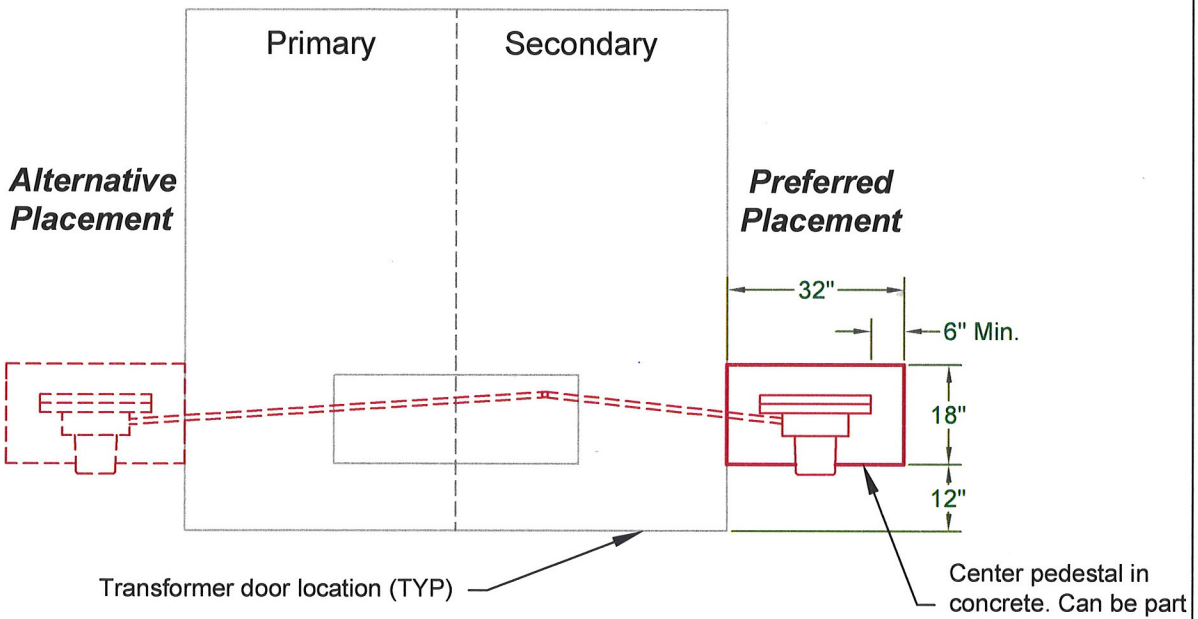
BENTON PUD

DRAWN BY: SWT
DRAW DATE: 05/12/10

TITLE: Current Transformer (CT) Enclosure Requirements for Commercial Three Phase Services 1200-2500 Amps

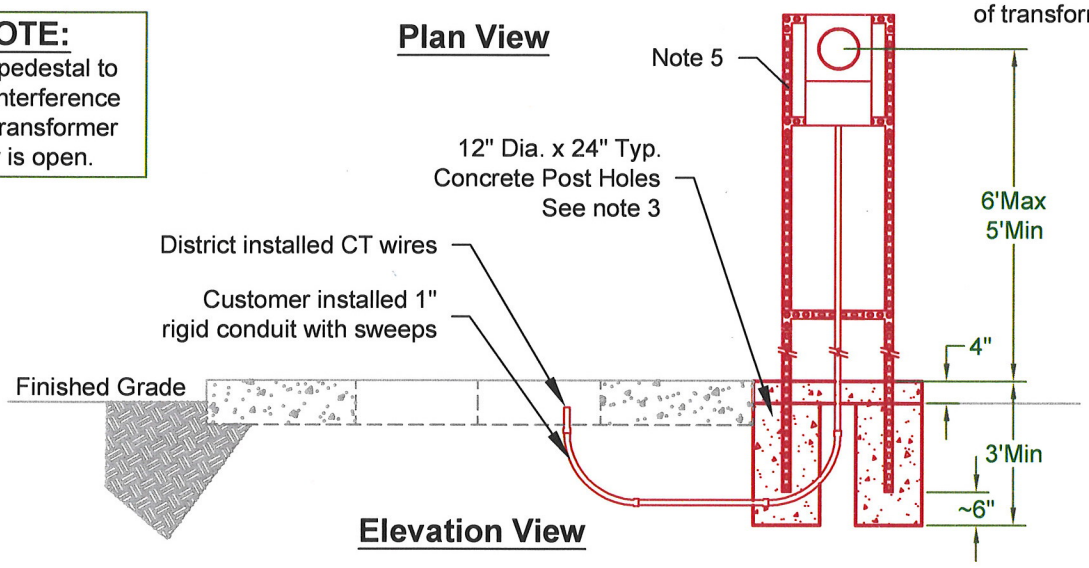
REV BY: TMG
REV DATE: 8/21/2020
REV NO: 2
DIR. ENG. [signature] DATE: 9/21/20
SHT. 2 of 2
DWG. NO. Q-5F

Transformer Pad



NOTE:
Install pedestal to avoid interference when transformer door is open.

Plan View



Elevation View

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 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 condulet 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

BENTON PUD

DRAWN BY: JAD

DRAW DATE: 03/27/01

TITLE: Self Supported CT Meter Pedestal with CT's Installed in Secondary Compartment of District Transformer

REV BY: ECE		SHT. 1 of 1
REV DATE: 2/15/23		
REV NO: 4	DIR. ENG.	DATE: 4-27-23
DWG. NO. Q-5G		

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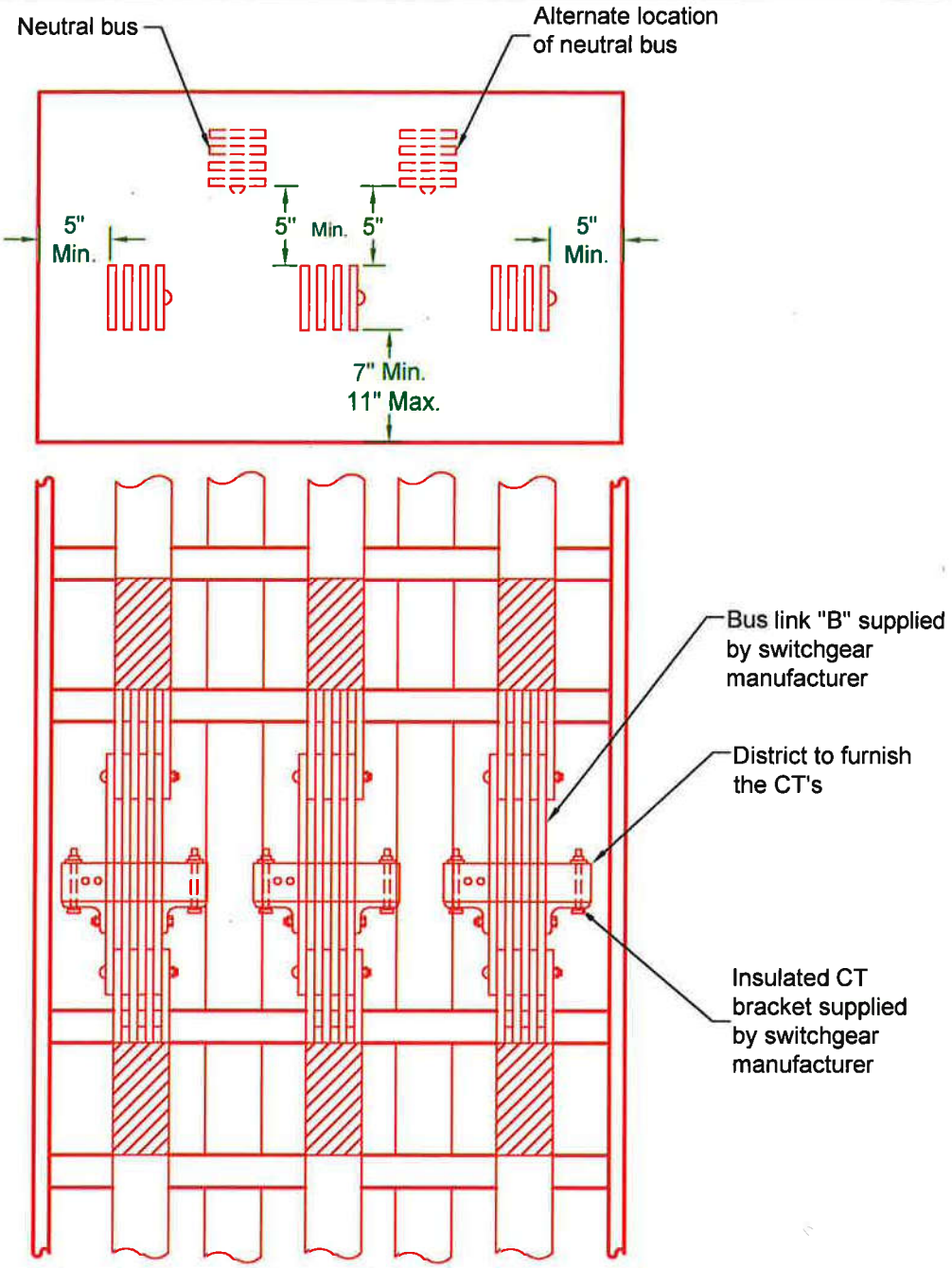


Notes:

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.

BENTON PUD

DRAWN BY: SWT

DRAW DATE: 06/04/10

TITLE:

Current Transformer Compartment for Switch Gear/Switch Board 400-3000 Amps

REV BY: TMA

REV DATE: 03/19/2018

REV NO: 2

DIR. ENG. FD DATE: 3/18

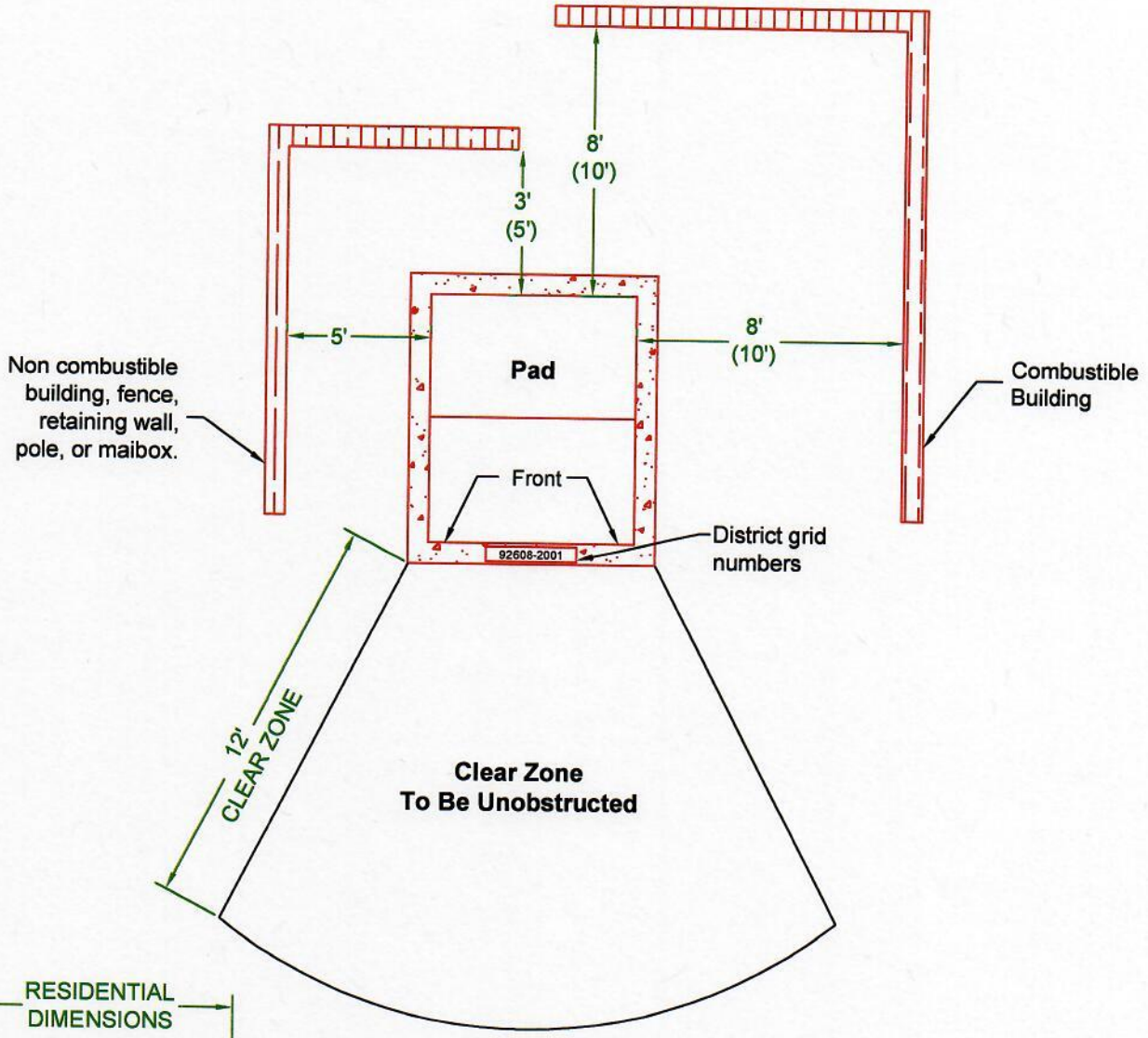
SHT. 1 of 1

DWG. NO.

Q-5H

TRANSFORMER PADS AND CLEARANCES

BENTON PUD	TITLE: TRANSFORMER PADS & CLEARANCES Q-6 Series	REV BY: JWV	SHT. 1 of 1
		REV DATE: 10/01/2013	
		REV NO: 1	DIR. ENG. DATE: 1/14
DRAWN BY: JAD		DWG. NO. Q-6	
DRAW DATE: 03/05/04			



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.

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BENTON PUD

DRAWN BY: JAD

DRAW DATE: 03/27/01

TITLE: Installation Clearances for Commercial and Residential Transformers

REV BY: TMG

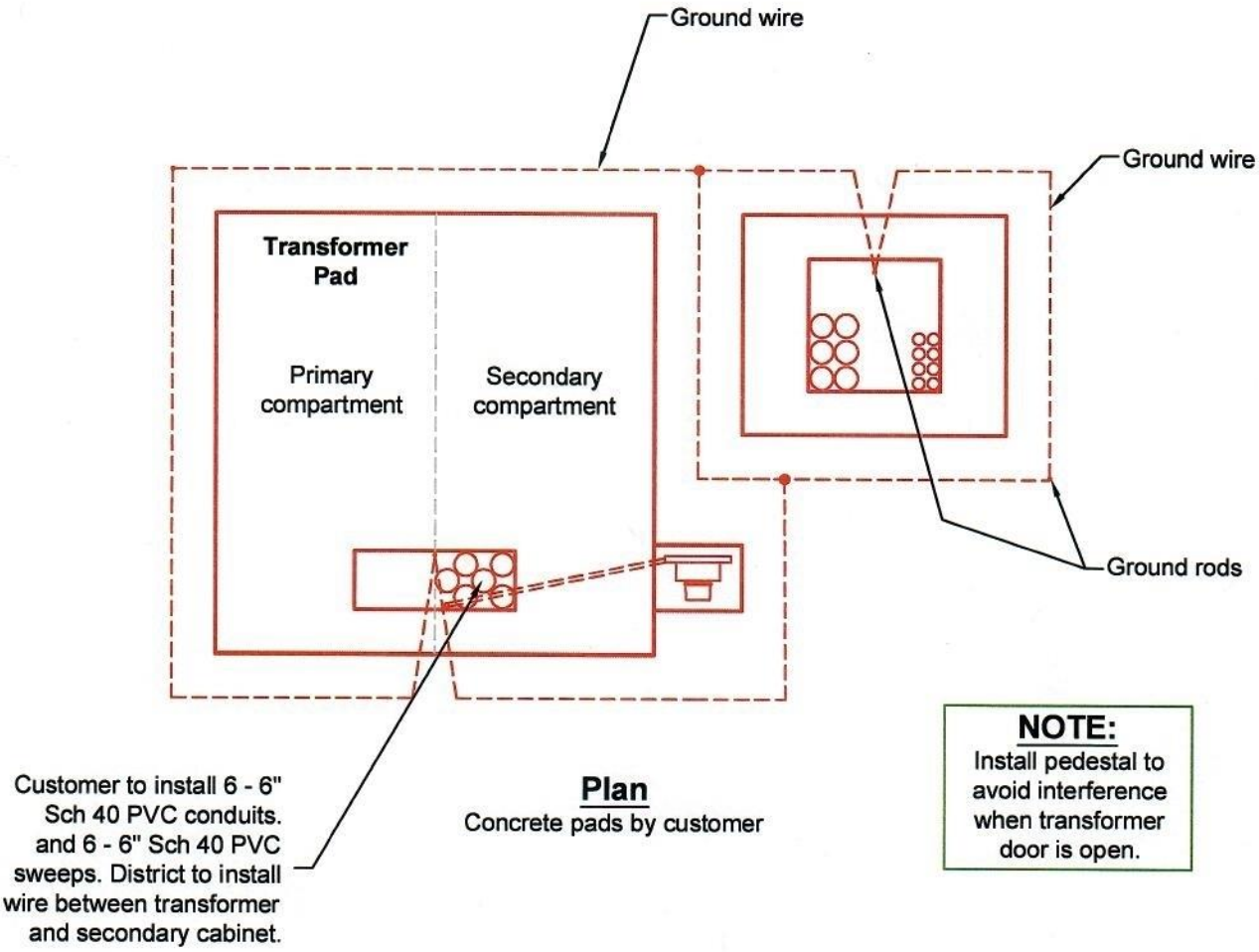
REV DATE: 8/21/2020

SHT. 1 of 1

REV NO: 2

DIR. ENG. [signature] DATE: 9/2/20

DWG. NO. Q-6C



Plan
Concrete pads by customer

NOTE:
Install pedestal to avoid interference when transformer door is open.

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.

BENTON PUD

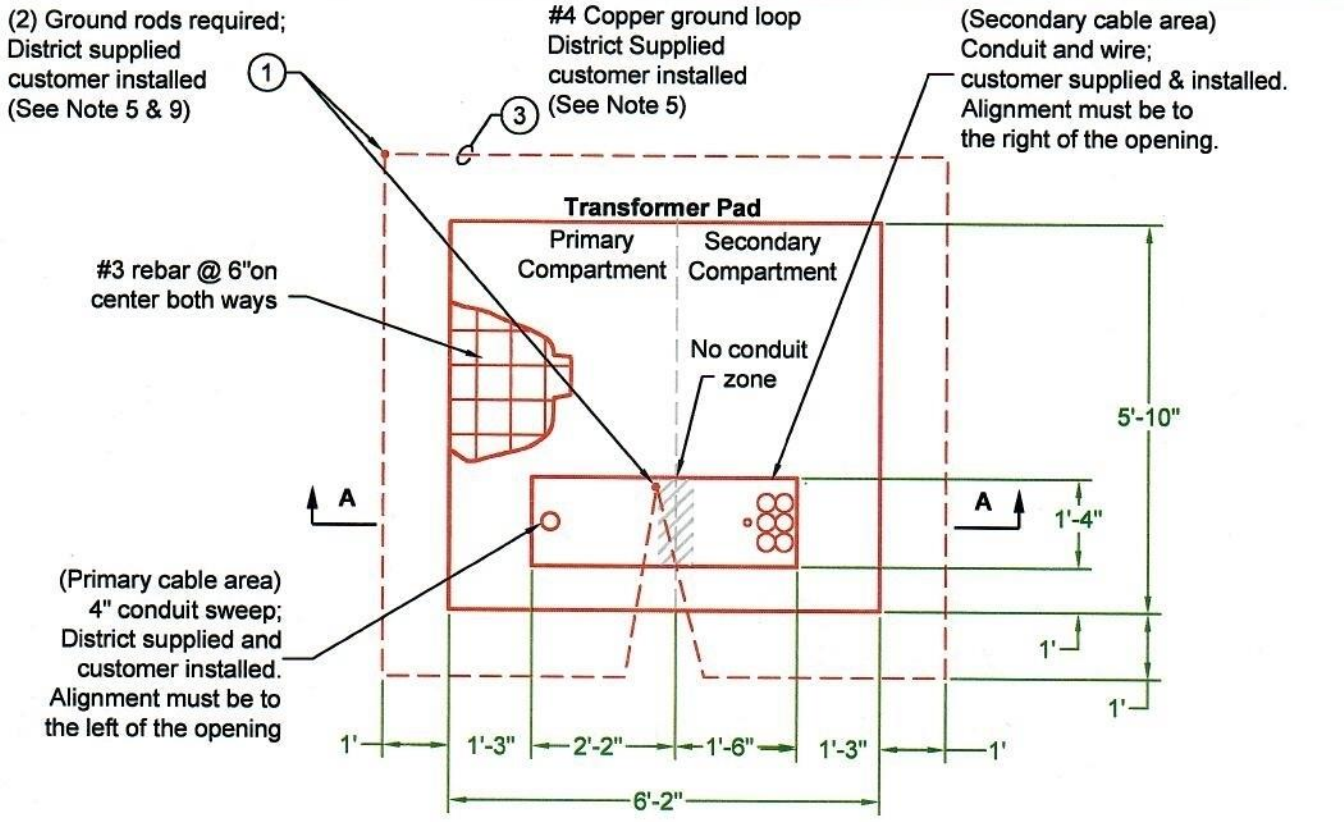
DRAWN BY: SWT
DRAW DATE: 06/21/10

TITLE:

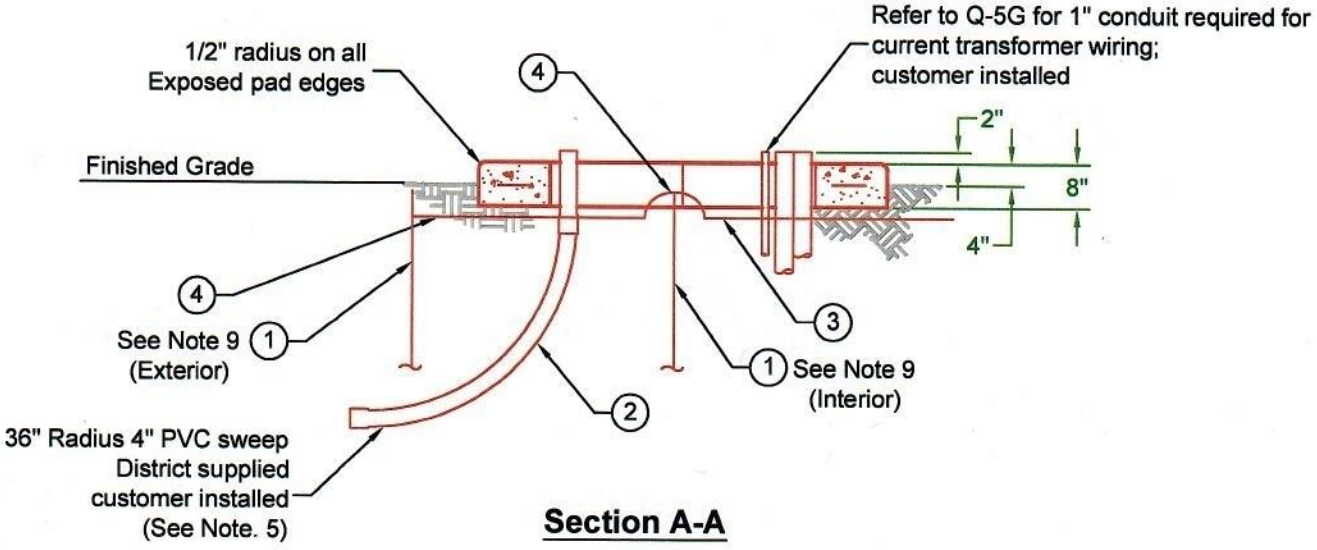
600V Termination Cabinet Guideline

REV BY: TMG		SHT. 1 of 1
REV DATE: 8/29/2020		
REV NO: 2	DIR. ENG.	DATE: 9/2/20
DWG. NO.		

Q-6G



Plan View
Concrete Transformer
Pad by Customer



Section A-A

BENTON PUD

DRAWN BY: JAD
DRAW DATE: 11/01/01

TITLE:

Transformer Pad
500 kVA & Below
Three Phase Pad Details

REV BY: TMG
REV DATE: 8/29/2020
REV NO: 2
DIR. ENG. [signature]
DATE: 9/21/20
SHT. 1 of 2
DWG. NO.

UG6-C

UG6-C			
Item	**Qty.**	**Description**	**Item Code**
1	2	5/8" x 8' Ground Rod	337381
2	1	4 " Diameter PVC Sch. 40 36" Radius Sweep	633651
3	50'	Wire #4 MHDB 7 Str.	400300
4	2	5/8" Ground Rod Clamp	327100

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 kcml. 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.

BENTON PUD

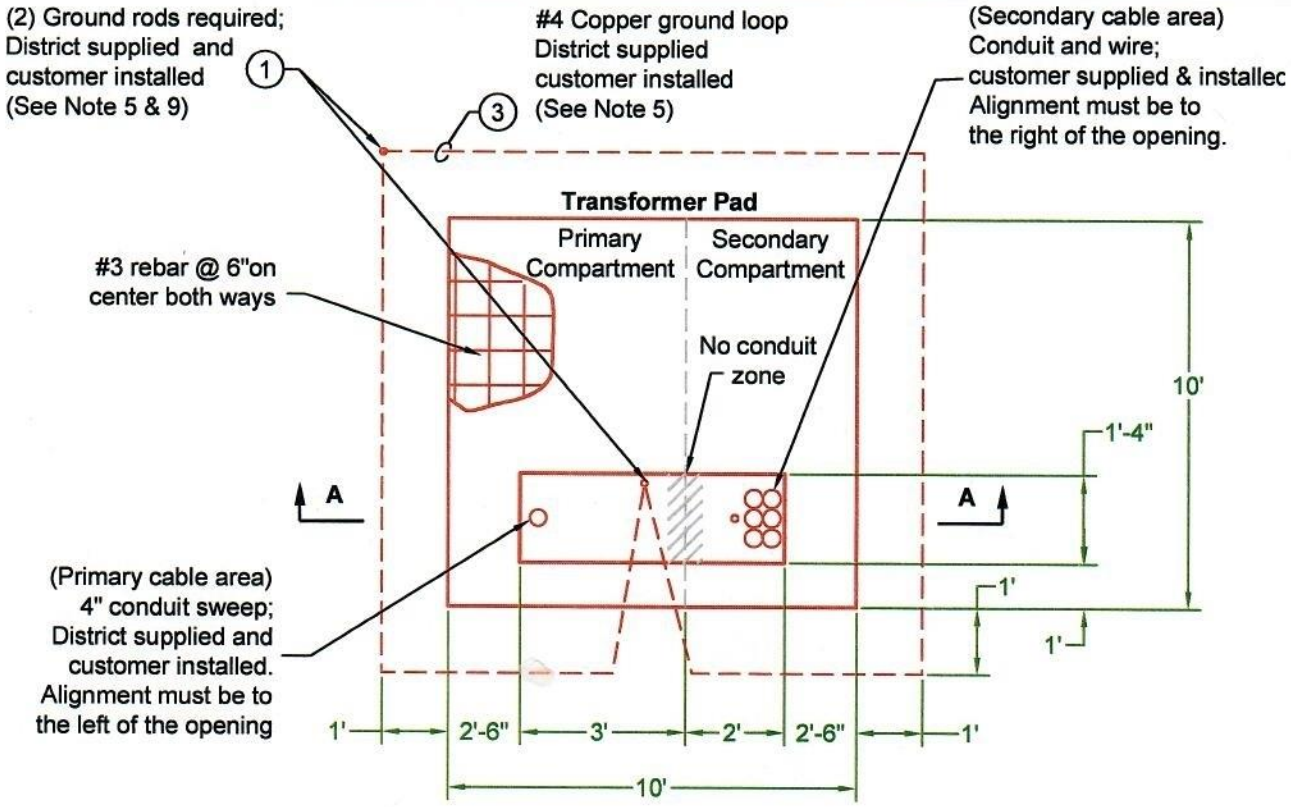
DRAWN BY: JAD
DRAW DATE: 11/01/01

TITLE:

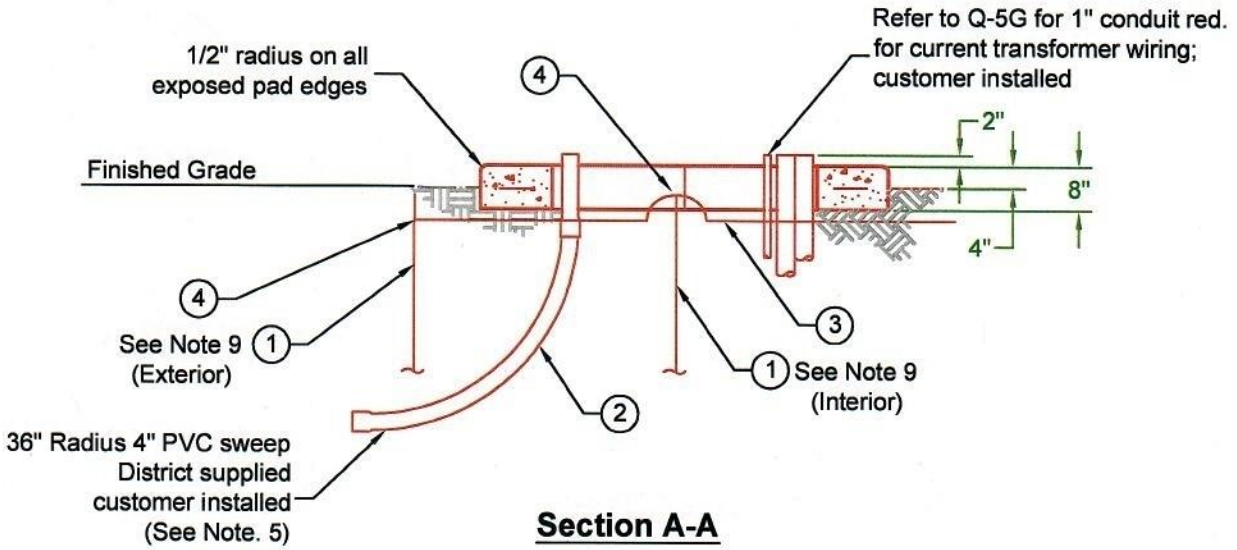
Transformer Pad
500 kVA & Below
Three Phase Pad Details

REV BY: TMG
REV DATE: 8/29/2020
SHT. 2 of 2
REV NO: 2
DIR. ENG. [signature] DATE: 9/21/20
DWG. NO.

UG6-C



Plan View
Concrete Transformer
Pad by Customer



Section A-A

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BENTON PUD

DRAWN BY: JAD
DRAW DATE: 11/01/01

TITLE:

Transformer Pad
750 kVA & Above
Three Phase Pad Details

REV BY: TMG
REV DATE: 8/29/2020
REV NO: 2
DIR. ENG.
DATE: 9/21/20
SHT. 1 of 2
DWG. NO.

UG6-C2

UG6-C2			
Item	Qty.	Description	Item Code
1	2	5/8" x8' Ground Rod	337381
2	1	4 " Diameter PVC Sch. 40 36" Radius Sweep	633651
3	50'	Wire #4 MHDB 7 Str.	400300
4	2	5/8" Ground Rod Clamp	327100

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 kcml. 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.

BENTON PUD

DRAWN BY: JAD

DRAW DATE: 11/01/01

TITLE:

Transformer Pad
750 kVA & Below
Three Phase Pad Details

REV BY: TMG

REV DATE: 8/29/2020

REV NO: 2

DIR. ENG.

DATE: 9/2/20

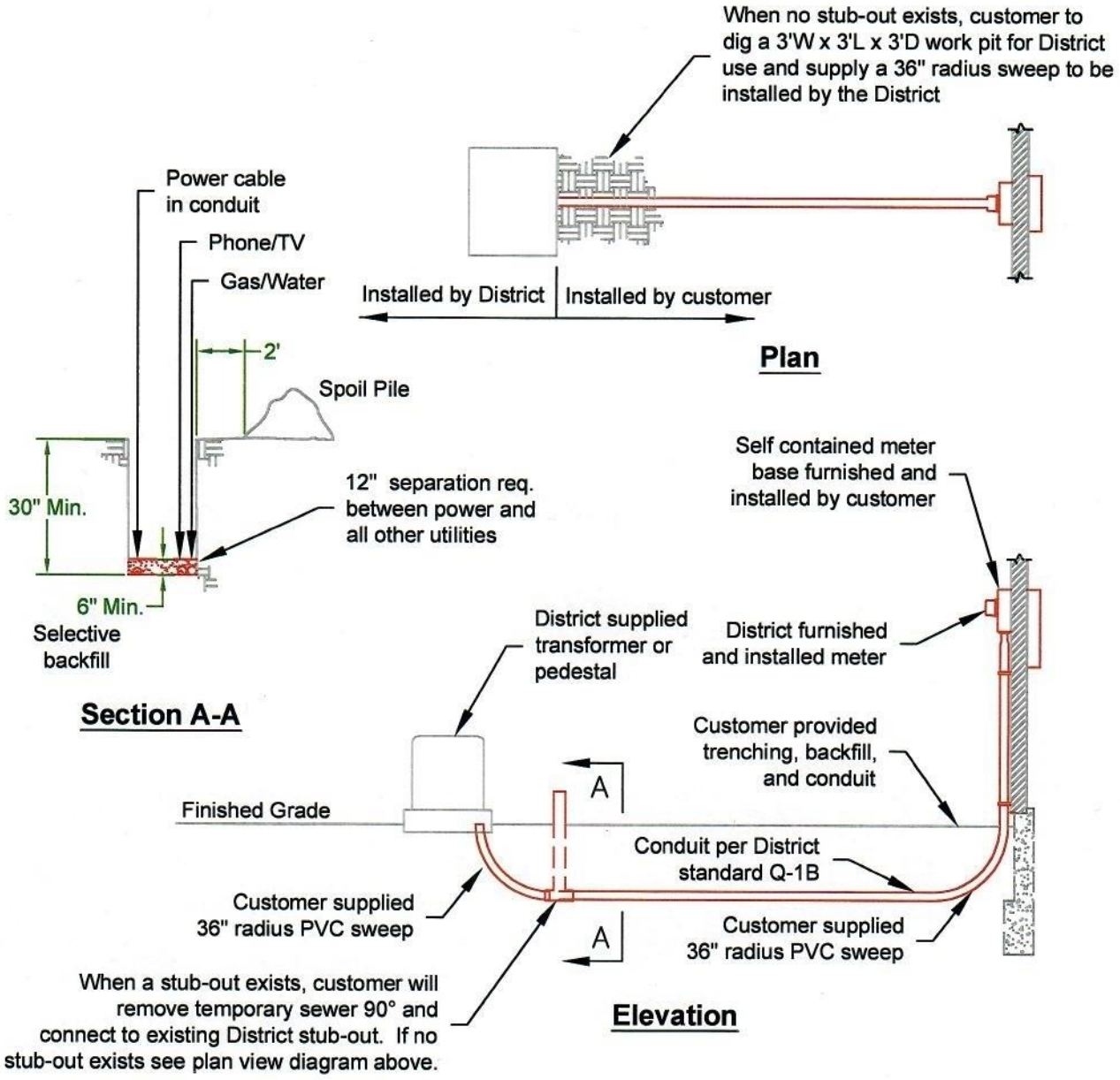
SHT. 2 of 2

DWG. NO.

UG6-C2

TRENCHING

BENTON PUD	TITLE: TRENCHING Q-7 Series	REV BY: JWV	SHT. 1 of 1
		REV DATE: 10/01/2013	
		REV NO: 1	DIR. ENG. DATE: 1/14
DRAWN BY: JAD		DWG. NO. Q-7	
DRAW DATE: 03/05/04			



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.

BENTON PUD

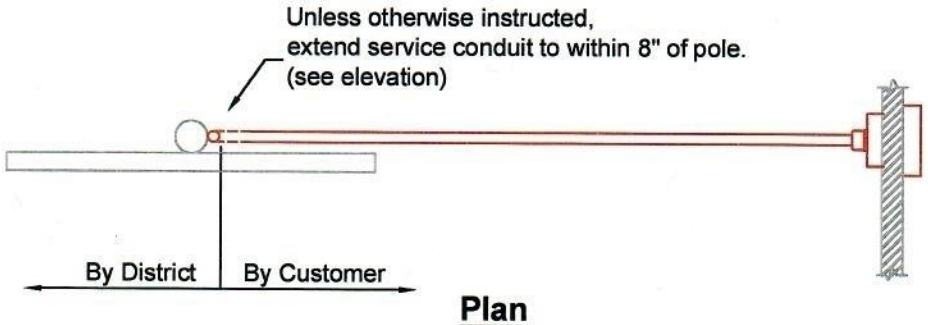
DRAWN BY: JAD

DRAW DATE: 3/27/01

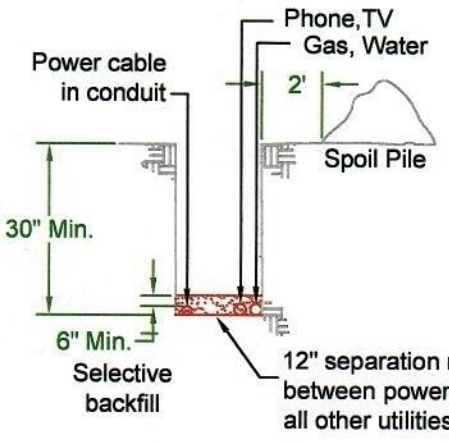
TITLE:

Trenching & Conduit Details for Typical Underground Service Installation from Pad Mount Transformer

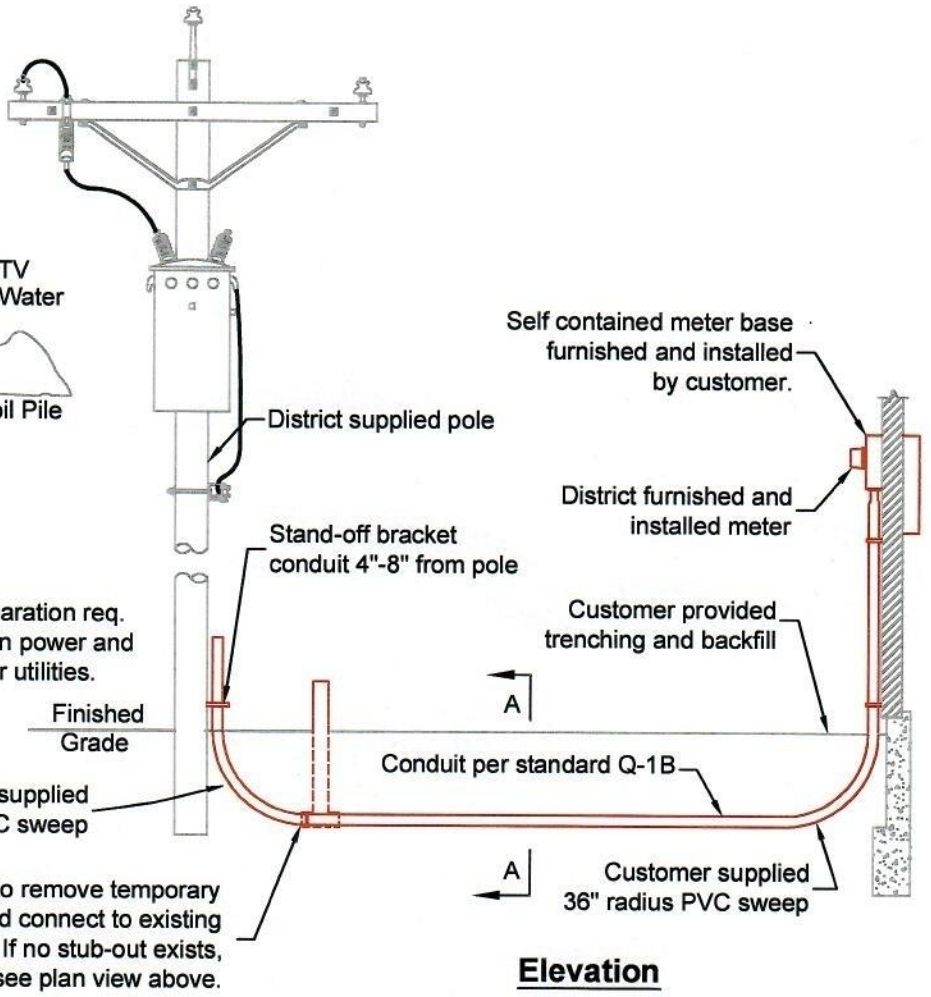
REV BY:	TMG
REV DATE:	8/29/2020
REV NO:	3
DIR. ENG.	
DATE:	9/21/20
SHT.	1 of 1
DWG. NO.	Q-7A



Plan



Section A-A



Elevation

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.

BENTON PUD

DRAWN BY: JAD

DRAW DATE: 03/27/01

TITLE:

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

REV BY: TMG		SHT. 1 of 1
REV DATE: 8/29/2020		
REV NO: 2	DIR. ENG.	DATE: 9/21/20
DWG. NO. Q-7B		

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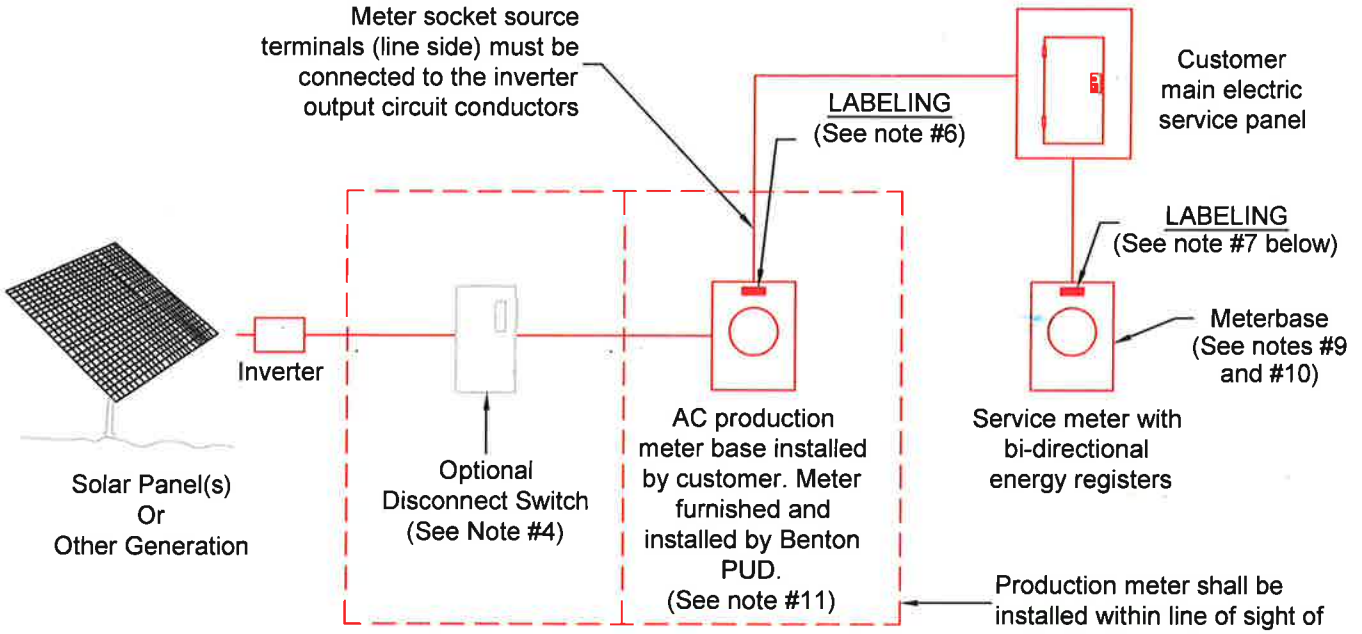
NET METERING SERVICES

BENTON PUD	TITLE: NET METERING SERVICES Q-8 Series	REV BY: JWV	SHT. 1 of 1
		REV DATE: 10/01/2013	
		REV NO: 1 DIR. ENG. DATE: 1/14	
DRAWN BY: DDB		DWG. NO. Q-8	
DRAW DATE: 03/22/12			



Notes:

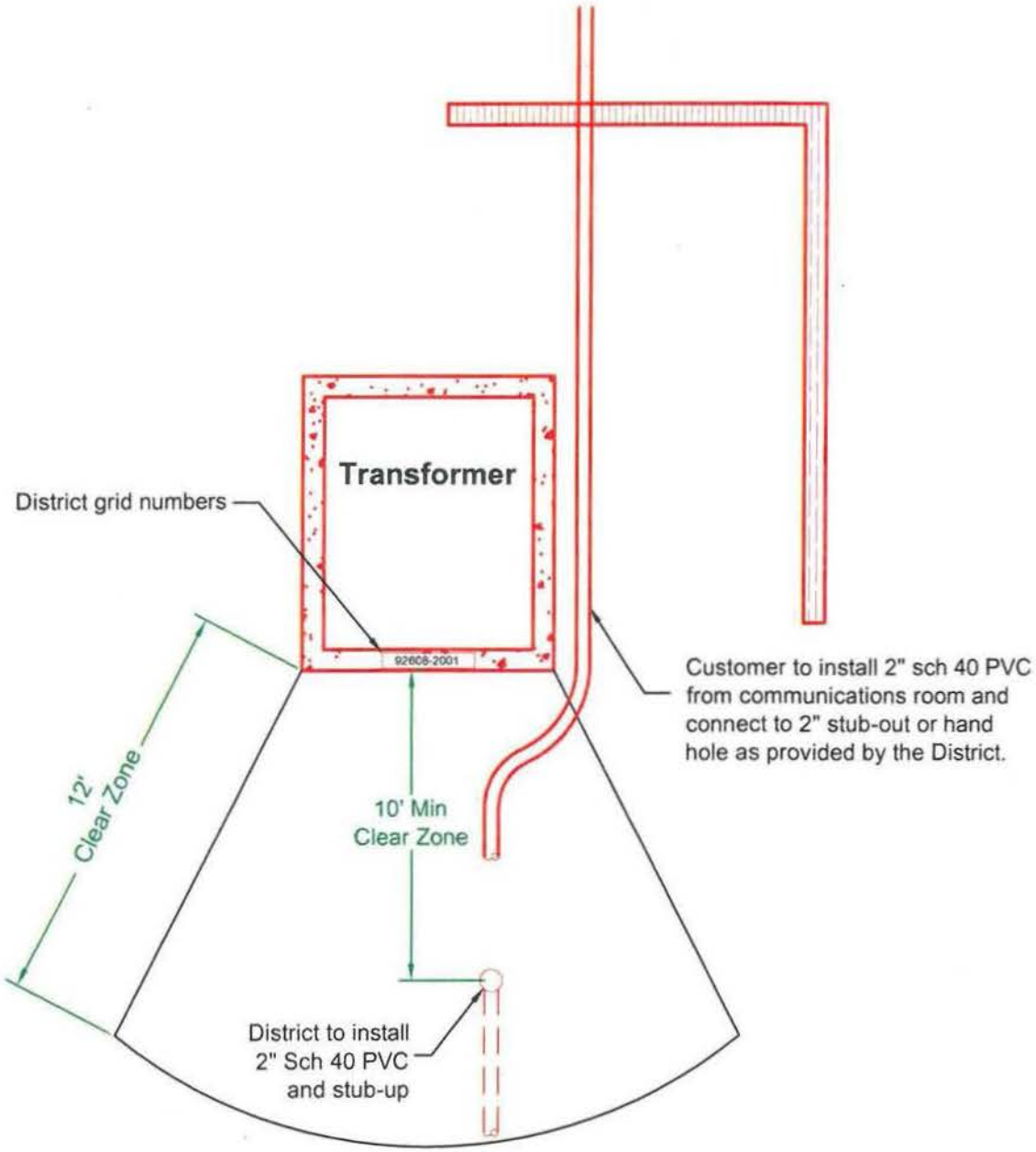
1. Connecting customer generation equipment to the Benton PUD (BPUD) distribution system requires completion of a Net Metering Application and signing of a Net Metering Interconnection Agreement.
2. This standard represents a typical arrangement for a net metering installation. The details shown are 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.
9. If customer's existing meterbase is "Banjo Style", it shall be upgraded to current BPUD standards. Reference Q3 or Q4, whichever applies, for meterbase specifications.
10. Loadside source connections allowed per NEC 705.12 shall not be permitted within Benton PUD controlled self-contained meter enclosures.
11. Production meter base shall not be affixed to manufactured home or any temporary structure.

BENTON PUD	TITLE: Customer Generator Net Metering Installation	REV BY: MAM	SHT. 1 of 1
		REV DATE: 7/6/22	
		REV NO: 4	DIR. ENG. DATE: 11/22/22
DRAWN BY: SWT		DWG. NO.	Q-8A
DRAW DATE: 06/02/10			

Customer

FIBER SERVICES

BENTON PUD	TITLE: FIBER SERVICES Q-9 Series	REV BY: JWV	SHT. 1 of 1
		REV DATE: 10/01/2013	
		REV NO: 1 DIR. ENG: PD DATE: 1/14	
DRAWN BY: DDB		DWG. NO. Q-9	
DRAW DATE: 03/22/12			



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.

BENTON PUD

DRAWN BY: RPR

DRAW DATE: 07/02/07

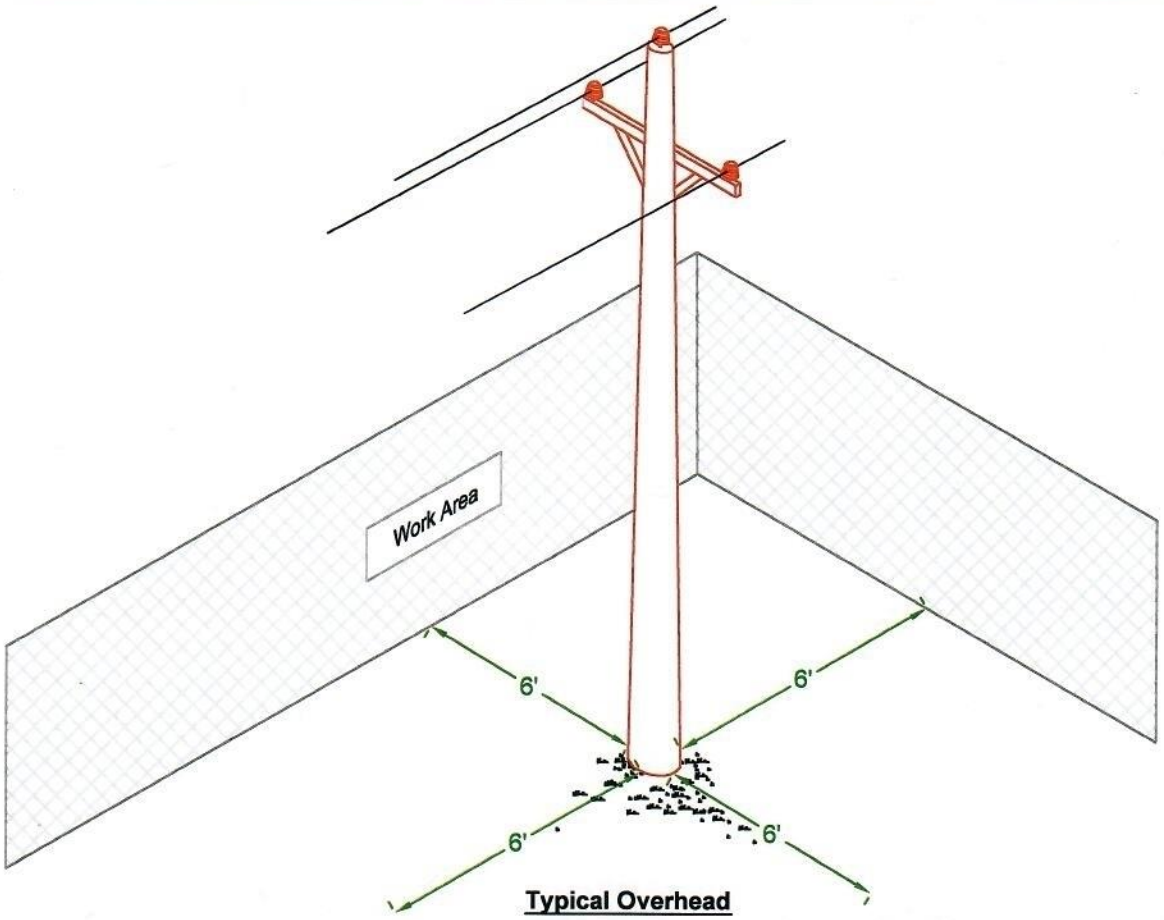
TITLE:

Installation Practices for Customer Fiber Services

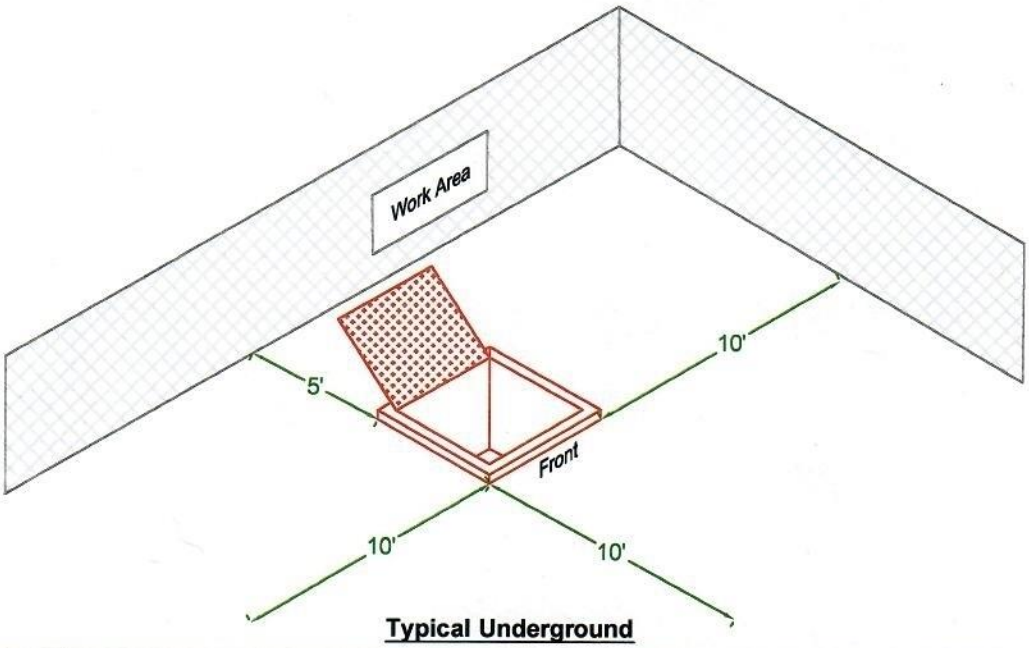
REV BY: JWV		SHT. 1 of 1	
REV DATE: 10/01/2013			
REV NO: 1	DIR. ENG. AD	DATE: 1/14	
DWG. NO. Q-9A			

WORK AREA CLEARANCES

BENTON PUD	TITLE: WORK AREA CLEARANCES Q-10 Series	REV BY: JWV	SHT: 1 of 1
		REV DATE: 10/01/2013	
		REV NO: 1	DIR. ENG. RD DATE: 1/14
DRAWN BY: DDB		DWG. NO. Q-10	
DRAW DATE: 03/22/12			



Typical Overhead



Typical Underground

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BENTON PUD

DRAWN BY: DDB

DRAW DATE: 11/03/10

TITLE:

Work Area Clearance
Utility Poles and Junction Boxes

REV BY: TMG		SHT. 1 of 1
REV DATE: 9/12/2020		
REV NO: 2	DIR. ENG.	DATE: 9/21/20
DWG. NO.		

Q-10A