MONTANA

Electric Service Requirements and Guidelines

NorthWestern® Energy

Delivering a Bright Future

July 2025

CONTACTS

Contact us one of these three ways:

- Apply online at **NorthWesternEnergy.com/Construction**
- Call **1-83-FOR-BUILD (1-833-672-8453)**, press or say 3, and the zip code of where your project is located, and your call will automatically be directed to an agent that can assist.
- Visit a **walk-in location** or reach out via email:

  Billings: 1944 Monad Road, Billings, MT 59102, ccbillings@support.northwestern.com

  Bozeman: 121 East Griffin Drive, Bozeman, MT 59715, ccbozeman@support.northwestern.com

  Butte: 400 Oxford S1, Butte, MT 59701, ccbutte@support.northwestern.com

  Great Falls: 1 1st Ave. S., Great Falls, MT 59401, ccgreatfalls@support.northwestern.com

  Helena: 1313 N. Last Chance Gulch, Helena, MT 59601, cchelena@support.northwestern.com

  Kalispell: 890 N. Meridian Road, Kalispell, MT 59901, ccmissoula@support.northwestern.com

  Missoula: 1903 S. Russell St., Missoula, MT 59801, ccmissoula@support.northwestern.com

CUSTOMER CONTACT CENTER

Our customer contact center is staffed Monday through Friday, 7 a.m. to 6 p.m. for general inquiries and 24 hours a day, 7 days a week for Electric and Gas Emergencies.

Customer Contact Center: Phone: (888) 467-2669

Electric and Gas Emergencies: Phone: (888) 467-2669

CONTENTS

SECTION 1 - GENERAL INFORMATION AND SERVICE REQUIREMENTS

1.1 Purpose and Scope

The Electric Service Guide & Requirements specifies the equipment, clearances and limitations for residential, commercial and industrial services interconnected to the Utility (NorthWestern Energy) system. As such, this guide is recommended for use by qualified electrical professionals.

Questions concerning large and/or complicated electrical projects should be directed to the Customer Contact Center at (888) 467-2669 or online at www.northwesternenergy.com/Construction.

1.1.1 Standard Residential and Commercial Project

Please refer to the New Service Guide regarding standard electric services including:

- Single family residential – 400 Amp (320A Continuous) and less
- Small commercial – 200 Amp and less
- Temporary construction – 200 Amp and less

The New Service Guide can be downloaded at www.northwesternenergy.com/build or obtained from any of the NorthWestern Energy walk-in offices.

1.2 Codes and Ordinances

Electric services, new or modified, shall conform to the requirements within the Electric Service Guide and Requirements as well as applicable provisions of the following:

- National Electric Code (NEC)
- National Electrical Safety Code (NESC)
- State of Montana rules and regulations
- City and County ordinances and codes
- Public Service Commission (PSC) – Rules on file and issued

These guidelines and requirements intend to comply with all applicable codes, ordinances and tariffs. At the option of the Utility, the minimum requirements may exceed those specified in the aforementioned codes, rules and regulations.

These requirements are subject to change as governing codes, ordinances or tariffs are revoked, modified or updated. The Utility does not assume responsibility for updating or keeping this guide current.

All interpretations or clarifications of these requirements and guidelines are reserved to NorthWestern Energy.

1.3 Application for Service

Applicants should complete an application for service in person at a local walk-in office or online at NorthWesternEnergy.com/build.

1.4 General Service Requirements

The service entrance shall be easily accessible from NorthWestern Energy distribution lines and convenient for the installation, operation, and maintenance of NorthWestern Energy meters and equipment.

Prior to establishing service, the customer shall provide the following:

- Rights-of-way and space for the installation and maintenance of utility facilities.
- A permanent address assigned to the service location.
- Electrical installation approved by the authority having jurisdiction.
- If necessary, obtain right-of-way easements. Notarized signatures on right-of-way agreements are required.

1.5 Approval for Service

According to Montana law, you must obtain and provide our New Construction office a copy of an electrical permit for all projects involving electrical wiring.

Contact your local government or New Construction department to determine who issues permits in your area. Many local governments also require inspection of customer wiring before NorthWestern Energy can energize your service.

All new or remodeled installations must conform to applicable provisions of the National Electric Code (NEC), National Electrical Safety Code (NESC), State of Montana rules and regulations, city and county ordinances and codes, and rules on file with or issued by the Montana Public Service Commission.

1.5.1 Construction Lead Times

Commercial or industrial customers normally require considerable advance planning by the Utility in order to serve the load.

- A lead-time of at least 60 days is normally necessary.
  - ↳ Installations requiring transformers or other equipment not in stock may require increased lead times of 6 months or more.

1.6 Project Details

A NorthWestern Energy representative will contact the applicant to acquire project specific details including:

- Electric load information
  - ↳ Specific equipment, demand and planned operation information
- Electric metering equipment specifications
- Construction schedule
- Detailed site plan

1.7 Available Service Voltage – Secondary Voltage

Electric service available is 60-hertz, alternating current, single or three phase. The nominal secondary voltages from overhead distribution lines and underground distribution lines are shown below.

Standard Overhead Service Types		
Service Type	**Secondary Voltage**	**Transformer Configuration**
Single Phase	120/240	3-wire, grounded
Three Phase	208Y/120	4-wire, grounded, wye
	240/120*	4-wire, grounded, delta
	480Y/277	4-wire, grounded, wye

Standard Underground Service Types		
Service Type	**Secondary Voltage**	**Transformer Configuration**
Single Phase	120/240	3-wire, grounded
Three Phase	208Y/120	4-wire, grounded, wye
	480Y/277	4-wire, grounded, wye

Non-Standard Overhead Service Types (Utility Approval Required)**		
Service Type	**Secondary Voltage**	**Transformer Configuration**
Single Phase	120/208	3-wire, grounded
	240/480*	3-wire, grounded
Three Phase	480/240*	4-wire, grounded, delta

Non-Standard Underground Service Types (Utility Approval Required)		
Service Type	**Secondary Voltage**	**Transformer Configuration**
Single Phase	120/208	3-wire, grounded
Three Phase	240/120*	4-wire, grounded, delta

**A 4-wire, grounded delta service (from two phase primary) shall be limited to at most, 20HP (15kW) of motor load or loads similar in operation to a motor, and service size less than 320A continuous.*

***Under certain conditions, at the option of the utility, non-standard service voltage may be provided. Consult your local NorthWestern Energy office prior to installation of non-standard service voltage equipment.*

1.8 Temporary Power Options

Temporary power is available for construction in a couple applications. There is temporary power available from transformers, secondary cans and an overhead application, as well. See Sections 3.8, 3.9 and 3.10 for specifications on the different types. A single phase 120/208V 200A option is available from a pad mounted transformer. This option will require a 5th jaw being added to the 9 o'clock horizontal position. It will need to be properly grounded for a 5-jaw meter to read correctly.

1.9 Available Service Voltage – Primary Voltage

The nominal primary voltage of NorthWestern Energy's distribution system may differ based on service area. Under certain conditions, primary delivery will be supplied at the nominal distribution voltage for the location requested.

Note: Individual service ratings of 4001A or greater, at secondary voltage, shall be metered at Primary Voltage.*

**This requirement does not apply to grouped meters served through a single set of service conductors.*

1.10 NorthWestern Energy-Owned Facilities

For secondary voltage service, NorthWestern Energy will provide, install and maintain equipment up to the point of delivery including:

- Transformers
- Metering Equipment (Instrument Transformers, Conductors, Test Switches)
  - ↳ Meter
  - ↳ Meter Seals
- Conductors defined as service drops or service laterals by Section 100 of the NEC
- Underground conduit system from point of delivery to utility source

Only authorized NorthWestern Energy employees shall make the permanent connection or disconnection of electric service to a meter. This includes the installation and removal of meters and meter seals. Any seals or meters that are not reported and found to be tampered with will be treated as meter tampering, a criminal offense.

1.11 Customer-Owned Facilities

The customer will provide, install and maintain all service equipment past the point of delivery including:

- Meter sockets
- Main disconnect
- Weatherheads
- Mast
- Switches
- Service entrance conductors
- Raceways
- Conduits
- Enclosures
- Meter pole

Customer-owned metering equipment, switching devices, conduits, conductor, luminaries, etc., are not to be mounted on the Utility's distribution and transmission poles.

1.12 Point of Delivery

The "point of delivery," unless otherwise specified by NorthWestern Energy, is that location on the customer's building or structure where NorthWestern's circuit and customer's system are interconnected. The exact location of the point of delivery shall be at NorthWestern Energy's discretion. Before building construction starts, please contact NorthWestern about the service lateral location and routing.

The standard points of delivery for overhead or underground installations of self-contained and transformer rated service are as follows:

Overhead Service	
Meter Type	**Point of Delivery**
Self-Contained	Customer Weatherhead
Transformer Rated	Customer Weatherhead

Underground Service	
Meter Type	**Point of Delivery**
Self-Contained	Line side connection of meter socket
Transformer Rated	Terminal lugs on line side of current transformer

Normally, a building will be supplied through only one set of main service conductors of the same voltage classifications. If the service cannot be served with one set of main service conductors a one-line drawing will need to be supplied to NorthWestern for approval. A transition cabinet may be installed, and taps may be taken from these main service conductors where more than one meter installation is necessary in a building of multiple occupancy. The transition cabinet will be sealed by NorthWestern. Any customer-owned devices (such as limiters, fuses, etc.) shall not be installed in the transition cabinet. The customer will take ownership of the transition cabinet and any downstream equipment or conductors from the landing block location in the transition cabinet.

1.13 Location of Meter – General

Meters shall meet the installation requirements and clearances applicable to the utility approved interconnection of service as well as:

- Meters shall be installed outdoors at a location that is readily accessible to NorthWestern Energy crews.
- Shall be suitably protected from physical damage.
  - ↳ Example: Ice, vehicle traffic, etc.
- Shall meet utility-required clearances applicable to the installation.
- Disconnecting means must be within 5 feet of meter and visible from the meter.
- Shall be in line of sight from transformer.
- Shall be at the closest building corner from utility primary.

If, in the opinion of NorthWestern Energy, a meter is made inaccessible per tariff, such as by the installation of a fence or enclosure, the customer shall, at their expense, move the meter socket and equipment to an accessible location agreed upon by the customer and NorthWestern Energy.

1.14 Location of Meter – Prohibited Locations

Meters shall **not** be installed in the following locations:

- The side of the building opposite utility lines.
- Over window wells or stairways.
- Exterior walls likely to be enclosed at a later date.
- Any location that NorthWestern Energy deems unsafe or inconvenient.

Meters shall **not** be attached to any mobile structure including:

- Trailers, barges, houseboats, cranes, dredges, draglines, sheds or mobile equipment.
- Any structure not permanently attached to a foundation.

1.15 Acceptable Installations

Meters may be installed in the following locations

- Unobstructed Wall
  - ↳ Shall not be within 15 inches of building opening
  - ↳ Shall not be within 3 feet of a gas regulator
- Treated 6x6 (Square Post) - Section 3.8
  - ↳ Approved for standing meter pedestal or rack
- Pole Butt-Treated (Round) – Section 3.9
  - ↳ Of sufficient height to provide all required clearances
- H – Frame Construction - Section 3.10

1.16 Pad-Mounted Transformer Installation

When a pad-mounted three phase transformer pad is needed, the customer will be responsible for the transformer pad within the project. The customer will provide enough space and clearances for the transformer according to NorthWestern clearance standards. Where a pad-mounted transformer is installed in a location where it might be struck by a motorized vehicle, the customer will provide NorthWestern-approved barriers to protect the transformer.

SECTION 2 - METER EQUIPMENT REQUIREMENTS

2.1 Grounding – Terminating Lugs

Lugs for terminating the customer's ground wire (or other grounding conductors) shall be located outside of the sealable section and shall be designed to readily permit the customer's neutral system to be isolated, when necessary, from the utility.

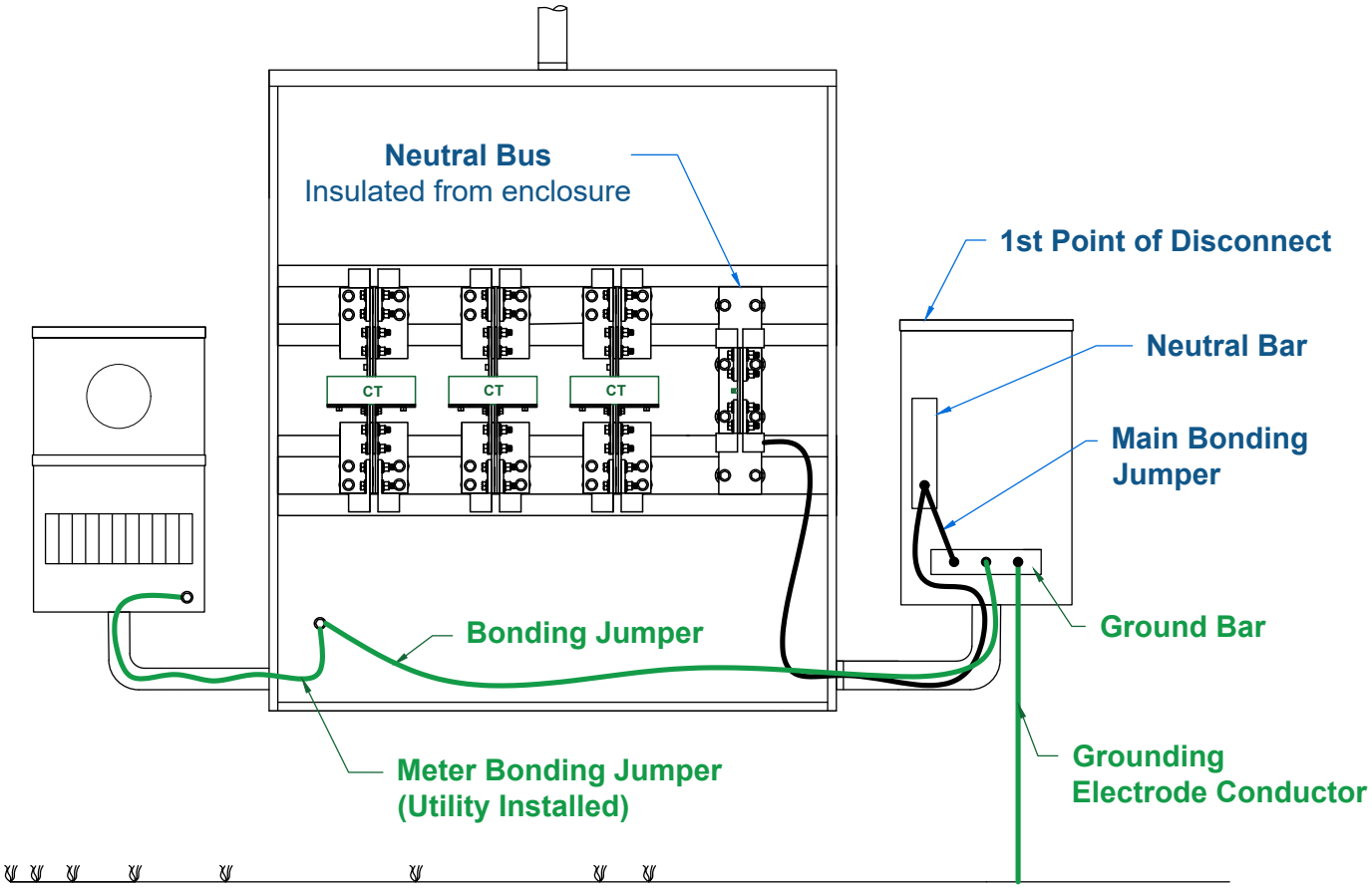
2.2 Main Service Disconnect – Ground Bus

Ground bus, when provided, shall be located at the rear of terminating enclosures (i.e., pull boxes and pull sections).

2.3 Accepted CT Cabinet Bonding

The Grounding Electrode Conductor (NEC), shall not terminate in the CT Cabinet. The main bonding jumper shall be installed within the 1st Point of Disconnect only.

Bonding Jumpers extending from the CT Cabinet to the termination of the Grounding Electrode Conductor, or other code-approved method, shall be used to bond the CT Cabinet to ground.



2.4 Phase Arrangement

Phase arrangement on 3-phase buses shall be A, B, C from front to back, top to bottom, or left to right, as viewed from the front of the metering enclosure or CT Compartment.

- Exception: 4-wire, delta-connected system
  - ↳ The high-leg of the 4-wire, delta-connected system shall terminate on the furthest right position of the metering enclosure or CT compartment and designated orange in color.
  - ↳ White or gray are never to be used as a phase marking.

2.5 Meter Socket Requirements – General

Acceptable meter sockets shall be manufactured in accordance with the current Standards for Safe Meter Sockets, UL/ANSI-414 or ANSI-C12.7.

- Sockets shall be limited to the intended use as defined by the equipment manufacturer:
  - ↳ Service type shall match designed entry type (overhead, underground, both).
  - ↳ All conductors shall enter or leave the enclosure through designated openings.
- 320A Continuous Sockets shall be furnished with a manual bypass, including jaw clamping/release function.
- Where two or more meters are grouped or installed at the same property, each meter must be clearly and permanently identified by means of an engraved placard, screwed or riveted, to indicate the particular location supplied.
  - ↳ Placards may not attach to a removable panel, door or other surface that could be incidentally installed at an incorrect location.
  - ↳ Sockets must be installed plumb in all directions and securely mounted to a ridged surface.
  - ↳ Conductors securely fastened to respective terminals and arranged to not interfere with meter or cover.

2.6 Meter Socket Requirements – Self Contained

Meter Base Jaw Requirements (Self-Contained)	
Type of Service	**# of Jaws**
Three wire, single phase	4
Three wire, 120/208V, single phase	5
Four wire, grounded	7

2.6.1 Overhead

- Ring Style Meter Socket
  - ↳ Exception: 400A (320A Continuous) shall be Ringless Style Meter Socket
- Main Disconnect

2.6.2 Underground

- Ring Style Meter Socket
  - ↳ Exception: 400A (320A Continuous) shall be Ringless Style Meter Socket
- Main Disconnect
- Supported Bus Bar Type Meter Base
- Knockout below service lateral knockout is reserved for Company's service lateral conductor.

2.6.3 400A (320A Continuous)

- Ringless Style Meter Socket
- Main Disconnect
- Manual Bypass Lever
- Jaw Clamping Function
- Anti-Rotational Device (Furnished & Installed by Customer)
- A blue placard stating 320A (400A) service (installed by NorthWestern)

2.6.4 Service Rating

Self-Contained service ratings, where the service voltage is 240V or less, shall be restricted as follows:

Approved Self-Contained Service Ratings (Service Voltage - 240V or Less)		
Service Entry	**Minimum Service Rating**	**Maximum Service Rating**
Overhead	100A	400A (320A Continuous)
Underground	200A	

Self-Contained service ratings, where the service voltage greater than 240V, shall be restricted as follows:

Approved Self-Contained Service Ratings (Service Voltage - Greater than 240V)		
Service Entry	**Minimum Service Rating**	**Maximum Service Rating**
Overhead	100A	200A
Underground	200A	

2.7 Meter Socket Requirements – Transformer (Instrument) Rated

Meter Base Jaw Requirements (Instrument Rated)	
Type of Service	**# of Jaws**
Three wire, single phase	5
Four wire, three phase, delta, center tap grounded	13
Four wire, three phase, grounded	13

2.7.1 Transformer Rated

- Ringless Style Meter Socket
- Main Disconnect
- Minimum Meter Socket Enclosure Width - 11 inches
- Minimum Meter Socket Enclosure Depth – 5 1/8 Inches
- Provisions for utility test switch (included within Meter Socket Enclosure)
  - ↳ Space below the socket, 9 ½ inches in length
  - ↳ A test switch perch, drilled and tapped

Note: Meter sockets with circuit closures or bypass clips will not be approved for new installations or modifications of existing service.

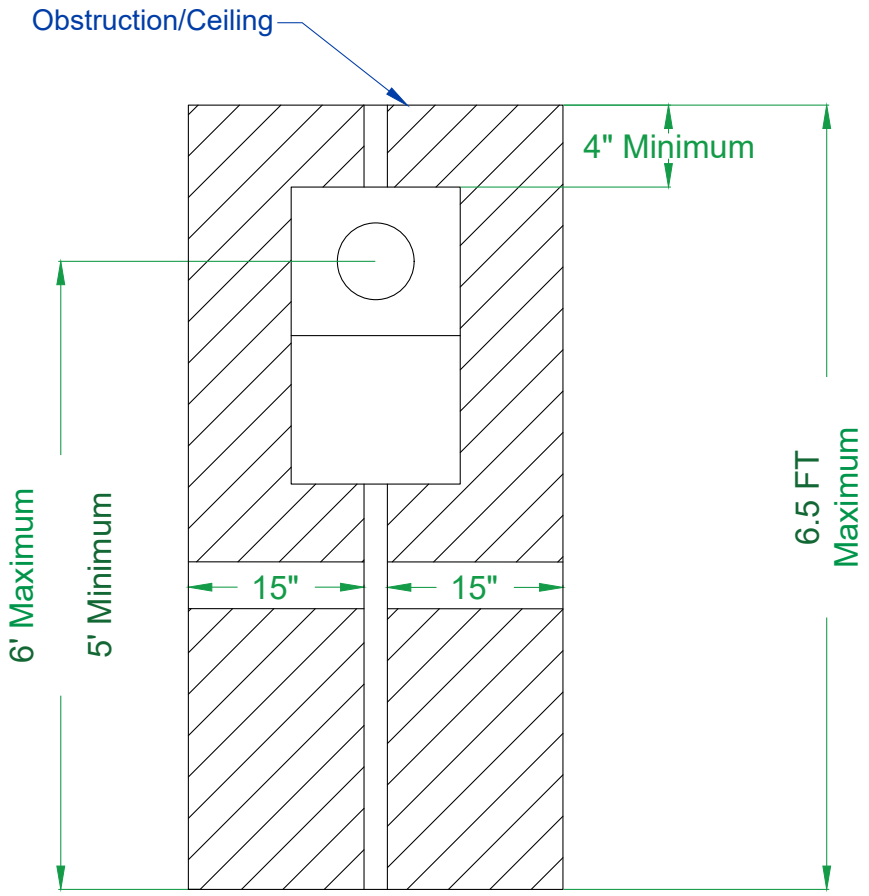
2.8 Meter Socket Installation Height

The center of any meter socket shall not be less than 5-feet or exceed 6-feet above the finished grade of floor immediately in front of the meter.

- Exception: Meter Pedestals, approved by NorthWestern Energy, shall be installed to meet manufacturer specifications.

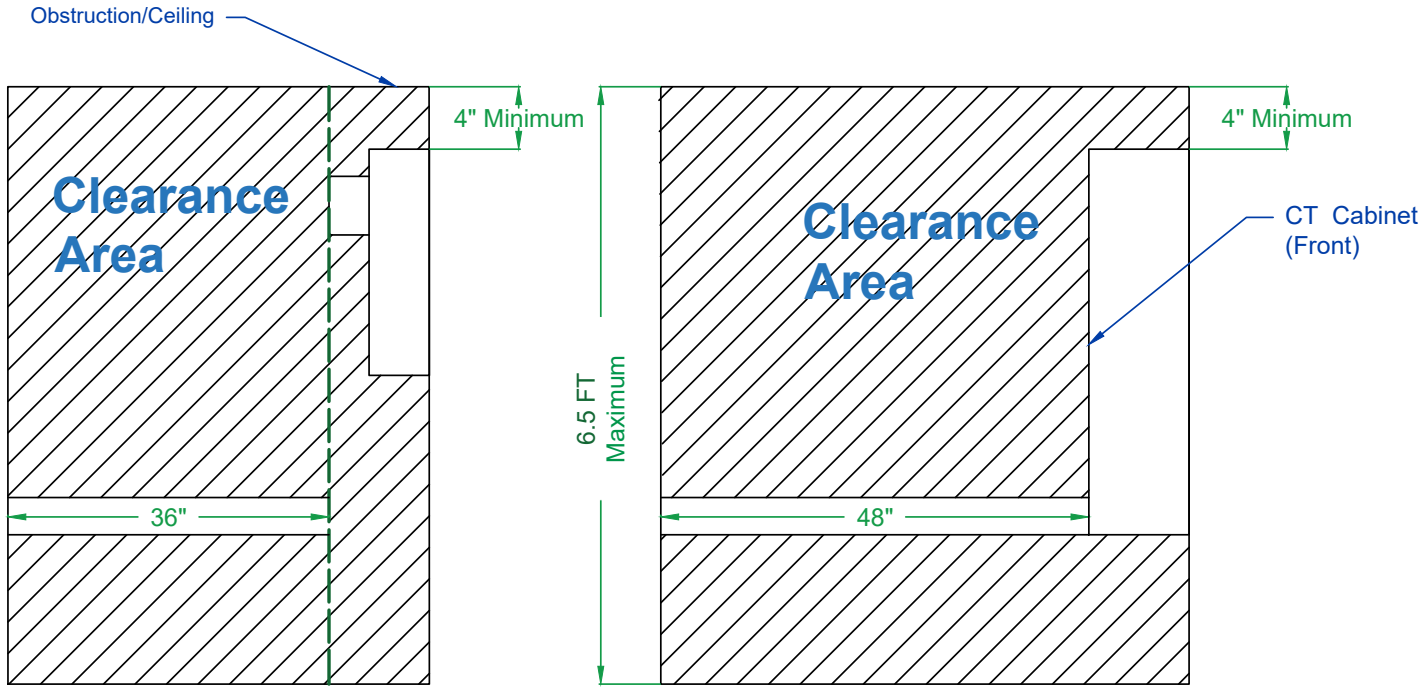
2.9 Meter Socket Clearance – Lateral

- Minimum unobstructed wall space width for a single meter is 15 inches on either side of the meter centerline.



2.10 Meter Socket Clearance – Front of Meter

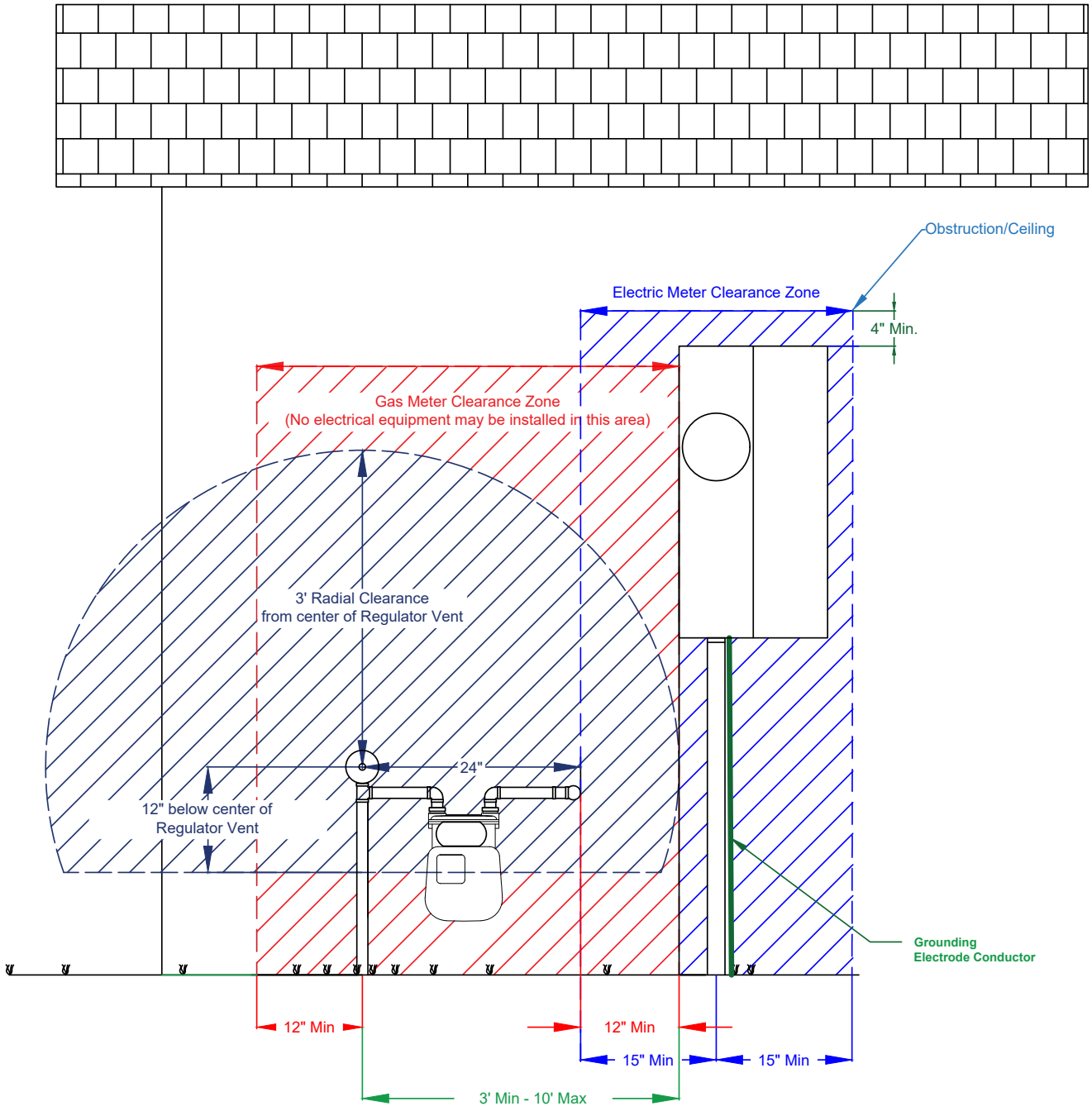
Self-Contained **Transformer Rated**



Notes:

1. A 36-inch working space shall be maintained in front of Self-Contained Meter Installations.
2. A 48-Inch working space shall be maintained in front of Transformer Rated Installations.
3. Any door that opens is to not block egress to and from any electrical equipment.

2.11 Electrical Equipment Clearance – Gas Regulator



Notes:

1. A 36-inch radius clearance shall be maintained from any ignition source, electrical equipment, building openings to a gas regulator.
   a. Drawing is intended for use in the installation of electrical equipment, specifying clearances between electric and gas facilities.
   b. In addition to the clearance provided, all required clearances shall be maintained.
2. Gas meters must be within 10 feet of electric meter if they are both served by NorthWestern Energy.
3. No gas piping can pass under the electric meter clearance zone, unless underground.

2.12 Service Disconnect

For each meter, the customer shall furnish and install a circuit breaker, fused switch or other approved disconnecting means with over-current protection.

The service disconnecting shall control all energy registered by the associated meter and be installed on the load-side of the meter. NorthWestern Energy must be allowed access to the service disconnect.

Service disconnect shall be mounted on the same outside wall as the meter socket, within 5 feet of the meter.

2.13 Main Service Disconnect

A main service disconnect device is installed on the line-side of a group of meters and sockets and may be a breaker, fused disconnect, or other approved disconnecting means.

Main service disconnect shall be mounted on the same outside wall as, and within 5 feet of, the cable pulling section.

2.14 Fire Pump Feeder Conductors

Fire pump feeder conductors shall be metered and connected to customer-owned equipment such as CT can, switchgear pull section or metering cabinet, transition cabinet, etc. Fire pump feeder conductors shall not come directly out of any NorthWestern Energy-owned equipment including a transformer unless prior approval has been given. The National Electrical Code (NEC) Exception 695 allows for the customer to have a lockable disconnect on these conductors feeding the fire pump controller to perform maintenance on their fire pump controller. NorthWestern Energy does not require this disconnect but will allow it if the customer chooses to install it.

2.15 Meter Socket and Panel Cover

- Self-contained sockets shall not be mounted on hinged panels.
- Hinged door panels shall be included on all CT Cabinets.

2.16 Sealing and Unmetered Conductors

All cabinets, gutters or conduits containing unmetered conductors must be sealable by the utility. Seals shall be installed by the utility to prevent injury and/or tampering. An unsealed meter that is not reported may be treated as meter tampering, a criminal offense. Metered and unmetered wires shall be separated by suitable barriers. If the service disconnect is included as part of the meter socket enclosure, it must be located in a separate sealable section of the enclosure that is accessible to both the customer and NorthWestern. The service disconnect shall not be in the same section as the un-metered service conductors.

2.17 Conduit

Service entrance conductors shall be installed in conduit in as follows:

2.17.1 Overhead Service

- Rigid Metallic Conduit – Minimum 2 inches

2.17.2 Underground Service

- Below Ground - Continuous Schedule 40 PVC
- Above Ground - Continuous Schedule 80 PVC
- Buried minimum 30” to top of conduit.
- Conduit stubs shall be marked and capped to keep them dirt and debris free.
- All underground services shall have a slip coupler installed.

2.17.3 Conduit Sizing Guidelines

- The conduit sizing table below has been provided as a general guideline.
- Minimum 24” PVC sweep radius
- **Project-specific conduit sizing shall be approved by NorthWestern Energy prior to installation.**

Minimum Conduit Sizing - Table A (For up to two bends* - 180 degrees or less, up to 150 feet in length)		
Service Entrance	**Single - Phase (# Conduits) - Diameter**	**Three - Phase (# Conduits) - Diameter**
200 or less	(1) - 2”	(1) - 3”
201-400A	(1) - 3”	(1) - 4”
401-600	(2) - 3”	(2) - 3”
601-1,000	(2) - 4”	(4) - 3” or (2) - 4”
1,001-1,200	(3) - 4”	(5) - 3” or (3) - 4”
1,201 and Greater	**Consult Utility**	

Minimum Conduit Sizing - Table B (For up to three bends* - 270 degrees or less, up to 300 feet in length)		
Service Entrance	**Single - Phase (# Conduits) - Diameter**	**Three - Phase (# Conduits) - Diameter**
200 or less	(1) - 2”	(1) - 3”
201-400A	(1) - 3”	(1) - 4”
401-600	(2) - 3”	(2) - 3”
601-1,000	(4) - 3”	(4) - 3”
1,001-1,200	(5) - 3”	(5) - 3”
1,201 and Greater	**Consult Utility**	

SECTION 3 - SELF CONTAINED METERING INSTALLATIONS

3.1 Termination Type

- Screw type Mechanical Terminations shall be appropriately sized, furnished and installed by the customer for all utility terminations.

3.2 Termination Size

- Mechanical lugs shall be compatible with the size and type of the service being installed (i.e., aluminum bodied AL-CU with aluminum cables, etc.).
- Self-contained meter socket service termination lugs shall accommodate the following conductor sizes based on Meter Socket Rating:

Self-Contained Mechanical Lug Requirements	
Socket Rating	**Conductor Range**
100 Amps	#14 – 2/0
200 Amps	#6 – 350MCM
400A (320A Continuous)	#6 – 600MCM

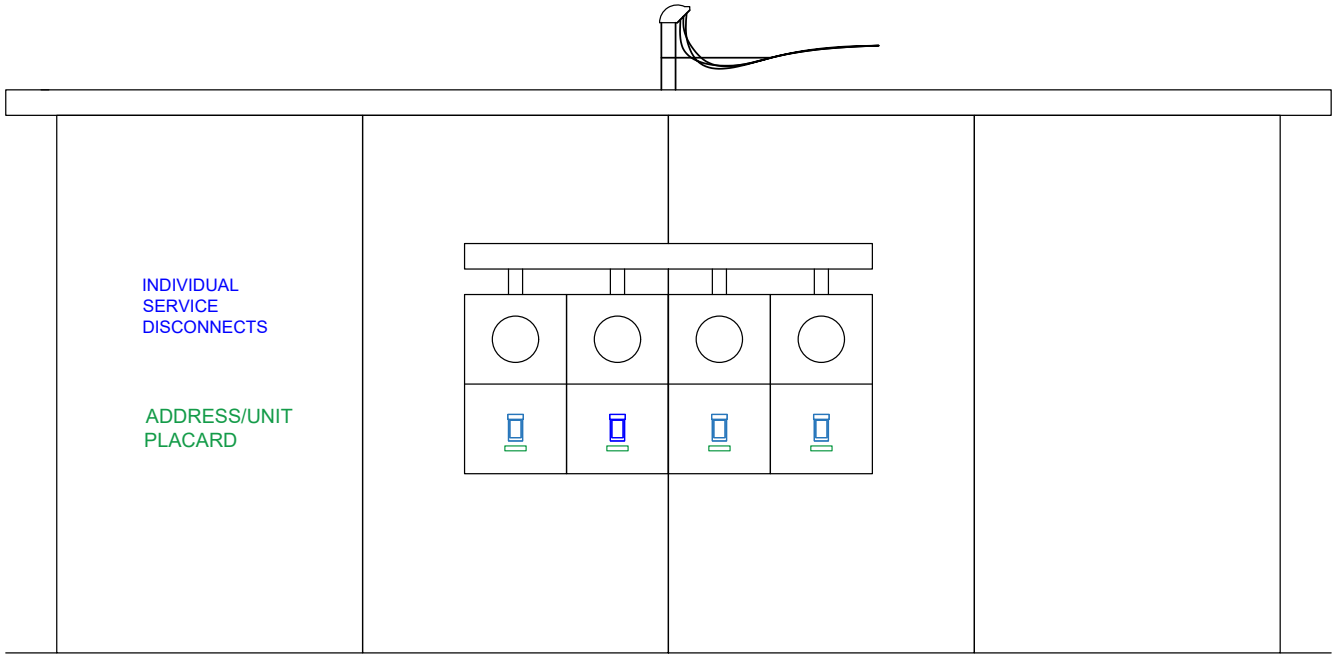
3.3 Clearances from Drops, 600 Volts and Below

The customer will provide a point of attachment for the service drop that is as high as practical for the type of building being served. For multi-story houses and buildings, the point of attachment shall be located no less than 18 feet above the finished grade. Where the incoming service drop will overhang 6 feet or less of the roof, measured horizontally, and the service mast is located 4 feet or less from the nearest edge of the roof, the mast attachment point shall not be less than 30 inches above the roof to provide a minimum clearance of 18 inches or more between the service wire and drip loops to the roof. Where the service drop will overhang more than 6 feet of the roof, or the mast is located more than 4 feet from the nearest edge of the roof, the mast attachment point shall be no less than 54 inches above the roof to provide a minimum clearance of 3 feet between the service conductors and the roof outside a 6-foot radius from the mast, and the mast must be guyed. The roof shall not be readily accessible through a door, window, etc. If the roof is accessible by NEC or NESC Code definition, then applicable code clearance is required. Supports for service drops must be extended from and tied into the main structural members of the building. Masts shall be suitable for the loads applied. See Section 3.9 for a picture.

The point of attachment will normally be on the building wall facing the nearest utility pole. The route of the service drop shall not overhang adjacent property unless a utility easement is acquired from the appropriate landowner. The service drop shall not be obstruction by buildings, trees, or other objects.

If the area is subject to truck or farming equipment traffic, consult NorthWestern about attachment heights.

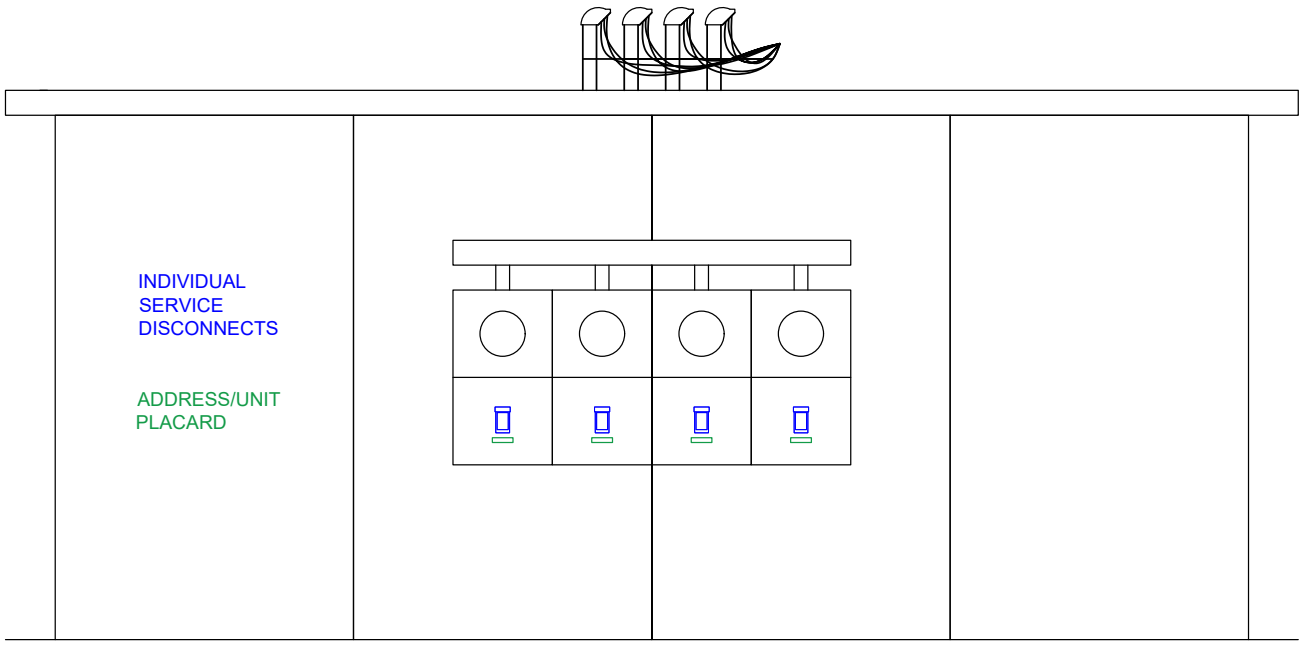
3.4 Grouped Meters – Single Service Mast



Notes:

1. A sealable service gutter is required by this arrangement.
    a. There shall be no more than 6 individual disconnects per service unless a main disconnect is included ahead of the sealable gutter.

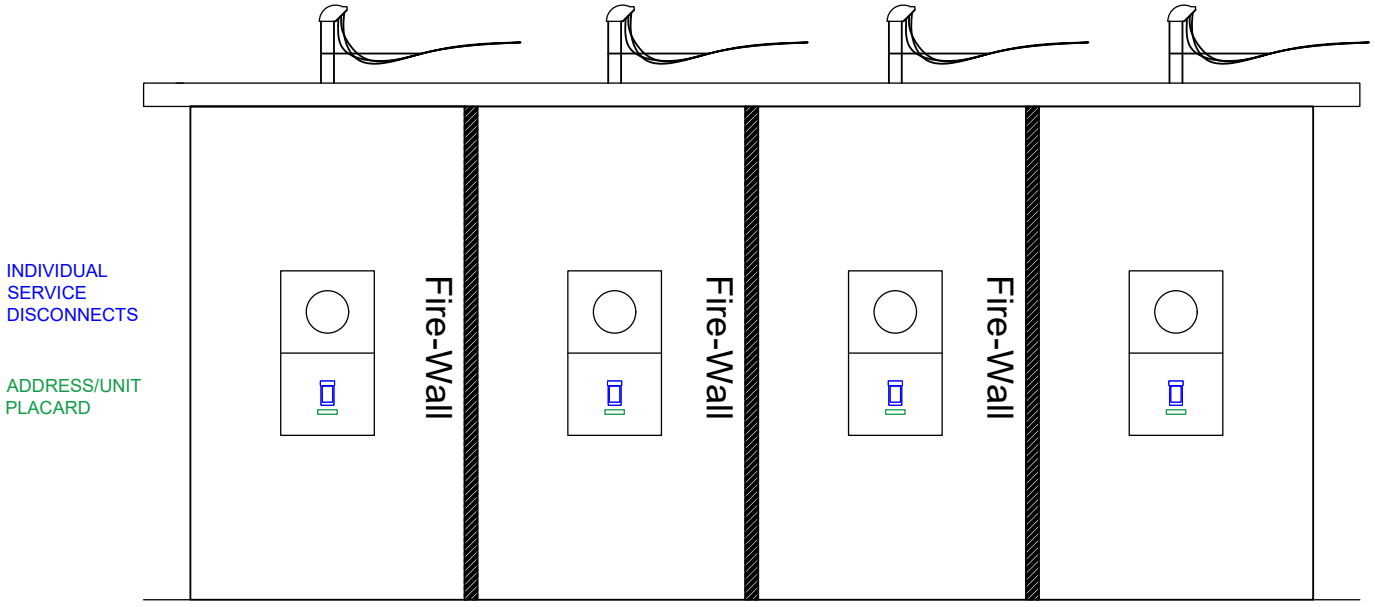
3.5 Grouped Meters – Individual Service Masts



Notes:

1. Individual service mast must be arranged so that all service entrance tails will reach a single point of attachment for utility service, which is the customer's responsibility.
2. Point of Utility service drop to each individual weatherhead should not exceed 18 inches.

3.6 Grouped Meters – Individual Utility Services



Notes:

1. Requires fire walls extended to the roof, in compliance with fire codes, between occupancies as shown.
   a. This arrangement must have prior approval of NorthWestern Energy and Electrical Inspection Authority.

3.7 Grouped Meters – Single Service

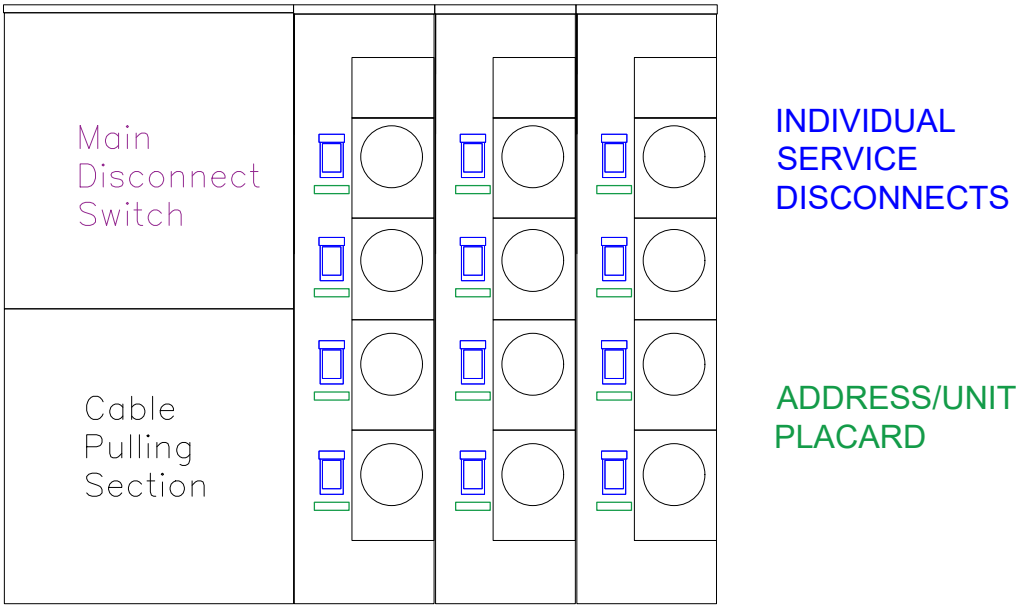


Figure 1- Integrated Assembly

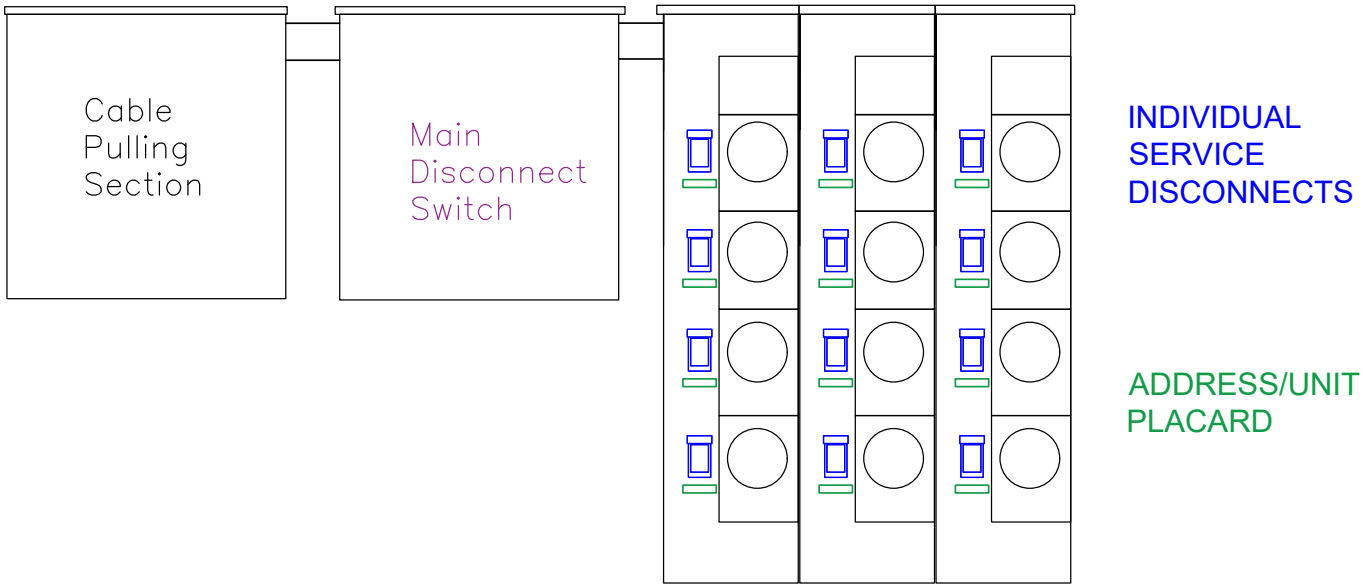


Figure 2 - Separate Components

1. A main disconnect, as well as individual service disconnects, is required for this installation.

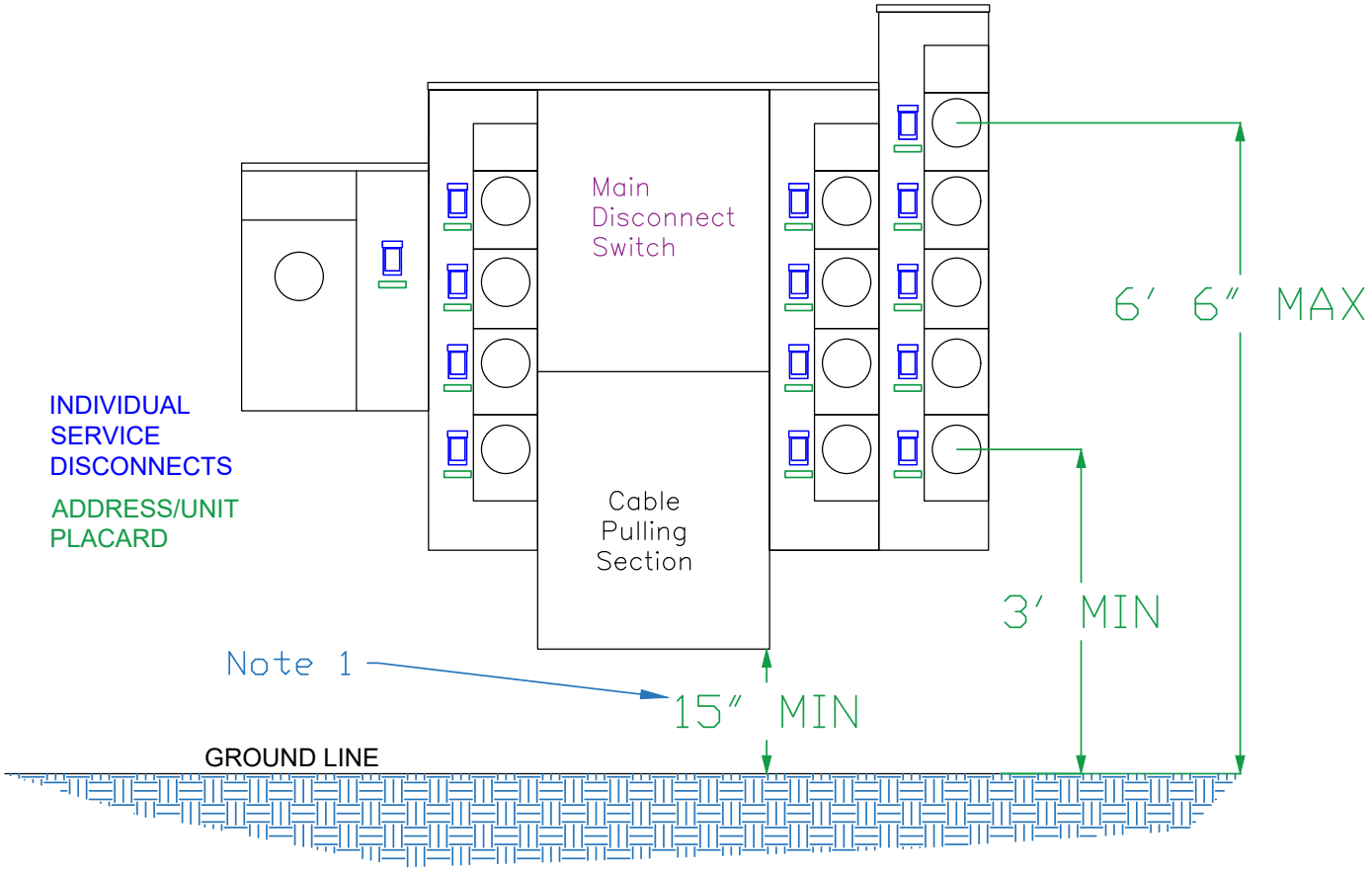
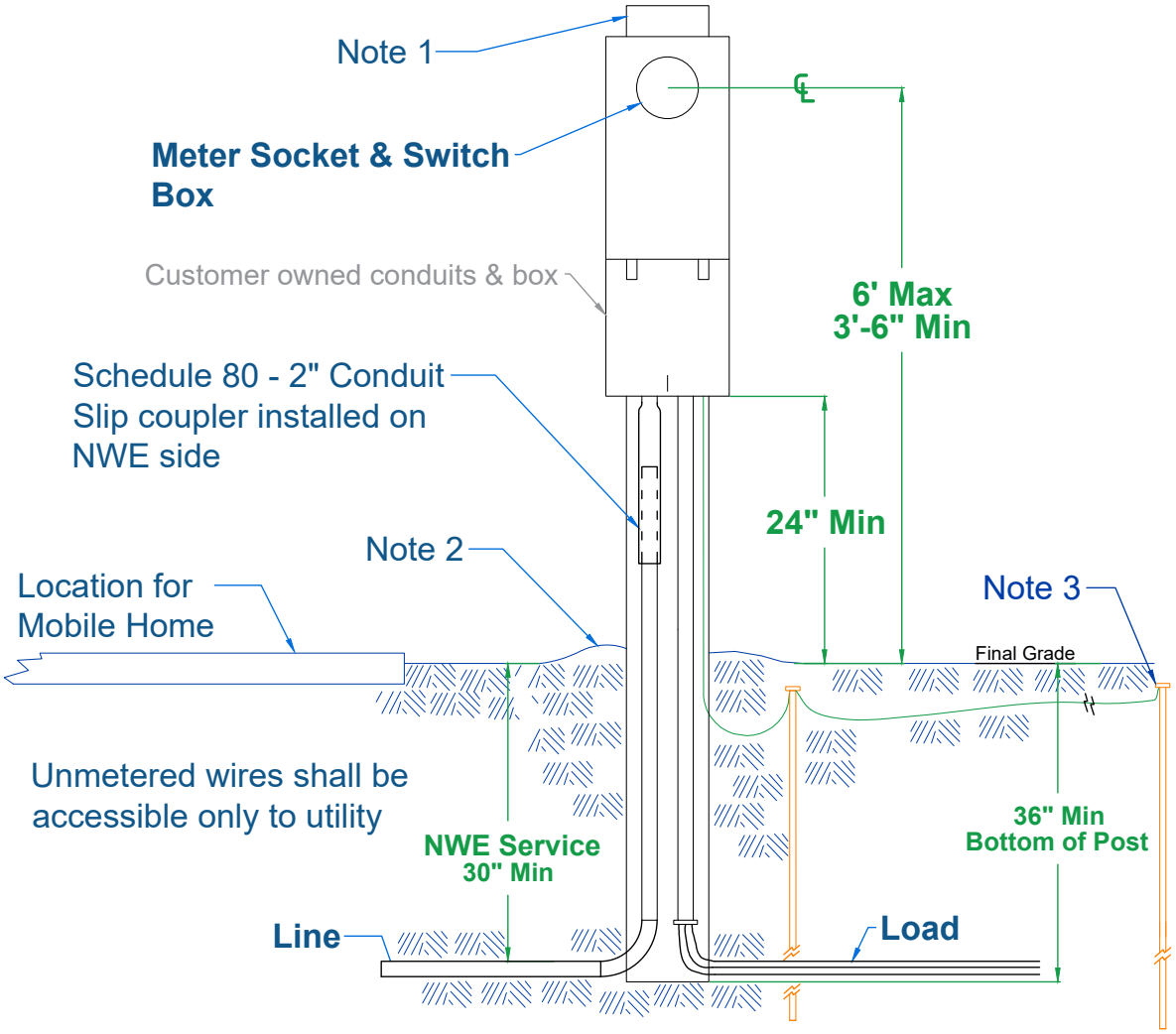


Figure 3 – Meter stacks

Notes:

1. 15-inch minimum clearance to allow for slip coupler.

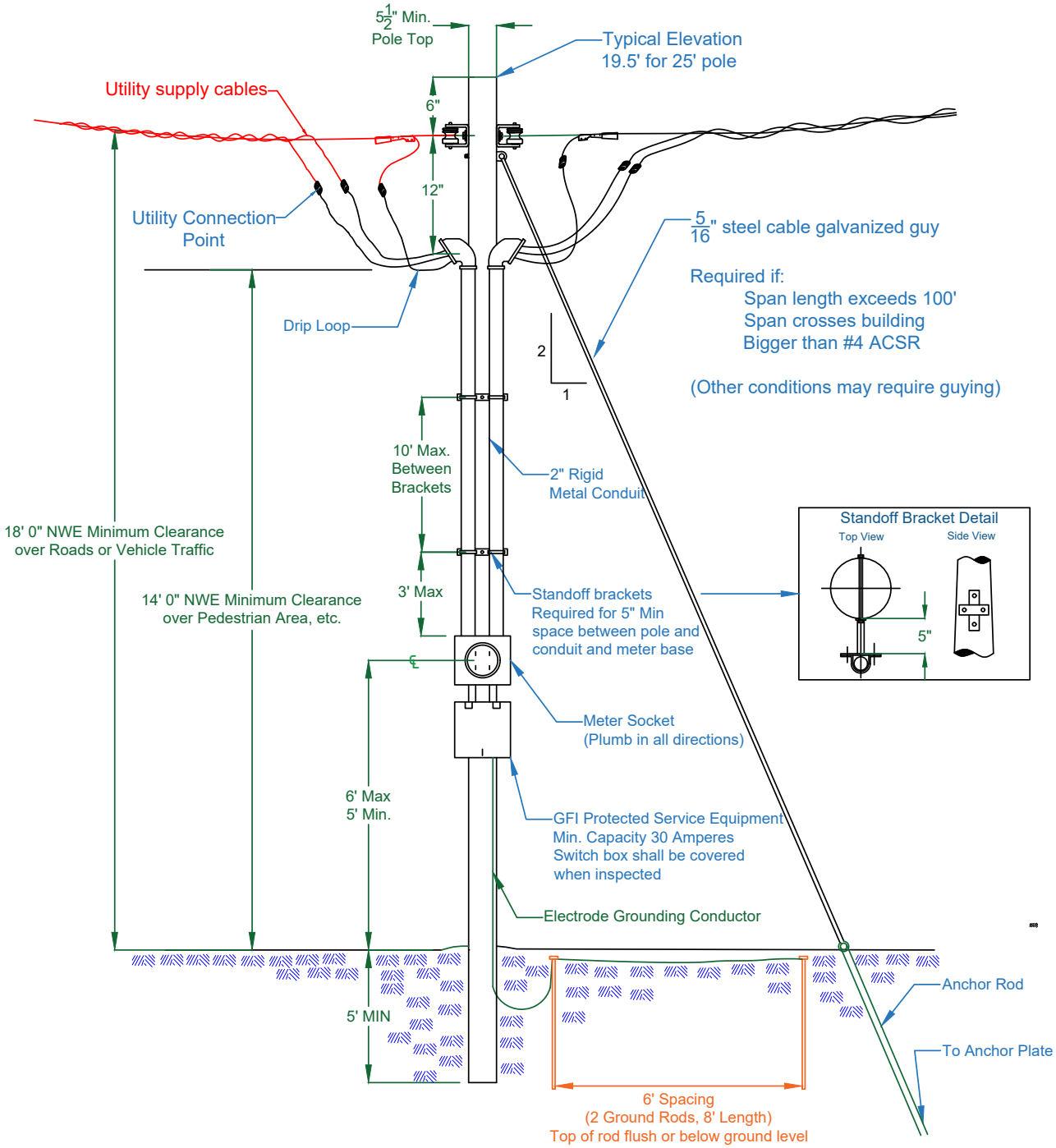
3.8 Underground Service – 6x6 Post Installation



Notes:

1. 6-inch-by-6-inch minimum size butt treated wood post owned by customer
2. Firmly tamp earth around post
   a. Dome earth to allow for settling
3. Meter base shall be firmly attached to post
4. Grounding
   a. (2) 8-foot ground rods with 6-foot spacing
   b. Top of rod flush or below ground level

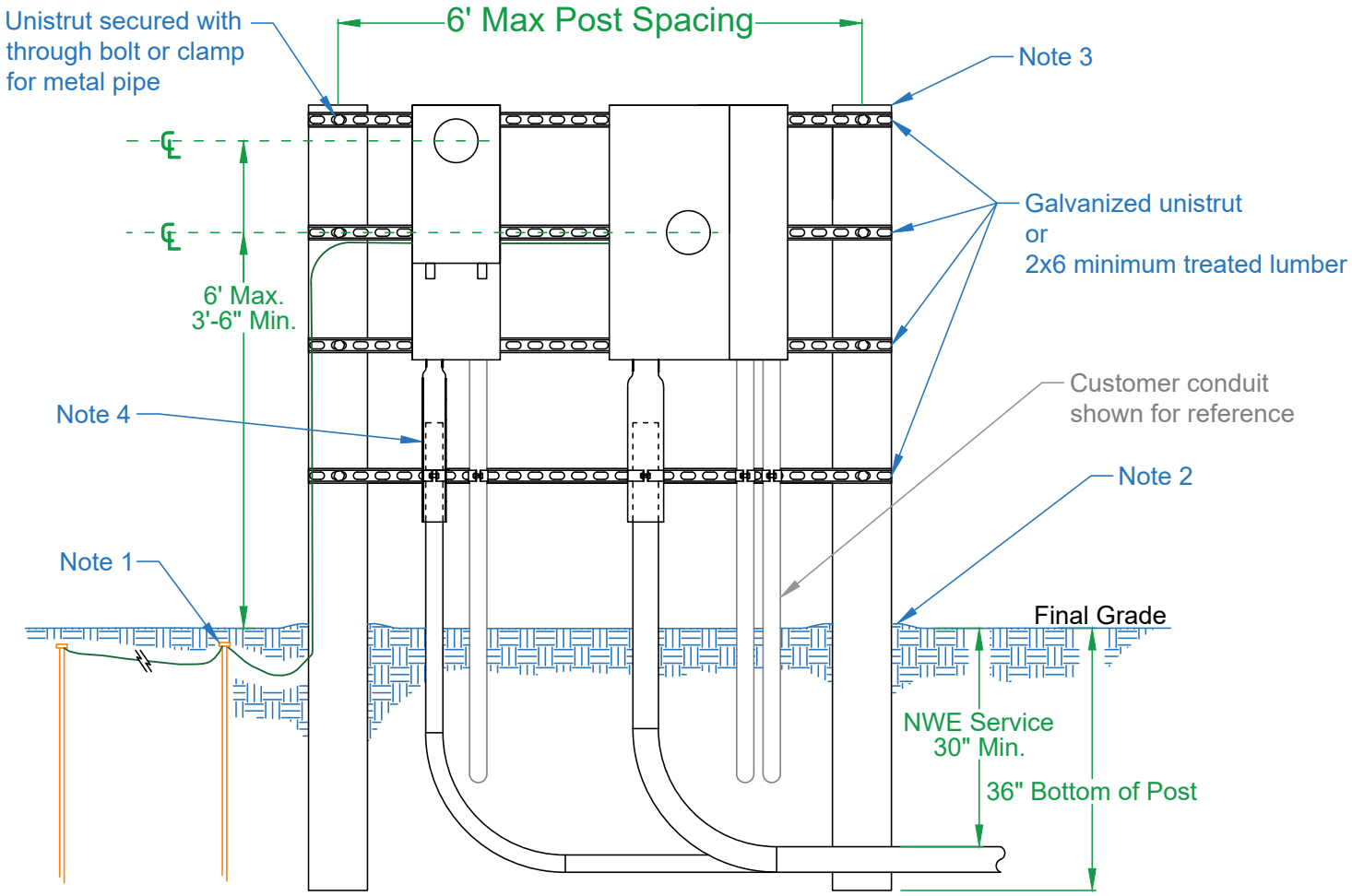
3.9 Overhead Temporary or Permanent Service Pole



Notes:

1. Pole
   a. Minimum 25 feet in length, minimum 5½-inch diameter at top.
   b. Set no less than 5 feet below ground level with soil properly compacted in disturbed area.
2. Wire Size
   a. For 200A Meter Base, minimum wire size is 4/0AL phase wires with 2/0AL neutral wire.
   b. For 100A Meter Base, minimum wire size is #2AL phase wires with #4AL neutral wire.
3. 18-inch length shall extend outside from weatherhead
4. 40-inch minimum on pole must be met from communications lines.
5. Insulated dead-end clamp shall be provided by customer.

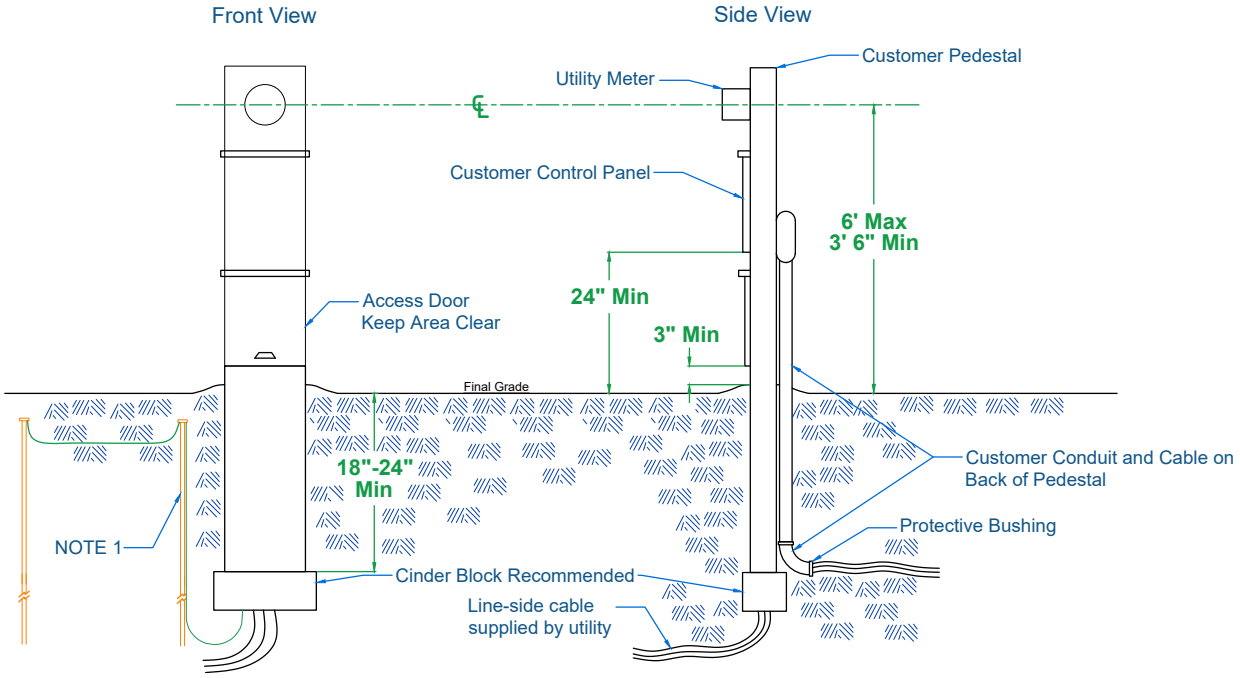
3.10 H – Frame Construction



Notes:

1. Two 8-foot ground rods required with a 6-foot minimum separation. Top of ground rod should be flush with or below ground level. Other grounding arrangements are permissible provided they fulfill the requirements of the NEC and are approved by state or local inspectors and the utility.
2. Earth around posts shall be firmly tamped and compacted, galvanized metal posts below grade shall be encased in a minimum of 8-inch diameter concrete, finished grade shall slope away from posts.
3. 6-inch-by-6-inch square post or 3-inch galvanized metal pipe, wood posts must be fully treated, meter bases shall be securely bolted to unistrut, entire structure is owned by customer.
4. Schedule 80 above grade conduit with slip couplers secured to unistrut with pipe clamps.

3.11 Mobile Home Pedestal



Notes:

1. Two 8-foot ground rods required with a 6-foot minimum separation. Top of ground rod should be flush with or below ground level. Other grounding arrangements are permissible provided they fulfill the requirements of the NEC and are approved by state or local inspectors and the utility.
2. Pedestal area below ground to have corrosion protection inside and outside.
3. Use corrosion inhibitor for all aluminum connections.
4. Unmetered wires must be accessible only to utility.
5. Meter must be plumb in all directions.

SECTION 4 - TRANSFORMER RATED METERING INSTALLATIONS

4.1 Termination Type

- Screw type Mechanical Terminations shall be appropriately sized, furnished and installed by the customer for all utility terminations.

4.2 Termination Size

- Mechanical lugs shall be compatible with the size and type of the service being installed (i.e., aluminum bodied AL-CU with aluminum cables, etc.).
- CT Cabinet termination lugs shall accommodate the following number of #4/0 – 600MCM Conductor lugs based on service ampacity rating.

4.3 CT Mounting Bus and Brackets

- Installation of CT Mounting Bus and Brackets shall be the responsibility of the customer and shall meet the CT Mounting Requirements of Sections 4.8 - 4.11 (relevant to service rating and configuration).
  - ↳ Equal clearance distance shall be provided for Line-Side and Load-Side Terminations to the CT Cabinet.
  - ↳ Ex. CT Mounting Brackets shall be installed on center within the CT Cabinet, providing the utility and electrical contractor equal spacing for conductor routing.

4.4 Current Transformer Cabinet/Compartment (Enclosure)

A CT cabinet is a customer-owned, sealable, steel, weatherproof cabinet that shall meet the following requirements:

- Contain only service conductors and utility equipment
- Metal cabinet
- **Equipped with a side-hinged cover**
- Equipped with Grounding Lug, sized to handle bonding wire and ground (#10) size
- Installed in a readily accessible location acceptable to NorthWestern Energy
- Securely mounted on a rigid surface
- Sized based on the “CT Cabinet Sizing Requirements” table below

CT Cabinet Sizing Requirements					
Service Type	Current Rating (Amps)	Minimum Exterior Cabinet Dimensions (inches)			CTs Mounted By
		Width	Height	Depth	
Single Phase	600A-800A	36	36	11	Utility
Three Phase	600A-800A	48	48	11	Utility
	1000A-1200A	48	48	11	Customer**
	Greater than 1200A	Pad-mounted - Consult NorthWestern Energy***			Customer**

**Meters Rated 400A and below shall be self-contained, except where the service voltage is 480Y/277.*

***NorthWestern Energy will provide Window (Donut) Type CTs to be mounted by the customer.*

****A drawing for a 1201A or greater CT Cabinet should be submitted to NorthWestern for approval. See Sections 4.10 and 4.11.*

4.5 Allowed Current Transformer Cabinet Styles

CT Cabinet Mounting Requirements					
Service Entry	**Cabinet Mount**	**CT Type**	**Bus Bar**	**Minimum Service Rating**	**Maximum Service Rating**
Overhead	Wall Mount	2 Hole Bar Type	Included in CT	600A*	800A
Underground	Wall Mount or Padmount**	2 Hole Bar Type	Included in CT	600A*	800A
Overhead	Wall Mount	Window	2 Hole - 4 inch Bar	1000A	1200A
Underground	Wall Mount or Padmount**	Window	2 Hole - 4 inch Bar	1000A	1200A
Underground	Padmount**	Window	4 Hole - 4 inch Bar	1400A	4000A

**Meters Rated 400A and below shall be Self-Contained, except where the service voltage is 480Y/277.*

***Pad-mounted cabinet drawings must be sent to NorthWestern for approval. See Sections 4.10 and 4.11.*

4.6 Meter Socket Enclosure

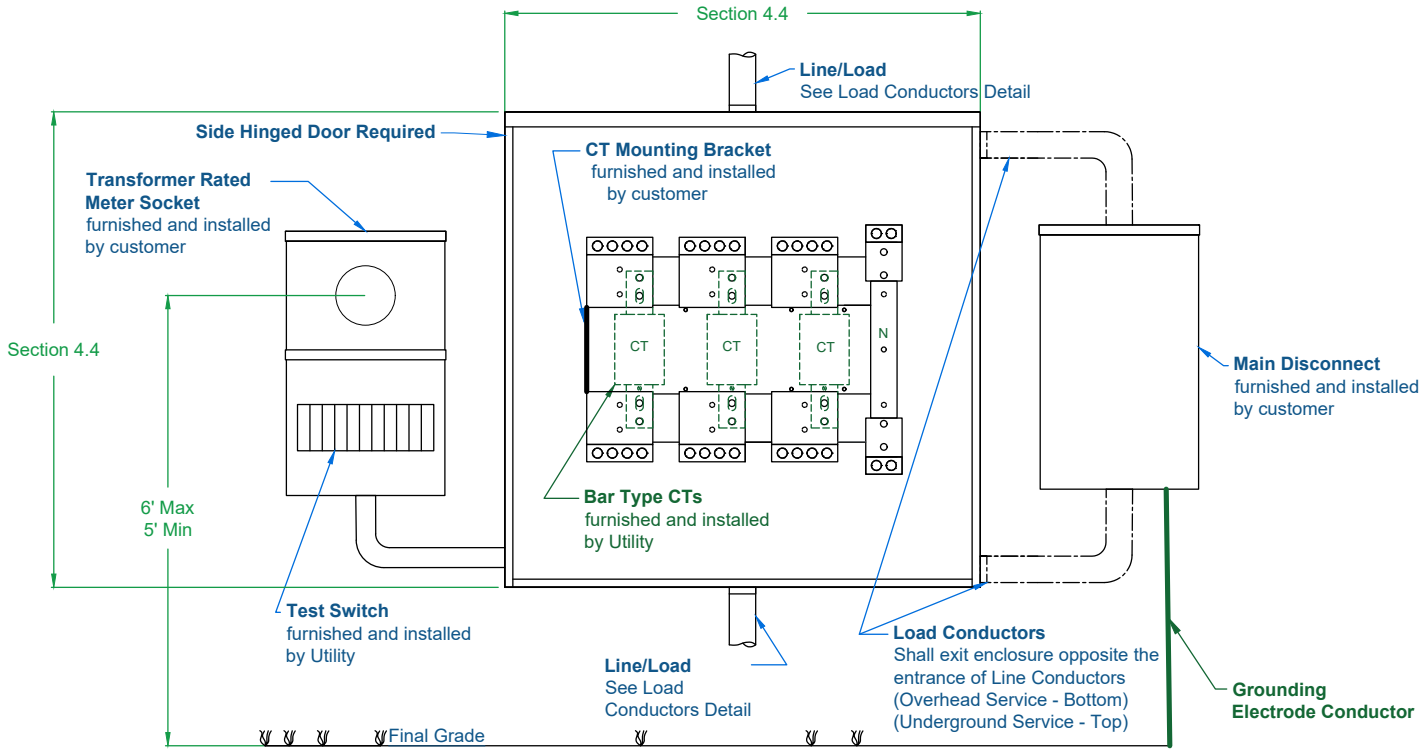
- Minimum width of the enclosure 11 inches.
- The following provisions, within the Meter Socket Enclosure, shall be provided for the utility test switch:
  - ↳ Space below the socket, 9 ½ inches in length
  - ↳ A perch, drilled and tapped

Note: Meter sockets with circuit closures or bypass clips will not be approved for new installations or modifications of existing service.

4.7 Metal Metering Conduit (CT Cabinet to Meter Socket)

- A minimum 1-inch diameter rigid metal conduit is required.
- Runs shall be limited to 30 feet or less.
- Bends shall be limited to 270 degrees.
- Shall be bonded by code-approved methods.
- Conduit must enter the CT Cabinet in front of all energized buses.

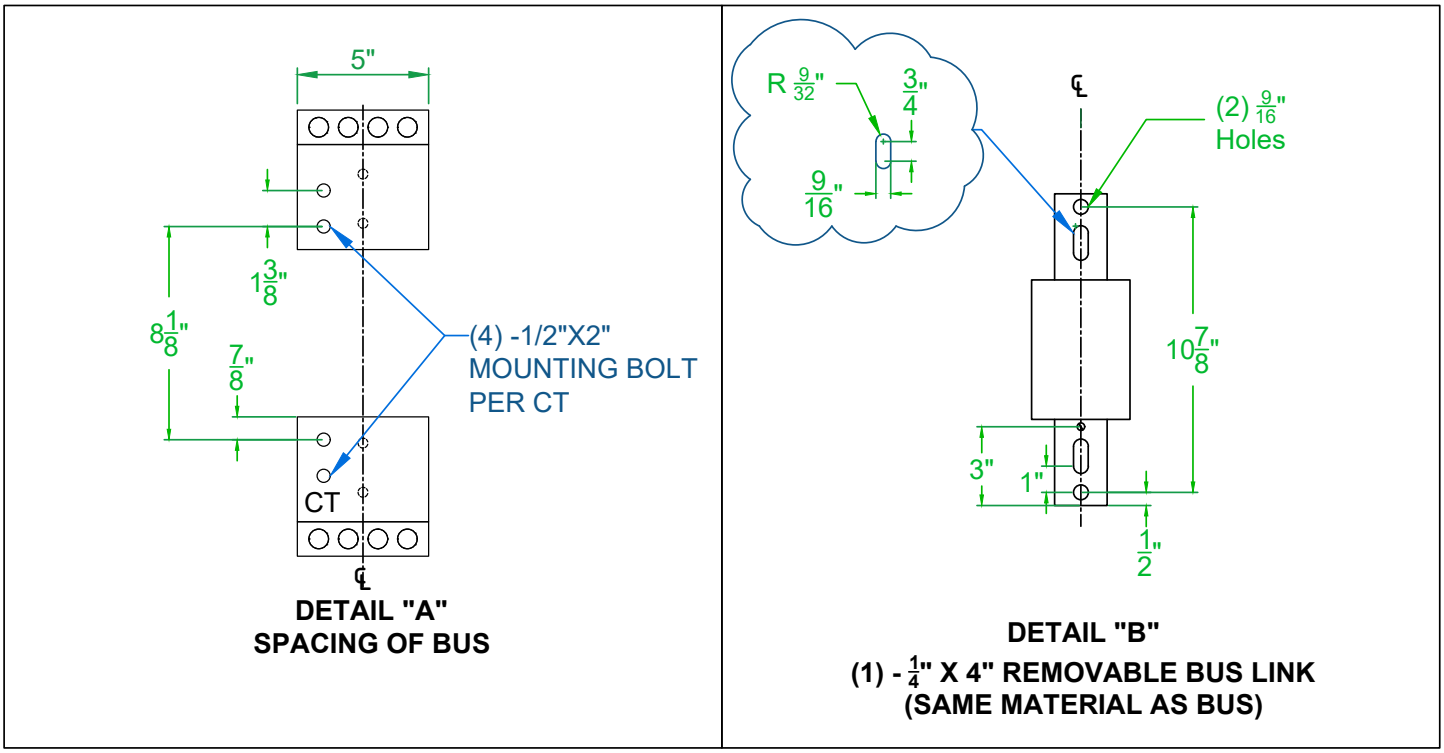
4.8 CT Cabinet (600-800A Max)



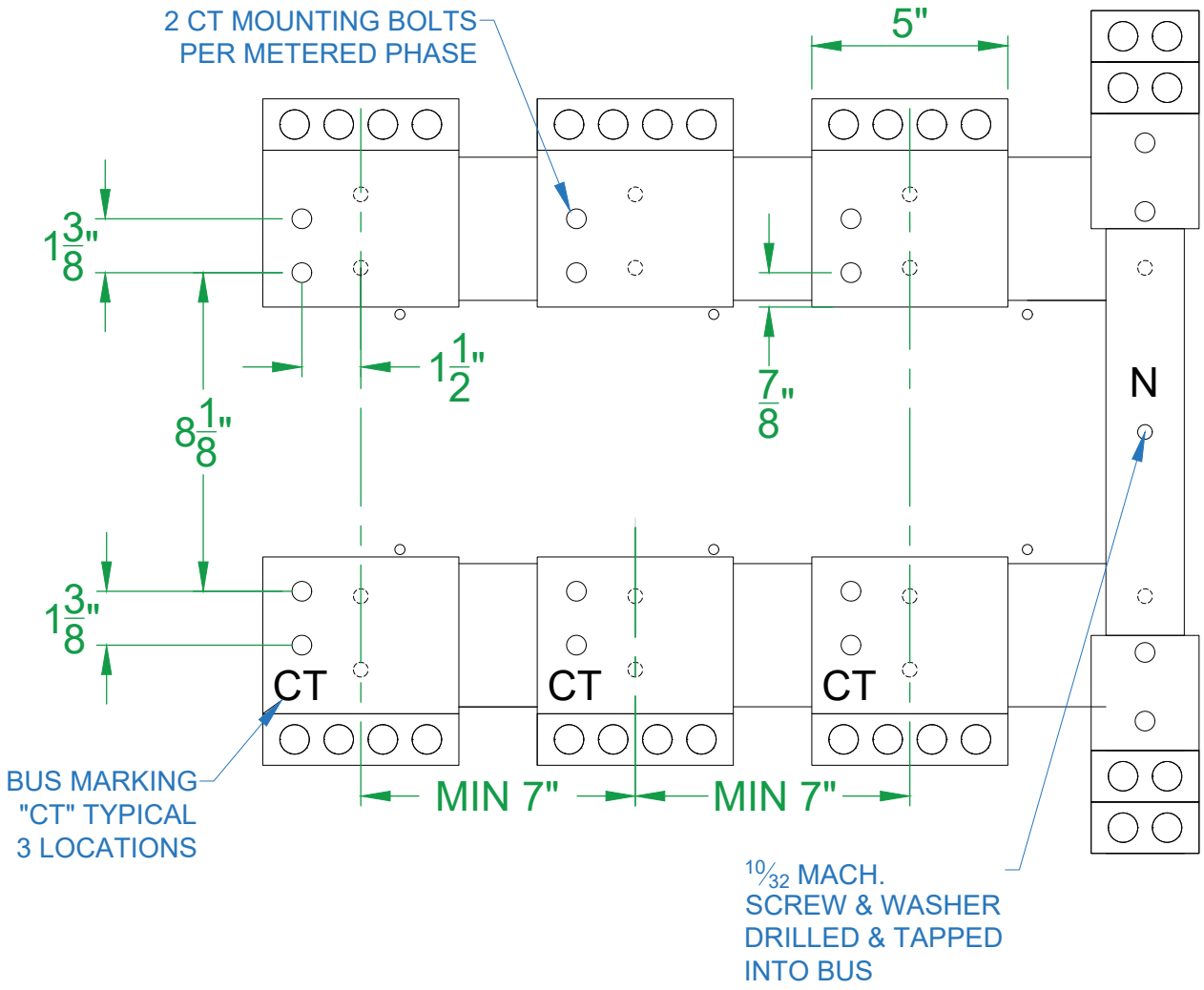
Notes:

1. Load Conductors shall exit the enclosure on the opposite half of the enclosure of the Line Conductors.
2. Cabinet Dimensions – Reference Section 4.4.
3. Equipped with **side-hinged cover**.
4. Terminations - Reference Section 4.2.
5. Main Service disconnect shall be mounted on the same outside wall as, and within 5 feet of, the cable pulling section.
6. For Single Phase applications, a 2 CT Bracket may be substituted.
   a. (1) CT will most likely be used.
7. The Grounding Electrode Conductor (NEC), shall not terminate in the CT Cabinet.
   a. Equipment Grounding Conductors extending from the CT Cabinet to the termination of the Grounding Electrode Conductor shall be used to bond the CT Cabinet to ground.
   b. Reference Section 2.3.
8. Use this configuration for a 400A 3-phase 480/277V service.

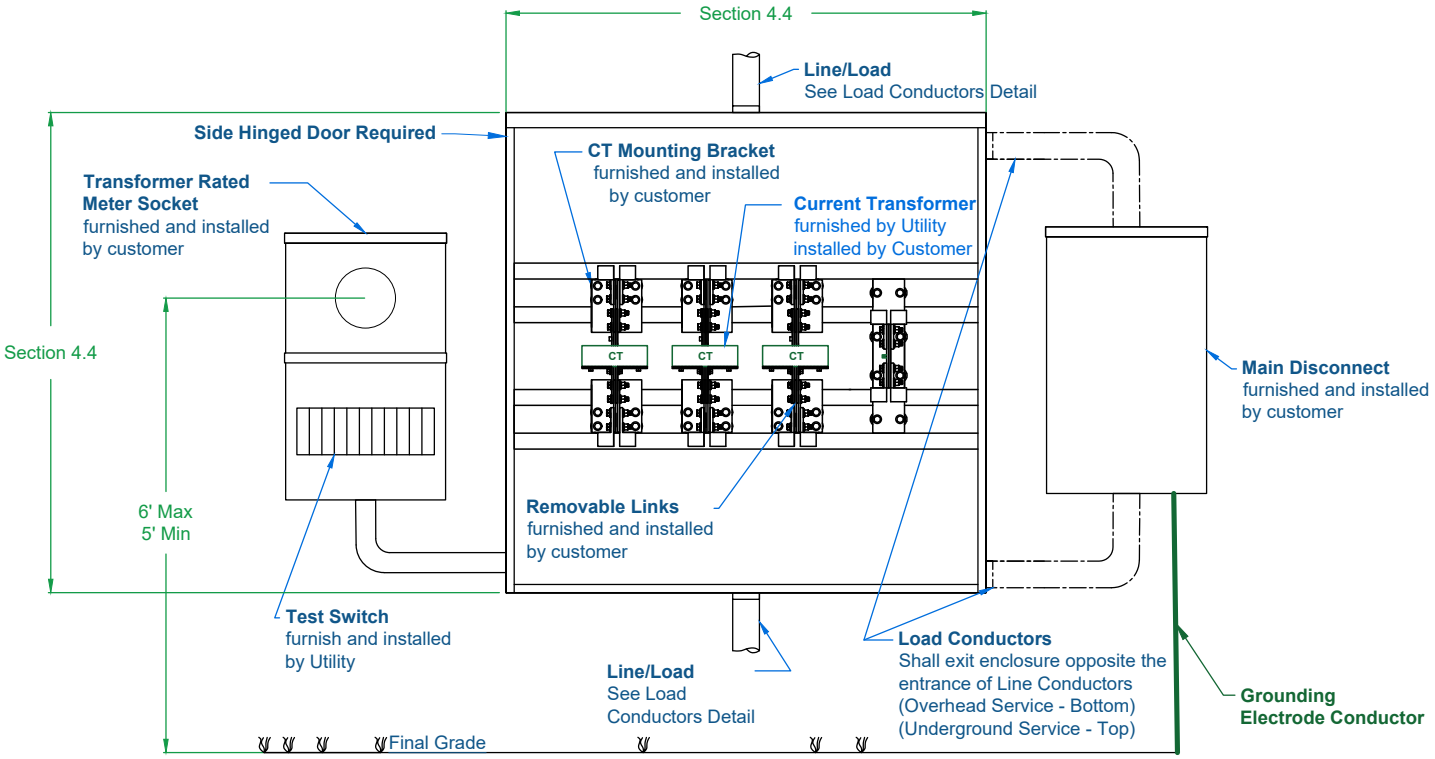
4.8.1 (2) Hole Bar Type CT Dimensions (600-800A Max)



4.8.2 (2) Hole Bar CT Bracket Dimensions (600-800A Max)



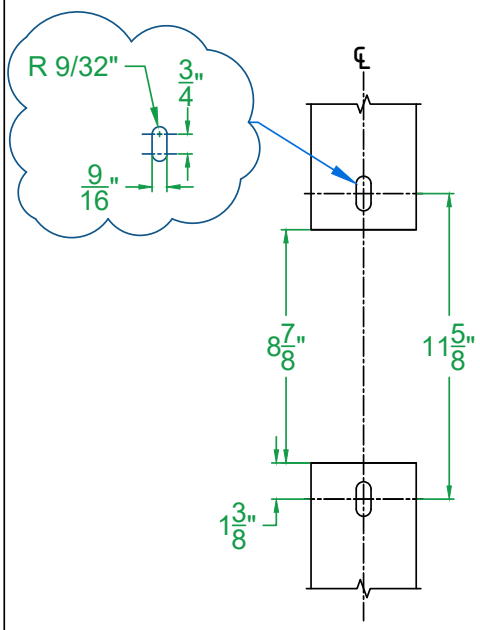
4.9 CT Cabinet (1000-1200A)



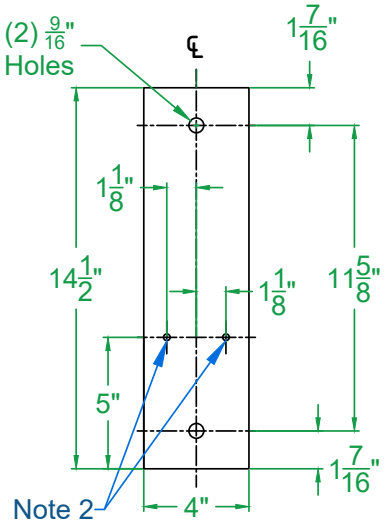
Notes:

1. Load Conductors shall exit the enclosure on the opposite half of the enclosure of the Line Conductors.
2. Cabinet Dimensions – Reference Section 4.4.
3. Equipped with side-hinged cover.
4. Terminations - Reference Section 4.2.
5. Main Service disconnect shall be mounted on the same outside wall as, and within 5 feet of, the cable pulling section.
6. The Grounding Electrode Conductor (NEC), shall not terminate in the CT Cabinet.
   a. Equipment Grounding Conductors extending from the CT Cabinet to the termination of the Grounding Electrode Conductor shall be used to bond the CT Cabinet to ground.
   b. Reference Section 2.3.

4.9.1 (2) Hole - 4 Inch Bus Dimensions (1000-1200A Max)



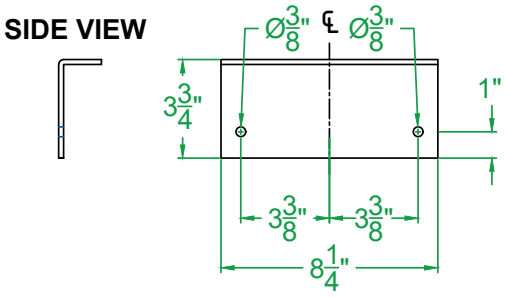
DETAIL "A"
DRILLING & SPACING OF BUS



DETAIL "B"
(1) - 1/4" X 4" REMOVABLE BUS LINK
(SAME MATERIAL AS BUS)

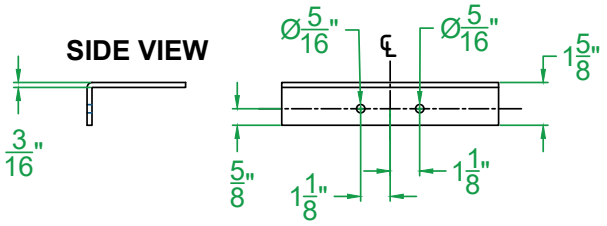
CT MOUNT VIEW

SIDE VIEW



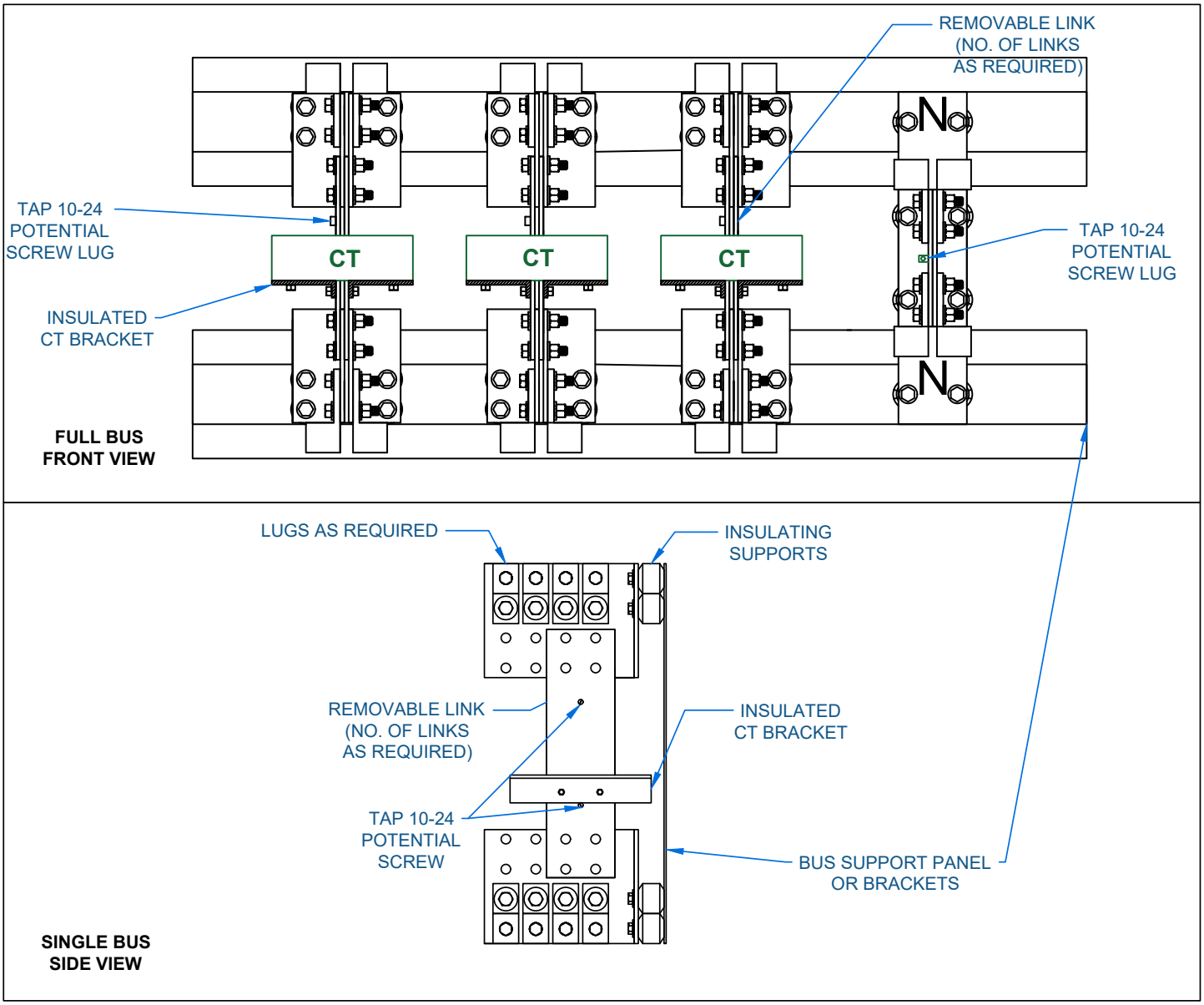
BUS MOUNT VIEW

SIDE VIEW

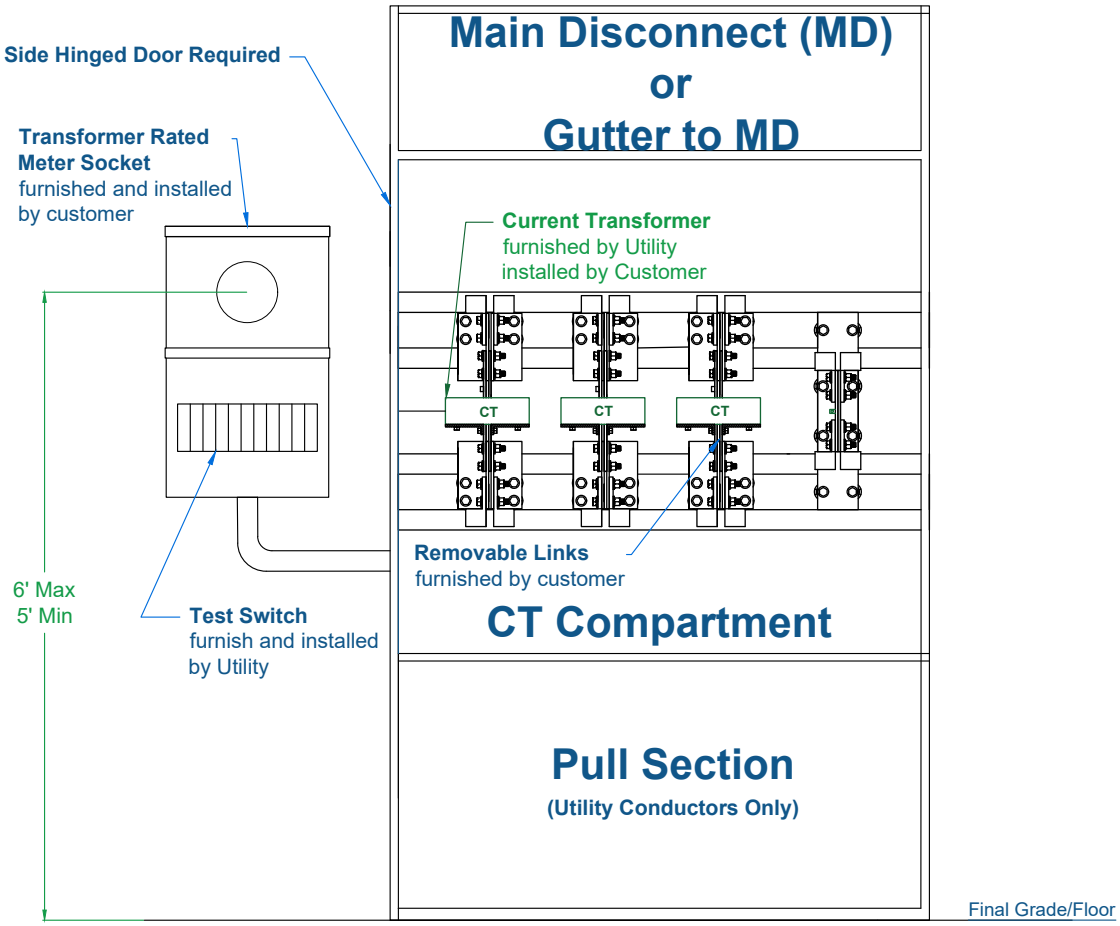


DETAIL "C"
INSULATED SUPPORT FOR
CURRENT TRANSFORMER
(MATERIAL: INSULATING, NON-TRACKING)

4.9.2 CT Mounting Configuration (1000-1200A Max)



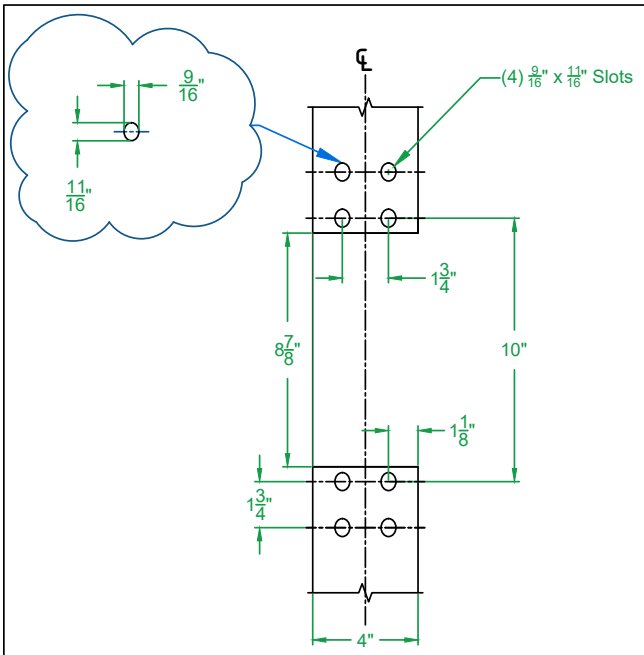
4.10 CT Cabinet Requirements (1400-4000A Max)



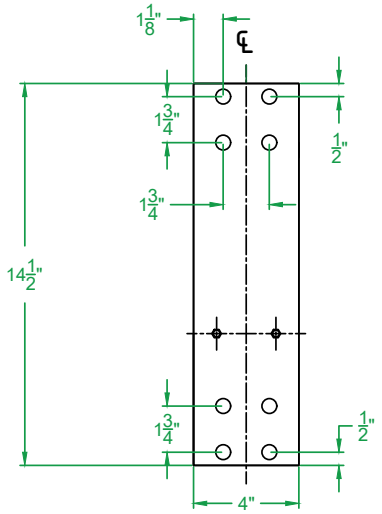
Notes:

1. Load Conductors shall exit the enclosure on the opposite half of the enclosure of the Line Conductors.
2. Cabinet Dimensions – Submit drawings for NorthWestern Energy approval.
3. Equipped with **side-hinged cover.**
4. Main Service disconnect shall be mounted on the same outside wall as, and within 5 feet of, the cable pulling section.
5. For 2 CT applications, the center phase bracket may be omitted.
6. The Grounding Electrode Conductor (NEC), shall not terminate in the CT Cabinet.
   a. Equipment Grounding Conductors extending from the CT Cabinet to the termination of the Grounding Electrode Conductor shall be used to bond the CT Cabinet to ground.
   b. Reference Section 2.3.

4.10.1 (4) Hole - 4 Inch Bus Dimensions (1400-4000A Max)



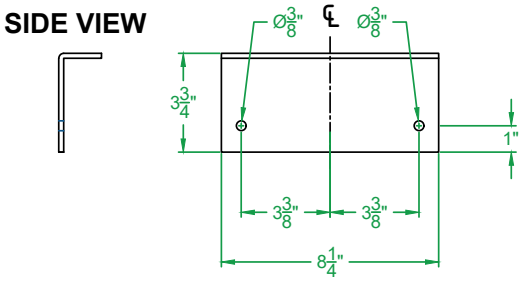
DETAIL "A"
DRILLING & SPACING OF BUS



DETAIL "B"
(1) - 1/4" X 4" REMOVABLE BUS LINK
(SAME MATERIAL AS BUS)

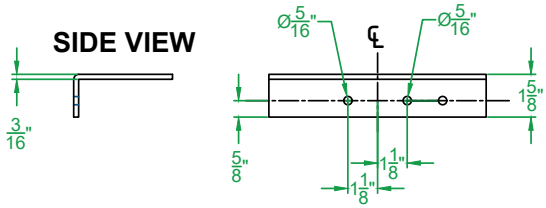
CT MOUNT VIEW

SIDE VIEW



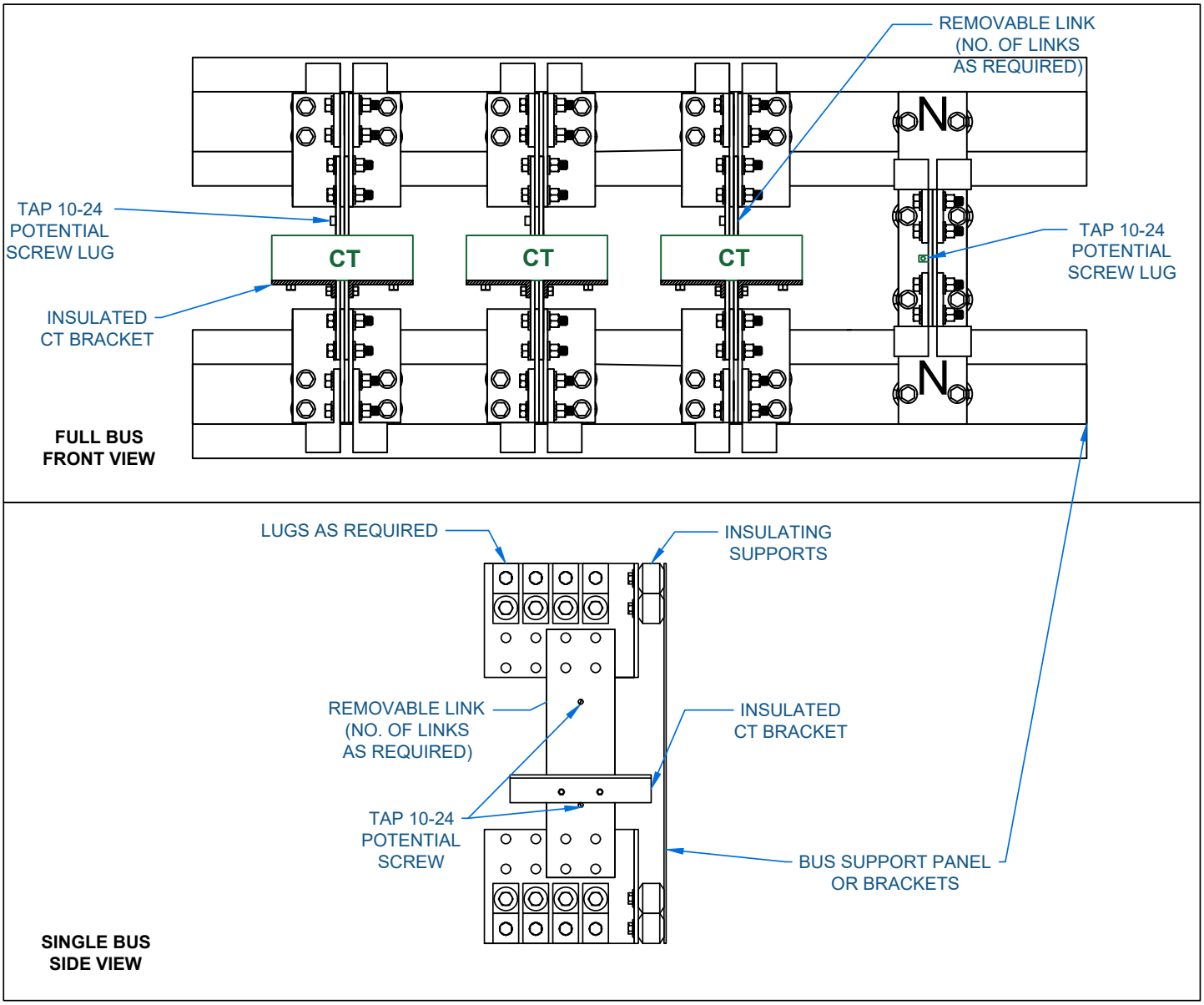
BUS MOUNT VIEW

SIDE VIEW

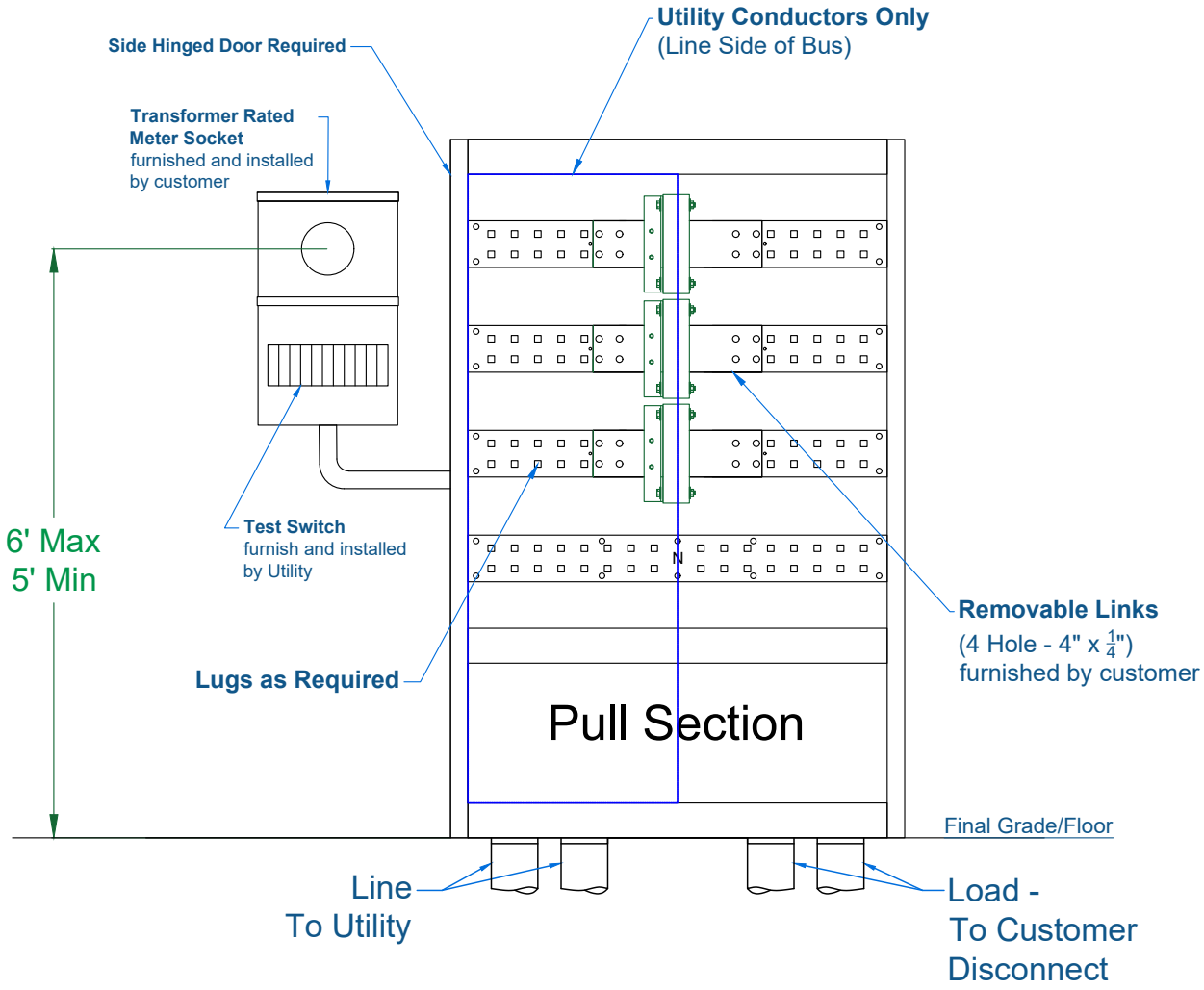


DETAIL "C"
INSULATED SUPPORT FOR
CURRENT TRANSFORMER
(MATERIAL: INSULATING, NON-TRACKING)

4.10.2 CT Mounting Configuration (1400-4000A Max)



4.11 Termination/CT Cabinet (1400-4000A Max)



Notes:

1. Load Conductors shall exit the enclosure on the opposite half of the enclosure of the Line Conductors.
2. Cabinet Dimensions – **Submit drawings for NorthWestern Energy approval.**
3. CT Compartment Equipped with **side-hinged cover.**
4. Main Service disconnect shall be integrated with CT Cabinet or mounted on the same outside wall as, and within 5 feet of, the cable pulling section.
5. The Grounding Electrode Conductor (NEC) shall not terminate in the CT Cabinet.
   a. Equipment Grounding Conductors extending from the CT Cabinet to the termination of the Grounding Electrode Conductor shall be used to bond the CT Cabinet to ground.
   b. Reference Section 2.3.

SECTION 5 - PRIMARY SERVICE

5.1 Primary Service – General

NorthWestern Energy will provide delivery to qualified customers directly, without transformation, from the high-voltage or "primary" distribution system standard for the location in which service is requested provided that:

- The distribution system nominal voltage is 2,400 volts or higher;
- Service at primary voltage will not, in the NorthWestern Energy's judgment, adversely affect the operation of the distribution system or other customer's service.

5.2 Requesting Primary Service

As early as feasible, applicants should complete an application for service either online or in person at a local walk-in office. Large loads may be subject to NorthWestern Energy performing a load study by our planning group.

5.3 Customer Equipment

The customer receiving service at primary or transmission voltage shall own:

- Poles, conductors, cables, transformers and associated protective devices beyond the metering point in accordance with the current filed tariff or special contract.
  - ↳ All such equipment, its arrangement and its operation will be subject to NorthWestern Energy approval.

5.4 Utility Equipment

NorthWestern Energy will normally provide, at the customer's expense, and maintain ownership of the following equipment in accordance with the current filed tariff:

- Pole-mounted or pad-mounted enclosure for primary metering equipment
- Meter Socket
- Primary Rated CTs & PTs
- Disconnecting means at or near the point of delivery capable of disconnecting the customer's system from the utility system.
  - ↳ Unless otherwise designated, the point of delivery shall be taken at the load-side of the utility's primary metering equipment.

SECTION 6 - UTILIZATION EQUIPMENT AND OPERATION

6.1 Equipment and Operation

The customer's equipment shall be designed to provide suitable operation for the service supplied, including standard voltage ranges and frequency. The customer shall not use any equipment or device that will adversely affect NorthWestern Energy's system or service to other customers. The customer's equipment must be designed for maximum fault current available. Available fault current rating for a service can be obtained by contacting your local construction department.

Electric service supplied by NorthWestern may be subjected to voltage disturbances which will not normally affect the performance of lighting, appliances, heating, motors or other typical electrical equipment, but may result in the improper operation of voltage-sensitive equipment such as computers or microprocessors. It is the customer's responsibility to provide those power conditioning devices that may be required to provide the quality of "power" necessary for optimum performance of the voltage-sensitive equipment.

6.2 Single-Phase Service – Limitations and Guidelines

- NorthWestern Energy, at its option, may limit the maximum single-phase load served through one point of delivery.
  - ↳ Single-phase load limitations are determined on a case-by-case basis given system-specific conditions.
    - **800A Service Panel maximum**
- Any equipment having a total capacity greater than 11.5 kilowatts should be so designed and controlled that not more than 11.5 kilowatts will be switched on or off at any one time.
- Any single piece of equipment with rated capacity of two kilowatts or more should be operated at not less than 208 volts.
- Three-phase service may be required in lieu of single-phase service where, in NorthWestern Energy's judgment, the customer's connected load is of a size that three-phase service is necessary.

6.3 Polyphase Service – Limitations and Guidelines

NorthWestern Energy, at its option, may limit the maximum load served through a single point of delivery to the capacity of the largest size transformer designated as a "utility standard."

- In general, prior agreement should be obtained for service to three-phase loads larger than 500 kilovolt-ampere.

Three-phase service, if available, will normally be provided in accordance with the NorthWestern's current tariff to non-residential customers upon request except where:

- Total load is less than 10 kilowatts.
- Largest motor is less than three horsepower.

6.4 Load Balance

Single-phase loads on three-phase services shall be balanced, as practicable, across all three phases to limit current unbalance. A per phase current imbalance exceeding 10% shall be corrected at the customer's expense. An aggregate rating of four kilowatts or greater should be balanced on the ungrounded conductors as closely as possible on a three wire or four wire service.

6.5 Motors – General

Motors should allow for the satisfactory operation of customer equipment and appliances without interference to other equipment or service to other customers.

Motors may cause voltage disturbances resulting in flickering lights, television interference, and other objectionable conditions.

Any objectionable conditions caused by a customer motor shall be corrected at the customer's expense

Single-phase services shall be limited to motors rated 10 horsepower or less.

To assure adequate safety to personnel and equipment, the customer shall provide and maintain code-approved protective devices in each phase to protect all motors against overloading, short circuits, ground faults and low voltage, and to protect all three-phase motors against single-phasing.

6.5.1 Motor Identification

All motors connected to the NorthWestern Energy's system shall bear a manufacturer's nameplate indicating horsepower, continuous or intermittent duty, speed, voltage and current ratings. When a motor is rewound to produce a change in the original design, a new nameplate shall be attached indicating the new characteristics.

6.5.2 Current Limiting Device Requirements (Soft Start – VFD)

Inrush current limiting devices, including reduced voltage starters or variable frequency drives, are required on the following:

- Three-phase motors rated 30 horsepower or greater.
- Three-phase 10 horsepower for frequently started motors.

6.5.3 Allowable Starting Current

NorthWestern Energy will furnish information regarding allowable starting currents which, in NorthWestern's opinion, can be supplied without undue interference with service to other customers.

The starting currents permitted will depend upon the following:

- Frequency of the motor starts.
- Size and character of the customer's load.
- Design of the NorthWestern's distribution system specific to the area.

6.6 Motor Limitations - Open Bank Transformers

Three-phase motors being served through an "Open Delta" configuration shall be:

- Limited to a maximum of 20 horsepower total motor load. See Section 1.7.

6.7 Interfering Loads

Whenever a customer's utilization equipment has characteristics which cause undue interference with service to other customers, the customer shall make changes in such equipment or provide, at customer expense, additional equipment to eliminate the interference. Where practicable, NorthWestern Energy will furnish additional equipment in accordance with the current tariff.

6.8 Inspection and Testing

NorthWestern Energy reserves the right to inspect and test any equipment interconnected to our system. Upon request, the customer shall provide device specific information as well as operational characteristics of customer-owned equipment.

SECTION 7 - GENERATION SYSTEMS AND INTERCONNECTION

7.1 Emergency or Standy Generators

Generators for emergency or standby are to be connected to the customer's wiring system by a permanently installed transfer switch intended for that purpose. The transfer switch is to disconnect all ungrounded conductors connected to NorthWestern's system prior to connecting the generator to the conductors supplying the load (break before make). The transfer switch is to be designed and installed so that connection of the generator to NorthWestern's system is prevented for any mode of operation.

Small portable generators shall not be connected to the customer's wiring system unless a transfer switch is installed properly. Compliance with these provisions is necessary to prevent serious or possible fatal accidents.

7.2 Private Generation – Net Metering and Small Generator Interconnection

NorthWestern Energy's Small Generator Interconnection process (including Net Metering) is governed by Rules 16-23 of the Montana Electric Tariff.

Links to the process documents can be found at NorthWesternEnergy.com/NetMeter.

Questions pertaining to Small Generator Interconnection may be directed to our Interconnect Specialist.

Email: northwesternenergynetmeter@northwestern.com

Telephone: 406-497-4165

Mail:

NorthWestern Energy

Attn: Interconnect Specialist

11 E. Park St.

Butte, MT 59701-1711

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