

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

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WAUNAKEE UTILITIES ELECTRIC SERVICE RULES AND INFORMATION

100. PURPOSE

The purpose of this book is to supply essential information to Customers, Employees, Architects, Engineers, Contractors, and others concerned with electrical installations in the Waunakee Utilities service area. The Utilities objective is to cooperate with and assist Customers to obtain safe, efficient electric service.

This book will be updated from time to time to include industry improvements or other necessary changes. New books will be available at the Utilities Office during normal office hours and a cost of 15.00 dollars.

To avoid misunderstanding and expenses, Customers, Architects, etc. should during the planning stage, consult the Utilities about electric service(s) available and the Utilities applicable rates and rules not included in these service rules.

Information in this book is intended to cover normal installations. The Utilities should be consulted for special cases and conditions.

101. CODES AND RULES

All Customers wiring installations must conform with the safety requirements of applicable electric codes. Installations must also comply with local ordinances.

All Customers wiring installations must comply with the Utilities electric service rules, which are part of the Utilities rates on file with the Public Service Commission of Wisconsin.

State law requires that the Utilities must receive an authorized Electrical Inspector's certificate of approval, or if there is no local inspector, the wireman's affidavit stating that the wiring complies with the state electrical code before furnishing electric service.

The Utilities is not required to inspect Customers wiring installation or equipment as to safety, suitability, or compliance with codes. **The Utilities may refuse or disconnect services to any installation, which does not comply with the Utilities electric service rules or may be dangerous to persons or property**

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102. CONTINUITY OF SERVICE

The Utilities goal is to provide continuous electric service, restore service interruptions promptly, and maintain its facilities with minimum inconvenience to Customers. The Utilities does not guarantee to supply continuous service or to maintain standard voltages of frequency at all times.

103. FREQUENCY, VOLTAGE AND AMPERAGE LIMITATIONS **

All electric service is alternating current at 60 hertz. The Utilities provides each building or structure with only one service voltage. The service voltage provided is based on need and available service voltages. Any exceptions must be specifically approved by the Utilities. Standard service voltages provided by the Utilities are listed below.

- A. Three phase, 120/208 volt wye, 4 wire, 2000 amp Continuous Duty service entrance maximum with grounded neutral conductor from a pad mounted transformer
- B. Three phase, 120/208 volt wye, 4 wire, up to 1200 amp service entrance maximum with grounded neutral conductor from overhead transformer bank.
- C. Three phase, 277/480 volt wye, 4 wire, up to 2000 amp Continuous Duty service entrance maximum with grounded neutral conductor from a pad mounted transformer.
- D. Three phase, 277/480 volt wye, 4 wire, up to 600 amp Continuous Duty or 800 amp Intermittent Duty service entrance maximum with grounded neutral conductor from a overhead transformer bank.

104. HIGHER VOLTAGES

Service may also be furnished to Customers at the existing primary distribution voltage. Utilities approval is required for each installation.

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105. UNUSUAL CAPACITY REQUIREMENTS

Large power installations may require an extensive increase in the Utilities distribution system, which takes considerable time to complete. Such projects must be discussed with the Utilities well in advance to provide ample time for contract arrangements and construction of Utilities facilities to meet the Customer's start-up date.

106. ADDITIONS TO EXISTING LOADS

The Customer shall give the Utilities reasonable notice of substantial load increase (permanent or temporary) which requires a larger transformer, service, or meter. This will enable the Utilities to change out its equipment preventing poor service or burned out transformers and meters. Customers failing to notify the Utilities may be charged for the replacement cost of damaged Utilities equipment.

107. SERVICE CONNECTIONS

The Utilities will make all service connections to its electric distribution system. Connection or alteration of the Utilities electric service or other equipment is prohibited and is subject to immediate disconnection and potential prosecution.

108. CUSTOMER ATTACHMENTS

The Utilities prohibits unauthorized attachment of wires, guys, signs, clothes lines, antennas, fences, etc. to its poles, pedestals, padmount transformers or other structures.

109. RESALE OF ENERGY

All energy sold shall be for the Customer's use only and cannot be resold except by specific Utilities authorization in accordance with a Utilities rate which permits resale.

110. OBTAINING INFORMATION

Contact Waunakee Utilities (608) 849-8111 during normal office hours for specific information about electric service(s).

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111. DISCLAMER

This Utility reserves the right to change any or all of these service rules and information at its discretion. All attempts to make this copy correct and up to date have been made. However, changes may have been made since this copy was printed. The drawings included in this manual are for illustration only; we suggest that you contact the Utilities as questions arise.

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200. GENERAL

The Utilities shall have the right to install its equipment on the Customer's premises, at a location, at the Utilities discretion as required to supply adequate service. Such equipment shall remain Utilities property and will be removed when service is discontinued.

201. ACCESS TO UTILITIES EQUIPMENT

The Utilities shall have the right of access to its equipment located on Customer premises for inspection, maintenance and restoration of service (**See Section 600**). The Utilities will attempt to give advance notice, but may not be able to do so during emergencies.

202. TAMPERING WITH METERS

Meters and meter equipment are sealed by the Utilities. (**Breaking of seals by unauthorized persons is not permitted except on meter enclosures which contain customer's fuses.**) The Customer should notify the Utilities immediately after breaking seals to replace fuses.

Meters shall not be removed or relocated except by authorized Utilities employees. Upon request, with reasonable advance notice, the Utilities will furnish employees to remove or relocate meters. (**Meters that are removed or relocated without Utilities approval is reason for immediate disconnection of service and potential prosecution.**)

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300. RESPONSIBILITY FOR EXTENSIONS

The Utilities constructs, owns, and maintains all extensions of its distribution systems and makes all service and lateral connections. Rules governing extensions to the Customer are published in Utilities rates on file with the Public Service Commission of Wisconsin.

301. APPLICATION FOR SERVICE

Application for service shall be in writing and made well in advance of the date service is required. This will permit the Utilities to plan and schedule its work to provide service by the date required. The "Application for service or extensions and application for temporary services," cannot be applied to another location or assumed by another tenant at the same location.

302. OVERHEAD SERVICE DROP

The Utilities installs, owns and maintains an overhead service drop to a suitable point of support on the Customers premises in accordance with Section 202.

303. UNDERGROUND SERVICE LATERAL

The Utilities installs, owns and maintains underground secondary and primary voltage laterals to a suitable point of termination on the Customer's premises in accordance with Section 202.

The Utilities will not install underground extensions or service laterals across rock quarries, agricultural land or other locations not suitable for underground cables and equipment.

THE EIGHT-FOOT RULE

There are three rules pertaining to the locations of service entrances and service conductors. The National Electric Code states where the service disconnects may be located. The Wisconsin State Electrical Code states where customer owned service conductors may be located. The Electric Service Rules and Information states -where Utilities owned service conductors may be located. NEC: The National Electric Code in Section 230-70(a) limits the location of the service disconnect to outside of the building or structure, or inside nearest the point of entrance of the service conductors.

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304. UNDERGROUND SERVICE LATERAL - CONTINUED

COMM: The Wisconsin State Electrical Code in COMM 16.25(4) states that conduits for conductors serving service equipment located according to NEC 230-70(a) can extend no more than 8 feet into the building from the point they enter the inside of the building through the outside wall or concrete floor.

ESRI: The Electric Service Rules and Information Manual limits the length of conduits containing Utilities owned service conductors, serving service equipment located according to NEC 230-70(a), to extending no more than 8 feet along, into or under a Customer's building.

For Customer owned service conductors, both the National Electrical Code and Comm. 16 must be followed. For Utilities owned service conductors, both the National Electrical Code and the ESRI manual must followed.

The Utilities must contact digger's hot-line prior to any underground installation or doing any work that contains any excavation.

It is the Customer, or the Customer's contractor(s) responsibility to contact Diggers Hot-Line (811) prior to any work being, performed underground or near the Utilities overhead lines. State laws require 3 working days notice for digging any excavation other than emergencies.

305. TERMINATION OF UTILITIES CONDUCTORS ON A MAIN DISCONNECT

The Utilities will not terminate directly on a Customer's circuit breaker. When circuit breakers are utilized, the Utilities conductors must be terminated at a termination box, or on a landing pad with set screw lugs.

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400. TECHNICAL SPECIFICATIONS FOR METERING TRANSFORMER CABINETS

Listing, Labeling

Current transformer cabinets shall be listed and labeled as “Metering Transformer Cabinets” by all independent testing laboratories (such as U.L.) and approved by Wisconsin Department of Commerce to ensure compliance with Wisconsin Electrical Code, Volume 2. In addition to this requirement, the cabinet must be inspected and approved by Waunakee Utilities to ensure it meets our requirements.

Doors

Current Transformers Cabinets are to have side-hinged doors with a two or three point handle operated locking device with a minimum 3/8 - inch diameter-sealing hole to accept a company lock. The handle may not be operated when the lock is in place. The door(s) shall have a lockable wind-stop assembly installed.

Enclosure Type

As a minimum requirement, the cabinet type shall carry a NEMA 3R rating. For installations where a corrosive environment is present, the cabinet shall be rated as a NEMA 4X.

Electrical Clearances

Clearances per Wisconsin Electrical Code, Volume 2 shall be maintained with the Current transformers and associated wiring installed and the cover(s) closed. The Utilities minimum height (“H”) minimum depth and minimum width dimensions shall be maintained according to the Current Transformer Cabinet Specification Table (attached).

Bus / Line Side Lug Specifications

CT’s must be mounted vertically. The CT must be bolted to a landing pad such that the lugs cannot be bolted directly to the CT’s. Lugs shall be of the Allen-Set screw type, suitable for aluminum conductors.

PT Mounting

PT’s cannot be mounted directly in front or behind any other electrical components or Utilities conductors. An external, side attached PT box may be used and must have the minimum dimensions of 8” wide, 23” high, and 8” in depth.

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401. TECHNICAL SPECIFICATIONS FOR METERING TRANSFORMER CABINETS CONTINUED

Fasteners

No fasteners shall be able to be removed from the exterior of the cabinet. The only way to remove a fastener is by unlocking the door and gaining access to the inside of the cabinet.

Conduit Expansion Joints – Will be required on any piped services running under ground, and are supplied by the customer.

Acceptable Voltages and Current Ranges

120/240 volts and 120/208 volts, single phase 3 wire from 200 amps through 800 amps, 120/208 volts, three phase 4 wire from 400 amps through 2000 amps, 277/480 volts, three phase 4 wire from 400 amps through 2000 amps.

Service Configuration

Overhead Service – Top feed installations (Customer-supplied conductors) can only be utilized for Overhead services with a maximum rating of 1200 amps. Load side conductors must exit below the load side lugs. The “H” dimension does not apply to this configuration.

Underground Services / Bottom Exit – Underground services must enter and terminate on the bottom of the Current Transformer Cabinet. Load side conductors must exit above the top of the Current Transformers. The conductors can be routed through a separate internal compartment within the cabinet, through a side gutter (pull box), or conduit exiting above the load side lugs.

Underground Services / Pad-Mounted CT Cabinets – Metering Transformer Cabinets meeting the specifications for Bottom Entrance / Bottom Exit may be used in a freestanding, pad-mounted configuration providing the following requirements be met:

1. The cabinet must be approved “bottom-entrance / bottom exit” as listed in chapter 4 of this book.
2. The cabinet must have a Waunakee Utilities approved pedestal mounted to the bottom in order to bring the cabinet 10” above the pad.
3. The entire assembly will be bolted to a suitable concrete pad, providing stable support, and facilitating the required conduit for entrance and exit.
4. The appropriate meter socket will be mounted only on the side of the cabinet, at a height consistent with the requirement in this book.

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**402. TECHNICAL SPECIFICATIONS FOR METERING TRANSFORMER
CABINETS CONTINUED**

Approval Process

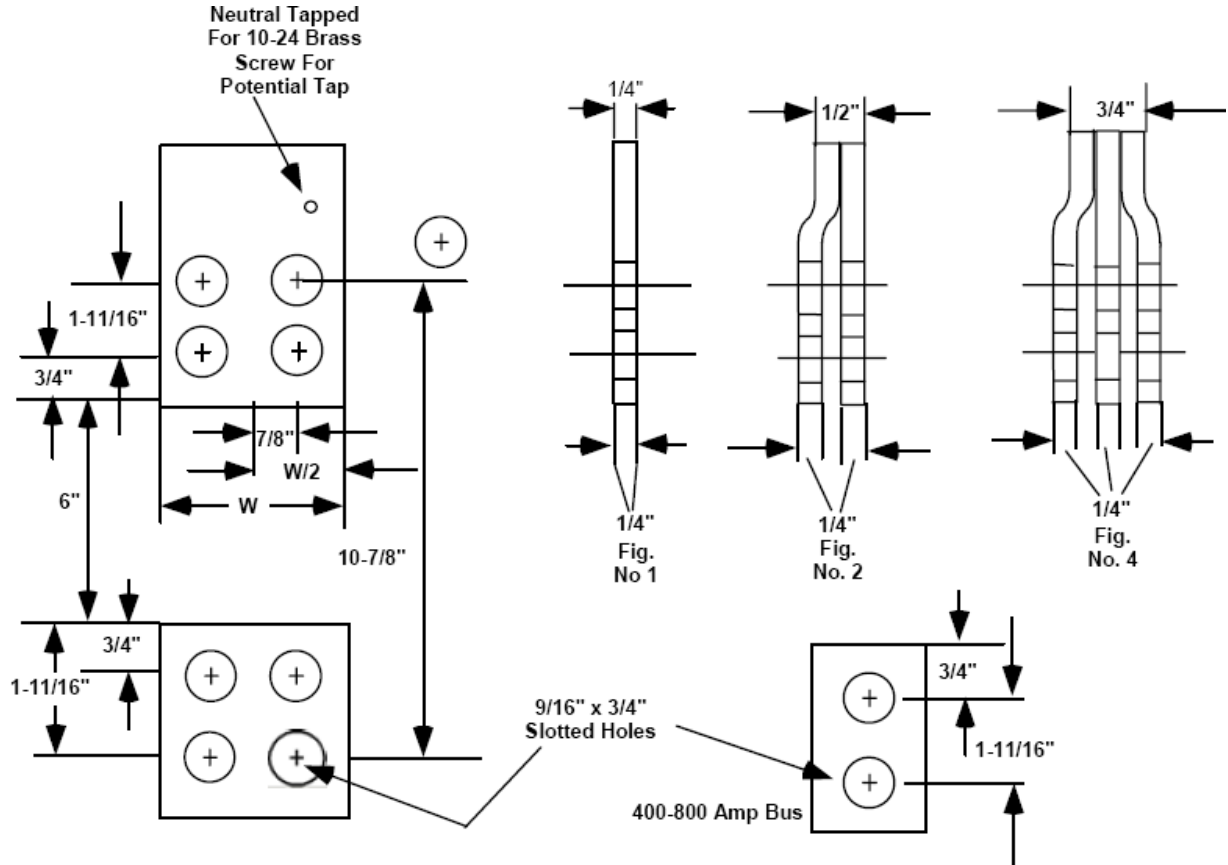
Equipment manufactures application information, technical specifications and dimension drawings must be submitted to the Waunakee Utilities Metering Division for review and approval. Factory visits will be made as necessary. Equipment found to meet these requirements will be allowed for a one-time installation for a field test once the field test shows the equipment to be satisfactory, a letter verifying temporary approval will be provided. The equipment will be listed in the next edition of the Electric Service Information Manual.

Periodic Review / Continued Listing

To continue to be approved and listed in the Electric Service Information Manual, equipment must be supplied as specified and the manufacturer must submit annual (June 1) verification and accuracy of model numbers and telephone contact number. If the specification is modified, manufacturers must verify their intent and submit new drawings by June 1 each year to continue to be approved and listed in the Electric Service Information Manual for the following update.

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403. CT BAR REQUIREMENTS



Amps	W	W/2	Copper	#/PH	Bars On Transf.	Fig. No.	Mounting Bolt Size
400	2	1	1/4 x 2	1	1	1	1/2x1-1/2
600	2-1/2	1-1/4	1/4 x 2-1/2	1	1	1	1/2x1-1/2
800	3-1/4	1-5/8	1/4 x 3-1/4	1	1	1	1/2x1-1/2
1000	4	2	1/4 x 4	1	1	1	1/2x1-1/2
1200	5	2-1/2	1/4 x 5	1	1	1	1/2x1-1/2
1600	3-1/4	1-5/8	1/4 x 3-1/4	2	2	2	1/2x2-1/2
2000	4	2	1/4 x 4	2	2	2	1/2x2-1/2
3000	5	2-1/2	1/4 x 5	3	3	4	1/2x2-1/2

- Customer shall furnish 1/2" mounting bolts for CT's

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404. CABLE SPACE REQUIREMENTS FOR CT CABINETS

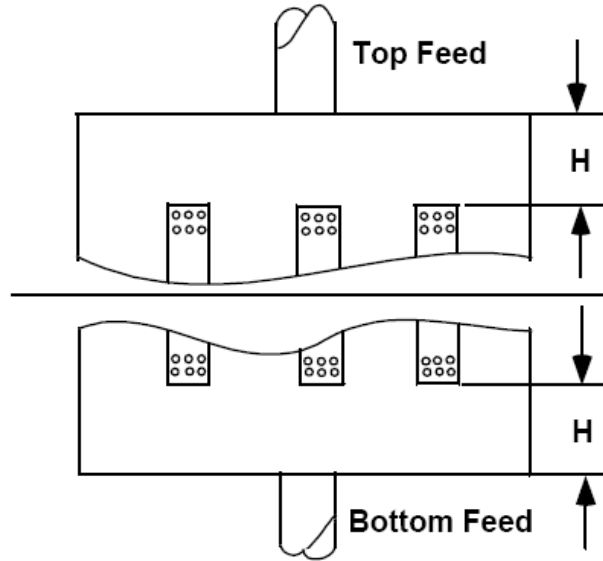


Table 1: Termination Cabinet Specification Table*

600 Volts Maximum

Ampacity	Lugs per Phase & Neutral	Lug Size	Unprotected Fault Current Rating	Min. Width	Min. Depth	Min. "H" Dimension
400	1	4/0-500	42,000 amps	20"	15"	20"
600	2	4/0-500	65,000 amps	24"	15"	20"
800	3	4/0-500	65,000 amps	24"	15"	20"
1200	4	4/0-500	65,000 amps	34"	15"	20"
1600	4	500-1000	65,000 amps	38"	15"	26"
2000	5	500-1000	65,000 amps	38"	15"	26"
2500	7	500-1000	65,000 amps	42"	21"	26"
3000	9	500-1000	65,000 amps	42"	21"	26"

Specifications Table Requirements: States minimum criteria and can be exceeded to utilize manufacturers' available equipment.

"H" dimension refers to the distance from the bottom of line side lug to the edge of the enclosure. See Diagram

Minimum width does not include separate internal compartment for Bottom Feed/Bottom Exit option. **Updated on June 2005.** This edition became effective **June 1, 2005** and supercedes all earlier editions.

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Table 1 – Wall Mounted Current Transformer Cabinet Specification Table

250 Volts Maximum

Ampacity	Lugs per Phase and Neutral	Lug Size	Unprotected Fault Current Rating	Min. Width	Min. Depth	Min. “H” Dimensions
400	1	4/0-500	42,000 amps	20”	15”	20”
600	2	4/0-500	65,000 amps	24”	15”	20”
800	3	4/0-500	65,000 amps	24”	15”	20”
1200	4	4/0-500	65,000 amps	34”	15”	20”
1600	4	500-1000	65,000 amps	38”	15”	26”
2000	5	500-1000	65,000 amps	38”	15”	26”
2500	7	500-1000	65,000 amps	42”	21”	26”
3000	8	500-1000	65,000 amps	42”	21”	26”

Table 2 – Wall Mounted Current Transformer Cabinet Specifications Table

600 volts Maximum with Side Mounted PT Enclosure

Ampacity	Lugs per Phase and Neutral	Lug Size	Unprotected Fault Current Rating	Min. Width	Min. Depth	Min. “H” Dimension
400	1	4/0-500	42,000 amps	24”	15”	20”
600	2	4/0-500	65,000 amps	24”	15”	20”
800	3	4/0-500	65,000 amps	24”	15”	20”
1200	4	4/0-500	65,000 amps	34”	15”	20”
1600	4	500-1000	65,000 amps	38”	15”	26”
2000	5	500-1000	65,000 amps	38”	15”	26”
2500	7	500-1000	65,000 amps	42”	21”	26”
3000	8	500-1000	65,000 amps	42”	21”	26”

Table 3 – Wall mounted Current Transformer Cabinet Specification Table

600 volts Maximum With Integral PT Mounting

Ampacity	Lugs per Phase and Neutral	Lug Size	Unprotected Fault Current Rating	Min. Width	Min. Depth	Min. “H” Dimension
400	1	4/0-500	42,000 amps	32”	15”	20”
600	2	4/0-500	65,000 amps	32”	15”	20”
800	3	4/0-500	65,000 amps	32”	15”	20”
1200	4	4/0-500	65,000 amps	42”	15”	20”
1600	4	500-1000	65,000 amps	46”	15”	26”
2000	5	500-1000	65,000 amps	46”	15”	26”
2500	7	500-1000	65,000 amps	50”	21”	26”
3000	8	500-1000	65,000 amps	50”	21”	26”

*Specifications are minimum criteria and can be exceeded to optimize manufactures’ available equipment. Minimum Width does not include separate internal compartment for Bottom Feed/Bottom Exit option or External PT. Enclosure.

“H” dimension refers to the distance from the bottom edge of the line side lug(s) to the bottom of the enclosure. See diagram above.

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405. METERING TRANSFORMER CABINETS SINGLE PHASE OR THREE PHASE – 250 VOLT MAX. BOTTOM FEED / TOP EXIT

Waunakee Utilities does not allow the grounding electrode conductor to terminate or run through the C.T. cabinet enclosure. The method of grounding and bonding is shown in Chapter 5 of the Electric Service Information Manual.

Waunakee Utilities shall terminate on the bottom of the C.T. Cabinet when entering from the bottom. Special permission required from Waunakee Utilities Planning Division for the customer to terminate on the bottom.

<u>MANUFACTURED</u>	<u>SIZE(AMPS)</u>	<u>1PH 3 WIRE</u>	<u>3PH 4 WIRE</u>
Erickson Electric	400	CT41-ALI	CT44-ALI
	600	CT61-ALI	CT64-ALI
	800	CT81-ALI	CT84-ALI
	1200	-----	CT124-ALI
	1600	-----	CT164-ALI
	2000	-----	CT-204-ALI
	2500	-----	CT254-ALI
	3000	-----	CT304-ALI
Galva Closure	400	ALI-413	ALI-434
	600	ALI-613	ALI-634
	800	ALI-813	ALI-834
	1200	-----	ALI-1234
	1600	-----	ALI-1634
	2000	-----	ALI-2034
	2500	-----	ALI-2534
	3000	-----	ALI-3034

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406. METERING TRANSFORMER CABINETS SINGLE PHASE OR THREE PHASE – 250 VOLT MAX. BOTTOM FEED / TOP EXIT – CONTINUED

<u>MANUFACTURED</u>	<u>SIZE(AMPS)</u>	<u>1PH 3 WIRE</u>	<u>3PH 4 WIRE</u>
A.M.P.	400	ALICT4-3L	ALICT4-4L
	600	ALICT6-3L	ALICT6-4L
	800	ALICT8-3L	ALICT8-4L
	1200	-----	ALICT12-4L
	1600	-----	ALICT16-4L
	2000	-----	ALICT20-4L
	2500	-----	ALICT25-4L
	3000	-----	ALICT30-4L

WALL MOUNT 250 VOLT -----BOTTOM IN - TOP OUT

E.M.I.	400	ALICT140	ALICT340
	600	ALICT160	ALICT360
	800	ALICT180	ALICT380
	1200	-----	ALICT312
	1600	-----	ALICT316
	2000	-----	ALICT320

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407. METERING TRANSFORMER CABINETS SINGLE PHASE OR THREE PHASE – 250 VOLT MAX BOTTOM FEED / BOTTOM EXIT

Waunakee Utilities does not allow the grounding electrode conductor to terminate or run through the C.T. cabinet enclosure. The method of grounding and bonding is shown in Chapter 5 of the Electric Service Information Manual.

Waunakee Utilities shall terminate on the bottom of the C.T. Cabinet when entering from the bottom. Special permission required from Waunakee Utilities Planning Division for the customer to terminate on the bottom.

<u>MANUFACTURER</u>	<u>SIZE (amps)</u>	<u>3PH 4 WIRE</u>	<u>1PH 3 WIRE</u>
Galva Closure	400	ALI-434UGBX	ALI-413UGBX
	600	ALI-634UGBX	ALI-613UGBX
	800	ALI-834UGBX	ALI-813UGBX
	1200	ALI-1234UGBX	-----
	1600	ALI-1634UGBX	-----
	2000	ALI-2034UGBX	-----
	2500	ALI-2534UGBX	-----
	3000	ALI-3034UGBX	-----
Erickson	400	CT44-ALI	CT41-ALI
	600	CT64-ALI	CT61-ALI
	800	CT84-ALI	CT81-ALI
	1200	CT124-ALI*	-----
	1600	CT164-ALI*	-----
	2000	CT-204-ALI*	-----
	2500	CT254-ALI*	-----
	3000	CT304-ALI*	-----

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408. METERING TRANSFORMER CABINETS SINGLE PHASE OR THREE PHASE – 250 VOLT MAX BOTTOM FEED / BOTTOM EXIT CONTINUED

<u>MANUFACTURER</u>	<u>SIZE(amps)</u>	<u>3PH 4 WIRE</u>	<u>1PH 3 WIRE</u>
AMP	400	ALICT4-4L	ALICT4-3L
	600	ALICT6-4L	ALICT6-3L
	800	ALICT8-4L	ALICT8-3L
	1200	ALICT12-4L	-----
	1600	ALICT16-4L	-----
	2000	ALICT20-4L	-----
	2500	ALICT25-4L	-----
	3000	ALICT30-4L	-----

*An optional **SIDE WIRING GUTTER** is required for Bottom Feed/Bottom Exit. The **SIDE WIRING GUTTER** may be located on the left or right side. Add suffix –SGL (side gutter on left) or SGR (side Gutter on right) to the catalog number at time of order.

409. WALL MOUNTED 250/600 VOLT BOTTOM IN / BOTTOM OUT W / PT PAN

<u>MANUFACTURER</u>	<u>SIZE(amps)</u>	<u>3PH 4 WIRE</u>	<u>1PH 3 WIRE</u>
E.M.I.	400	ALICT340P	ALICT140P
	600	ALICT360P	ALICT160P
	800	ALICT380P	ALICT180P
	1200	ALICT312P	-----
	1600	ALIPM316	-----
	2000	ALIPM320	-----
	2500	ALIPM325	-----
	3000	ALIPM330	-----

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

410. METERING TRANSFORMER CABINETS THREE PHASE – 277 / 480 VOLTS

Waunakee Utilities does not allow the grounding electrode conductor to terminate or run through the C.T. cabinet enclosure. The method of grounding and bonding is shown in Chapter 5 of the Electric Service Information Manual.

Waunakee Utilities shall terminate on the bottom of the C.T. Cabinet when entering from the bottom. Special permission required from Waunakee Utilities Planning Division for the customer to terminate on the bottom.

<u>MANUFACTURER</u>	<u>SIZE (AMPS)</u>	<u>TOP EXIT 3PH 4-WIRE</u>	<u>BOTTOM EXIT 3PH 4 WIRE</u>
Erickson Electric	400	CT44-PT-ALI	CT44-PT-ALI
	600	CT64-PT-ALI	CT64-PT-ALI
	800	CT84-PT-ALI	CT84-PT-ALI
	1200	CT124-PT-ALI	CT124-PT-ALI **
	1600	CT164-PT-ALI	CT164-PT-ALI **
	2000	CT204-PT-ALI	CT204-PT-ALI **
	2500	CT254-PT-ALI	CT254-PT-ALI **
	3000	CT304-PT-ALI	CT304-PT-ALI **

**** An optional SIDE WIRING GUTTER is required for Bottom Feed/Bottom Exit. The SIDE WIRING GUTTER may be located on the left or right side. Add suffix –SGL (side gutter on left) or SGR (side Gutter on right) to the catalog number at time of order.**

<u>MANUFACTURER</u>	<u>SIZE (AMPS)</u>	<u>TOP EXIT 3PH 4-WIRE</u>	<u>BOTTOM EXIT 3PH 4 WIRE</u>
Galva Closure	400	ALI-464	ALI-464UGBX
	600	ALI-664	ALI-664UGBX
	800	ALI-864	ALI-864UGBX
	1200	ALI-1264	ALI-1264UGBX
	1600	ALI-1664	ALI-1664UGBX
	2000	ALI-2064	ALI-2064UGBX
	2500	ALI-2564	ALI-2564UGBX
	3000	ALI-3064	ALI-3064UGBX

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

**411. METERING TRANSFORMER CABINETS THREE PHASE – 277 / 480
VOLTS CONTINUED**

<u>MANUFACTURER</u>	<u>SIZE (AMPS)</u>	<u>TOP EXIT 3PH 4-WIRE</u>	<u>BOTTOM EXIT 3PH 4 WIRE</u>
A.M.P.	400	ALICT4-4L	ALICT4
	600	ALICT6-4L	ALICT6-4L
	800	ALICT8-4L	ALICT8-4L
	1200	ALICT12-4L	ALICT12-4
	1600	ALICT16-4L	ALICT16-4L
	2000	ALICT20-4L	ALICT20-4L
	2500	ALICT25-4L	ALICT25-4L
	3000	ALICT30-4L	ALICT30-4L

**412. WALL MOUNTED – 250 / 600 VOLT – BOTTOM IN / BOTTOM OUT –
WITH PT PAN**

<u>MANUFACTURER</u>	<u>SIZE IN AMPS</u>	<u>3PH 4-WIRE</u>
E.M.I.	400	ALICT340P
	600	ALICT360P
	800	ALICT380P
	1200	ALIPM312
	1600	ALIPM316
	2000	ALIPM320
	2500	ALIPM325
	3000	ALIPM330

**WAUNAKEE UTILITIES
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413. METERING TRANSFORMER CABINETS WITH MAIN DISCONNECT

<u>MANUFACTURER</u>	<u>SIZE (AMPS)</u>	<u>1PH-250 V</u>	<u>3PH-250 V</u>	<u>3PH-480 V</u>
Erickson Electric	400	ALICTP3244N	ALICTP4244N	ALICTP4644N
	400	ALICTCB3244N	ALICTC4244N	

The above units are provided with 2-200 amp disconnects

400 (fusible)	ALICTP325N	ALICTP425N		
400 (CCT Brkr)	ALICTDK325N	ALICTDK425N	ALICTKD425N	

The above units are provided with 1-400 amp disconnect (Fusible or CCT Brkr)

A.M.P.	400	ALIMCT225(*)	ALIMCT325(*)	ALIMCT365(*)
	600	ALIMCT226(*)	ALIMCT326(*)	ALIMCT366(*)
	800	ALIMCT227(*)	ALIMCT327(*)	ALIMCT367(*)
	1200	ALIMCT228(*)	ALIMCT328(*)	ALIMCT368(*)

* Fill in catalog # with (B) for CT at bottom configuration, or use (T) for CT at the top configuration.

**WAUNAKEE UTILITIES
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414. PAD MOUNTED METERING TRANSFORMER CABINETS

<u>MANUFACTURER</u>	<u>SIZE(AMPS)</u>	<u>1PH – 240 VOLT</u>	<u>3 PH – 240 VOLT</u>	<u>3PH – 600 VOLT</u>
Erickson Electric	400	CT41-ALI**	CT44-ALI**	CT44-PT-ALI **
	600	CT61-ALI**	CT64-ALI**	CT64-PT-ALI **
	800	CT81-ALI**	CT84-ALI**	CT84-PT-ALI **
	1200		PMCT124MF-ALI	PMCT124MF-ALI*
	1600		PMCT164MF-ALI	PMCT164MF-ALI*
	2000		PMCT204MF-ALI	PMCT204MF-ALI*
	2500		PMCT254MF-ALI	PMCT254MF-ALI*
	3000		PMCT304MF-ALI	PMCT304MF-ALI*

* Requires Erickson P/T enclosure when ordering.

**Requires Stainless Steel Mounting Base (CAT.#PMB1624X10) when ordering.

NOTE: The above cabinets 1200 Amp through 3000 Amp include a "customer compartment" for Disconnect, Service Panel, ect.

<u>MANUFACTURER</u>	<u>SIZE</u>	<u>1PH-240 V</u>	<u>3PH-240 V</u>	<u>3PH-600 V</u>
Galva Closure	400	ALI-413PM	ALI-434PM	ALI-464PM
	600	ALI-613PM	ALI-634PM	ALI-664PM
	800	ALI-813PM	ALI-834PM	ALI-864PM
	1200		ALI-1234PM	ALI-1264PM
	1600		ALI-1634PM	ALI-1664PM
	2000		ALI-2034PM	ALI-2064PM
	2500		ALI-2534PM	ALI-2564PM
	3000		ALI-3034PM	ALI-3064PM

**WAUNAKEE UTILITIES
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**415. PAD MOUNTED METERING TRANSFORMER CABINETS
CONTINUED**

<u>MANUFACTURER</u>	<u>SIZE</u>	<u>1PH-240 V</u>	<u>3PH-240 V</u>	<u>3PH-600 V</u>
AMP	400	ALIPCT4-3L	ALIPCT4-4L	ALIPCT4-4L
	600	ALIPCT6-3L	ALIPCT6-4L	ALIPCT6-4L
	800	ALIPCT8-3L	ALIPCT8-4L	ALIPCT8-4L
	1200	-----	ALIPCT12-4L	ALIPCT12-4L
	1600	-----	ALIPCT16-4L	ALIPCT16-4L
	2000	-----	ALIPCT20-4L	ALIPCT20-4L
	2500	-----	ALIPCT25-4L	ALIPCT25-4L
	3000	-----	ALIPCT30-4L	ALIPCT25-4L

PADMOUNT/WALLMOUNT - 250 & 600 VOLT BTM IN - BTM OUT --- W/PT PAN

	<u>SIZE</u>	<u>3PH - 4 WIRE</u>
E.M.I.	800	ALIPM380
	1200	ALIPM312
	1600	ALIPM316
	2000	ALIPM320
	2500	ALIPM325
	3000	ALIPM330

PTB - PT Box to convert 250 Volt wall mount to 600 Volt
PMR38 - 10" Riser to convert wall mount - bottom in - bottom out to padmount 38" width
PMR42 - 10" Riser to convert wall mount - bottom in - bottom out to padmount 42" width

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

**416. BUSSED TERMINATION BOXES AND METERING TRANSFORMER
CABINETS THREE PHASE – 250 VOLT MAX**

Waunakee Utilities does not allow the grounding electrode conductor to terminate or run through the C.T. cabinet enclosure. The method of grounding and bonding is shown in Chapter 5 of the Electric Service Information Manual.

Waunakee Utilities shall terminate on the bottom of the C.T. Cabinet when entering from the bottom. Special permission required from Waunakee Utilities Planning Division for the customer to terminate on the bottom.

<u>MANUFACTURER</u>	<u>SIZE (AMPS)</u>	<u>TERMINATION BOX</u>	<u>C.T. CABINET</u>
Erickson Electric	400	<i>ALI-TRB-425N</i>	<i>ALI-1128-5-CM8</i>
	600	<i>ALI-TRB-426N</i>	<i>ALI-283-5-CM8</i>
	800	<i>ALI-TRB-427N</i>	<i>ALI-283-5-CM8</i>
	1200	<i>ALI-TRB-428N</i>	
	1600	<i>ALI-TRB-429N</i>	

**417. TERMINATION BOXES (BOTTOM IN – TOP / SIDE OUT) 480 VOLTS
AND UNDER**

Waunakee Utilities does not allow the grounding electrode conductor to terminate or run through the C.T. cabinet enclosure. The method of grounding and bonding is shown in Chapter 5 of the Electric Service Information Manual.

Waunakee Utilities shall terminate on the bottom of the C.T. Cabinet when entering from the bottom. Special permission required from Waunakee Utilities Planning Division for the customer to terminate on the bottom.

**WAUNAKEE UTILITIES
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<u>MANUFACTURER</u>	<u>SIZE(AMPS)</u>	<u>1PH 3-WIRE</u>	<u>3PH 4-WIRE</u>
Erickson Electric	400	ALI-TB-365N	ALI-TB-465N
	600	ALI-TB-366N	ALI-TB-466N
	800	ALI-TB-367N	ALI-TB-467N
	1200	-----	ALI-TB-468N
	1600	-----	ALI-TB-469N
	2000	-----	ALI-TB-4610N
	2500	-----	ALI-TB-4611N
	3000	-----	ALI-TB-4612N

<u>MANUFACTURED</u>	<u>SIZE(AMPS)</u>	<u>1PH 3 WIRE</u>	<u>3PH 4 WIRE</u>
A.M.P.	400	ALICT4-3L	ALICT4-4L
	600	ALICT6-3L	ALICT6-4L
	800	ALICT8-3L	ALICT8-4L
	1200	-----	ALICT12-4L
	1600	-----	ALICT16-4L
	2000	-----	ALICT20-4L
	2500	-----	ALICT25-4L
	3000	-----	ALICT30-4L

WALL MOUNT 250 VOLT -----BOTTOM IN - TOP OUT

E.M.I.	400	ALICT140	ALICT340
	600	ALICT160	ALICT360
	800	ALICT180	ALICT380
	1200	-----	ALICT312
	1600	-----	ALICT316
	2000	-----	ALICT320

**WAUNAKEE UTILITIES
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**418. TERMINATION BOXES (BOTTOM IN – TOP / SIDE OUT) 480 VOLTS
AND BELOW – CONTINUED**

Galva Closure	400	TBALI-413-1	TBALI-434-1
	600	TBALI-613-2	TBALI-634-2
	800	TBALI-813-3	TBALI-834-3
	1200	-----	TBALI-1234-4
	1600	-----	TBALI-1634-4
	2000	-----	TBALI-2034-5
	2500	-----	TBALI-2534-7
	3000	-----	TBALI-3034-8

**419. TERMINATION BOXES (BOTTOM IN / BOTTOM OUT) 480 VOLTS
AND BELOW**

Waunakee Utilities does not allow the grounding electrode conductor to terminate or run through the C.T. cabinet enclosure. The method of grounding and bonding is shown in Chapter 5 of the Electric Service Information Manual.

Waunakee Utilities shall terminate on the bottom of the C.T. Cabinet when entering from the bottom. Special permission required from Waunakee Utilities Planning Division for the customer to terminate on the bottom.

MANUFACTURER	SIZE(AMPS)	1PH 3-WIRE	3PH 4-WIRE
Erickson Electric	400	ALI-TB-365N	ALI-TB-465N
	600	ALI-TB-366N	ALI-TB-466N
	800	ALI-TB-367N	ALI-TB-467N
	1200	-----	ALI-TB-468NSG
	1600	-----	ALI-TB-469NSG
	2000	-----	ALI-TB-4610NSG
	2500	-----	ALI-TB-4611NSG
	3000	-----	ALI-TB-4612NSG
Galva Closure	800	TBBX-813-3	TBBXALI-834-3
	1200	-----	TBBXALI-1234-4
	1600	-----	TBBXALI-1634-4
	2000	-----	TBBXALI-2034-5
	2500	-----	TBBXALI-2534-7
	3000	-----	TBBXALI-3034-8

**WAUNAKEE UTILITIES
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**420. TERMINATION BOXES (BOTTOM IN / BOTTOM OUT) 480 VOLTS
AND BELOW – CONTINUED**

<u>MANUFACTURER</u>	<u>SIZE(AMPS)</u>	<u>1PH 3-WIRE</u>	<u>3PH 4-WIRE</u>
AMP	400	ALITB4-3L	ALITB4-4L
	600	ALITB6-3L	ALITB6-4L
	800	ALITB8-3L	ALITB8-4L
	1200	-----	ALITB12-4L
	1600	-----	ALITB16-4L
	2000	-----	ALITB20-4L
	2500	-----	ALITB25-4L
	3000	-----	ALITB30-4L

* All wall mounted cabinets may be used for pad mounted installations when extension part #CR12E is used.

**WAUNAKEE UTILITIES
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421. FARMSTEAD POLE TOP TRANSFER SWITCHES – 250 VOLTS MAX

<u>MANUFACTURER</u>	<u>SIZE(AMPS)</u>	<u>ITEM#</u>	<u>REMARKS</u>
Ronk Electric Industries	400	9406	Single phase – 2 pole
	400	9806	Three phase – 3 pole
	800	R8208	Single phase – 2 pole
	800	R8808	Three phase – 3 pole

422. FARMSTEAD POLE TOP TRANSFER SWITCHES – 600 VOLT MAX

<u>MANUFACTURER</u>	<u>SIZE (AMPS)</u>	<u>ITEM #</u>	<u>REMARKS</u>
Ronk Electric Industries	400	9806-6	Three phase – 3 pole
	800	R8808-6	Three phase – 3 pole

423. GRADE LEVEL TRANSFER SWITCHES – 250 VOLT MAX INSTALLED AFTER THE MAIN

<u>MANUFACTURER</u>	<u>SIZE(AMPS)</u>	<u>ITEM#</u>	<u>REMARKS</u>
Ronk Electric Industries	400	7406	Single phase – 2 pole
	400	7806	Three phase – 3 pole
Square “D”	400	92255	Single phase – 2 pole
	400	92355	Three phase – 3 pole

424. RESIDENTIAL GRADE LEVEL TRANSFER SWITCHES WITH METER SOCKETS – 250 VOLTS

<u>MANUFACTURER</u>	<u>SIZE(AMPS)</u>	<u>ITEM#</u>	<u>REMARKS</u>
Ronk Electric Industries	200	7215-MSH(*) – (**)	Single phase – 2 pole

Note: (*) = H / Horn Bypass or L / Lever Bypass. (**) = OH / Over Head, UG / Underground or SS / Sid by Side (Overhead or Underground). Unit has 10,000 AIC rating only.

**WAUNAKEE UTILITIES
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**425. GRADE LEVEL OPERATED PRIMARY VOLTAGE POLE TOP LOAD
BREAK SWITCH**

<u>MANUFACTURER</u>	<u>SIZE (VOLTS)</u>	<u>ITEM#</u>	<u>REMARKS</u>
S&C	15KV	137032R1-S101	Single phase – 1 pole
	25KV	147413/ED-701	Three phase – 3 pole Gang Operated

426. EQUIPMENT MANUFACTURES PHONE NUMBERS

<u>MANUFACTURER</u>	<u>TECHNICAL SUPPORT</u>	<u>PRODUCT INFORMATION</u>
A.M.P.	1-800-328-8658	1-800-328-8658
DURHAM/UPPER MIDWEST	1-417-532-7121	1-417-532-7121
EATON/CUTLER HAMMER	1-800-356-1243	1-800-356-1243
EMI	1-800-536-3678	1-800-536-3678
ERICKSON ELECTRIC	1-800-952-7225	1-800-952-7225
GALVA CLOSURE	1-608-873-3044	1-608-873-3044
LANDIS & GYR	1-765-429-1383	1-800-428-7853
MIDWEST ELECT. PRODUCTS	1-507-345-2543	1-507-345-2543
MILBANK	1-800-323-6575	1-800-323-6575
MURRAY/SIEMANS	1-770-751-2474	1-800-548-6405
RONK	1-800-221-7665	1-800-221-7665
SIEMANS/ITE	1-414-774-6544	1-800-548-6405
SQUARE "D"	1-888-778-2733	1-888-778-2733
GE	1-414-797-4912	1-800-626-2004

WAUNAKEE UTILITIES ELECTRIC SERVICE RULES AND INFORMATION

427. GENERAL

Meter sockets, group meter assemblies, meter pedestals transfer switches shown here are accepted for use.

Equipment installed which has not been approved for use by Waunakee Utilities will not be accepted. In order to assure interconnection, please utilize the equipment listed in this equipment section for the applications shown. Waunakee Utilities shall not approve the use of used or altered equipment.

All residential meter sockets can be equipped with approved horn or lever bypasses. All commercial sockets shall be equipped with approved lever bypasses capable of carrying full rated continuous duty current. Set screw type or lay in type terminal **lug connectors shall be provided on all metering devices**. Permanent or added 5th terminals shall be installed horizontally in the 9:00 position, and be of the screw – in type, unless otherwise approved by Waunakee Utilities. **All meter sockets must be ringless.**

The socket grounding stud in each device should be bonded to the grounded neutral conductor of the service entrance conductors. If a direct ground / bond connection is not available, the device must be bonded to other grounded equipment by an approved means. Meter sockets, meter pedestal and C.T. cabinet grounding and bonding are shown in Chapter 5.

The bonding of the **Current Transformer Cabinet** is in Chapter 5 (Ground rods are not to be installed in C.T. or Termination cabinets). The bonded conductor sizes are shown in Chapter 5. Waunakee Utilities shall terminate on the bottom of the C.T. or Termination cabinet when entering from the bottom. Special permission is required from Waunakee Utilities Planning Division for the Customer to terminate on the bottom of these cabinets.

**WAUNAKEE UTILITIES
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TABLE FOR SOCKET SELECTION						
Service Type	Phase	Wire	Voltage	Max Amps	Terminals	Meter Form
SELF CONTAINED						
Single Phase	1	3	120/240	320	4	2S
Network 1Ø*	1	3	120/208	200	5	12S
Four Wire Wye	3	4	120/208	200	7	16S
Four Wire Wye	3	4	120/240	200	7	16S
CURRENT TRANSFORMER RATED*				Over 400 Service Amps		
Single Phase CT Cabinet	1	3	120/240	20	6	4S
Four Wire Wye	3	4	120/208	20	13	9S
Four Wire Wye	3	4	277/480	20	13	9S
* Network Meter. Fifth terminal (5T8K stud) shall be installed horizontally in the 9:00 o'clock position.						
* Test switch provided by Waunakee Utilities						
APPROVED SINGLE POSITION SOCKETS (Milbank unless noted otherwise)						
Socket Description	Form 2S	Form 4S	Form 9S	Form 16S		
200A Pedestal 3Ø Lever Bypass					U9107-O	
200A OH/UG 3Ø Lever Bypass					U7423-XL	
20A Test Switch Provision				U7449-XL		
20A Test Switch Provision		U7532-XL (Preferred)				
100A OH/UG	U7487-RL-TG-KK	U7487-RL-TG-KK*				
200A OH/UG	U1773-XL-TG-KK					
200A Pedestal w/Main Breaker	1008846CH Eaton/Cutler Hammer					
200A Pedestal w/Main Breaker	NU8980-0-200-KK-LP					
200A Pedestal w/Main Breaker	NU8980-0-200-K					
200A Pedestal w/MB Trailer Home	U5136-0-200					
200A Pedestal	U3358-O-KK					
320A Pedestal Lever Bypass	U1748-O-WI					
320A Pedestal W/100/200 Main Breaker	U3849-0-200-100					
* 6 Terminals needed. Use two Milbank 5T8K 5th terminal assembly studs.						

428. SINGLE PHASE – RESIDENTIAL – WALL MOUNTED METER SOCKETS AND SPECIAL SERVICES – 250 VOLT MAX

Waunakee Utilities does not allow the grounding electrode conductor to terminate in or run through the meter socket enclosure.

WAUNAKEE UTILITIES

ELECTRIC SERVICE RULES AND INFORMATION

429. **SINGLE PHASE – RESIDENTIAL – WALL MOUNTED METER SOCKETS AND SPECIAL SERVICES – 250 VOLT MAX – CONTINUED**
430. **SINGLE PHASE – RESIDENTIAL – WALL MOUNTED METER SOCKETS – 250 VOLT MAX RESIDENTIAL CONTINUED**
431. **SINGLE PHASE – RESIDENTIAL – SOCKET / PANEL COMBINATION**
432. **SINGLE PHASE – COMMERCIAL – WALL MOUNTED SOCKETS – 250 VOLTS MAX**
433. **SINGLE PHASE – COMMERCIAL – WALL MOUNTED SOCKETS – 250 VOLT MAX CONTINUED**
434. **THREE PHASE – WALL MOUNTED METER SOCKETS – 250 VOLT MAX**

Waunakee Utilities does not allow the grounding electrode conductor to terminate in or run through the meter socket enclosure.

435. **THREE PHASE – WALL MOUNTED METER SOCKETS – 205 MAX CONTINUED**
436. **THREE PHASE – WALL MOUNTED METER SOCKETS – 277 / 480 VOLTS**

Waunakee Utilities does not allow the grounding electrode conductor to terminate in or run through the meter socket enclosure.

437. **RESIDENTIAL SINGLE PHASE AND NETWORK – MODULAR METER ASSEMBLIES – 250 VOLT MAX – 4 AND 5 TERMINAL**

WAUNAKEE UTILITIES

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438. RESIDENTIAL SINGLE PHASE AND NETWORK – MODULAR METER ASSEMBLIES – 250 VOLT MAX – 4 & 5 TERMINAL

439. RESIDENTIAL SINGLE PHASE AND NETWORK – GROUP METER ASSEMBLY – 250 VOLT MAX – 4 & 5 TERMINAL

440. RESIDENTIAL SINGLE PHASE AND NETWORK – GROUP METER ASSEMBLY – 250 VOLT MAX 4 & 5 TERMINAL – CONTINUED

**WAUNAKEE UTILITIES
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441. **RESIDENTIAL SINGLE PHASE AND NETWORK – GROUP METER ASSEMBLY – 250 VOLT MAX 4 & 5 TERMINAL – CONTINUED**
442. **COMMERCIAL GROUP METER ASSEMBLIES (4, 5, AND 7 TERMINAL) – SINGLE PHASE OR THREE PHASE – 250 VOLT MAX**
443. **COMMERCIAL MODULAR METER ASSEMBLIES (4, 5, AND 7 TERMINAL) – SINGLE PHASE OR THREE PHASE – 250 VOLT MAX**
444. **COMMERCIAL GROUP METER ASSEMBLIES, 277 / 480 VOLT THREE PHASE – SELF CONTAINED**
445. **RESIDENTIAL METER PEDESTALS – SINGLE PHASE – 250 VOLT MAX WALL MOUNTING ONLY**

Waunakee Utilities does not allow the grounding electrode conductor to terminate or run through the meter pedestal enclosure. Ground rods should be installed external to the meter pedestal enclosure. Note that with group meter assemblies a load calculation maybe required in accordance with NEC 220.

446. **COMMERCIAL METER PEDESTALS – CONTINUOUS DUTY – UNDER 250 VOLTS – WALL MOUNTING ONLY**

Waunakee Utilities does not allow the grounding electrode conductor to terminate or run through the meter pedestal enclosure. Ground rods should be installed external to the meter pedestal enclosure. Note that with group meter assemblies a load calculation maybe required in accordance with NEC 220.

447. **COMMERCIAL METER PEDESTALS – CONTINUOUS DUTY – UNDER 250 VOLTS – WALL MOUNTING ONLY CONTINUED**

WAUNAKEE UTILITIES

ELECTRIC SERVICE RULES AND INFORMATION

448. MANUFACTURED HOME / RESIDENTIAL FREE STANDING PEDESTALS

449. MANUFACTURED HOME / RESIDENTIAL FREE STANDING PEDESTAL – CONTINUED

450. MANUFACTURED HOME / RESIDENTIAL PEDESTALS – WALL MOUNTED ONLY

MANUF.

200 AMP 4 TERM.

Milbank

NU8980-O-200-KK-22K {} ***

*** Must order Field installed Series Wiring Kit for Breakers, No. K4902-200/22.

451. RECREATIONAL VEHICLE FREE STANDING PEDESTALS

452. COMMERCIAL FREE STANDING PEDESTALS

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

CHAPTER 5 - SERVICE ENTRANCES

- 500. General
- 501. Grounding Electrode System
- 502. Grounding Service Entrance And Metering Equipment
- 503. Bonding
- 504. Notes

WAUNAKEE UTILITIES ELECTRIC SERVICE RULES AND INFORMATION

500. GENERAL

In accordance with the National Electrical Code, a permanent and effective ground shall always be provided for all service entrance equipment. The neutral conductor shall also be grounded. See Section 502 for examples.

The grounding of electric installations is essential for the safety of those using the electric service, personnel maintaining the service, and is a safeguard for the Customer's equipment. It is recommended that electric services and communication conductors enter the building at the same point to facilitate bonding of grounding systems.

501. GROUNDING ELECTRODE SYSTEM

The grounding electrode system consists of one or more grounding electrodes and the conductors, which connect the grounding electrodes to the grounded service entrance conductor (neutral) at the service equipment.

The grounding electrode conductor cannot be run through the meter sockets or the Utilities portion of a metering pedestal.

Exception 1: Metering equipment containing the service equipment.

Exception 2: Multiple metering installations.

In addition to any other grounding electrodes used, Waunakee Utilities requires the installation of two eight foot, 5/8 inch minimum diameter ground rods at least six feet apart (spacing greater than six feet results in a more effective ground). The ground rods and conductor shall be buried a minimum of 6 inches below final grade. This grounding electrode conductor is not required to be larger than 6 AWG copper or 4 AWG aluminum as permitted by NEC 250.53(E).

The grounding electrode conductor shall be one piece in length, supported and protected by rigid conduit or as required by NEC 250.64 (B) where physical damage may occur.

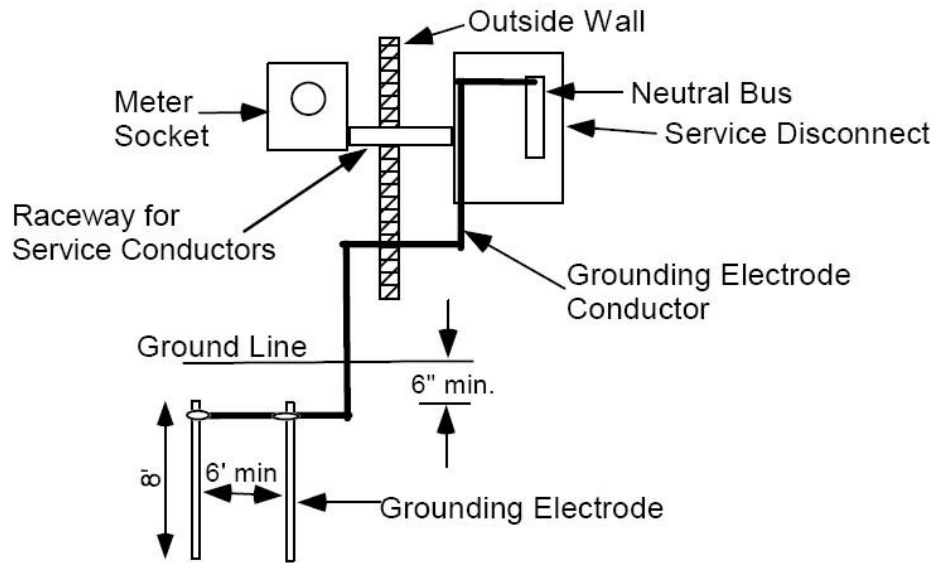
Metal underground gas piping systems shall not be used as a grounding electrode or bonded to the grounding electrode system.

502. GROUNDING SERVICE ENTRANCE AND METERING EQUIPMENT

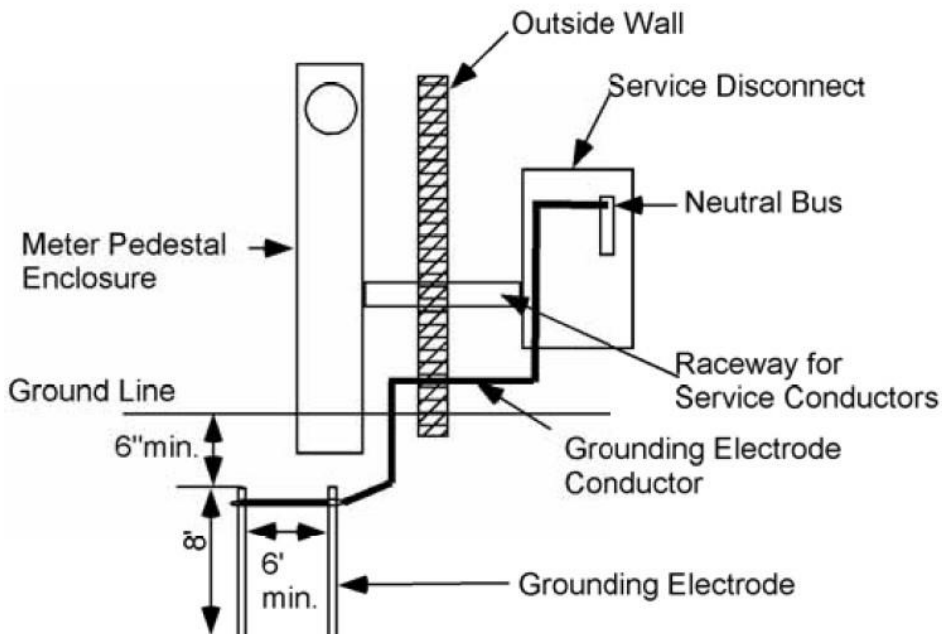
1. Both ground rods shall be installed to left or right of meter socket but not in front. Grounding electrode conductor shall not pass in front of meter socket or pedestal.
2. Leave top 2" of the ground rod exposed prior to meter installation for Waunakee Utilities. Ground rods shall be covered after the meter has been installed.
3. The electrical contractor is responsible for all bonding connections.
4. The CT cabinet and meter socket shall be bonded to the system neutral.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

Wall Mounted Meter Socket

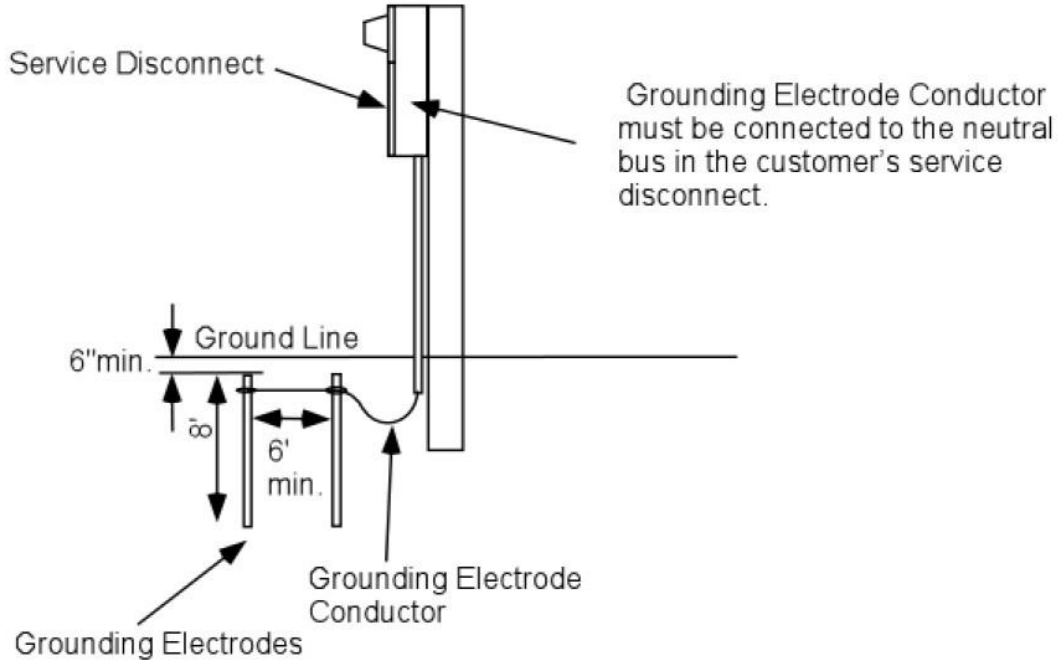


Grounding Single Self Contained Wall Mounted Meter Sockets and Pedestals

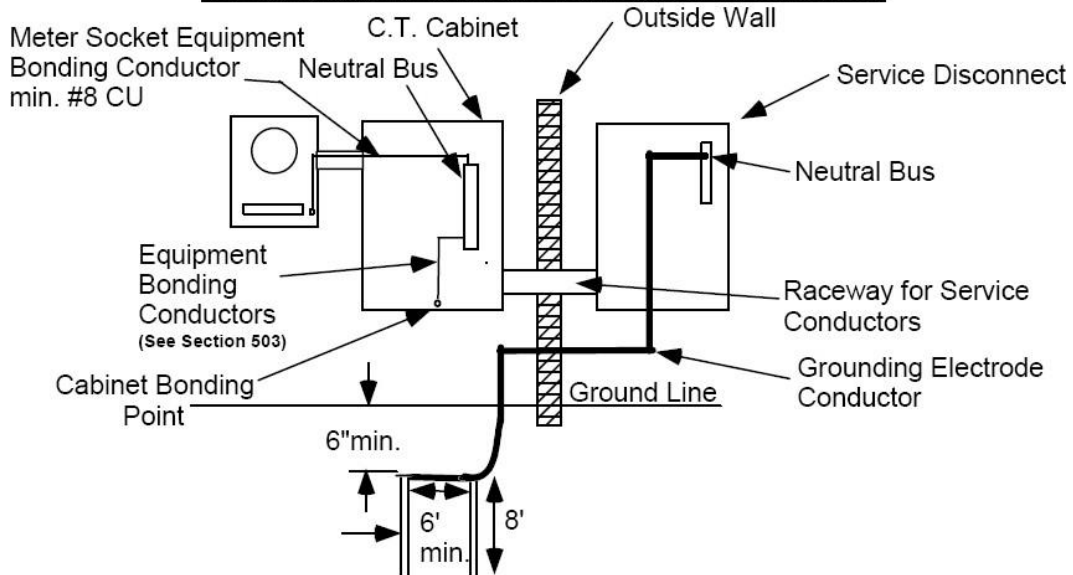


**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

Grounding Free Standing Pedestals

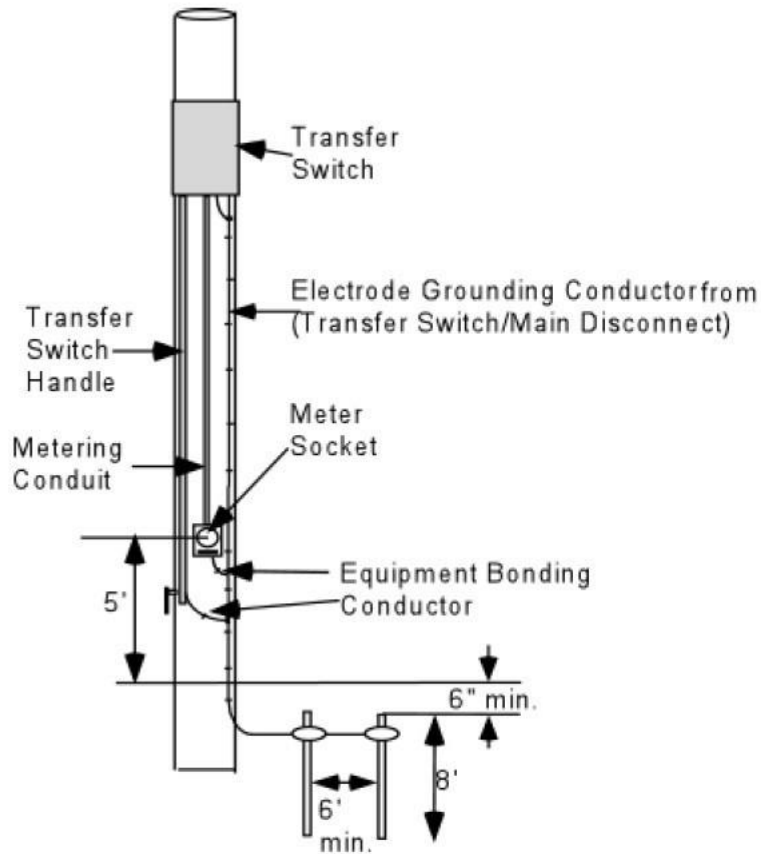


Grounding Instrument Transformer Cabinets



**WAUNAKEE UTILITIES
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Grounding Farm Service Yard Poles



Pole Top disconnect switch grounding conductor shall conform to NEC 250.96 and the grounding electrode shall conform to NEC 250.68 and 250.70.

The customer grounding electrode and grounding electrode conductor shall be completely separate from Waunakee Utilities transformer grounding electrode and grounding electrode conductor.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

503. BONDING

Bonding shall be provided where necessary to ensure electrical continuity and the capacity to safely conduct any fault current likely to be imposed.

Non-current-carrying metal parts of equipment shall be effectively bonded together, including but not limited to raceways, service enclosures, meter enclosures, ect.

Bonding to other systems shall not be done on or within a metering enclosure unless a means of bonding, intended for intersystem bonding is furnished as part of a listed joint use metering enclosure. (i.e. Telephone, CATV, ect.)

The following (if on the premises) shall be bonded into the grounding electrode system:

1. Metal water piping system(s) installed in or attached to the building or structure.
2. Other metal piping system(s) including gas piping installed in or attached to the building or structure.
3. Exposed structural steel that is interconnected to form a steel building frame.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

Equipment bonding conductors on the supply side of service shall be sized according to NEC 250.102C. The following table may be used as a guide in determining the minimum size for equip. bonding conductors for metering cabinet installations.

The table assumes **75°C temperature ratings** for service entrance conductors, with no adjustment factor for more than 3 current-carrying conductors. On a 3-phase 4-wire wye service where the major portion of the load consists of nonlinear (harmonic) loads, the neutral shall be considered as a “current-carrying” conductor (NEC 310.15B4c); in such cases a larger equipment bonding conductor shall be used.

Metering Cabinet Rating, Amps	Service Entrance Conductor Size (75°C Copper, AWG/kcmil)	Number of Runs	Minimum Equipment Bonding Conductor Size or Equivalent Area for Parallel Conductors (Copper, AWG/kcmil)
400	3/0	2	#2
	4/0	2	1/0
	600	1	1/0
600	3/0	3	1/0
	4/0	3	2/0
	350	2	2/0
800	3/0	4	2/0
	350	3	2/0
1200	350	4	4/0
	500	4	250
	600	3	250
1600	350	6	300
	500	5	350
	600	4	300
2000	350	7	350
	500	6	400
	600	5	400
2500	350	9	400
	500	7	500
	600	6	500
3000	350	10	500
	500	8	500
	600	8	600
	750	7	750

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

504. NOTES: UTILITIES INSTALLATION

Utilities facilities shall consist of those which, in the opinion of the Utilities, are most cost effective or feasible for the Utilities to provide adequate service to the Customer-owned service entrance facilities. The Utilities shall not supply wiring in or on a building beyond the necessary service entrance facilities, indoor conduits, building structural supports and accessories as specified by the Utilities. The Customer shall be responsible for all damage to the Utilities equipment and for all losses resulting from the interference or tampering there within caused by the Customer or the Customer's Permittee, including compensation for consumed energy not recorded upon the meter. The meter socket and service entrance facilities shall be located at the closest point to the Utilities distribution system on the exterior of the building.

The Utilities, after consulting with the Customer, specifies the location of the service entrance.

The Utilities provides each building or structure with only one service voltage (see-- rate file section 101.3) supplied by one overhead or underground service lateral to the service entrances located on the exterior of the building or structure located on the Customer's Premises. "Building" is defined in the Wisconsin State Electric code, Volume 2 as, "a structure which stands alone or which is separated from adjoining structure by fire walls having no less than a 3 hour fire resistive rating with all openings in the wall protected with 3 hour fire rated door assemblies."

"Structure" is defined as a substation, pole, metal pedestal, vault, pad mount switchgear or other structure specifically approved by the Utilities.

The above rule will be strictly adhered to except as follows:

Exception No. 1 - For separate services, supplying emergency lighting or power systems installed in accordance, with applicable electric code.

Exception No. 2 - For buildings of large areas, a second service may be provided if the service entrances are located more than 150' apart (measured in a straight line) and provided that all electrical wiring supplied by each service has no common raceway or connection with any other service.

WAUNAKEE UTILITIES ELECTRIC SERVICE RULES AND INFORMATION

Exception No. 3 - For capacity requirements in excess of 2000 amperes at a supply voltage of 600 volts or less, a second service may be provided. The second service entrance shall be located adjacent to the first service entrance.

Exception No. 4 - For Row house construction as defined in the Wisconsin Administrative Code, building, heating, and ventilation code, chapter Ind. 57, a separate service drop may be provide for each two attached units. "Row house" is defined as four or more contiguous living units, not more than 3 stories high, with a minimum 1 floor fire wall from the foundation to the underside of the roof with no doors or windows in the firewall.

Exception No. 5 - An existing Customer whose three phase 120 / 240 volt , delta, 4 wire load requirements exceed the capacity of the Customer's existing service entrance rating, will be provided with a second service. This service will be a three phase, 4 wire, 120 / 208 volt or 277 / 480 volt service installed in accordance with the provisions of section 104.

All the above exceptions must be specifically approved by the Utilities. Extension of service to each delivery point must be installed in accordance with the Utilities extension rules. Each delivery point will be individually metered.

CUSTOMER INSTALLATION

The Customer installs, owns and maintains the service entrance,

All service entrance shall include a service disconnecting means and over current protection located at the point where energy is supplied to the building or structure. The service equipment shall consist of a single main switch fuses (or circuit breakers). **The sequence shall be Meter - Switch - Fuse.**

Exception No. 1 - Multiple metering installations supplying more than 6 meters require a main switch fuse ahead of the meters.

Exception No. 2 - Individual dwelling units shall have a single main disconnecting means
for each metered service except services rated 300 amperes or more shall be permitted to have two service disconnecting means.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

Exception no. 3 - For self-contained 277 / 480 volt metering, **the sequence shall be Switch - Fuse - Meter.**

Exception no. 4 - Customer 3 phase primary metered service entrances are required to have a single 3 phase gang operated device and fuse (or circuit breaker) unless the service equipment is specifically approved by the Utilities.

The Customer may also be required to provide simultaneous over current protection in all ungrounded service entrance conductors of wiring systems including large capacitor banks or other equipment which may cause abnormally high voltages or be damaged as a result of single phasing.

CAPACITY

Service entrances shall have ample capacity for any electrical load that may be reasonably expected to develop. All current carrying components shall have an ampacity rating equal to the ampacity rating of the service entrance conductors.

IDENTIFICATION OF CONDUCTORS

The neutral or grounded conductor of a service entrance (480 volts and under) shall be insulated, and shall be identified by a white or gray color or identified at each end by white tape.

SHORT CIRCUIT DUTY REQUIREMENT

The Customer's service equipment and other devices shall be adequate to withstand and interrupt the maximum available short circuit current. The minimum interrupting capability requirements for various types of customers are as follows:

ONE AND TWO FAMILY DWELLINGS

All new 120 / 240 volt service equipment (0 to 200 amps) shall have an interrupting rating of 10,000 amperes symmetrical current. All new 120 / 240 service equipment (201 to 400 amp) shall have a minimum interrupting rating of 22,000 amperes symmetrical current.

THREE PHASE AND OTHER

Consult the Utilities for maximum available short circuit current.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

PHASE BALANCE REQUIREMENTS

The Customer shall balance electrical loads on three phase service entrances. Each phase conductor shall carry a minimum of 25% of the total KVA at maximum load conditions. Exception - the load will be sufficiently balanced if the load on any phase conductor does not exceed the load on either of the other phase by more than 167 KVA at maximum load conditions.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

CHAPTER 6 - METERING

- 600. Utility metering facilities
- 601. Customer installation
- 602. Meter locations
- 603. Clearance requirements for metering equipment
- 604. Meter seals
- 605. Capacity
- 606. Separation of metered and un-metered conductors
- 607. Identification of meters
- 608. Meter jumpers
- 609. High voltage metering
- 610. Bonding metering enclosures
- 611. Outdoor metering installation (Overhead & Underground service, 0 to 300 amps – 480 volts and under)
- 612. 120/240 volt single phase – overhead – self contained
- 613. 120/240 volt single phase – underground – self contained
- 614. 120/208 single phase (Network) overhead – self contained
- 615. Three phase – 4 wire – overhead / underground – self contained
- 616. Meter socket requirements
- 617. Grounding at metering installation and service entrances
- 618. Meter ice and snow shield
- 619. Outdoor meter installation (overhead service up to 300 amp - 240 volts and under
- 620. Wall mounted meter pedestal connection (single or duplex) up to 300 amps
- 621. Self contained multiple metering (2 or more meters) up to 200 amps per socket all voltages
- 622. Outdoor free standing (field built) meter structures
- 623. Instrument transformer installations
- 624. Wall mounted outdoor metering transformer cabinet overhead service
- 625. Wall mounted Outdoor metering transformer cabinet installation (underground service)
- 626. Pad mounted outdoor metering instrument transformer cabinet underground service
- 627. Combined instrument transformer / self contained multiple metering 240 volts and below pre-bussed / wire equipment
- 628. Combined instrument transformer / self contained multiple metering 240 volts and below pre-bussed / wire equipment – continued

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

CHAPTER 6 - METERING

600. UTILITIES METERING FACILITIES

The Utilities will install, own and maintain its own metering and control equipment at a convenient outdoor location on the customer's premises.

The Customer shall provide ample space for such equipment without cost to the Utilities, and shall allow Utilities personnel free access to such equipment at all reasonable times **(See Rate File Section 104.3)**

601. CUSTOMER INSTALLATION

The Customer furnishes and installs all meter sockets, ganged meter sets, instrument transformer cabinets, troughs, and other related metering equipment. Waunakee Utilities will provide all meters, instrument transformers, meter wiring, and secondary instrument transformer brackets for overhead services. The Customer will install the secondary instrument transformer brackets and the 1" galvanized steel conduit for the meter wiring. Meter mounting devices shall be securely fastened to the supporting building or structure with rust-resistant fastenings. Certain structures may require the addition of a rust reinforced mounting surface. Conduits and cables shall not be used to support wall-mounted devices. In no case may sockets be installed where they will be exposed to mechanical injury, excessive dust, excessive moisture, corrosive vapors, or vibrations.

Meters and metering devices shall be mounted plumb and at such a height, that the center of the meter is 5' above the final grade or floor except as follows:

Exception 1: Group mounted meter sockets shall be mounted so that meter centers are between 2'6" and 6' above the floor / final grade.

Exception 2: Outdoor wall mounted, or free standing meter pedestals shall be mounted so that meter centers are a minimum of 36" above final grade.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

602. METER LOCATIONS

Waunakee Utilities shall approve the location of all meters and metering equipment. The metering equipment shall be accessible at all times to Waunakee Utilities representatives. The meter socket, enclosures or cabinets shall be installed outdoors on a substantial building or structure.

Waunakee Utilities requires all yard pole meters, field built pedestal meters, or free standing pedestal meters, be installed so the meter faces an area (usually a driveway) that will accommodate motor vehicle access to the meter. This will allow the meter to be read from the vehicle if necessary.

Service up-grades (up to 300 amps) for existing yard pole installations may be built on field built structures as shown on the drawings in section 616. The field built structure installation may be used as an upgrade for non-farm service installations, such as an acreage with multiple buildings. A new service installation, for acreage with multiple buildings, shall be installed on one of the buildings.

If a self-contained meter is installed at a location other than a building, or farm distribution center, service equipment, including over current protection and grounding shall be required at the metering point.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

Service meter installation requirements starting February 1, 2018

 **Waunakee Utility power source**  **service location on building**

If Waunakee Utility's power source is located in the front of the lot, the permanent service needs to be installed on the front of the building or on a side wall within 10 feet of the front of the building. If the power source is located in the rear of the lot, the permanent service needs to be installed on the rear of the building or on a side wall within 10 feet of the rear of the building.

STREET NAME



HOUSE OR BUILDING

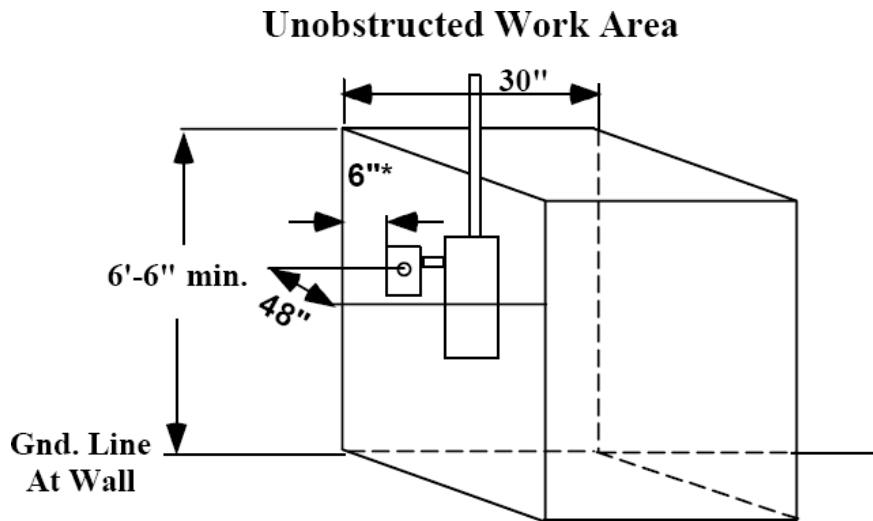
rear lot line



**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

603. CLEARANCE REQUIREMENTS FOR METERING EQUIPMENT

The NEC requires working space in front of each meter, meter cabinet, or instrument transformer cabinet.



6' Clearance must be maintained from all metering equipment.

The workspace shall be a minimum of 48 inches measured out from the face of the meter or door(s) of the cabinet and a minimum 30 inches wide. A minimum 6-inch vertical and horizontal separation shall be maintained between metering equipment and other obstructions or non-metering equipment. The space shall be large enough to allow the cabinet doors to open 90 degrees. The workspace should be clear from the floor to at least 6 ½ feet above the ground or floor with 8 feet preferred. An area of at least 30 inches in width shall be provided to provide access to the work area. This access area shall not be used for storage. The floor of the access area and work area shall be kept in a safe condition. Any exposed electrical parts or hazardous mechanical parts shall be suitably guarded. The area containing the metering equipment shall be properly ventilated and illuminated.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

604. METER SEALS

Waunakee Utilities will seal all meters, meter facilities, and points of access to un-metered wiring on the customer's premises. All cabinets, conduit fittings, and equipment enclosures containing un-metered conductors shall be made sealable before the service is energized. Customers or contractors shall not remove meters. Contact Waunakee Utilities if access to meter sockets is required. **Violation of this rule could result in immediate disconnection and prosecution.**

605. CAPACITY

Meter sockets and other current carrying components of the Customers metering installation shall have ampacity rating equal to the rating of the service entrance conductors.

606. SEPARATION OF METERED AND UN-METERED CONDUCTORS

Metered circuit wires shall not be enclosed with un-metered circuit wires in the same raceway or cable trough, except as required in meter equipment assemblies. Where metered circuit conductors are run parallel to un-metered service entrance conductors, they shall be at least 6" apart at their termination where not in conduit and exposed, such as weather heads. Un-metered Service Entrance Conductors shall not extend more than 8' into a building to a service disconnect, and shall be visible at all times. The Customer shall not install accessible fittings (e.g. LB, Box ect...) in conduit risers that enclose un-metered service conductors.

607. IDENTIFICATION OF METERS

For multiple unit buildings (two or more), each meter position shall be marked on the outside of the socket or by the breaker (if available) with the address or the unit served. A permanent marking shall also be inside the meter socket base in a visible location. This marking shall also be placed on the corresponding distribution panel(s). The marking shall be in permanent self sticking brass or rigid plastic label with minimum ½ " block letters or numbers, suitable for the location so as to be considered permanent. Meters will not be installed until this requirement is met.

608. METER JUMPERS

Customers, Contractors or other persons shall not close meter loops or place jumpers in meter sockets.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

609. HIGH VOLTAGE METERING

The Customer shall consult the Utilities before planning installation for voltages above 600 volts.

610. BONDING METER ENCLOSURES

AU meter enclosures shall be bonded in accordance with NEC Article 250. As modified by Wisconsin Administrative Code IILHR 16. For single meter installations, bonding within the meter socket or pedestal is not allowed per Wisconsin Administrative Code.

611. Conduit Expansion Joints

Conduit Expansion Joints will be required on any piped services running underground.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

**611. OUTDOOR METER INSTALLATION
OVERHEAD AND UNDERGROUND SERVICE
0 - 300 AMPS - 480 VOLTS AND UNDER**

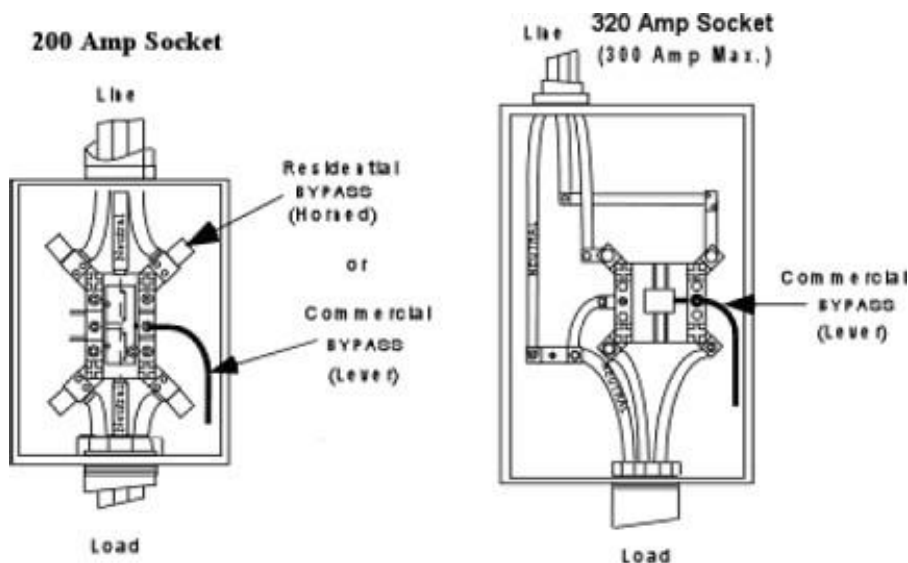
The Utilities will install, own and maintain the socket type meter (s).

The Customer shall install, own and maintain the meter socket, pedestal, group meter socket(s), or trough and sockets. Troughs must be the pre-wired type or the Customer must install main service conductors and all taps inside the trough. The Utilities will connect to only the main service bus or conductors at one end of the trough.

Notes:

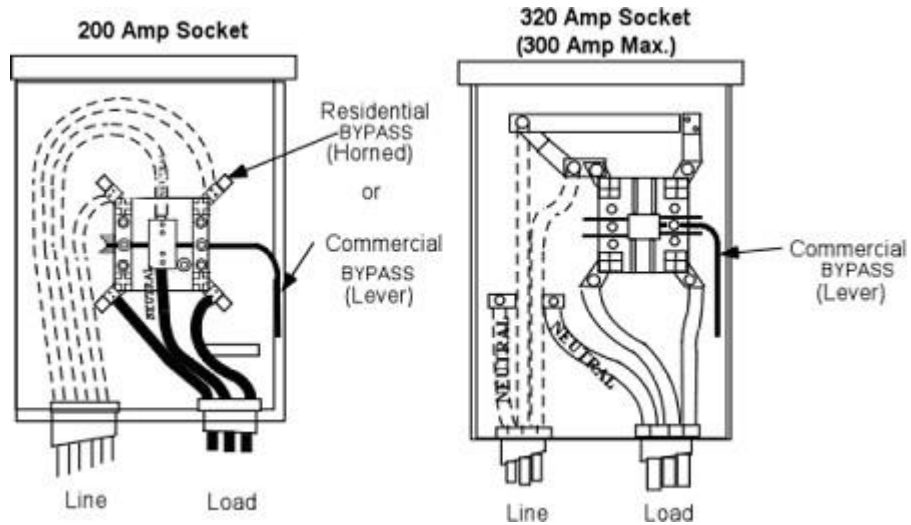
- A. Sockets, pedestals, and trough shall be mounted outdoors where they will be accessible to the Utilities at all times.
- B. The socket grounding stud in each socket may be connected to the grounded Conductors (neutral) of the service entrance conductors. If a grounding stud is not available or connected, the socket shall be bonded to the service panel.
- C. The sequence shall be **Meter - Switch - Fuse**, for all installations, except 277/480 volt services And multi-meter panel board installations which may be **Switch - Fuse - Meter** or **Switch - Meter- Fuse**.

612. 120 / 240 VOLT SINGLE PHASE – OVERHEAD SELF CONTAINED

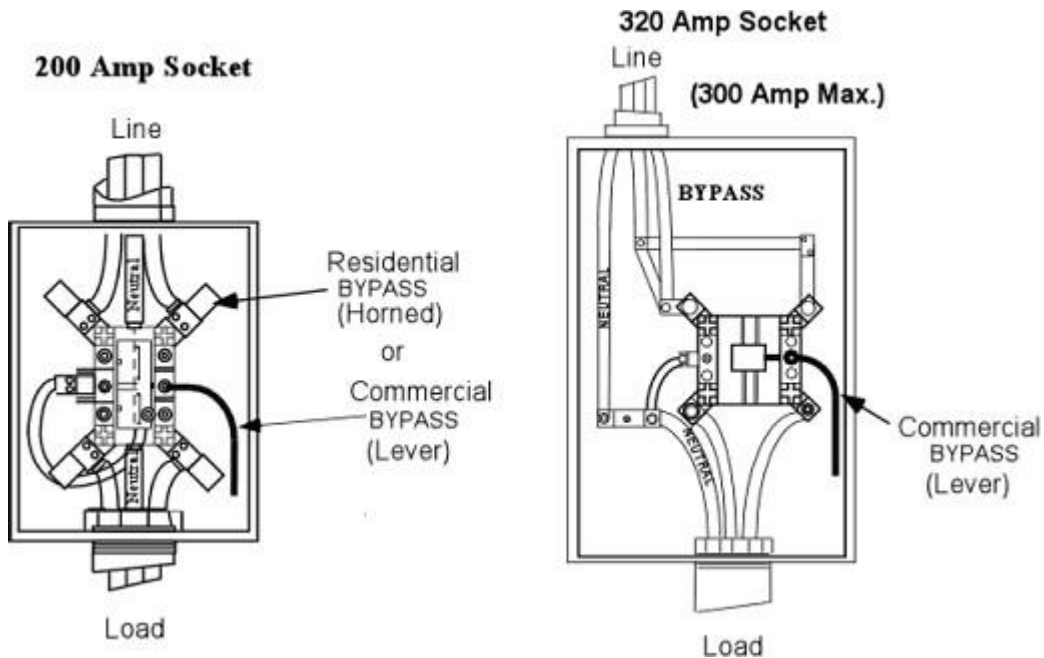


**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

613. 120 / 240 VOLT SINGLE PHASE – UNDERGROUND – SELF CONTAINED

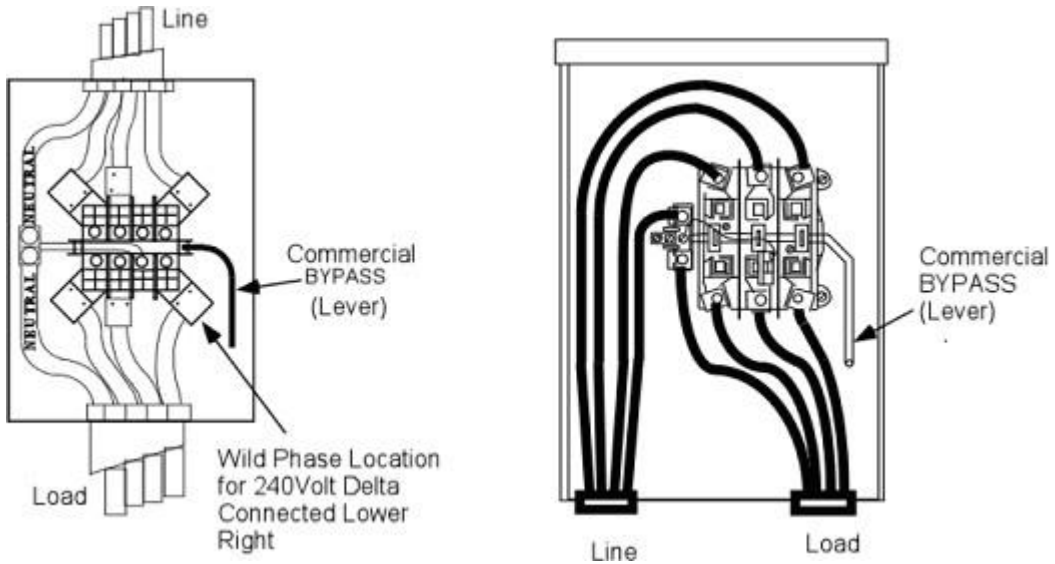


614. 120 / 208 SINGLE PHASE (NETWORK) OVERHEAD – SELF CONTAINED



**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

**615. THREE PHASE – 4 WIRE – OVERHEAD / UNDERGROUND – SELF
CONTAINED**



**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

616. METER SOCKET REQUIREMENTS

Phase	Wire	Voltage	Max. Amps.	No. of Term.
SELF CONTAINED				
1	3	120/240	300	4
1	3	120/208*	200	5
3	4	120/208	300	7
3	4	277/480	300	7
INSTRUMENT TRANSFORMER				
1	3	120/240	20	5
1	3	120/240	20	6
1	3	120/204	100	5*****
3	4	120/208	20	13
3	4	277/480	20	13
3	4	120/240	20	8***

*** Network Meters – The fifth terminal shall be installed horizontally in the 9:00 position. Permanent or added fifth position terminals shall be of the screw-in-type unless approved by the Waunakee Utilities Planning Division.**

***** This 8 terminal socket is for maintenance only.**

******* This 5 terminal meter is for use in Waunakee Utilities area.**

Line and load side conductors entering a meter socket for underground service shall enter and leave the socket on opposite side. The center knockout in the bottom of the socket shall not be used. Line conductors shall enter the socket on the bottom left side and the load conductors shall leave on the bottom right side of the socket. To change this orientation, approval shall be obtained from Waunakee Utilities Planning Division.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

617. GROUNDING AT METERING INSTALLATION AND SERVICE ENTRANCES

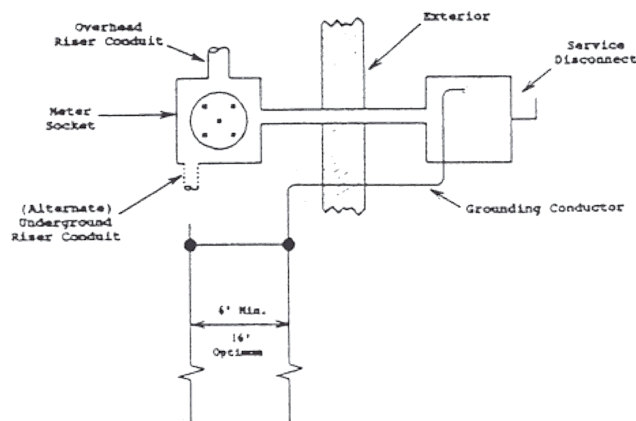
General: The grounding electrode conductor from the ground rods cannot be installed in (an exception is made for manufactured homes and multiple metering installations) meter sockets or the Utilities portion of the pedestal.

Ground Rods: Grounding electrode systems for all electric service entrances will meet electrical code requirements if:

- A. 2 ground rods are installed at least 6' apart (16' spacing is considered optimum)
- B. For single meter installations, bonding within the meter socket on pedestal is not allowed Per Wisconsin Administrative Code.
- C. The following (as described in the NEC), if also on premises, are bonded into the Grounding system:
 - 1. Metal underground water pipe system.
 - 2. Metal frame of the building.
 - 3. Concrete - Encased electrode.
 - 4. Grounding rings
 - 5. Communication grounding electrode.
 - 6. CATV grounding electrode.

Other variation of these grounding systems is available as described in IHLR 16.27 and NEC 250 section H.

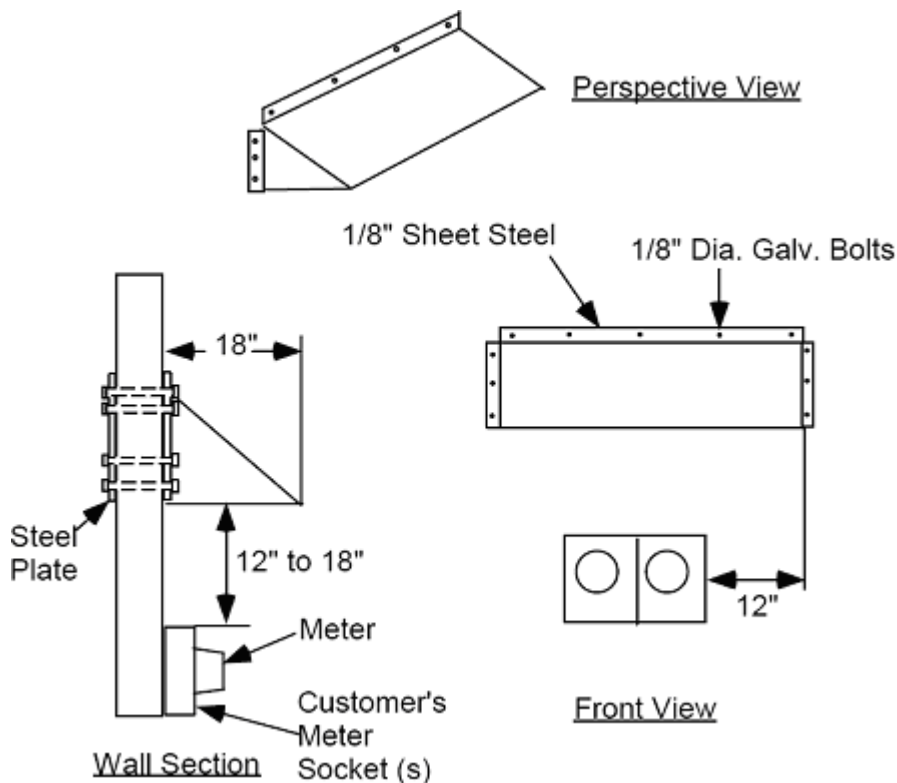
Pedestals: All ground rods should be on the same side of the pedestal. NOT in front of it



**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

618. METER ICE AND SNOW SHIELD

The Customer is responsible for protecting Waunakee Utilities meter(s) from damage caused by falling, ice, snow, or other objects. If protection is not provided for Waunakee Utilities outdoor meter by adequate roof overhang, the Customer shall construct a protective shield, or the meter location shall be moved to a safe area. The Customer will be charged for meter replacement if ice damage occurs. An adequate roof overhang shall extend a minimum of 18" out from the face of the wall to which the meter is mounted.



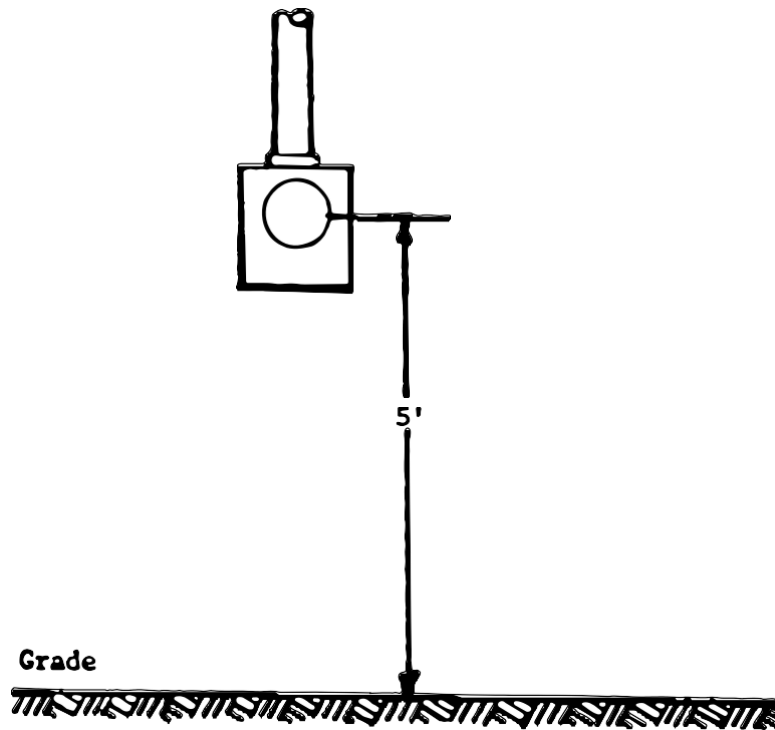
Notes:

1. Steel to be primed and painted with rust resistant paint.
2. Shield shall be capable of supporting 50 pounds.
3. Shield may be constructed of steel, treated wood or masonry. Thin sheet metal (tin) is **not** acceptable.
4. Shield to be so located as to be a "head bumping" hazard.
5. Width of shield may vary depending on the number of meters being protected.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

619. OUTDOOR METER INSTALLATION
OVERHEAD SERVICE UP TO 300 AMP
240 VOLTS AND UNDER

OVERHEAD SERVICE ONLY

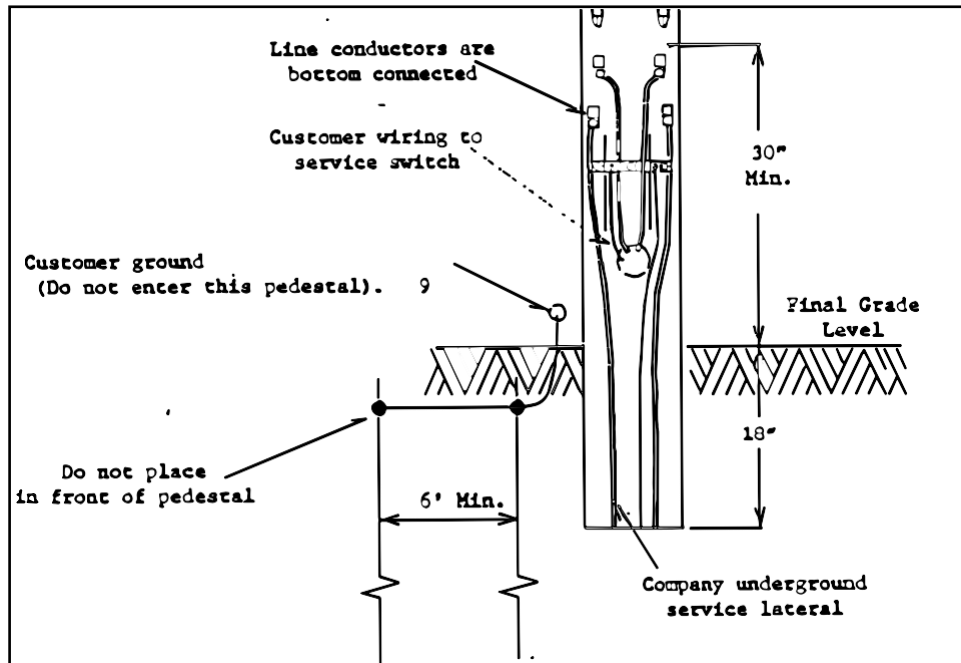


Notes:

- A. Meter socket (s) and conduits are installed, owned and maintained by the customer
- B. PVC conduit may be used except for "thru the roof" and commercial installation

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

620. WALL MOUNTED METER PEDESTAL CONNECTION
(SINGLE OR DUPLEX) UP TO 300 AMPS
120 / 240 VOLT - SINGLE PHASE
120 / 208 VOLT - THREE PHASE - 4 WIRE



Notes:

- A. Grounds must be in accordance with applicable codes. Do not install grounding electrodes inside pedestal or in front of pedestal for single meter pedestal installations. The grounding electrodes conductor may terminate within a duplex meter pedestal only. Where future access to this conductor termination is required, contact the Utilities immediately in order to reseal the duplex meter pedestal enclosure. Where two electrodes are required, both shall be on the same side of the pedestal and not in front of the pedestal.
- B. Wire duplex pedestal in similar manner.
- C. Pedestal shall have a listing for the class of Customer being served.
- D. For 300 amp service disconnect(s) shall consist of no more than 2 with a combined rating of no more than 300 amps.
- E. **Conduit Expansion Joints** – Will be required on any piped services running underground.

**WAUNAKEE UTILITIES ELECTRICAL
SERVICE RULES AND INFORMATION**

**621. SELF CONTAINED MULTIPLE METERING (2 OR MORE METERS) UP
TO 200 AMPS PER SOCKET ALL VOLTAGES**

Utility furnishes, installs & maintains

1. Socket type meter

Customer furnishes, installs & maintains

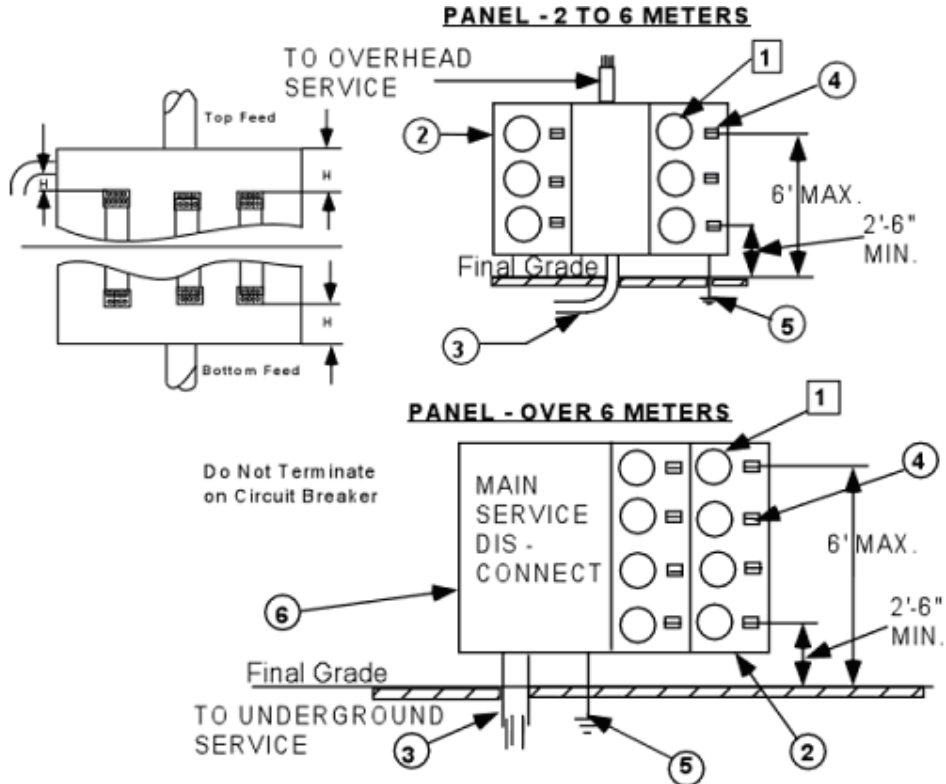
2. Approved multiple metering equipment including compartments, raceways, troughs, pull boxes, meter sockets with individual covers, switches, fuses, circuit breakers and associated equipment.
3. Rigid Conduit
4. Individual load break disconnect switches wired before the meter for 480 volt services, shall be rated for service entrance equipment with a means of locking open or closed.
5. Grounds in accordance with applicable codes.
6. Main service disconnect (for more than six meters)

Notes:

- A. Service disconnect switches shall be located adjacent to the meter or grouped in an integral factory manufactured section of the multiple metering equipment.
- B. Meter shall be arranged such that there is a logical left to right and top to bottom numbering sequence.
- C. The Customer shall furnish Waunakee Utilities with a diagram of the ganged meter socket assembly with each unit clearly identified and a floor plan of the facility with corresponding units clearly identified.
- D. The normal sequence shall be Switch – Meter – fuse for six or less meters. With special approval from Waunakee Utilities Planning Division, and only on factory bussed equipment, a disconnect may be installed ahead of the metering for 2 through 6 meter installations. This sequence will then be switch – fuse – switch – meter. For 7 or more meters the sequence shall be switch – fuse – switch – meter.

WAUNAKEE UTILITIES ELECTRICAL SERVICE RULES AND INFORMATION

621. CONTINUED



Service entrance panels shall have a min. distance for "H" from the edge of the cable entry opening, to the set screw connector, as shown in the table below. This area is for wire training space. No. accessible fittings are allowed in conduit entry.

Information in this table to be used for underground services only

Switch Size In Amps	Wire Size Aluminum	"H" Min. Distance- inch.
200	#4/0 - 350 KCM	20
300	#4/0 - 350 KCM	20
400	#4/0 - 500 KCM	20
600	#4/0 - 500 KCM	20
800	350 - 500 KCM	20
1000	350 - 500 KCM	20
1200	350 - 500 KCM	20
1600	500 - 1000 KCM	26
2000	500 - 1000 KCM	26
2500	500 - 1000 KCM	26
3000	500 - 1000 KCM	26

**WAUNAKEE UTILITIES ELECTRICAL
SERVICE RULES AND INFORMATION**

622. OUTDOOR FREE STANDING (FIELD BUILT) METER STRUCTURES

FIELD BUILT PEDESTALS

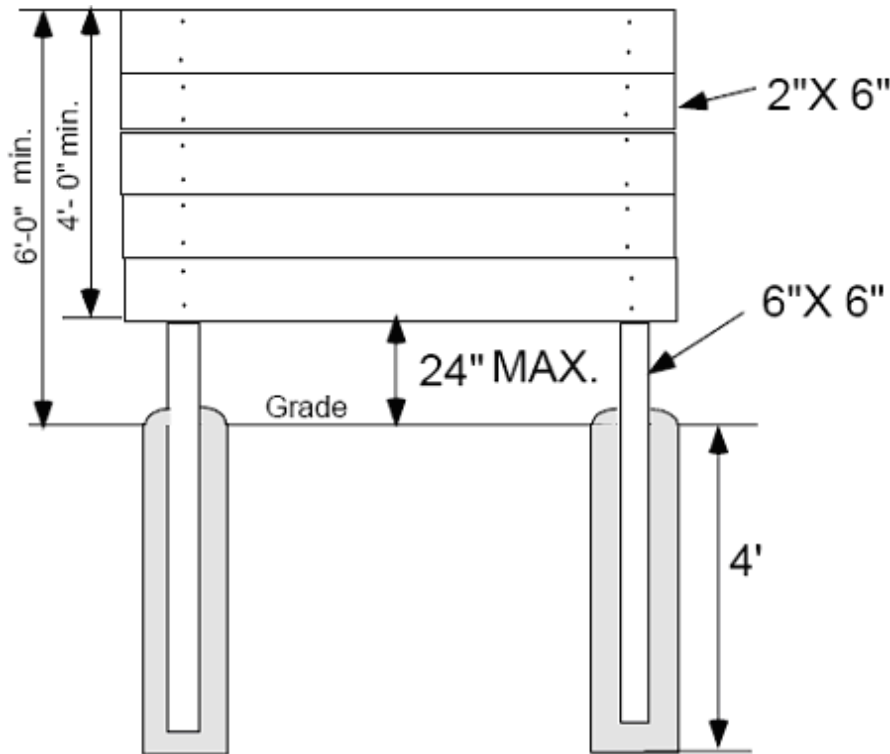
Waunakee Utilities Planning Division approval is required for use.

All field built pedestals shall have a minimum 6" X 6" wood posts and 2" X 6" planks that are commercially treated against decay. The posts shall be buried a minimum of 4' deep, plumb, and set in concrete the full depth. The planks shall be level and fastened with galvanized hardware.

All service equipment shall be waterproof, lockable and listed by an approved testing agency for service entrance use.

All service conductors shall be in rigid conduit and extend a minimum of 24" below final grade.

This installation may be built with horizontally mounted uni – strut, however Waunakee Utilities Planning Division's approval is required for the change.



**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

623. INSTRUMENT TRANSFORMER INSTALLATIONS

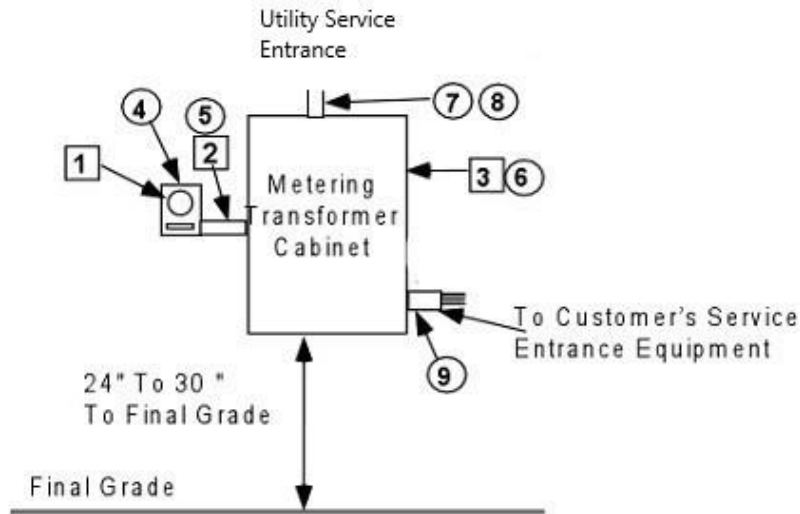
- A. For new services greater than 300 amps, **and all irrigation services**, metering instrument transformers (current and / or voltage) shall be used with instrument rated meters to measure power consumption. All 277 / 480 volt services may utilize instrument transformers and instrument rated meters.
- B. When Instrument Transformers are required, the following conditions will apply:
1. The Customer shall provide and install a Waunakee Utilities approved bussed cabinet for the instrument transformers. PT's & CT's will be provided and installed by Waunakee Utilities. The approved cabinets will be listed in Section 4.
 2. The instrument rated meter socket will be provided by the customer and installed by the customer.
 3. The Customer will install a 1 inch rigid galvanized steel conduit for metering conductors between the meter cabinet and the meter socket with a minimum separation of 6 inches.
 4. The Customer shall mount the metering cabinets outdoors at locations specified by Waunakee Utilities Planning Division.
 5. All free standing cabinets shall be mounted on a UL approved manufactures base a min. 9" high.
 6. Waunakee Utilities will **not** terminate conductors or meter secondary services in a Customer's building or Customer owned switchgear.
- C. Installations above 480 volts
1. The Customer shall contact Waunakee Utilities concerning all planned installations with service voltages above 480 volts.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

**624. WALL MOUNTED OUTDOOR METERING TRANSFORMER CABINET
OVERHEAD SERVICE**

Customer furnishes, installs and maintains Utility furnishes, installs and maintains:

- | | |
|--|----------------------------|
| 4. Approved Meter Socket | 1. Socket Type Meter |
| 5. 1" rigid galv. Steel conduit. Max. allowable conduit run is 50' with a total of 2-90° bends. Min. 6" nipple is required. Runs more than 50' or runs with more than 2-90° bends will require Stoughton Utilities Planning Division approval. | 2. Metering Cable |
| 6. Metering transformer cabinet | 3. Instrument Transformers |
| 7. Rigid galv. Steel conduit | |
| 8. Service Conductors | |
| 9. Service conduit(s) or trough | |



Notes:

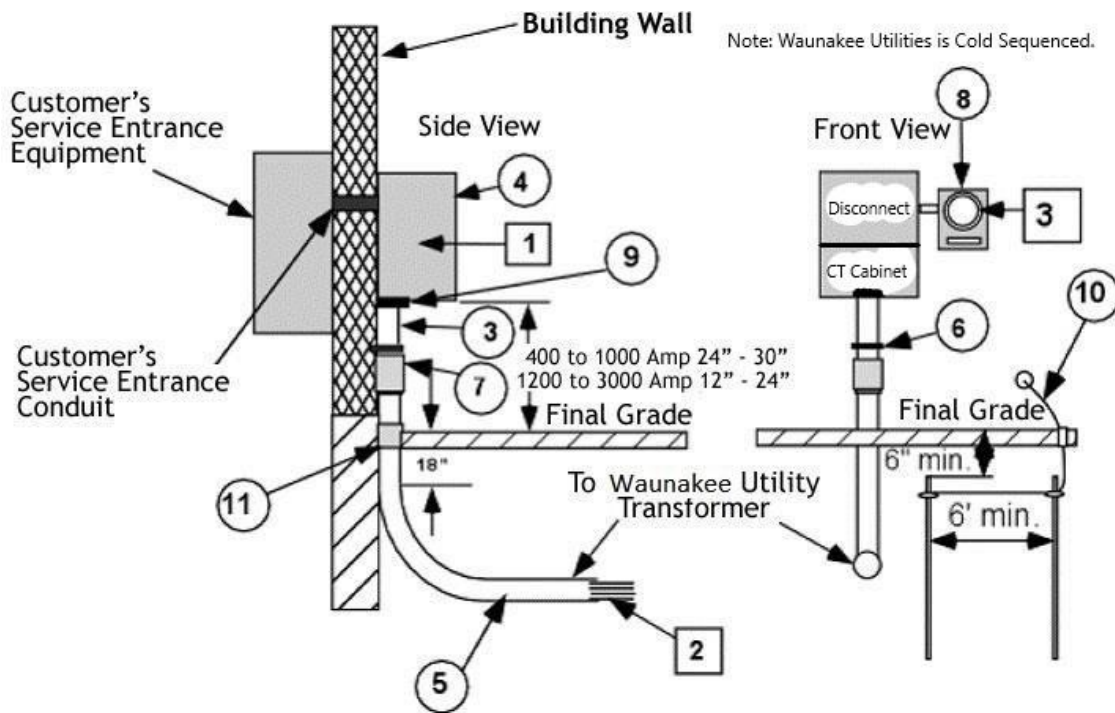
1. Customer will install a # 8 Cu grounding conductor between the secondary neutral conductor and the meter socket.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

**625. WALL MOUNTED OUTDOOR METERING TRANSFORMER CABINET
INSTALLATION (UNDERGROUND SERVICE)**

Customer furnishes, installs & maintains Utility furnishes, installs & maintains

- | | |
|--|---|
| <ul style="list-style-type: none"> 4. Instrument Transformer Cabinet 5. Rigid Conduit 6. Conduit Straps 7. Expansion Joint 8. Approved Meter Socket 9. Insulated Bushing 10. Ground in accordance with the code 11. Sleeve if conduit passes through concrete or asphalt | <ul style="list-style-type: none"> 1. Instrument transformers in Cabinet 2. Service Lateral 3. Meter |
|--|---|



Notes:

- A. The customer shall consult Waunakee Utilities before this installation is planned or started.
- B. A minimum clear space of 4 ft. shall be provided in front of the metering transformer cabinet to allow for door opening and working space.
- C. For single door CT cabinets the meter shall be mounted opposite of the hinged side.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

**626. PAD MOUNTED OUTDOOR METERING INSTRUMENT
TRANSFORMER CABINET UNDERGROUND SERVICE**

1. Waunakee Utilities no longer allows metering on the transformer.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

**627. COMBINED INSTRUMENT TRANSFORMER / SELF CONTAINED
MULTIPLE METERING 240 VOLTS AND BELOW PRE-BUSSED / WIRE
EQUIPMENT**

Utility furnishes, installs, and maintains:

1. Service lateral
2. Meter

The Customer furnishes, installs, and maintains:

3. Overhead service conductors in riser conduit
4. Rigid conduit
5. Multiple metering equipment including compartments, raceways, troughs, pull boxes, meter sockets, switches, fuses, circuit breakers, and associated equipment.
6. Termination Box (See equipment Section) or Customer Main Disconnect (more than 6 meters)
7. Service entrance conductors (No accessible fittings allowed)
8. Service Disconnect
9. Metering conduit – (1” rigid galv.)

Notes:

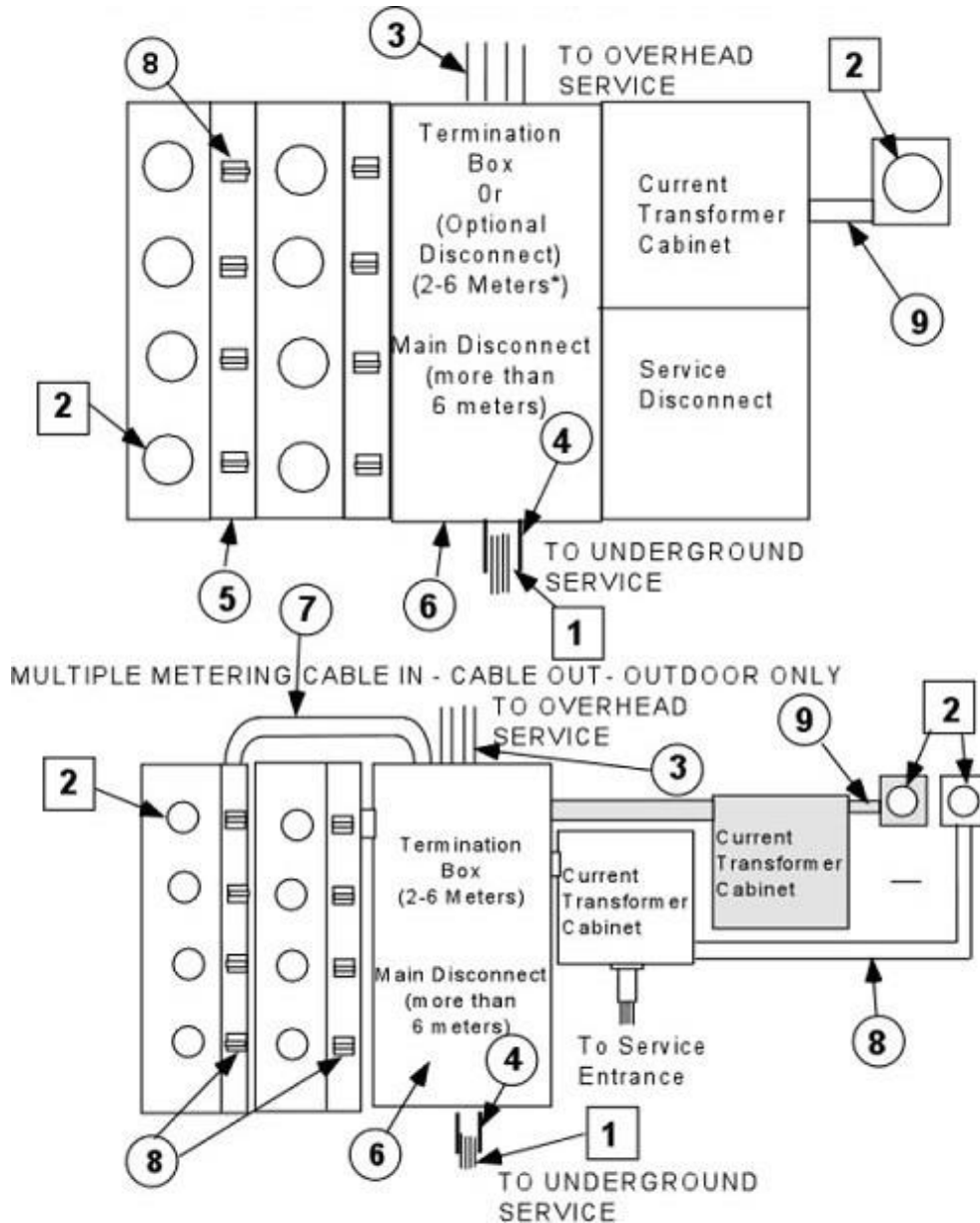
- A. Refer to Section 108 for maximum allowable entrance size for each service voltage.
- B. The Customer shall consult Waunakee Utilities for service entrance and meter bank locations.
- C. The normal sequence shall be switch – meter – fuse, if 6 meters or less. If in the future more than 6 meters will be required, the Customer may install with special approval from Waunakee Utilities, a service disconnect, for a grouped meter assembly of modular design, and factory bussed. The sequence would then be switch – fuse – meter – switch – fuse.
- D. The sequence shall be switch – fuse – meter to the main service disconnect supplying more than 6 meters, however, the sequence shall be meter – switch – fuse for the metered individual units.
- E. The multiple metering service disconnect switch(es) or circuit breaker(s) shall be listed as suitable for service entrance equipment.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

**628. COMBINED INSTRUMENT TRANSFORMER / SELF CONTAINED
MULTIPLE METERING 240 VOLTS AND BELOW PRE-BUSSED / WIRE
EQUIPMENT – CONTINUED**

Note:

Waunakee Utilities is Cold Sequenced. Optional use of disconnect with less than six meters is only allowed with approval from Waunakee Utilities on factory Bussed Equipment.



**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

CHAPTER 7 - TEMPORARY SERVICES

- 700. General
- 701. Specifications
- 702. Large capacity, three phase, and primary temporary services
- 703. Overhead temporary service pole (for construction sites) (100-200 amp-single phase 3 wire- 120/240 volt)
- 704. Diagram
- 705. Underground temporary service structure (for construction sites) (100-200 amp single Phase- 3 wire - 120/240 volts)
- 706. Diagram
- 707. Underground service lateral to residential pedestal (200 amp single phase - 3 wire 120/240 volt) winter installation temporary placed on top of ground
- 708. Diagram

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

CHAPTER 7- TEMPORARY SERVICES

700. GENERAL

The customer shall make application to the Utilities for the proposed temporary service and obtain approval of the location.

The Utilities will provide temporary service in accordance with rate schedules Rg - 1 and Cg - 1.

701. SPECIFICATIONS

Specification for Customer owned overhead and underground temporary installations are shown in Chapter 7, (704 through 707).

Temporary installations not serving construction sites must be installed in accordance with the applicable portions of Chapters, (8 & 9).

Temporary installations serving construction sites may not be reclassified as permanent unless such installation are constructed in accordance with the applicable portions of Chapters, (8 & 9).

Customer owned temporary service entrances are not permitted on Utilities owned poles.

702. LARGE CAPACITY, THREE PHASE TEMPORARY SERVICES

The Customer shall consult the Utilities for specifications.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

703. OVERHEAD TEMPORARY SERVICE POLE (FOR CONSTRUCTION SITES) 100-200 AMP - SINGLE PHASE - 3 WIRE - 120/240 VOLT

O Customer furnishes, installs & maintains [] Utility furnishes, installs & maintains

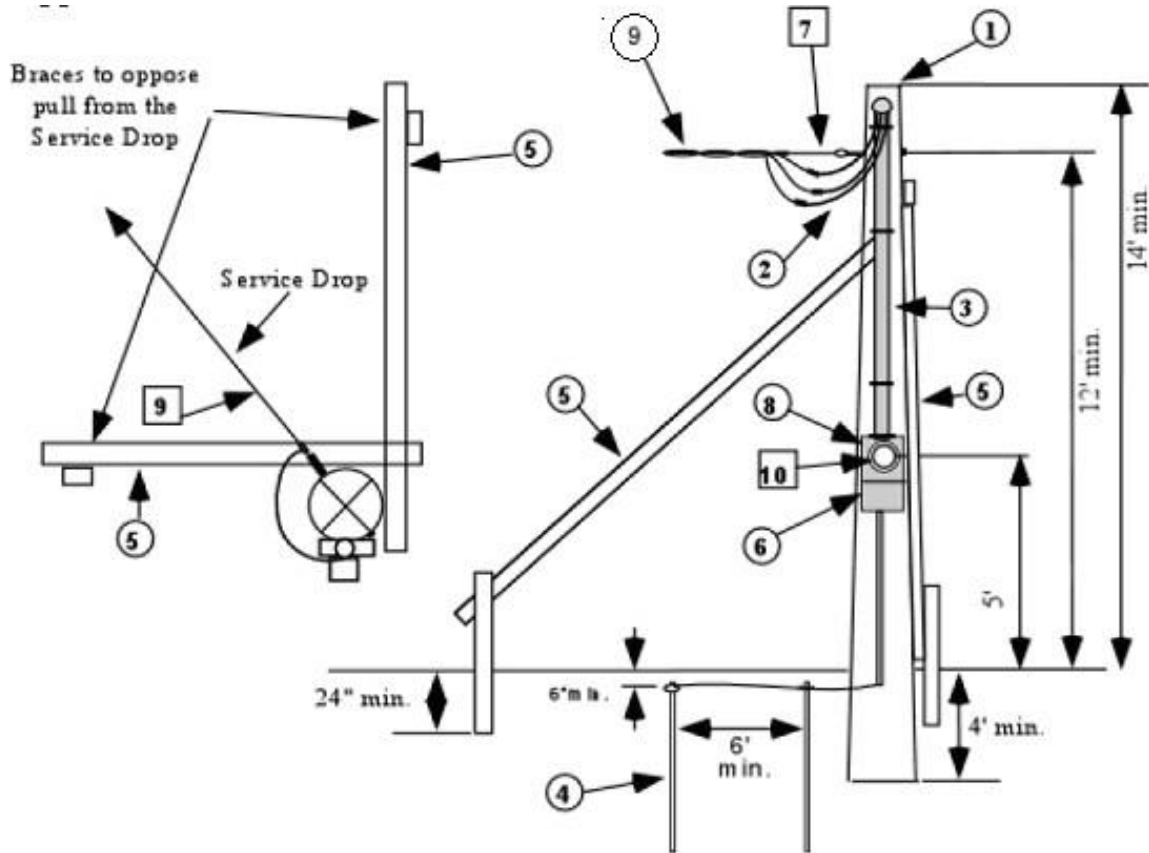
- 1. Pole min. class 7 or 6" x 6" treated post**
- 2. Service Entrance Wires with 36" leads**
- 3. Rigid Conduit or SE Cable**
- 4. Ground in accordance with the code**
- 5. Two Braces of 2" x 4" x 16' or Guy Wire
Capable of Supporting Service Drop**
- 6. Service Equipment with one main
Fused Disconnect Switch or Circuit Breaker
With Weatherproof GFCI Receptacles**
- 8. Approved Meter Socket**
- 9. Overhead Service Drop, Max. service length 100'.**
- 7. Service Dead-End**
- 10. Meter**

Notes: The Utilities will make all connections and disconnections of the Customer overhead service drop to the closest distribution pole.

- A.** The Customer (contractor) shall call Diggers Hotline for cable location before digging or driving ground rods so that the installation can be made safely and without damage to underground facilities.
- B.** The maximum allowable service length to this structure is 100' and it shall not be installed across public streets and roads or railroads track. The installation must provide minimum Wisconsin Electric Code clearances for the Customer's overhead service drop. Basic code clearances are shown in Chapter 8.
- C.** The guy/brace must be adequate to support the Customers service drop.
- D.** Service equipment must be rated "suitable for service equipment ". Power outlet type service equipment may be used in place of a separated meter socket, disconnect, and distribution panel.
- E.** The customer must supply the service drop wire from temporary service to Utilities pole.
- F.** Customer pole shall maintain 10' horizontal separation from Waunakee Utilities facilities.

WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION

704. Diagram



**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

**705. UNDERGROUND TEMPORARY SERVICE STRUCTURE (FOR
CONSTRUCTION SITES) (100 – 200 AMP SINGLE PHASE – 3WIRE – 120
/ 240 VOLTS)**

Customer furnishes, installs & maintains Utility furnishes, installs & maintains

- | | |
|---|--|
| <ol style="list-style-type: none">1. Service lateral approved LFMC3. Approved meter socket4. Ground in accordance with the Code (refer to Chapter 5)5. Fused main disconnect switch or Main circuit breaker6. 4" x 4" treated wood post or Approved manufactured pedestal | <ol style="list-style-type: none">2. Meter |
|---|--|

***LFMC – Liquid-tight Flexible Metal Conduit**

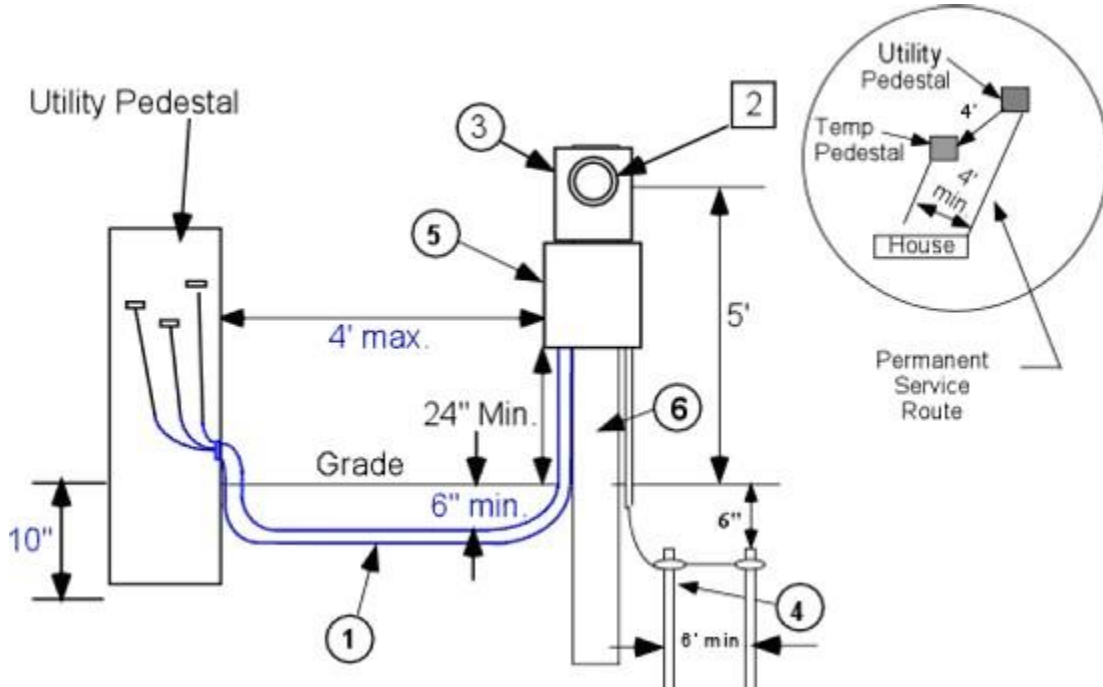
- A. The Customer (contractor) shall call Diggers Hotline for cable location before digging or driving ground rods so that the installation can be made safely and without damage to underground facilities.
- B. The temporary structure must be located away from the route of the permanent service to provide a 12' wide access for the Utilities trencher.
- C. The Utilities will make all service connections and disconnections of the Customers underground service lateral at the closest point of the distribution system.
- D. Service equipment shall be rated "suitable for service equipment". Power outlet type service equipment may be used in place of a separate meter socket, disconnect, and distribution panel.
- E. If a "power outlet" rated 100 amperes is used, a reducing coupling is permitted to match the 1 1/2" knockout in the bottom of the power outlet.
- F. Temporary pedestal will be placed **within 4 feet** of Waunakee Utilities supply source.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

- G.** Waunakee Utilities will also require the Customer to provide LFMC (Liquid-tight Flexible Metallic Conduit) as a protective conduit for the Customer's underground service conductors. Along with the LFMC the customer shall also provide all fittings and couplings necessary to attach the LFMC to a Waunakee Utilities pedestal or pad mounted transformer. **Customer is to supply wire for connecting temporary service to transformer.**
- H.** The Customer's service lateral conductors shall be appropriately sized to carry the maximum ampacity of the Customers over current device (main switch). The LFMC shall be buried 6 inches below grade between the Customer's equipment and Waunakee Utilities secondary pedestal or transformer.
- I.** **Waunakee Utilities will NOT make connections to any temporary service lateral that is laid on the ground. These conductors must be buried in order to comply with the National Electrical Safety Code.**

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

706. Diagram



**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

**707. UNDERGROUND SERVICE LATERAL TO RESIDENTIAL PEDESTAL
INTER INSTALLATION TEMPORARY PLACED ON TOP OF GROUND)
200 AMP - SINGLE PHASE - 3 WIRE - 120/240 VOLT**

The Utilities will install and own:

1. Underground service lateral.
2. Protective flexible conduit.
3. Meter

The Customer shall install, own and maintain:

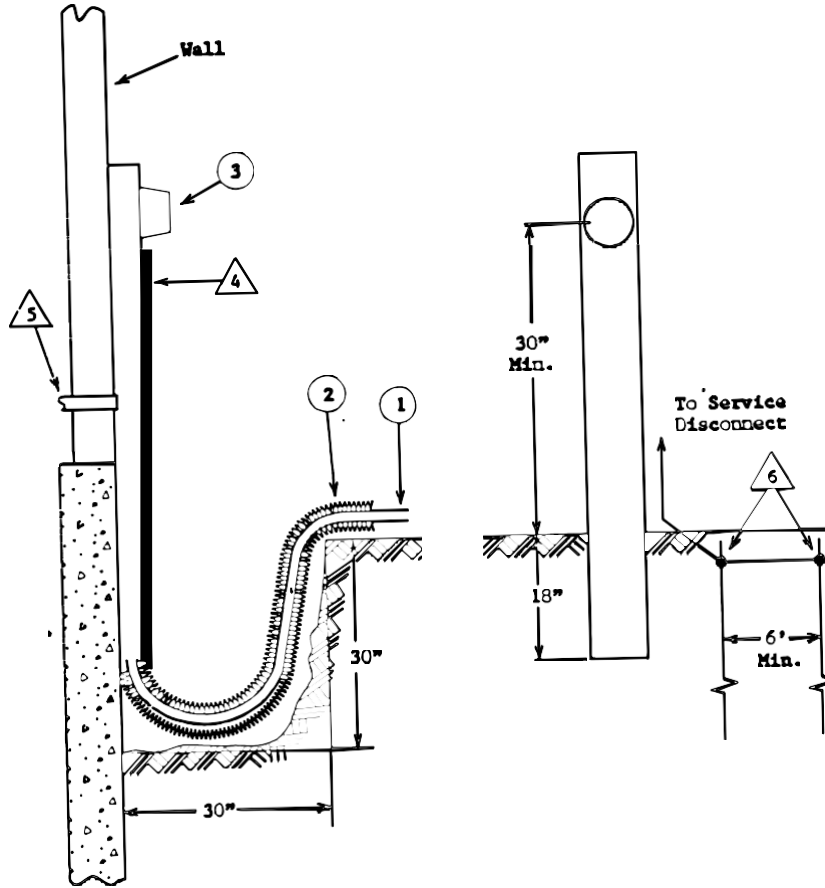
4. Residential meter pedestal (see Chapter 9).
5. Service entrance conduit.
6. Ground (in accordance with applicable electrical codes).

**Notes: The Customer must provide an excavation
approximately 30" x 30" x 30", and protect the public from it
prior to and after cable installation.**

- A. Service equipment shall be rated "suitable for service equipment."
- B. Grounding electrode conductor **shall not** terminate in or run through the meter pedestal enclosure. Do not place grounding electrode in front of pedestal. Where two electrodes are required, both shall be on same side of the pedestal.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

708. Diagram



**Underground Service Lateral to Residential Pedestal
(Winter Installation Temporary Place On Top Of Ground)
200 Amp - Single Phase - 3 Wire -120/240 Volt**

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

CHAPTER 8 - OVERHEAD SERVICES

- 800. General
- 801. Service entrance conductors**
- 802. Attachment of service drops
- 803. Connections
- 804. Identification of conductors
- 805. Separation
- 806. Maximum service drop length
- 807. Service mast installation thru the roof (up to 300 amp - 240 volts and under)
- 808. Diagram
- 809. Wall installation (100-300 amp – 240 volts and under)
- 810. Diagram
- 811. Wall or roof installation 100-300 amp single and three-phase 480-volt maximum
- 812. Diagram
- 813. Service attachment to brick or masonry walls and metal buildings (0-1200 amp 480 volts and under)
- 814. Pole mounted service entrance (up to 300 amp - 240 volts and under)
- 815. Diagram
- 816. Clearances for overhead cable services (0-480 volts - ground clearances)
- 817. Minimum clearances for service 300 volts and below
- 818. Minimum clearances for service 300 volts and below – continued
- 819. Minimum clearances for service 300 volts and below by pools
- 820. Clearance for services over state and federal highways
- 821. Service conductor clearance from signs
- 822. Service mast installation roof clearances, clearance of service drop terminating on support mast 300 volts or less
- 823. Clearance envelope for grain bins filled by portable augers, conveyors, and elevators
- 824. Special horizontal clearances for overhead cable services 0 to 480 volts
- 825. Special horizontal clearances for overhead cable services 0 to 480 volts – continued
- 826. Service riser requirements (1200 amp max 0 – 480 volts)

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

CHAPTER 8 - OVERHEAD SERVICES

800. GENERAL

In all cases, the Customer shall install, own and maintain the service entrance facilities, in accordance with the Utilities applicable rates and extension rules and the requirements of Chapter 5.

For overhead facilities, the applicant for service shall furnish without cost to the Utilities, a right-of-way **with** clearing and grubbing rights, adequate for the line extension necessary to service them along a route approved by the Utilities. Clearing shall either be done by the applicant, or be done by the Utilities, in which case the applicant shall, in advance of the clearing work make a contribution in the amount equal to the, Utilities estimate of cost thereof. The Customer will be responsible for all costs incurred due to changes in grade levels that affect the elevation of pole and conductors.

The Utilities service drop will terminate at the **first** point of contact on the building or structure supporting the metering equipment.

802. SERVICE ENTRANCE CONDUCTORS**

Service entrance conductors shall be enclosed in an approved type of raceway or shall be a type of cable approved for use by applicable codes.

803. ATTACHMENT OF SERVICE DROPS

The Customer's structure must be strong enough to support the service drop and high enough to provide Code Clearance of the service drop above ground, buildings, roads and other facilities. It shall be the Customers responsibility to provide a secure attachment point not more than 12" horizontal and 6" to 12" below the service entrance head.

If the structure to which a service drop is to be run is not high enough to provide the required code clearance above ground, the Customer shall furnish and install a higher support strong enough to withstand severe ice and wind loading which give the required clearance.

For connection to the Utilities service drop, the Customer's service entrance conductors shall project beyond the service head at least 3'.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

804. CONNECTIONS

All outdoor service raceway or cable connections to meter socket bases, meter enclosures, or switches shall be waterproof Service entrance cable fittings and shall be of screw-tight construction.

805. IDENTIFICATION OF CONDUCTORS

If the neutral or grounded conductor of a service entrance is insulated, it shall be identified by a white or natural gray color.

806. SEPARATION

No metered circuit wire shall be enclosed with an un-metered circuit wire in the same raceway or cable, except as may be necessary in meter equipment assemblies.

Where metered circuit conductors are run parallel to un-metered service entrance conductors, they shall be at least 6" apart at their termination in the open.

Open wire communication conductors on buildings shall be separated at least 4" from Utilities power conductors not in conduit or cable.

No part of service drop conductors, their drip loops, or their weather head shall come within 12" of communication cables or conductors.

807. MAXIMUM SERVICE DROP LENGTH

For safety and the prevention of damage to Customer's premises, the maximum length of the Utilities overhead service is 150'. The maximum allowable length shall be less than 150' for installations with large conductors or due to other limitations.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

**808. SERVICE MAST INSTALLATION (THRU THE ROOF)
UP TO 300 AMP - 240 VOLTS AND UNDER**

Customer furnishes, installs, & maintains:

6. Conduit or cable supports (as required)
7. Approved Meter socket
8. Ground in accordance with applicable codes(refer to section 613)
10. Rigid Steel Conduit
11. Conduit Guy if Required

Utility furnishes, installs & maintains

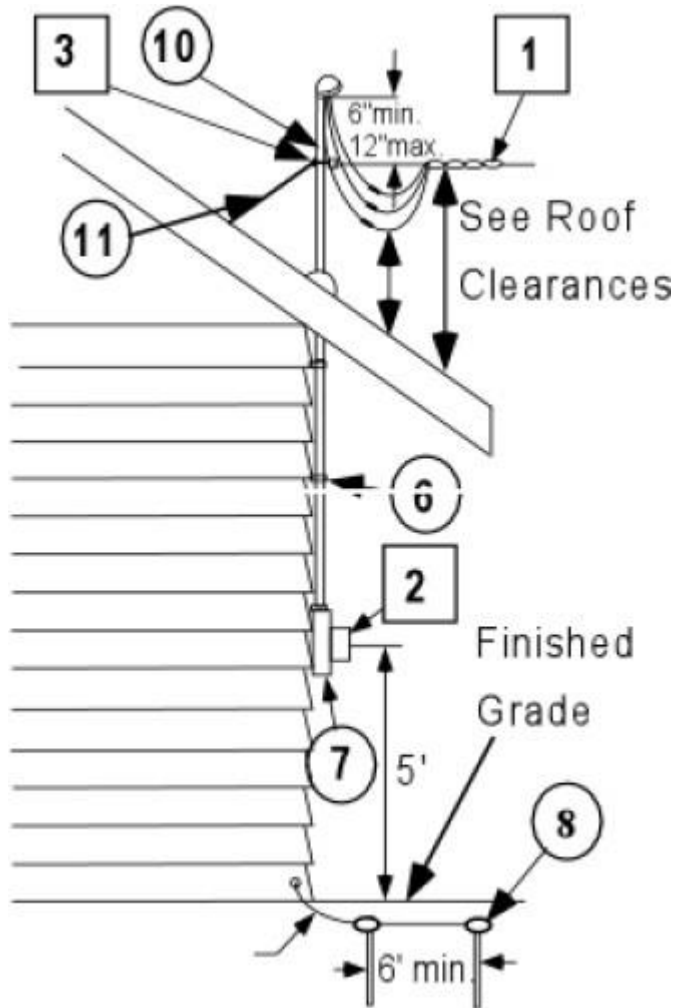
1. Overhead service drop
2. Meter
3. Cable wire holder on mast

Notes:

- A. The mast must be located to provide adequate clearances for the Utilities overhead service drop, above ground clearance and other clearance requirements
- B. Consult the Utilities for specifications for larger capacity and /or higher voltages service mast installation
- C. For 300 amp services, the service disconnect shall consist of no more than 2 disconnects with a combined rating of no more than 300 amps.
- D. Drawing refers to roof slope of 4 to12 or greater, allows a maximum of 6' of conductor above roof. The Customer shall not install LB fittings in the conduit riser.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

809. DIAGRAM



Service drop conductors which pass over 4' or less of roof overhang for the purpose of terminating at a "service mast" shall be a minimum of 18" from the roof. All masts with service attachment more that 48" above the roof shall be securely guyed at the point of the service drop attachment.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

810. WALL INSTALLATION UP TO 300 AMP 240 VOLTS AND UNDER

The Utilities will install, own and maintain:

1. Overhead service drop.
2. Service connectors.
3. Meter.
4. Cable wire holder.

The Customer shall install, own and maintain:

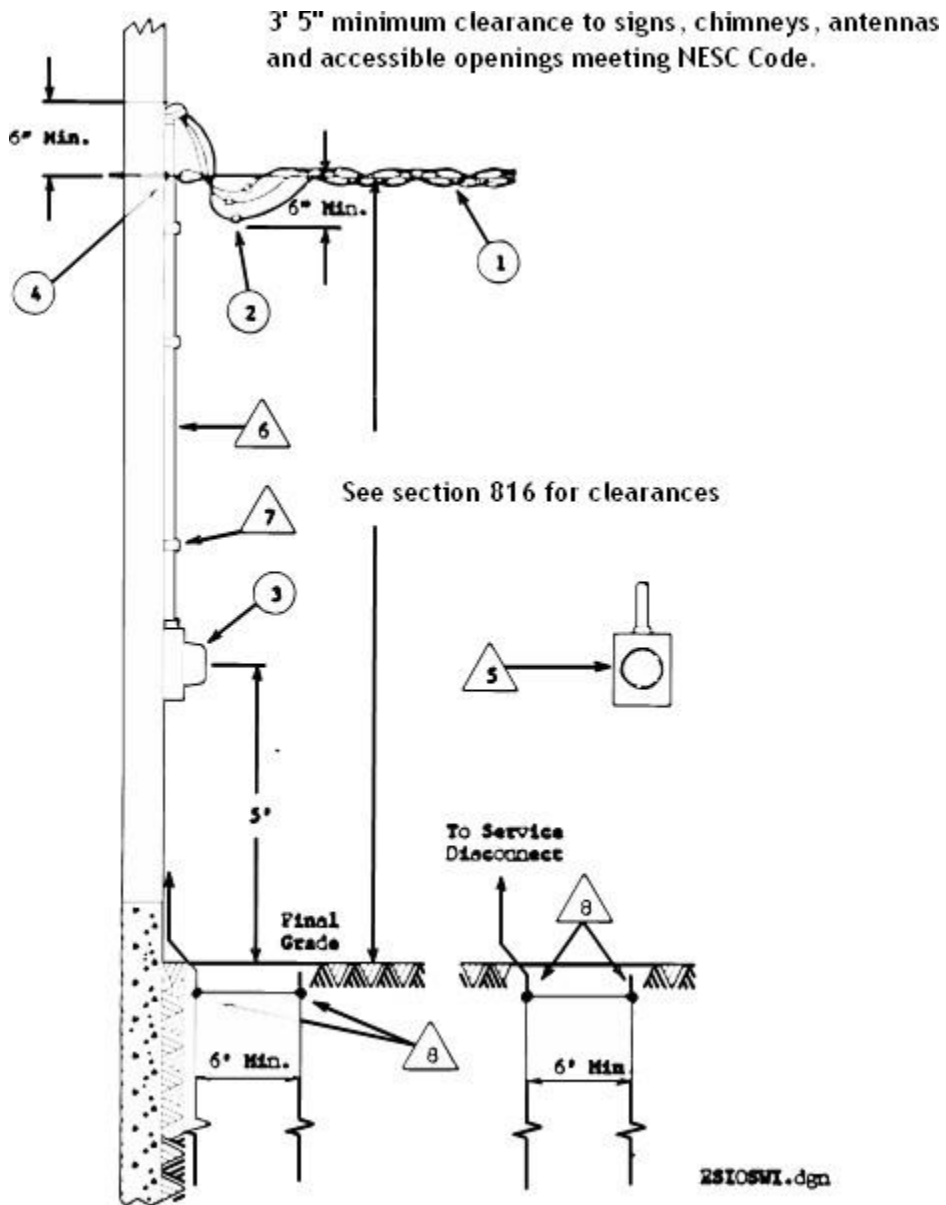
5. Meter socket (**ringless**)
6. Conduit or service cable and weather head.
7. Conduit or cable straps (as required).
8. Grounds in accordance with applicable codes. The grounding electrode conductor shall not terminate in or run through the meter socket enclosure.

Notes:

- A. The service riser must be located to provide adequate clearance for the Utilities overhead service drop.
- B. Customer must provide a strong wall location to anchor service cable(s) and show the Utilities its location.
- C. Leave wire ends at weather head a minimum of 36" long to be connected by the utilities.
- D. Service equipment shall be listed by approved testing agency (e.g. LTL)
- E. The Customer shall not install LB fittings in the conduit riser which encloses un-metered service conductors.
- F. For 300 amp services, the service disconnect shall consist of no more than 2 disconnects with a combined rating of no more than 300 amps.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

811. CONTINUED



Wall Installation Up to 300 AMP# Wire - 240 VOLT and Under

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

**812. WALL OR ROOF INSTALLATION 100 – 300 AMP SINGLE AND THREE
PHASE 480 VOLT MAXIMUM**



Customer furnishes, installs, & maintains:

4. Conduit or service cable and weatherhead
5. Disconnect for 480 volt service
6. Conduit or cable supports (as required)
7. Approved Meter socket (Ringless)
8. Ground in accordance with the code
9. Customer's service entrance panel
10. Rigid Steel Conduit
11. Conduit Guy if Required



Utility furnishes, installs & maintains

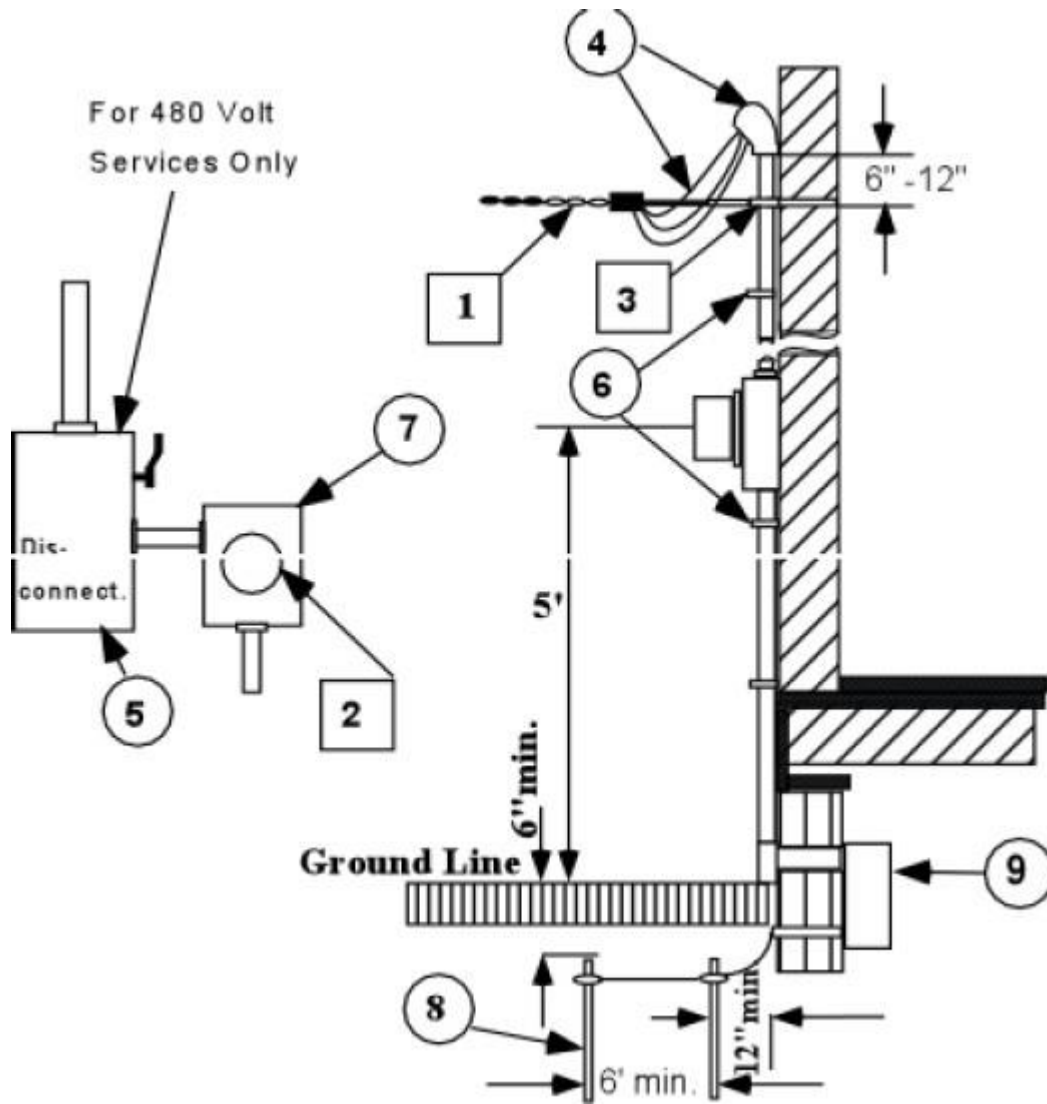
1. Overhead service drop
2. Meter
3. Cable wire holder

Notes:

- A. Refer to section 106 for maximum allowable entrance size for each service voltage.
- B. The Service riser must be located to provide adequate clearances for the Utilities overhead service drop.
- C. Leave wire ends at weather head a minimum of 3' long to be connected by the Utilities
- D. Sequence shall be **Switch - fuse - Meter.**
- E. Service equipment shall be listed by an approved testing agency (e.g. LTL)
- F. Disconnect shall have means for locking open.
- G. The Customer shall not install LB fittings in the conduit riser which encloses un-metered service conductors.

WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION

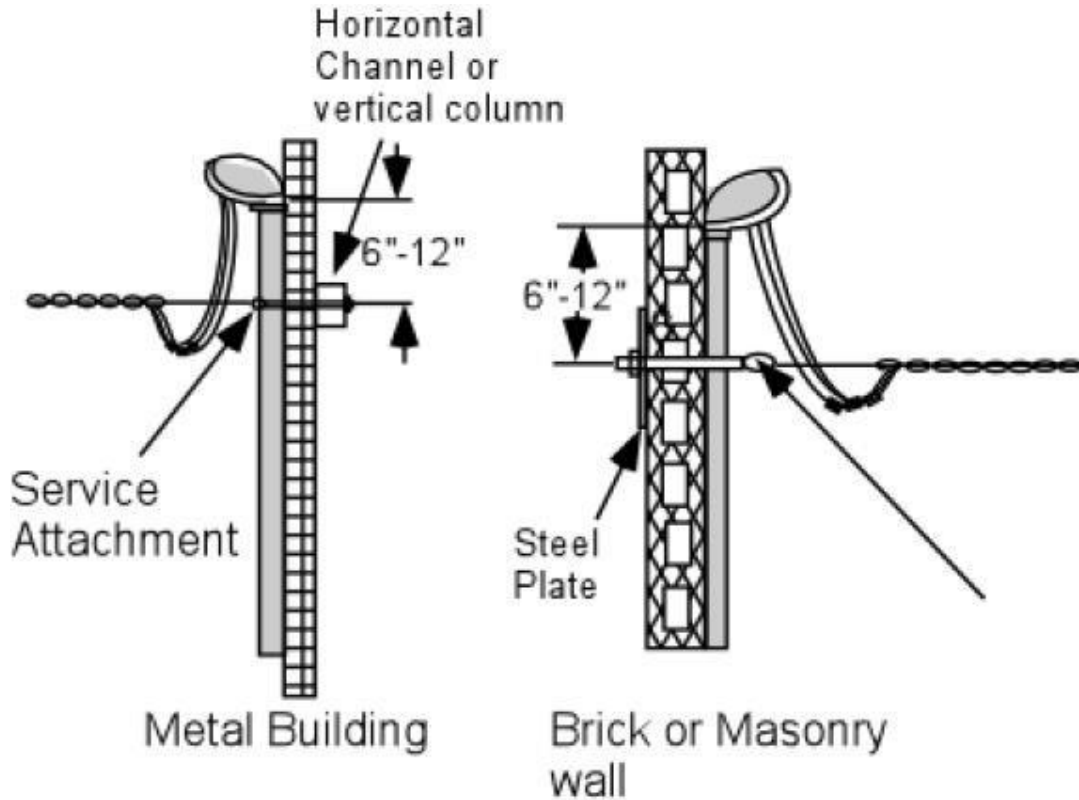
813. DIAGRAM



Overhead Service Installation
100-300 amp Three Phase
4 Wire - 277 / 480 Volt
Self - Contained

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

814. SERVICE ATTACHMENT TO BRICK OR MASONRY WALL AND METAL BUILDINGS 100-1200 AMPS - 480 VOLT AND UNDER



Notes:

- A. Refer to Section 106 for maximum allowable entrance size for each service voltage.
- B. Customer furnishes, installs, and maintains the installations except for the Utilities service cables, connectors, and cable dead-ends.
- C. The Customer must consult the Utilities for service cable tensions and provide an attachment with adequate strength. The installation must provide adequate clearances for the Utilities overhead service cables.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

The Customer shall consult the Utilities before such installation is planned or started. Where no building or structure is available, the Customer shall furnish and install a pole to support the Utilities overhead service cable(s) and meter.

815. POLE MOUNTED SERVICE ENTRANCE (UP TO 300 AMP – 240 VOLTS AND UNDER)

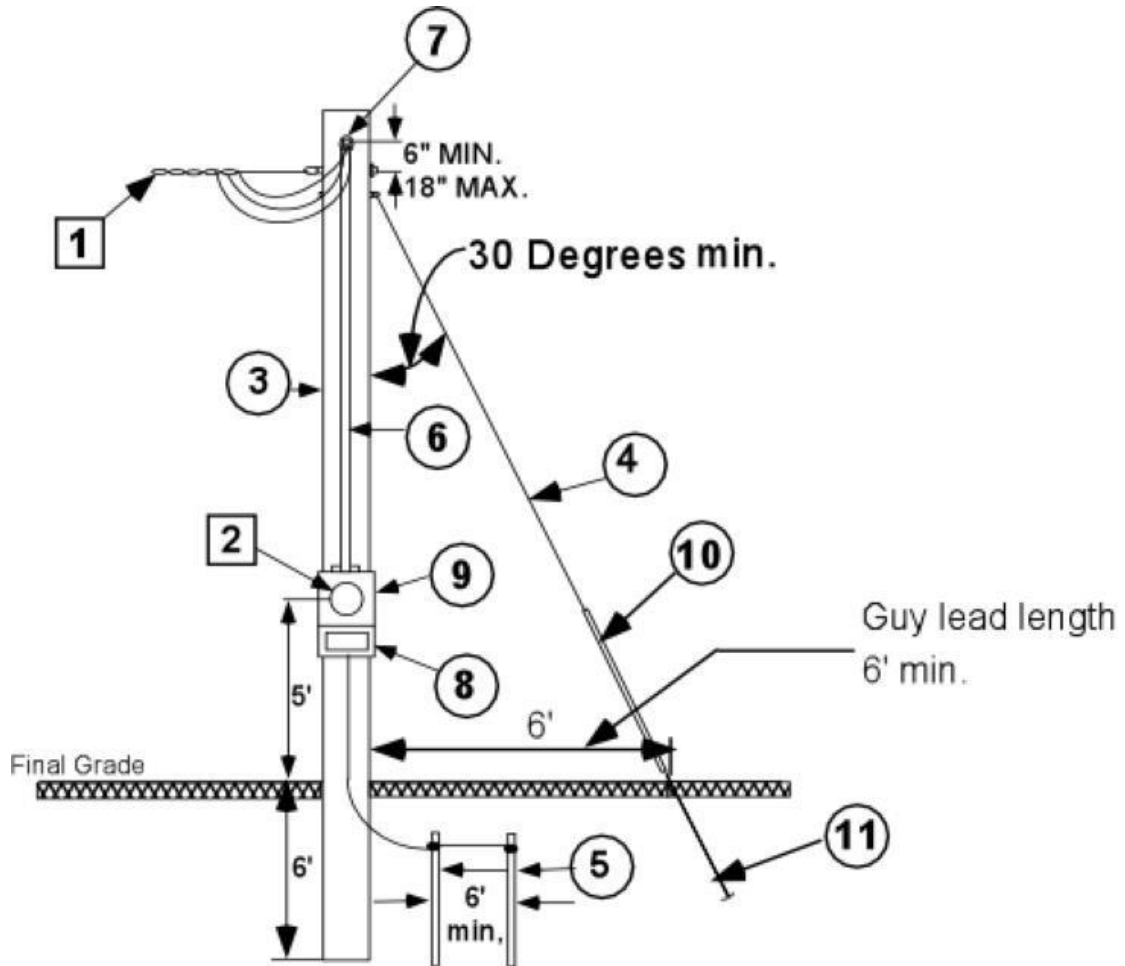
- | | |
|---|--|
| <input type="radio"/> Customer furnishes, installs, and maintains: | <input type="checkbox"/> Utility furnishes, and installs, and maintains: |
| <ul style="list-style-type: none">3. Pole, treated, class 6 minimum, 5" dia. at top, length necessary to meet all applicable clearance4. Guy, Galv. stranded steel, ¼" minimum5. Ground in accordance with applicable codes (refer to section 613)6. Conduit or Service Entrance cable7. Rain-tight service head8. Service entrance equipment9. Approved Meter socket (Ringless)10. Guy Guard11. Anchor | <ul style="list-style-type: none">1. Overhead service cable2. Socket type meter |

Notes:

- A. The installation must provide adequate clearances for the Utilities overhead service cable(s).
- B. See Chapter 6, for meter socket installation details
- C. Service must be UL rated "suitable for service equipment".
- D. The customer shall not install LB fittings in the conduit riser which encloses un-metered service Conductors.
- E. The grounding electrode shall not terminate or run through the meter socket enclosure.

WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION

816. DIAGRAM



**Pole Mounted Service Entrance
Up To 300 amps - 240 Volts and under**

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

**817. CLEARANCES FOR OVERHEAD CABLE SERVICES 0-480 VOLT
GROUND CLEARANCES (FT)**

This table has changed dramatically. Please consult the Utilities if you are unsure of required clearances.

**VOLTAGES LIMITS TO GROUND
ABOVE GRADE ROADWAYS**

	<u>150V</u>	<u>300V</u>	<u>750V</u>
Roads, streets and areas subject to truck traffic	16'	16'	16'
Residential Driveways	15'	15'	16'
Spaces and ways subject to pedestrian or Restricted traffic only	12'	12'	12'
Drip loops	15'	15'	16'
WI DOT Highways	17'	17'	17'

OTHER VERTICAL CLEARANCES

Over or under roofs or projection (not readily accessible)	8'	8'	8'
Over or under roofs, decks etc,	11'	11'	11'
Signs, chimneys, antennas, and other installations Not classified as buildings	3.5'	3.5'	3.5'
Windows (below, only)	3'	3'	3'
Swimming pools (within 10' of horizontal*)	18'	18'	18'
Diving structures and towers (within 10' of horizontal)*	14'	14'	14'

HORIZONTAL CLEARANCE

Building walls and projections	5'	5'	5'
Unguarded windows, doors, porches, and fire escapes	5'	5'	5'
Balconies and areas accessible to pedestrians	5'	5'	5'
Signs, chimneys, antennas, etc.	3.5'	3.5'	3.5'

* **Conductors not allowed over swimming pools.**

**WAUNAKEE UTILITIES
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- A. Where the height of attachment to a building or other installation does not permit service drops to meet these values the clearances over residential driveways may be reduced to 12' 5" for insulated supply service drops limited to 300V to ground and to 12' for those limited to 150V to ground. These reductions in clearance must be pre-approved by the Utilities.
- B. Where the height of attachment to a building or other installation does not permit service drops to meet these values, the clearances may be reduced to 10' 5" for insulated drip loops of supply service drops limited to 300V to ground and 10' for those limited to 150V to ground. These reductions in clearance must be pre-approved by the Utilities.
- C. Where no more than 4' of service drop conductors, of 3,000 V or less, pass over the overhang portion of the roof for the purpose of terminating at a (through the roof) service raceway or approved support, clearance may be maintained at a minimum of 18" from any portion of the roof over which they pass.
- D. Where the voltage to ground does not exceed 300V, the clearance of the cable attached to the building may be reduced to 3'.
- E. Do not install beneath openings which materials pass through.
- F. Where clearances cannot be obtained, conductors shall be guarded with a solid barrier.

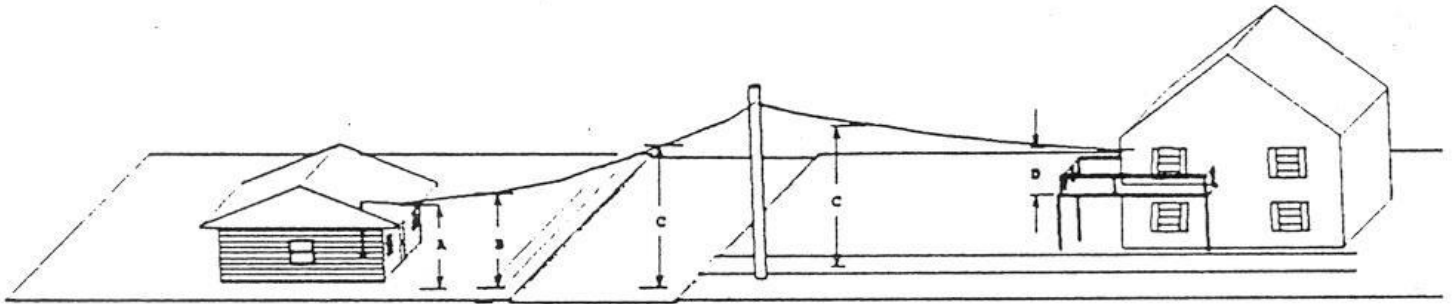
**WAUNAKE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

**** MAXIMUM HEIGHT OF SERVICE HEAD ABOVE SUPPORT
ON AN UNGUYED SERVICE MAST**

Heavy Loaded service drop tension may not exceed 500 LBS.

Type of Conduit Material	Conductor Size	SERVICE DROP LENGTH	2" Conduit	2 ½" Conduit	3" Conduit
Rigid Metal Steel Conduit	#2 Aluminum Triplex	30'	6' 0"	6' 0"	6' 0"
		40'	6' 0"	6' 0"	6' 0"
		50'	5' 10"	6' 0"	6' 0"
		60'	5' 1"	6' 0"	6' 0"
		70'	4' 7"	6' 0"	6' 0"
		80'	4' 1"	6' 0"	6' 0"
Rigid Metal Steel Conduit	#1/0 Aluminum Triplex	30'	6' 0"	6' 0"	6' 0"
		40'	6' 0"	6' 0"	6' 0"
		50'	5' 0"	6' 0"	6' 0"
		60'	4' 4"	6' 0"	6' 0"
		70'	3' 11"	6' 0"	6' 0"
		80'	3' 7"	5' 8"	6' 0"

**WAUNAKE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

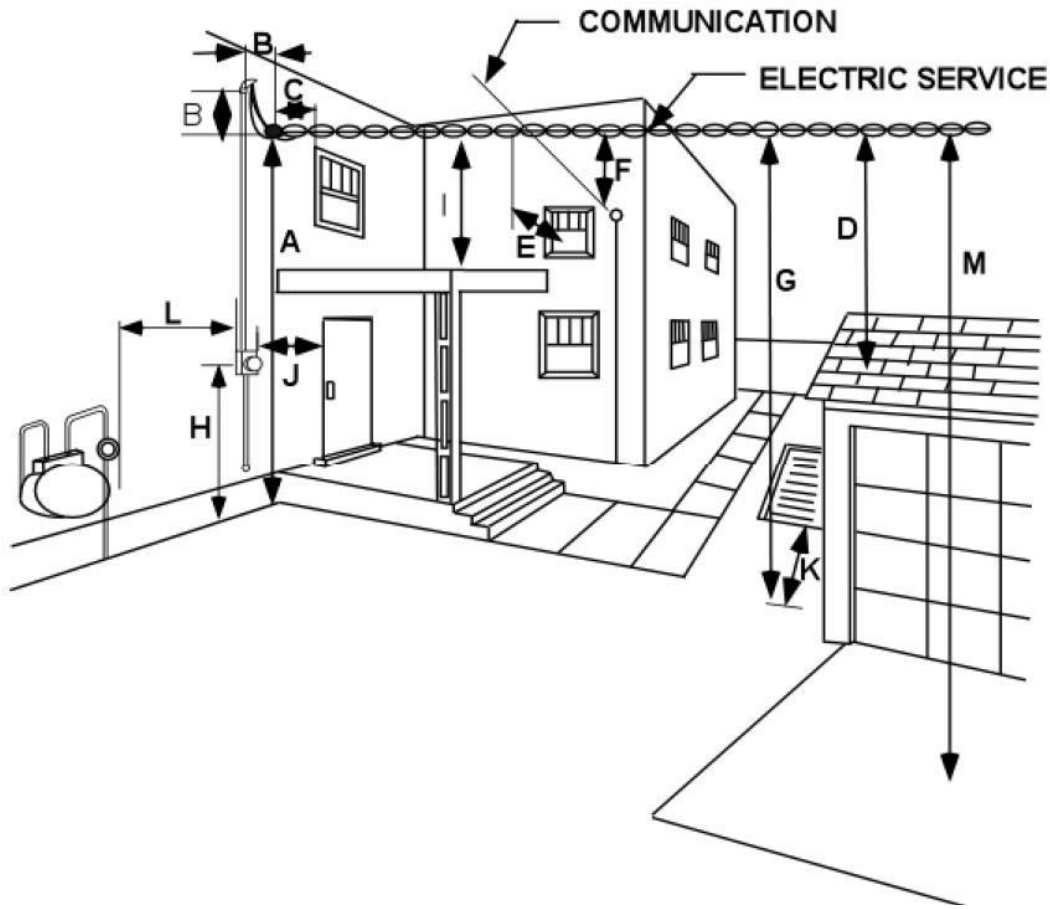


TYPICAL SERVICE DROP CLEARANCE (120/240 VOLT)

- A. 12' height for lowest wire, at point of attachment (within 15" of service entrance)
- B. 12' over sidewalks and other spaces accessible to pedestrians
- C. 16' over roads, streets, or driveway (including residential driveways subject to truck traffic) 17' if over a WI DOT jurisdiction highway
- D. 11' over roofs and decks
- E. The Utilities will not allow conductors over swimming pools

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

818. MINIMUM CLEARANCES FOR SERVICE 300V AND BELOW



The NEC and NESC prescribe minimum clearances for service wires

- A. 10 ft. min. to drip loops of triplex, if voltage to ground is less than 150 volts.
- B. 1 ft. min. and 2 ft. max. horizontal, 6 to 12 inch vertical above or below service head and attachment.
- C. Exposed conductors shall be no less than 3 ft. from window, doors, porches, fire escapes, awnings, signs, and similar construction, when service is attached to building. The exposed service conductors shall be 3 ft. from all sides except top of window. When the service conductors are attached above a window, the drip loop shall not sag below the top of the window.

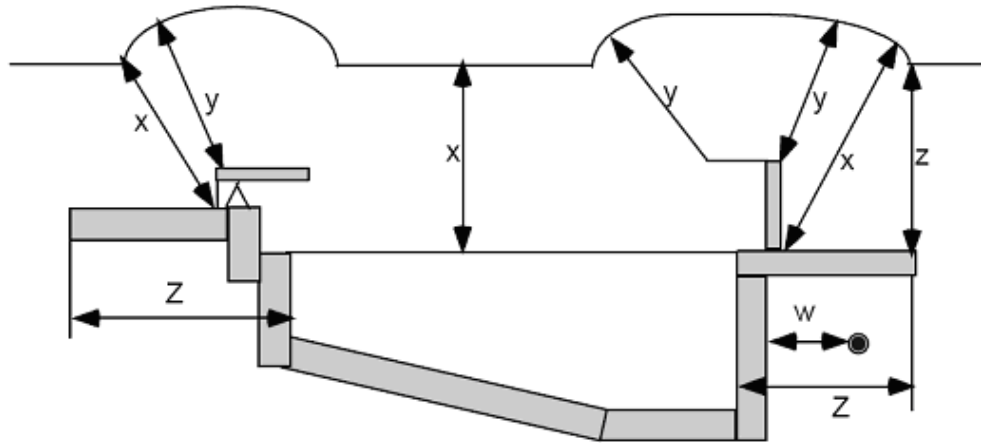
**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

819. MINIMUM CLEARANCES FOR SERVICES 300V AND BELOW CONT.

- D. Where the service passes over a building, but does not attach, the vertical clearance shall be 11.0 ft. if the roof is accessible or 3.5 ft. if inaccessible.
- E. 5 ft. when wires pass opposite a window, where the service is attached
- F. 2 ft. from communication wires.
- G. 12 ft. if the height of building does not permit 12 ft., it can be reduced to 10.5 ft. if the voltage to ground is less than 150 volts, it can be reduced to 10 ft.
- H. Center of meter 5 ft. above finished grade.
- I. On buildings where service attaches, the vertical clearance shall be 8 ft.
- J. When a door opens outward, mount the meter socket a door's width plus 6" on the hinged side away from the door opening. Do not mount the meter along high traffic passageways.
- K. The clearances in Section 818 apply except for triplex cables meeting 230C3 (NESC) which are 10 feet or more horizontally from the edge of the pool, diving platform, or diving tower.
- L. A minimum horizontal separation of 3' shall be maintained between natural gas service equipment (vented regulators,) and electric metering or termination equipment. Transformers shall have a minimum separation of 5' from natural gas service equipment. A minimum separation of 5' shall be maintained between electric metering or termination equipment and liquid petroleum facilities on site but not filled on site. If the liquid petroleum facilities are filled on site, the minimum separation is 10'.
- M. 16 ft. over a driveway, may be reduced to 12.5 ft for isolated drops limited to 300 volts to ground or 12.0 ft. for triplex service drops limited to 150 volts.

**WAUNAKEE UTILITIES
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820. MINIMUM CLEARANCES FOR SERVICE 300 VOLTS AND BELOW BY POOLS



	Insulated supply or service cables, 0 to 750V to ground supported on and cabled together with an effective grounded bare messenger or effectively grounded neutral conductor	All other supply or service drop conductors	Underground conductors
X - Clearances in any direction to the water level, edge or water surface, base of diving platform or permanently-anchored raft	22.5 FT.	25 ft	-----
Y -Clearance in any direction to the diving platform or tower	14.5 ft.	17 ft.	-----
Z -Horizontal limit of clearance measured from the inside wall of the pool	This limit shall extend to the outer edge of the structures and not less than 10 ft.	This limit shall extend to the outer edge of the structures and not less than 10 ft.	-----
W -Clearance from all underground conductors from the outside edge of the pool	-----	-----	5 ft.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

821. CLEARANCE FOR SERVICE OVER STATE AND FEDERAL HIGHWAYS

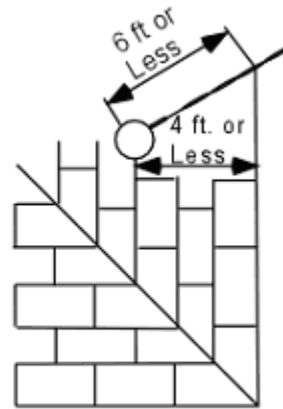
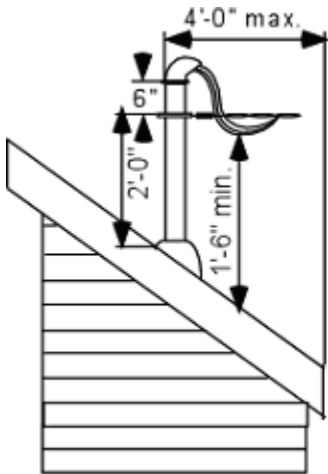
Clearance	Illinois	Iowa	Minnesota	Wisconsin
Height in Ft.	18	20	22	17

822. SERVICE CONDUCTOR CLEARANCE FROM SIGNS

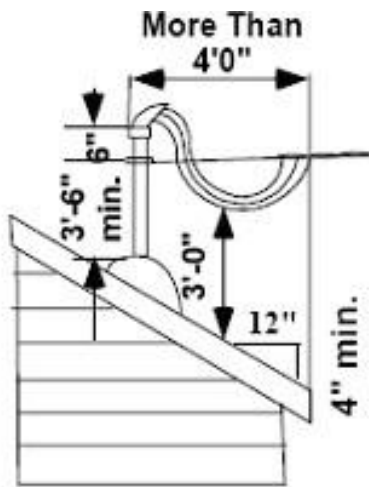
Conductor or Cable	Clearance in Feet
Horizontal (displaced by wind)	3.5
Vertical	3.5

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

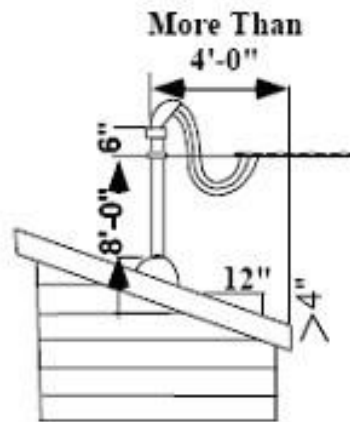
**823. SERVICE MAST INSTALLATION – ROOF CLEARANCES
CLEARANCE OF SERVICE DROP TERMINATING ON SUPPORT
MAST 300 VOLTS OR LESS**



Top View of Roof



Roof Slope 4" X 12" or Greater



Roof slope Less than 4" x 12"

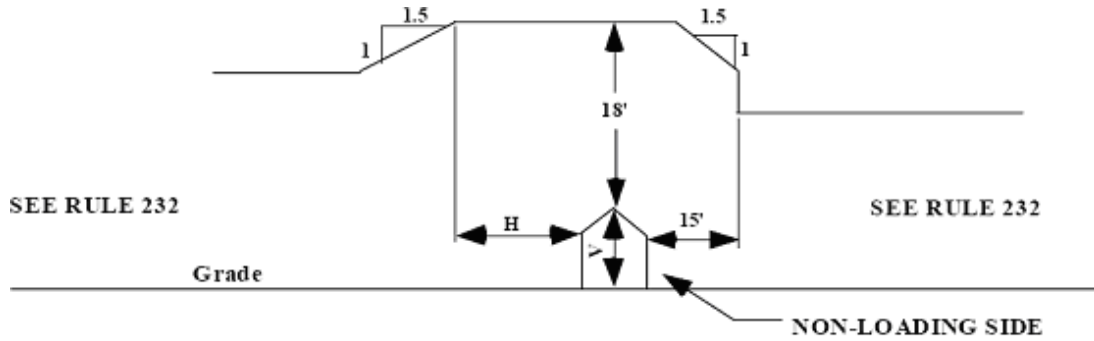
**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

NOTES:

1. If not more than 6 ft. (4 ft. horizontally) of service conductor passes over the roof to attach to a service mast through the roof and the service support is located not more than 4 ft. from the roof edge, the vertical clearance of the service can be reduce to 18”.
2. No coupling is allowed in conduit between the weather head and bottom of the soffit.
3. If the roof has a slope of 4/12 or greater and 4 ft. or more of the service conductors pass over the roof horizontally, then the minimum clearance allowed is 3 ft.
4. If roof is flat or has a slope less than 4/12 and 4ft. or more of the service conductors pass over the roof horizontally, the minimum clearance is 8 ft.
5. 8 ft. min. clearance is required over any roof that is accessible through doorway, ramp, stairway or permanently mounted ladder.

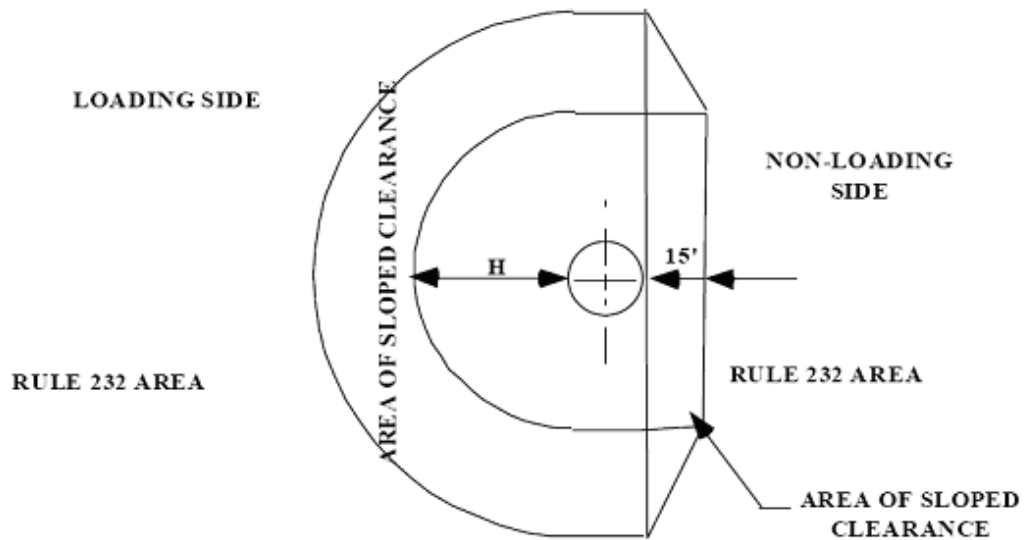
**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

824. CLEARANCE ENVELOPE FOR GRAIN BINS FILLED BY PORTABLE AUGERS, CONVEYORS, AND ELEVATORS



V+ Height of highest filling or probing port on grain bin

$$H=V+18 \text{ ft.}$$

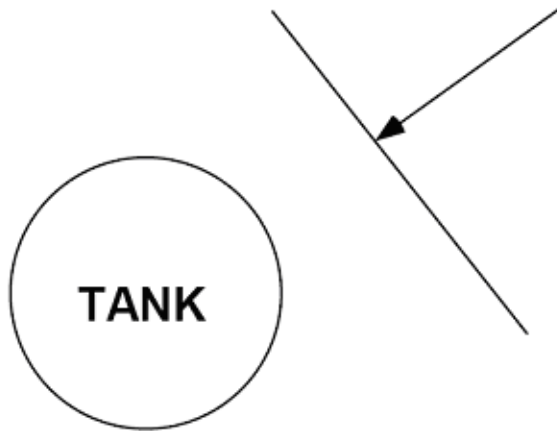


**Note: 18' Clearance Must Be Maintained in All Directions From A Probe Port
Rule 232 – See NESC**

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

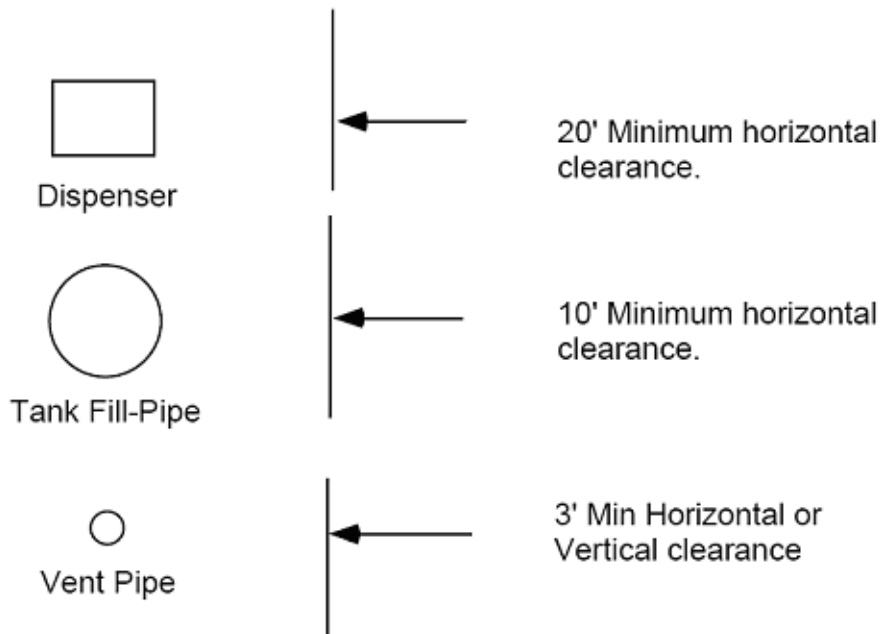
825. SPECIAL HORIZONTAL CLEARANCES FOR OVERHEAD CABLE SERVICES 0 TO 480 VOLTS

ABOVE-GROUND FLAMMABLE LIQUID STORAGE TANKS AND LP GAS STORAGE TANKS



8' Minimum horizontal clearance (this requirement does not apply to LP gas tanks of 1000 gallons or less).

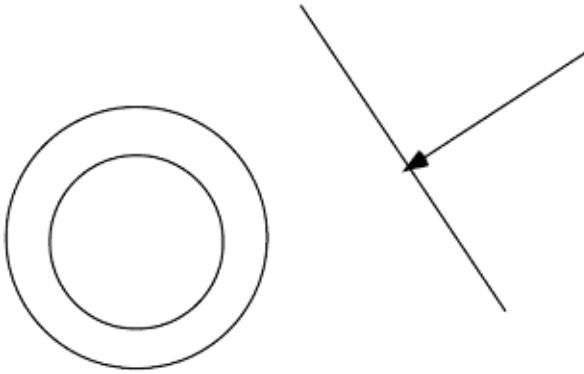
GASOLINE DISPENSING AND SERVICE STATIONS



**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

826. SPECIAL HORIZONTAL CLEARANCES FOR OVERHEAD CABLE SERVICES 0 TO 480 VOLTS – CONTINUED

Wells



Wisconsin Only

Minimum horizontal clearance between wells and overhead conductors shall be at least 3/4 of the required vertical clearance of the conductor to ground

Antennas

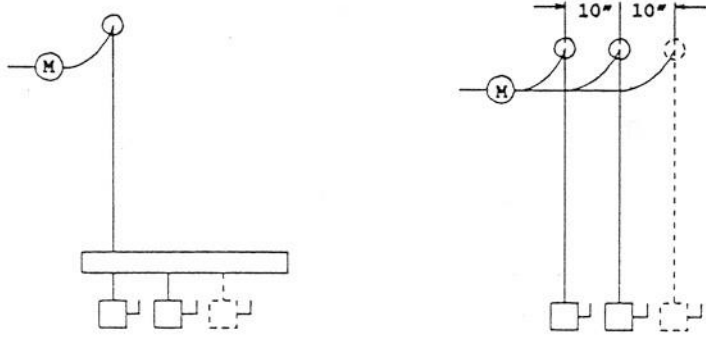
Antenna System Support – Poles used for electric power or for communication lines may not be used for supporting or for guying antenna systems.

Setbacks – No wires, cables, or guy wires shall extend over any street or other public thoroughfare or over any electric power or communication lines.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

**827. SERVICE RISER REQUIREMENTS
1200 AMP MAXIMUM - 0 TO 480 VOLTS**

ONE METER (WITH OUTDOOR METERING TRANSFORMERS)

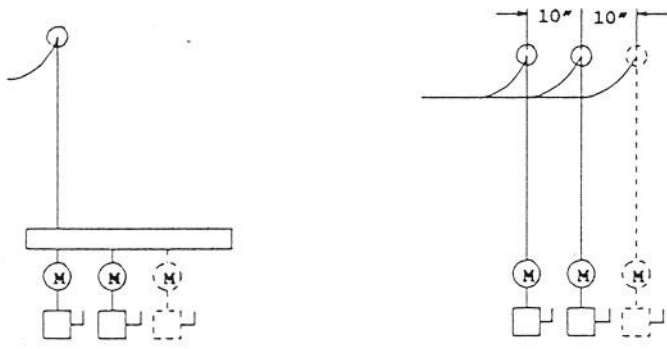


(2 to 6 Service Disconnects)

10

(Maximum of 3 Service Risers)
(Maximum of 3 Service Disconnects)

TO 6 METERS (WITH SELF-CONTAINED OR METERING TRANSFORMERS)



(2 to 6 Meters) 10

(2 to 6 Service Disconnects)

(Maximum of 3 Service Risers)

(Maximum of 3 Meters)

Notes:

- A. The Customer shall consult the Utilities before planning an installation with multiple risers.
- B. Where multiple risers are installed, leave wire ends at weather-heads a minimum of 60" long to be connected by the Utilities.

**WAUNAKEE UTILITIES
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CHAPTER 9 - UNDERGROUND SERVICES

- 900. General
- 901. Connections
- 902. Clearances
- 903. Wall mounted pedestal service single or duplex single or three phase 400-amp max 240-volt max.
- 904. Diagram
- 905. Outdoor group meter installation underground service lateral - multiple dwellings (200 - 600 amp - single phase - 3 wire - 120/240 volts - 3 to 6 meters)
- 906. Diagram
- 907. Free standing pedestal service entrance single phase or three phase 400 amps max 480 volts max
- 908. Diagram
- 913. Underground service to outdoor CT cabinet from padmount transformer single phase 400 to 800 amp 120 / 240 volt
- 914. Diagram
- 915. Underground service to outdoor CT cabinet from padmount transformer three phase 400 to 2000 amp 480 volts and under
- 916. Diagram
- 917. Underground service lateral 100-200 amp three phase 4 wire 277 / 480 volts self contained
- 918. Diagram
- 919. Pad specifications for three phase padmount transformers (75 to 2500 KVA)
- 920. Pad layout for three phase padmount transformers (75 - 2500 KVA).
- 921. Single phase box pad
- 922. Transformer pad foundation wall
- 923. Transformer pad foundation – alternate
- 924. Rigid conduit specifications
- 925. Pad mounted transformer locations
- 926. Non-combustible building walls *
- 927. Non-combustible transformer locations – continued
- 928. Non-combustible transformer locations – continued
- 929. Combustible building walls
- 930. Barriers
- 931. Barriers – continued

**WAUNAKEE UTILITIES
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932. Fire escapes

933. Fire escapes – continued

934. Single phase padmounted transformer – protection

935. Three phase padmounted transformer – protection

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

Chapter 9 - UNDERGROUND SERVICES

900. GENERAL

The Utilities will install, own and maintain the underground service lateral and metering equipment in accordance with the Utilities applicable rates and extension rules and the requirements of Chapter 5. Underground service lateral is defined as the underground service conductors from the last pole, pedestal, transformer or other Utilities structure connecting to the Customer's service entrance equipment at the building or other structure.

The Customer shall install, own and maintain all service entrance facilities other than the service lateral and metering equipment, regardless of metering location.

The Customer shall make application to the Utilities for the proposed underground service lateral and obtain approval of the location before starting installation of the service entrance.

Any required contributions must be paid to the Utilities before the service lateral is installed. (See insert A)

INSERT "A"

Additional payment shall be made for abnormally high installation costs such as setting poles, or trenching in rocky soil or high bedrock areas. The title to every extension at all times remains with the Utilities. The Utilities reserves the right to add new customers and connect new extensions to an existing extension. The Utilities shall make the extension over the most direct route which is the least expensive and least environmentally degrading. Access to all Utilities equipment shall be provided by the customer.

WAUNAKEE UTILITIES ELECTRIC SERVICE RULES AND INFORMATION

INSERT "B"

For underground facilities the applicant shall secure for the Utilities, without cost, such easements as the Utilities may require for the installation, maintenance or replacement of the underground lateral and distribution line extension. Village Ordinance requires that electric, communications and CATV entrance facilities shall be placed in a common trench. The applicant shall inform the Utilities of any known or expected underground obstruction near the cable routes on their property (septic tanks, drainage tile, invisible fences, private underground facilities, well, etc.). Any earth fill added to bring the cable route to final grade prior to the underground construction shall not contain large rocks, debris or rubbish. In the event of future changes in grade levels by the customer that would materially change the depth of cover over underground conductors, or affect transformer locations, the landowner shall notify the Utilities in advance of grading, and shall pay the Utilities its costs of moving or replacing its equipment to accommodate the change in grade. Such charge shall also be made for changes made for changes in building, foundations, walls or other obstructions. The Customer shall be responsible for the restoration of the property after the Utilities has completed installing the distribution facilities.

The Customer contribution for relocating and rebuilding existing distribution facilities shall be equal to the cost of installing the new facilities plus the depreciated cost of the facilities to be removed. The Customer contribution for an overhead service drop upgraded to an underground service lateral shall be equal to the cost of the underground service lateral less the cost of an equivalent overhead service drop.

Upon receipt of the prepayment and the inspector's report or the wiring affidavit, the Utilities will schedule the construction project within ten working days.

901. CONNECTIONS

The Utilities will connect the underground service lateral to the Customer's equipment.

902. CLEARANCES

To avoid damage to facilities when digging, the underground service lateral shall have a minimum horizontal clearance of 5 feet from swimming pools, fuel storage tanks, septic systems, wells etc.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

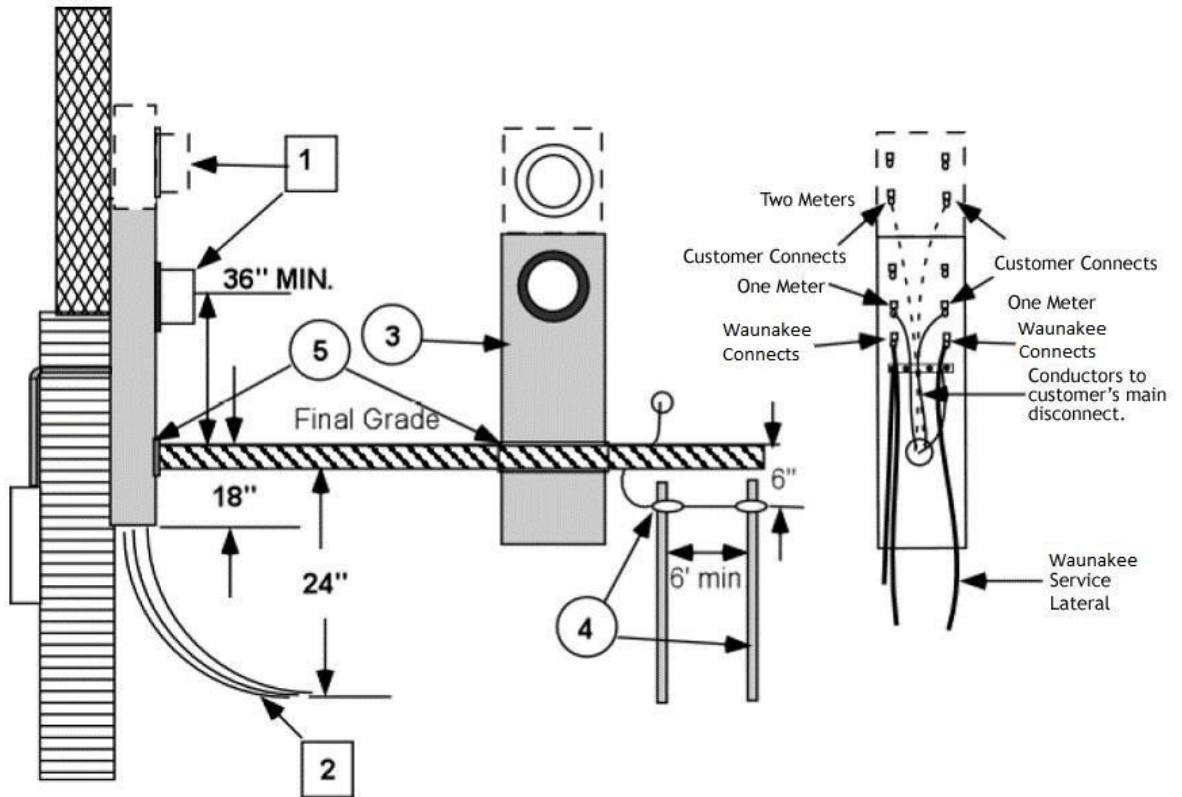
**903. WALL MOUNTED PEDESTAL SERVICE SINGLE OR DUPLEX SINGLE
OR THREE PHASE 400 AMP MAX 480 VOLT MAX**

- Customer furnishes, installs & maintains Utility furnishes, installs & maintains
- | | |
|---|--------------------------------|
| 3. Approved Meter Pedestal | 1. Meter |
| 4. Grounding in accordance with applicable codes. | 2. Underground Service Lateral |
| 5. Concrete Sleeve | |

Notes:

- A. The Customer's grounding electrode is not permitted to be installed within the residential pedestal. The grounding electrode shall be installed on either side (not in front) of the pedestal. The grounding electrode conductor may not terminate in or through the meter pedestal
- B. The pedestal must be securely fastened to the building wall.
- C. If the pedestal goes through a poured concrete slab, there shall be adequate separation between the pedestal and the concrete to insure that no damage occurs to the pedestal should the concrete shift due to *frost*, moisture, settling, etc.
- D. Pedestal terminal lugs for the Utilities aluminum service lateral conductors must accommodate sizes #2 - 350 MCM**
- E. Combined ampacity of service disconnects shall not exceed 400 amps for 400 amp service
- F. For tubing a service for winter construction, a 30" x 30" x 30" hole must be dug at the base of the meter installation.
- G. 400-amp max. 320-amp continuous duty **must** have lever bypass

904. **DIAGRAM**



**Underground Service Lateral to Pedestal (Single or Duplex)
Up to 400 AMP - Single Phase &
Three Phase - 240 VOLT Max and Under**

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

905. OUTDOOR GROUP METER INSTALLATION
UNDERGROUND SERVICE LATERAL MULTIPLE DWELLINGS
200-600 AMP SINGLE PHASE
3 WIRE - 120/240 VOLT
3 TO 6 METERS

The Utilities will install, own and maintain:

1. Underground service lateral(s).
2. Socket type meter(s).

The Customer shall install, own and maintain:

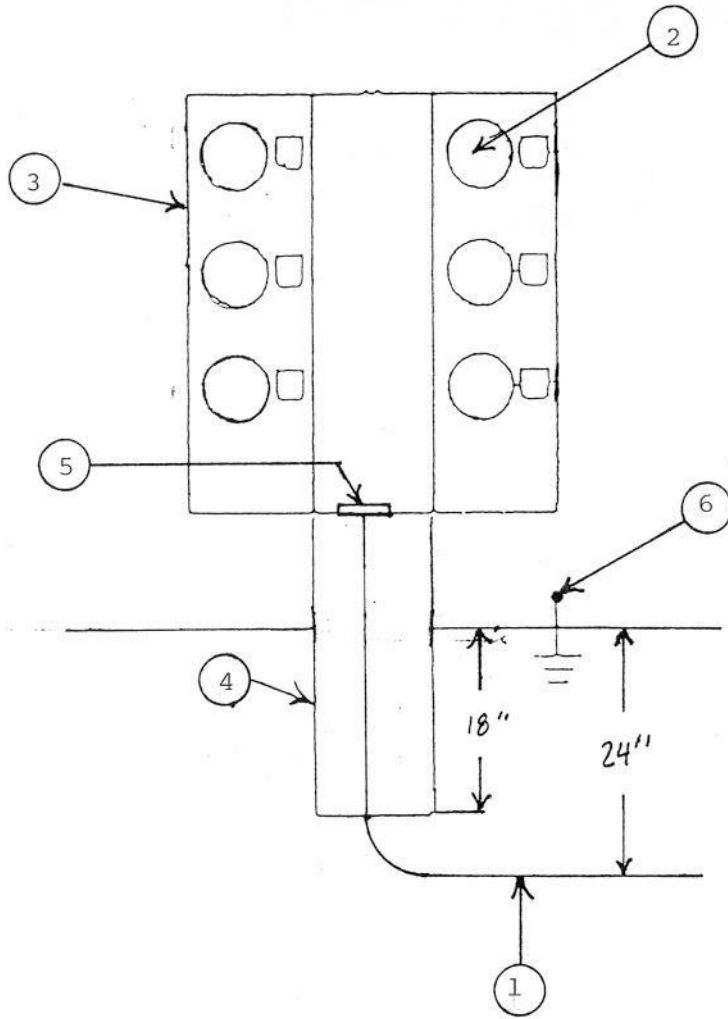
3. Group metering assemblies (See equipment list).
4. Galvanized Steel down trough.
5. Insulated bushing. (As required)
6. Ground (in accordance with applicable codes).

Notes:

- A. Group meter socket(s) and down trough are installed owned and maintained by the customer.
- B. Sockets shall be factory bussed and approved by the Utilities. A terminal box must be provided for installations supplied by the Utilities underground service lateral.
- C. **The Customer must permanently identify each meter with the correct apartment, unit, or circuit number before the meters are installed.**
- D. Multiple metering installations supplying more than 6 meters require a main switch-fuse ahead of the meters.
- E. **The Customer must provide a down trough for the Utilities service lateral. (Please consult the Utilities).**

**WAUNAKEE UTILITIES
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906. DIAGRAM



**Outdoor Group Meter Installation
Underground Service Lateral
Multiple Dwellings
200-600 AMP Single Phase
3 wire -120/240 VOLT
3 to 6 Meters**

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

**907. FREE STANDING PEDESTAL SERVICE ENTRANCE SINGLE PHASE
OR THREE PHASE 400 AMPS MAX 240 VOLTS MAX**

Customer furnishes, installs & maintains Utility furnishes, installs & maintains

- | | |
|--|--------------------------------|
| 3. Approved Meter Pedestal (Ringless) | 1. Meter |
| 4. Service Entrance Equipment | 2. Underground Service Lateral |
| 5. Pedestal | |
| 6. Ground in accordance with applicable codes. | |
| 7. Factory stabilization foot | |
| 8. Rigid Conduit | |

The Customer shall consult the Utilities before this installation is planned or started.

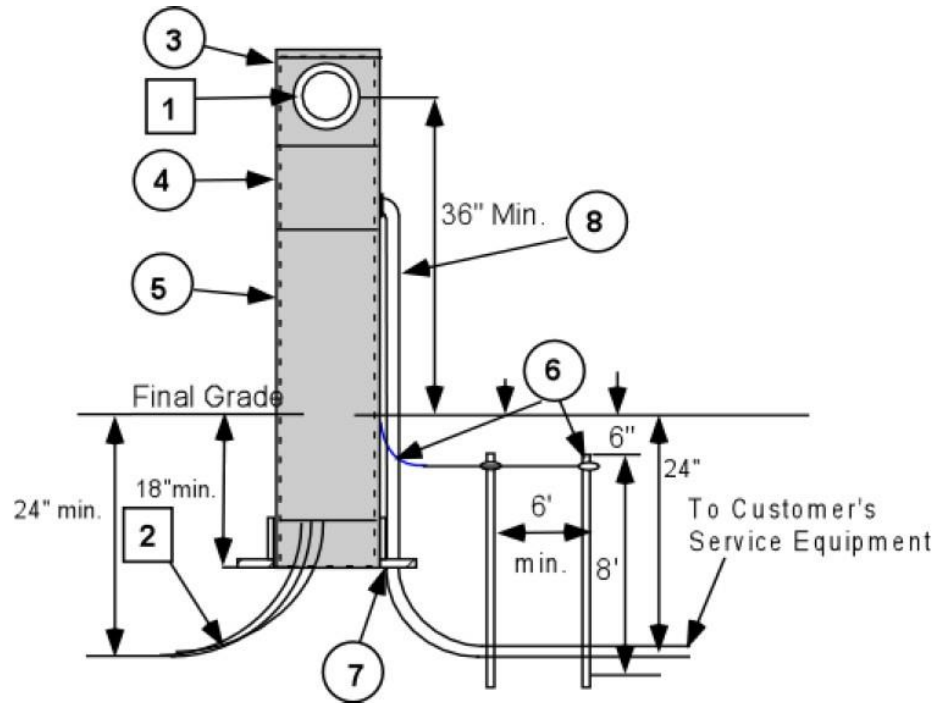
Where no building or structure is available, the customer shall install a pedestal to support the Utilities meter and terminate the Utilities underground service lateral.

Notes:

- A. Customer pedestal shall be used to supply only underground wiring systems for locations where no building is available for **pole-mounted** entrance used to supply Customer owned overhead wiring systems.
- B. Service pedestals shall be IUL listed "suitable for service entrance equipment".
- C. **Pedestal terminal lugs for the Utilities aluminum service lateral conductors must accommodate sizes #2 - 350 MCM.**
- D. Customer circuits supplied by the pedestal must be permanently wired (no cords).
- E. Customer's underground circuit conductors must not be installed in the same raceway with the Utilities service lateral.
- F. See Chapter 10 for mobile home pedestal requirements.
- G. Where two electrodes are required, both shall be installed on the same side (not in front) of the pedestal.
- H. 400-amp max. 320-amp continuous duty **must** have lever bypass.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

908. DIAGRAM



Notes:

- A. Customer pedestal shall be used to supply only underground wiring systems for locations where **no buildings are available**.
- B. Grounding Electrodes shall be installed on the same side of the Pedestal.
- C. When an entrance trough on the meter pedestal is not divided for metered and un-metered conductors, the contractor shall provide a conduit exit for the customer's conductors from disconnect device.
- D. Overcurrent devices shall be installed so the bottom of the enclosure containing the overcurrent device is not less than 2 ft. above finished grade or working platform.

**Free Standing Pedestal type Service Entrance
Underground Service Lateral
Up to 400 AMP - 240 VOLTS and under**

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

**913. UNDERGROUND SERVICE TO OUTDOOR CT CABINET FROM
PADMOUNT TRANSFORMER - SINGLE PHASE
401-800 AMP - 120/240 VOLT**

The Utilities will install, own and maintain:

1. Underground primary cable.
2. Fiberglass box pad (15" x 37" x 46"
3. Padmount transformer.
4. Underground service lateral.
5. Metering (See Chapter 6).

The Customer shall install, own and maintain:

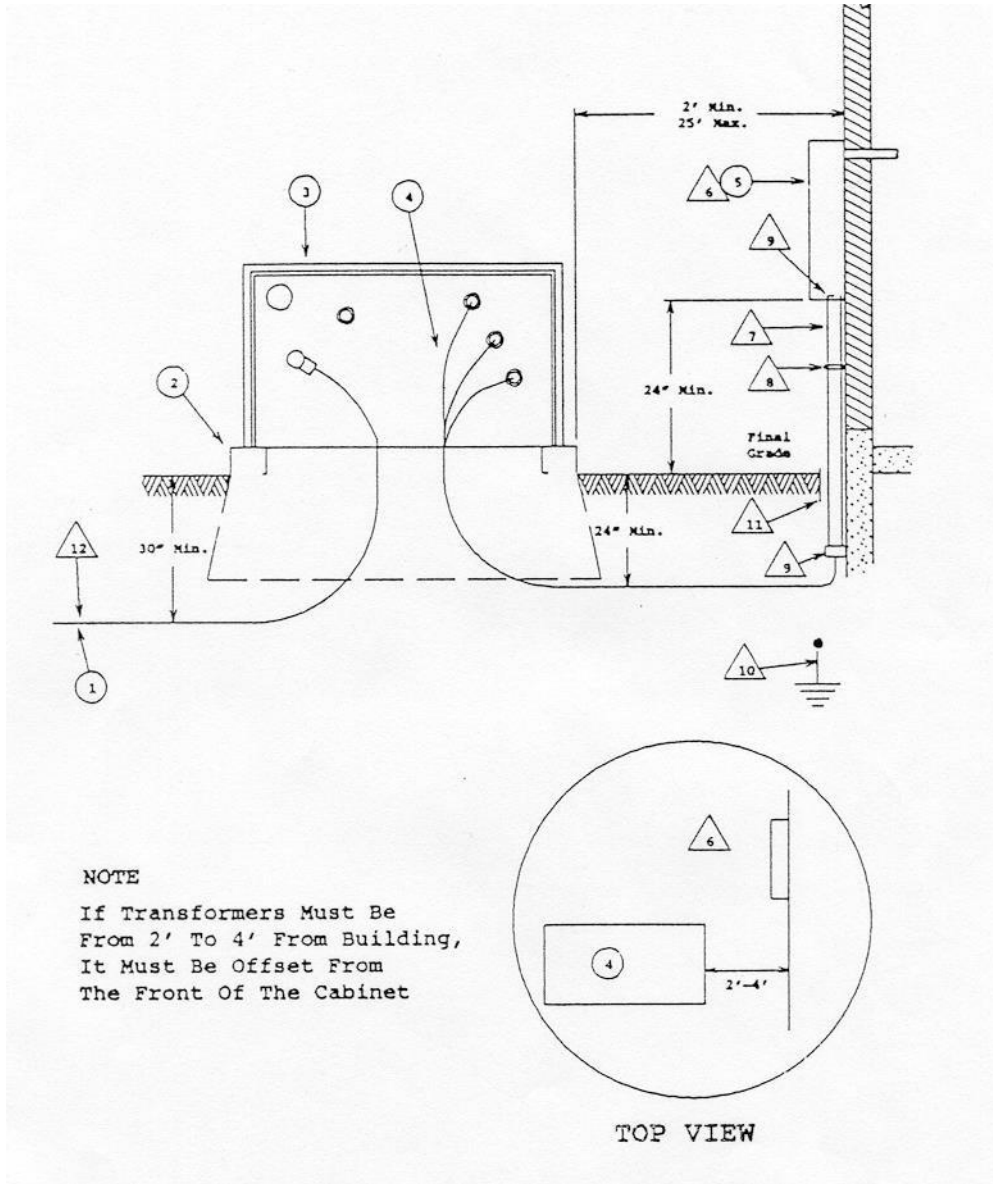
6. Metering transformer cabinet (See Chapter 6).
7. Conduit(s)
8. Conduit straps (as required).
9. Insulating bushing.
10. Ground (in accordance with applicable codes).
11. Sleeve if conduit passes thru concrete, blacktop etc.
12. Conduit required for underground conductors when located under concrete, blacktop or an area that cannot be readily dug up in the future.

Notes:

- A. **The Customer shall consult the Utilities before this installation is planned or started.**
- B. "LB" conduit fittings are not permitted in the conduit run containing the Utilities underground service lateral.
- C. The pad mount transformer must be located in accordance with the requirements shown in Sections 910.
- D. Cables shall enter and leave the transformer through the window in the pad. No equipment should be attached to the transformer or holes cut in the transformer for any reason.
- E. A minimum clear space of 4 feet must be provided in front of metering transformer cabinet to allow for door opening.
- F. **Conduit Expansion Joints** – Will be required on any piped services running underground, the customer is responsible for purchasing and installing.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

914. DIAGRAM



Notes:

- A. The Customer shall install the number and size of conduit runs required to match the ampacity of the service entrance.

**Underground Service to Outdoor CT Cabinet From
Padmounted Transformer 401-800 AMP - 120/240 VOLT
Single Phase**

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

**915. UNDERGROUND SERVICE TO OUTDOOR CT CABINET FROM
PADMOUNT TRANSFORMER - THREE PHASE
400-2000 AMP - 480 VOLTS AND UNDER**

The Utilities will install, own and maintain:

1. Underground primary cables.
2. Pad mount transformer.
3. Underground service lateral.
4. Metering (See Chapter 6).

The Customer shall install, own and maintain:

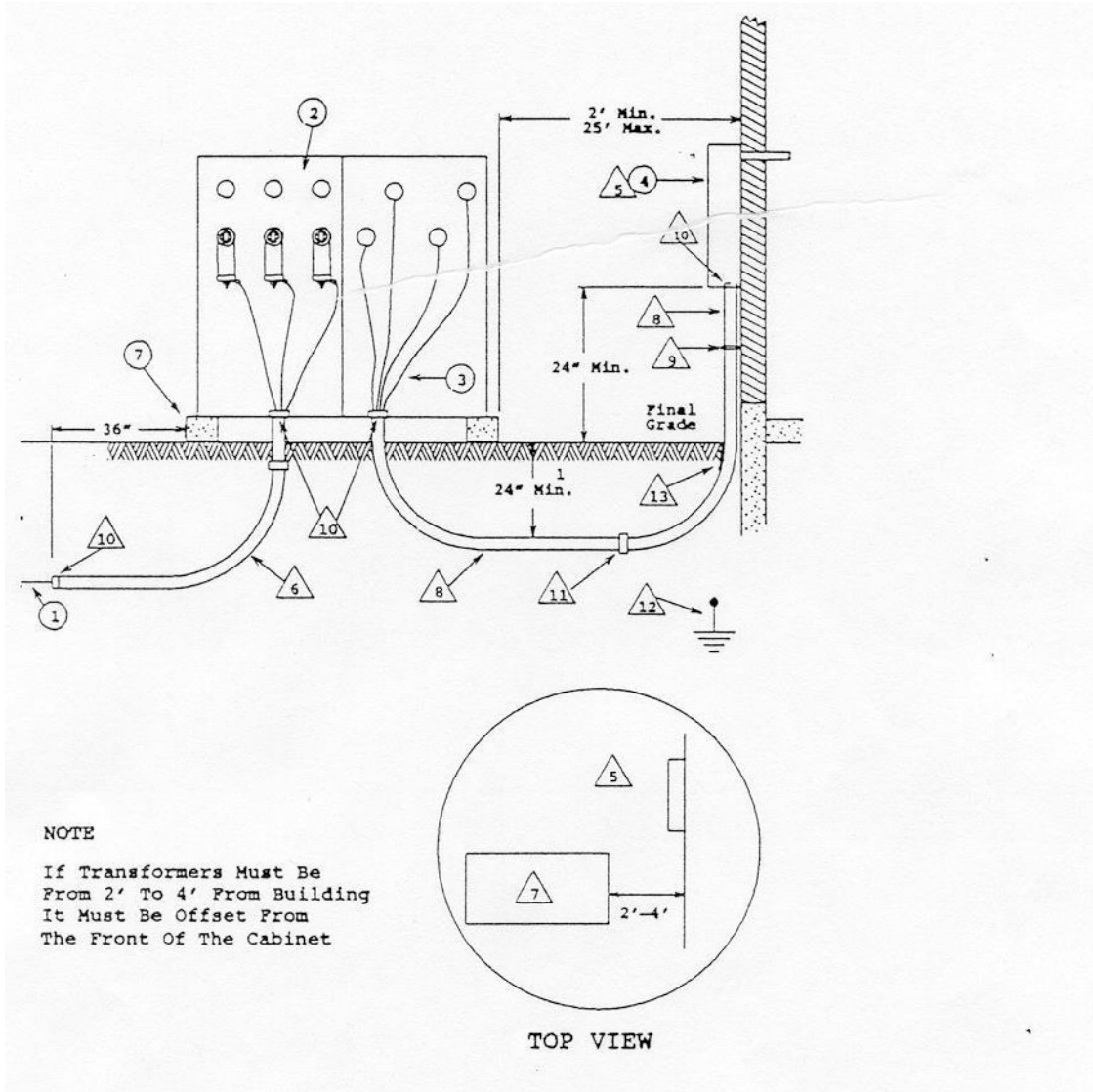
5. Metering transformer cabinet
6. Conduit (s)
7. Concrete pad
8. Conduit (s)
9. Conduit straps (as required)
10. Insulating bushing.
11. Conduit adapter coupling (as required)
12. Grounds (in accordance with applicable codes)
13. Sleeve if conduit passes thru concrete, blacktop etc.
12. Conduit required for underground conductors when located under concrete, blacktop.

Notes:

- A. The Customer shall consult the Utilities before this installation is planned or Started.
- B. "LB" conduit fittings are not permitted in the conduit run containing the Utilities underground service lateral.
- C. The pad mount transformer must be located in accordance with the requirements shown in Section 911.
- D. Cables shall enter and leave the transformer through the window in the pad. No equipment shall be attached to the transformer or holes cut in the transformer for any reason.
- E. A minimum clear space of 4 feet must be provided in front of metering transformer cabinet to allow for door opening.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

916. DIAGRAM



Notes:

- A. The Customer shall install the number and size of conduit runs required to match the ampacity of the service entrance.
- B. **Conduit Expansion Joints** – Will be required on any piped services running under ground, the customer is responsible for purchasing and installing.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

**917. UNDERGROUND SERVICE LATERAL
100 - 200 AMP - THREE PHASE
4 WIRE – 277 / 480 VOLTS
SELF CONTAINED**

The Utilities will install, own and maintain:

1. Underground service lateral.
2. Socket type meter.

The Customer shall install, own and maintain:

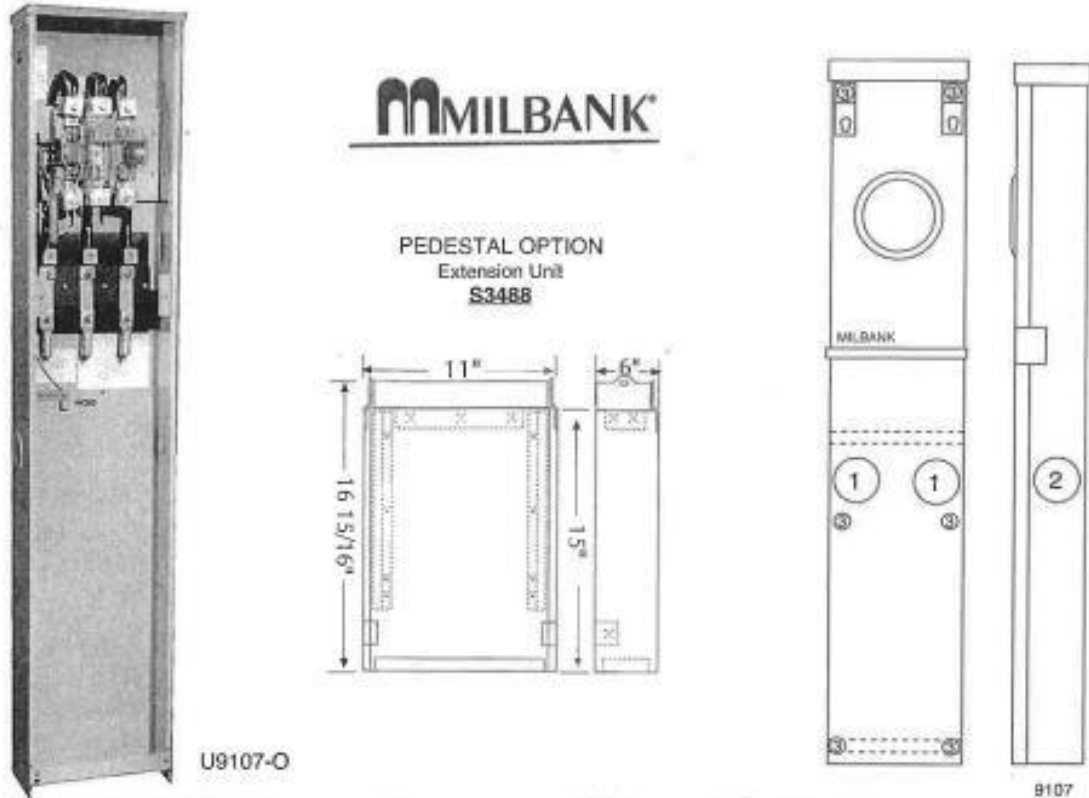
3. Meter Sockets (**ringless**).
4. 36” min. from final grade to middle of meter socket.
5. 18” of min. cover between final grade and the bottom of the meter pedestal.
6. Ground (in accordance with applicable codes).

Notes:

1. See Chapter 1, Section 104 for maximum allowable entrance size for each service voltage.
2. This equipment shall be UL approved and factory assembled gear.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

918. DIAGRAM



200 AMP—7 TERMINAL—RINGLESS—3Ø4W—UG

# OF TERM	SERVICE	CATALOG NUMBER	HUB	CONNECTOR CU/AL		BY-PASS	DIMENSIONS			CONCENTRIC K.O.'S			
				LINE	LOAD		D"	W"	H"	1	2	3	4
7	UG	U9107-O-K5*	NONE	#6-350 kcmil	#6-350 kcmil	LEVER	6	11	58	2½	2½	5/16	-

**Underground Service Lateral
100-200 AMP - Three Phase
4 wire - 277/480 VOLT
Self Contained**

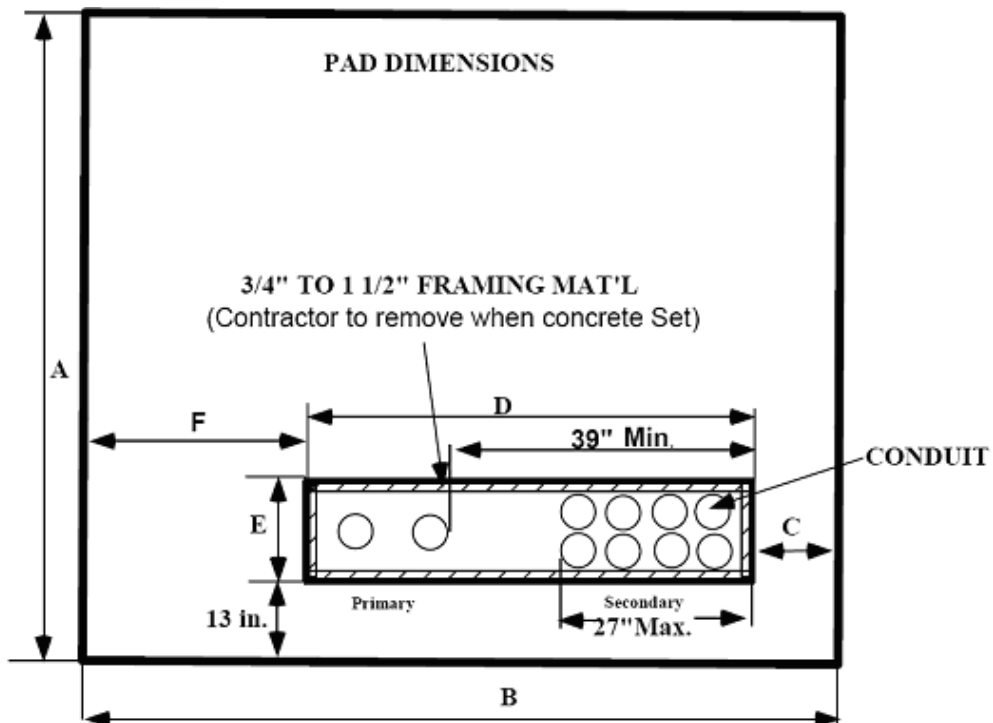
EXTENSION UNIT: For a field mounted, 15" extension unit, order catalog number **S3488**.
GROUND: U9108-O is supplied with a bonded ground which may be insulated when desired.
BYPASS: Lever supplies clamping action on meter spades and also operates bypass device.
***INCLUDES:** #6-350 kcmil connectors on line side for Alliant Energy.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

919. PAD SPECIFICATIONS FOR THREE PHASE PADMOUNT TRANSFORMERS (75 TO 2500 KVA)

***NOTE: Waunakee Utilities primarily uses box pads for all single phase and three phase transformer settings. These Specifications are only if the box pad installation will not work and Waunakee Utilities gives permission. Please contact Waunakee Utilities with any questions.**

1. Waunakee Utilities shall install, own, and maintain a concrete transformer box pad whenever the underground service requires a three-phase transformer pad. The customer will install and maintain any poured concrete pads.
2. A clear space of 10' shall be maintained in front of the transformer to provide working space for hot-stick operation of the transformer.
3. Additional transformer pad foundation wall shall be used for locations having poor soil conditions or a large number of secondary cables.
4. For a service requiring more than 8 conduits, contact the Waunakee Utilities Planning Division for details on transformer pad design.

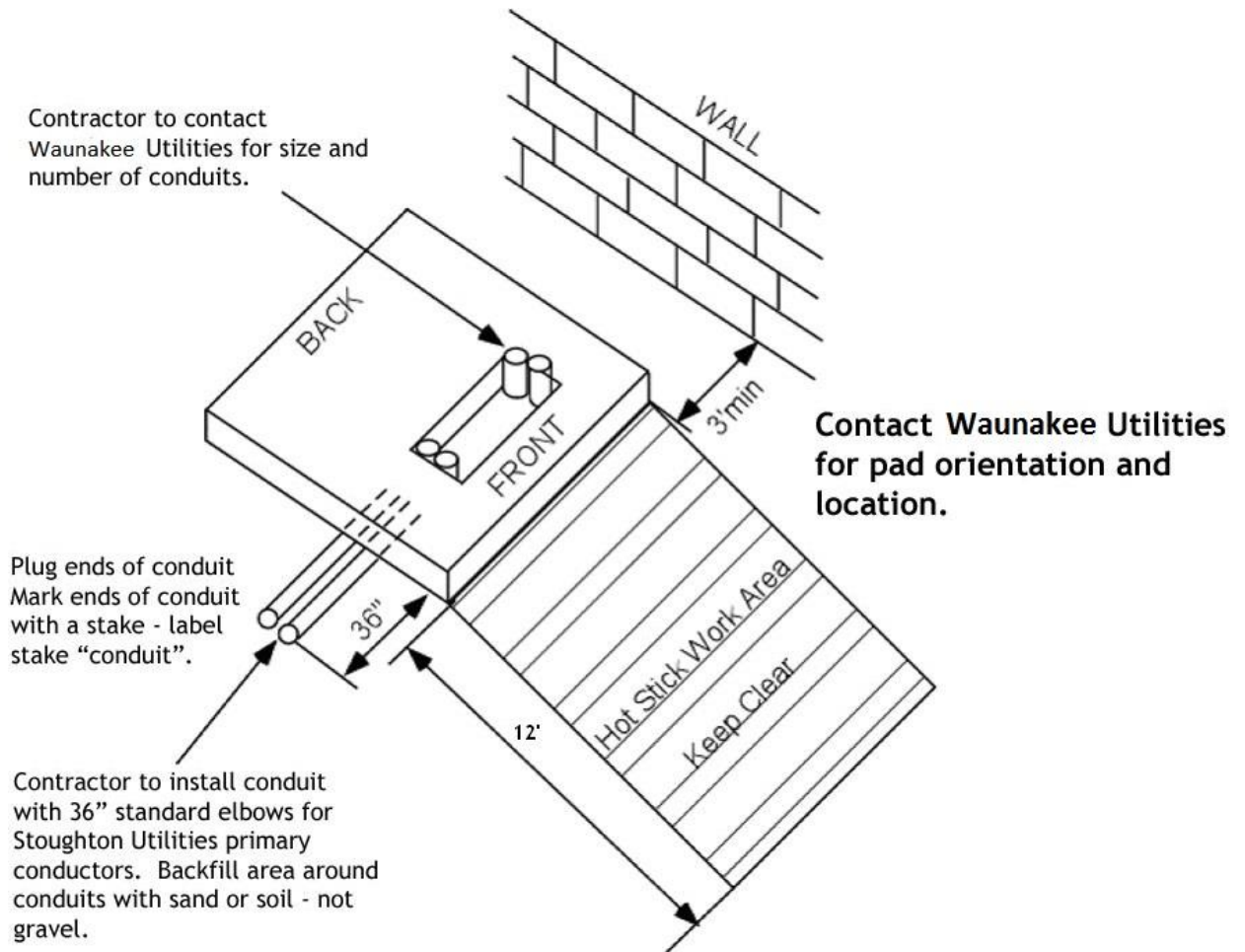


		SERV. SIZE	SERV. SIZE							
	XFMR	208Y/120	480Y/277	A	B	C	D	E	F	THICKNESS
	KVA	AMPS	AMPS	IN.	IN.	IN.	IN.	IN.	IN.	IN.
PAD I	75-500	100-1200	100-600	84	96	10	55	13	31	6
PAD II	750-2500	1600-3000	800-3000	105	108	14	60	17	34	8

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

**920. PAD LAYOUT FOR THREE PHASE PADMOUNT TRANSFORMERS
(75 – 2500 KVA)**

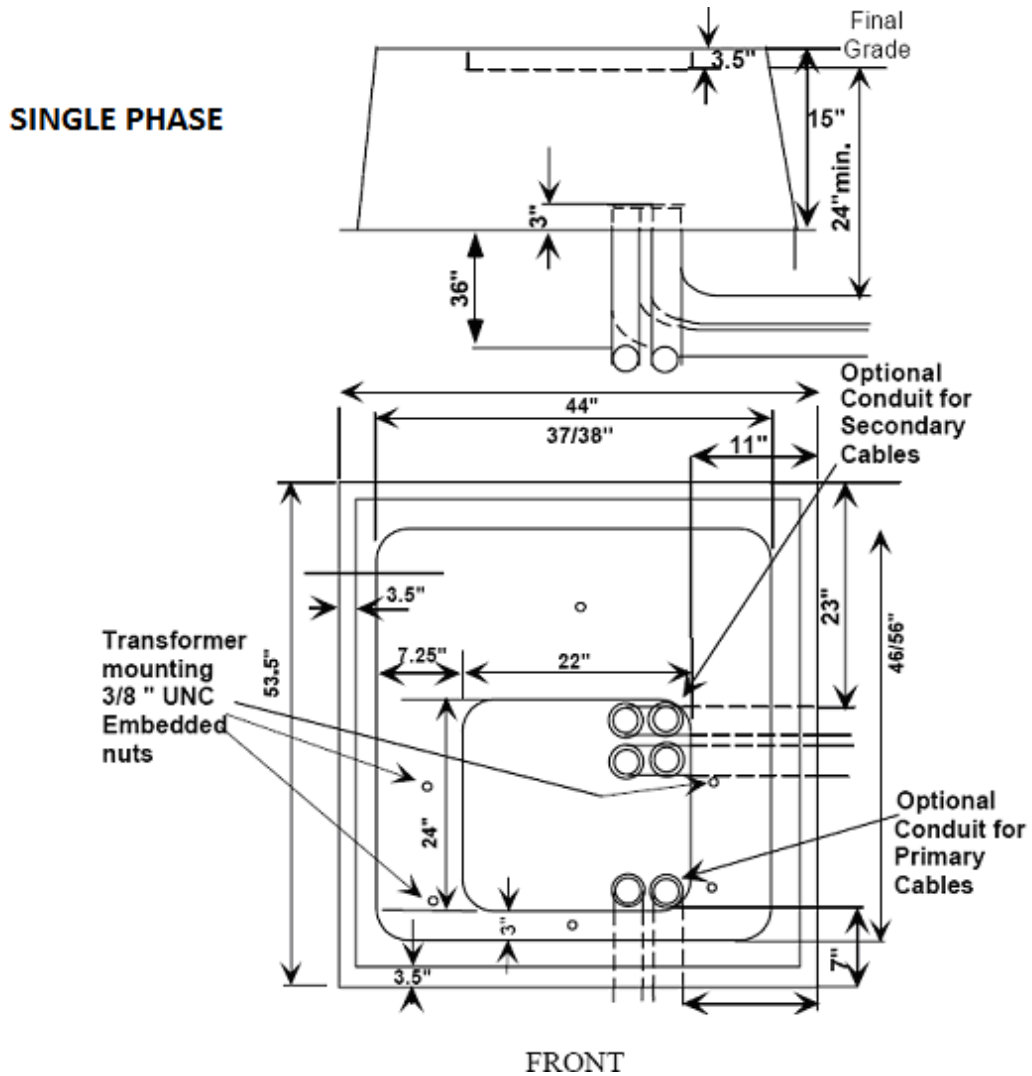
***NOTE: Waunakee Utilities primarily uses box pads for all single phase and three phase transformer settings. These Specifications are only if the box pad installation will not work and Waunakee Utilities gives permission. Please contact Waunakee Utilities with any questions.**



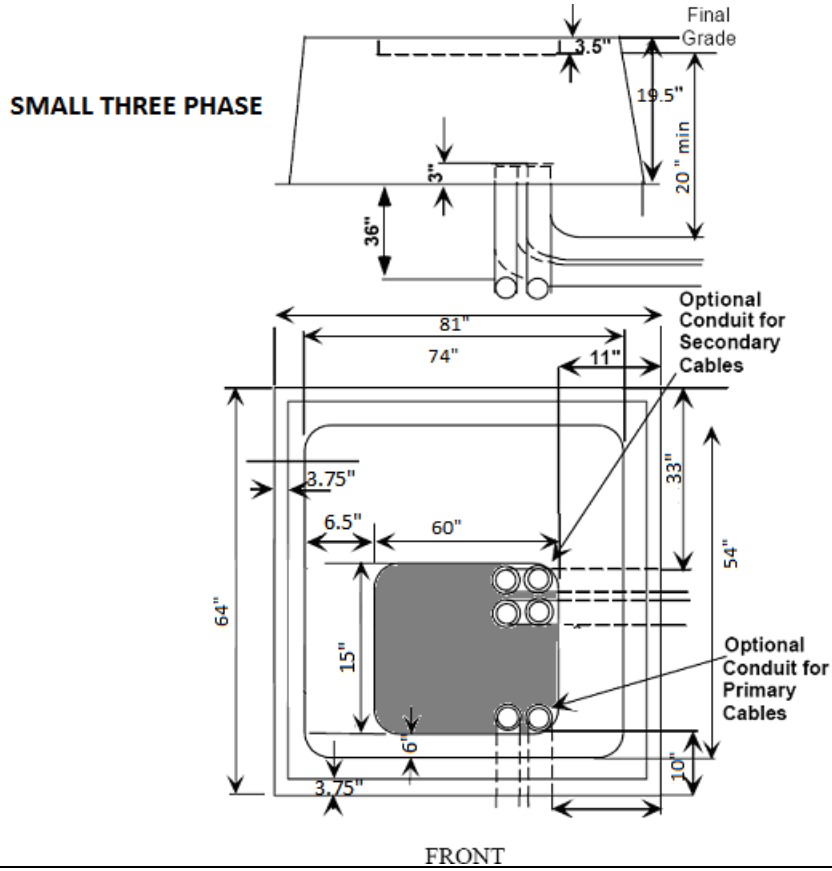
**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

921. SINGLE/THREE PHASE BOX PAD

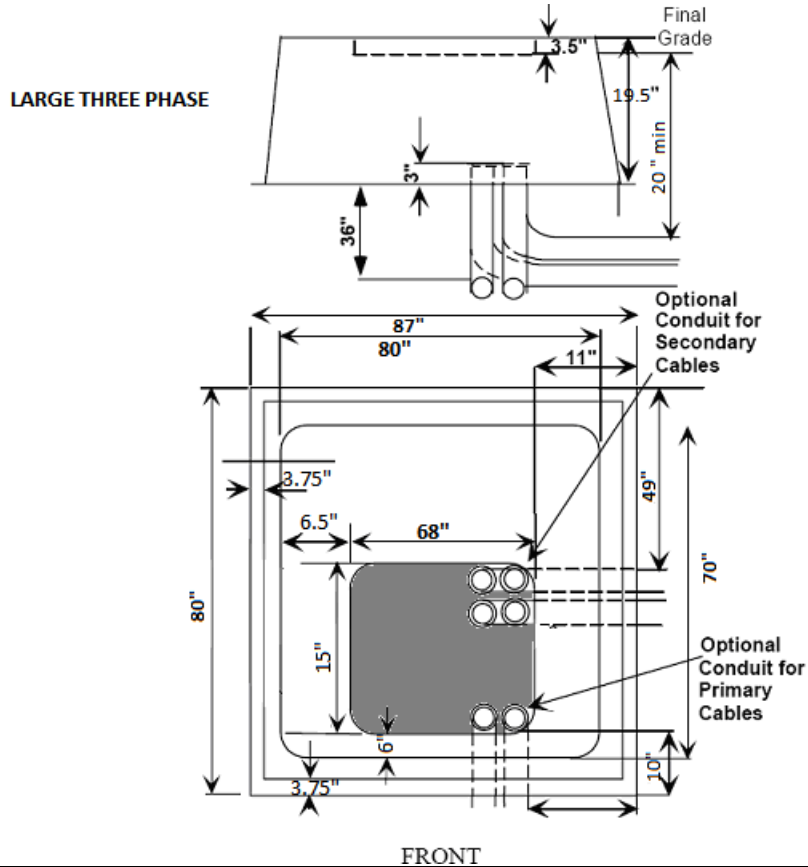
Waunakee Utilities furnishes and installs pad – Customer provides and installs conduit.



WAUNAKEE UTILITIES ELECTRIC SERVICE RULES AND INFORMATION



WAUNAKEE UTILITIES ELECTRIC SERVICE RULES AND INFORMATION



Notes:

1. At Waunakee Utilities discretion conduit elbows may be eliminated and the Customer may extend the conduit without elbows under the pad to the opening and install conduit bushings.
2. Contact Waunakee Utilities Planning Division for size and number of conduit.
3. Single Phase Box – pads com with 3/8" – UNC Embedded nuts for bolting transformers to pad.
4. Transformers should not extend over edges of box – pad. Larger transformers with cooling fins may require the larger box – pad.

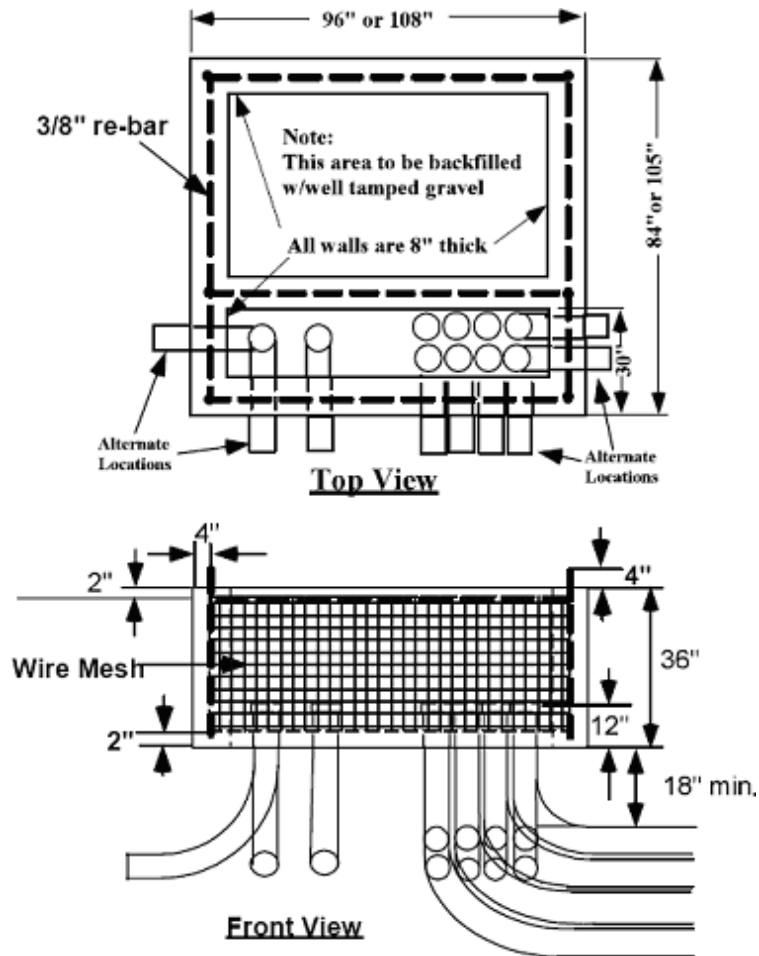
**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

922. TRANSFORMER PAD FOUNDATION WALL

Foundations shall be used where unstable soil conditions exist (to avoid tilting of pad) or where a large number of secondary cables are required to provide additional cable training area.

Notes:

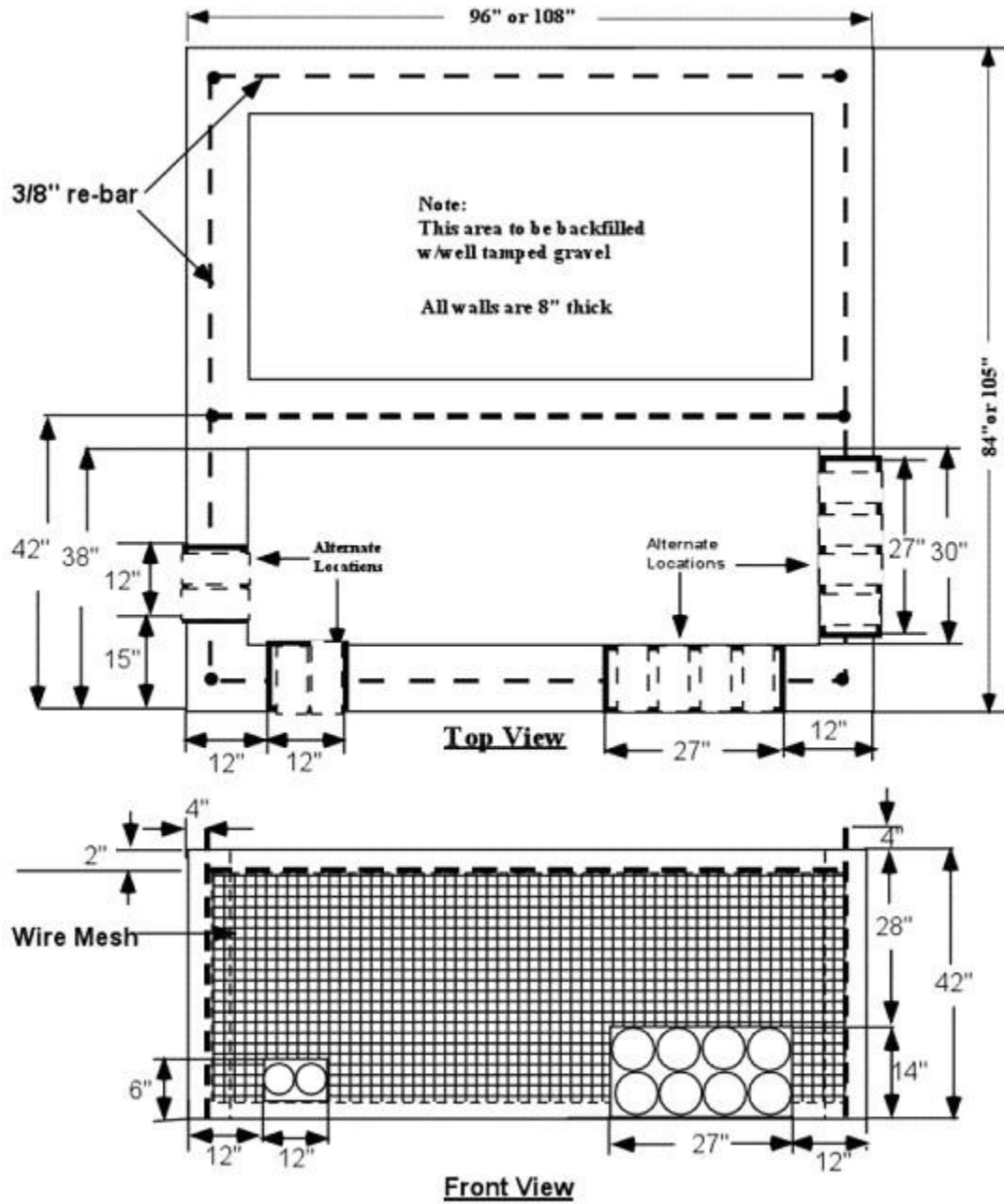
1. **Top of foundation walls shall be level.**
2. **Drainage around pad to be such that if there is a leak oil will flow away from building.**
3. **For Pad 1 use 84" X 96" vault dimensions, For Pad 2 use 105" X 108" dimensions, for larger pads consult with Waunakee Utilities Planning Division.**
4. **See transformer pad for information for sizing vertical wire mesh used in foundation walls.**
5. **For all services 1200 amps or larger this transformer foundation wall is**



recommended.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

923. TRANSFORMER PAD FOUNDATION-ALTERNATE



Note: Bushings shall be installed on conduits inside foundation to protect conductors.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND FORMATION**

924. RIGID CONDUIT SPECIFICATIONS

The Utilities will select the size, type and number underground service lateral conductors and conduits.

Rigid nonmetallic conduit such as Schedule # 80 PVC electrically rated and schedule # 80 equivalent polyethylene. Schedule # 40 electrically rated PVC allowed for horizontal runs below 12" of final grade and into pad mounted transformers and cabinets. Refer to individual Sections for specific installations.

Conduit for overhead service masts (thru the roof) must be Galvanized Rigid Steel conduit.

The rigid nonmetallic conduit shall conform to specifications in Article 347 of the National Electrical Code.

Frost sleeves are required around conduit or / pedestals when they pass thru concrete to prevent damage from frost & settling.

**CONDUIT SIZING CHART
480 VOLTS AND UNDER****

**For conduit runs less than 100' containing two or less bends

Entrance Rating Amps	Phase	No. Of Conduits	Conduit Size In Inches	Min Radius Bend Rigid Nonmetallic In Inches
400	1	1	4	30
600	1	2	4	30
800	1	3	4	30
200	3	2	4	30
400	3	2	4	30
600	3	2	4	30
800	3	3	4	30
1200	3	4	4	30
1600	3	4	5	36
2000	3	5	5	36

For longer conduit runs or runs containing three or more bends, the Customer should consult the Utilities for the conduit size and for the radius bends to use.

925. PAD MOUNTED TRANSFORMER LOCATIONS

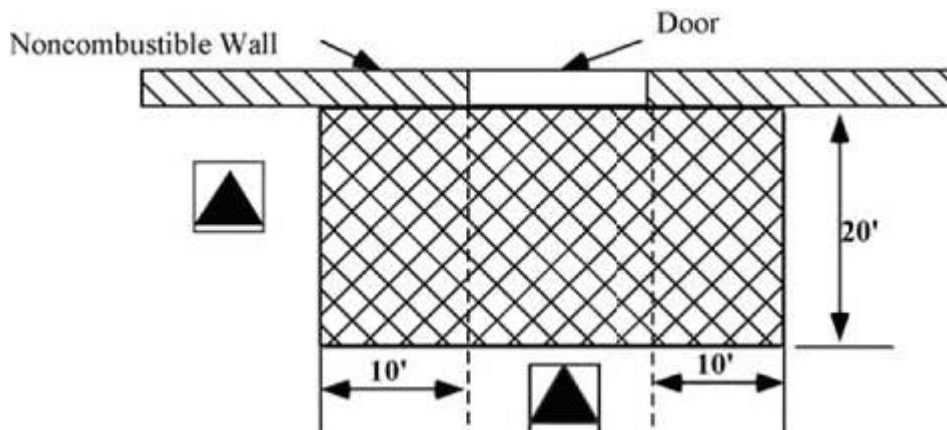
Waunakee Utilities shall approve the location of all transformer pads. Pad locations shall be in accordance with the requirements of **NEC, NESC, National Fire Protection Association** and the **Environmental Protection Agency**. In addition, they are to be located far enough from the building overhang so they will not be subject to damage by falling snow and ice. Pad-mounted transformer locations shall be graded for proper drainage and be readily accessible by truck or other means for change-out. Where danger of snow plowing or traffic damage exists, barriers consisting of concrete filled pipe shall be provided for protection.

926. NON-COMBUSTIBLE BUILDING WALLS

Pad-mounted oil insulated transformers may be located no closer than 3 ft. to non-combustible walls if all of the following clearances are maintained from doors, windows, and other building openings:

A. Doors:

Pad mounted oil insulated transformers shall not be located within a zone extending 20' outward and 10' to either side of the building door.



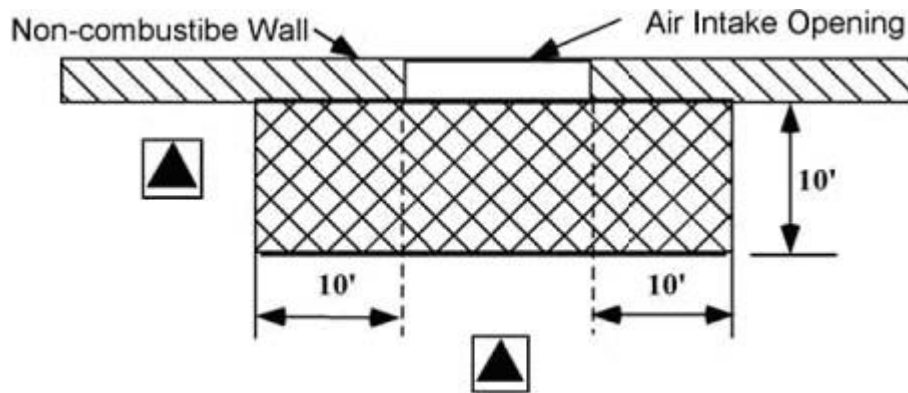
* **NON COMBUSTIBLE WALLS** – Are walls where the framing and sheeting materials will not burn and they will in no way contributed to the burning process. **Metal-skinned** wood framed buildings are considered combustible.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

927. NON-COMBUSTIBLE TRANSFORMER LOCATIONS-CONTINUED

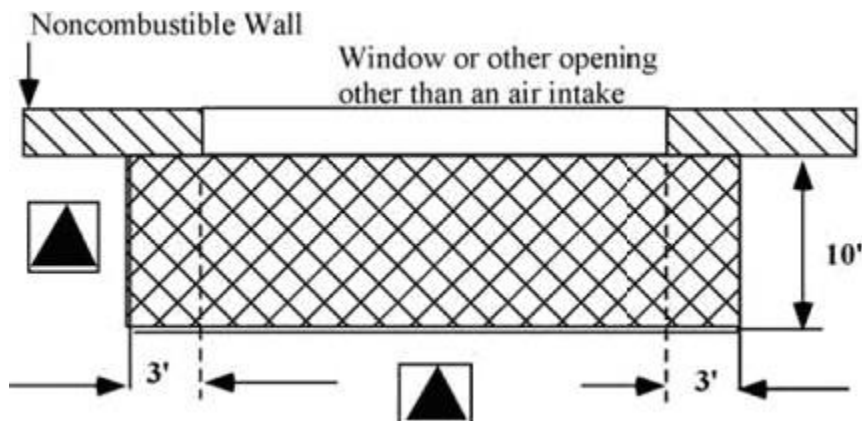
B. Air-Intake Openings:

Pad-mounted oil insulated transformers shall not be located within a zone extending 10' outward and 10' to either side of an air intake opening. Transformers may be located within the zone beneath an air intake opening provided there is a minimum 25' diagonal separation between the transformer and the opening.



C. Windows or Openings Other than Air Intake

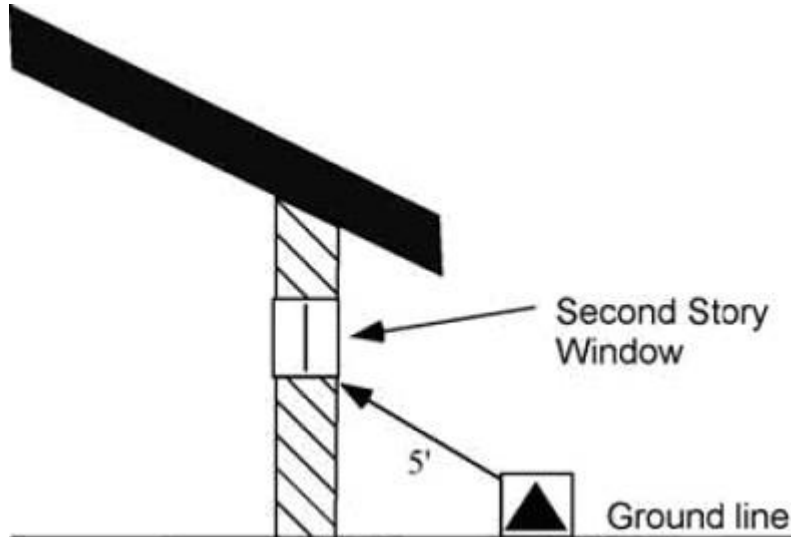
Pad-mounted oil insulated transformers shall not be located within a zone extending 10' outward and 3' to either side of a building window or opening other than an air intake.



**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

928. NON COMBUSTIBLE TRANSFORMER LOCATIONS CONTINUED

Pad-mounted oil insulated transformers shall not be located less than 5' from any part of a second story window or opening other than air intake.



929. COMBUSTIBLE BUILDING WALLS

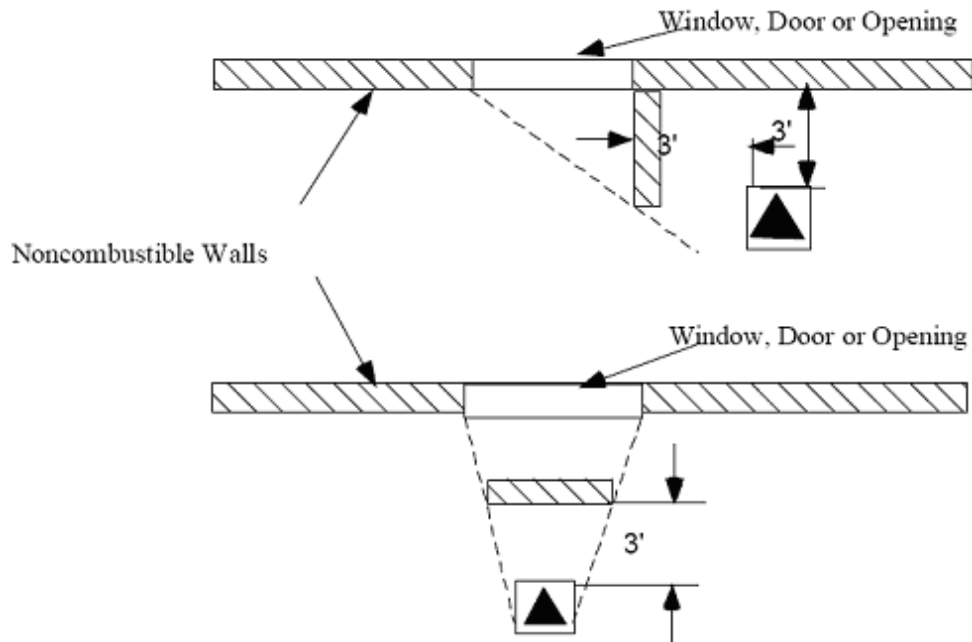
- A. Pad-mounted oil insulated transformers in size up to and including 100, KVA shall be located according to the provisions set forth in the non-combustible transformers walls section.
- B. Transformers greater than 100 KVA shall be located a minimum of 10 feet from a combustible wall in addition to the clearances from building doors, windows and other openings set forth for non-combustible walls. An oil-collecting sump shall be installed for transformers in size exceeding 500 KVA if the immediate terrain is pitched toward the building.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

930. BARRIERS

If the clearances specified above cannot be obtained, a fire resistant barrier may be constructed in lieu of the separation. The following methods of construction are acceptable.

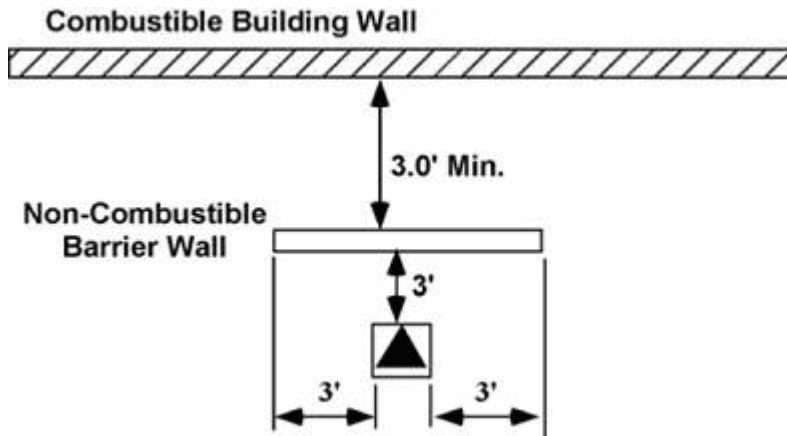
- a. Non-combustible Walls – The barrier shall extend to a projection line from the corner of the pad-mount to the farthest corner of the window, door or opening in question. The height of the barrier shall be 1' above the top of the pad-mounted transformer.



**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

931. BARRIERS-CONTINUED

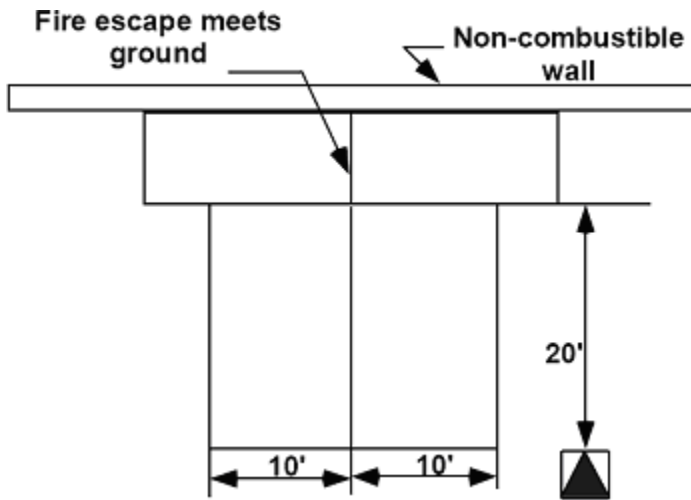
- b. Combustible Walls – The barrier shall extend 3' beyond each side of the pad-mounted transformer. The height of the barrier shall be 1' above the top of the pad-mounted transformer.



**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

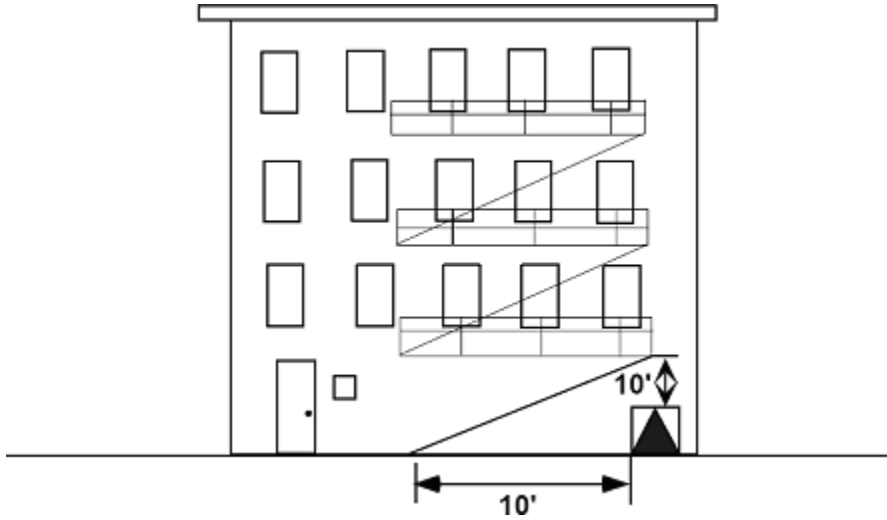
932. FIRE ESCAPES

Pad-mounted oil insulated transformers shall be located such that a minimum outward Clearance of 20', and a minimum clearance of 10' to either side of the point where the fire escape touches the ground shall be maintained at all times.



**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

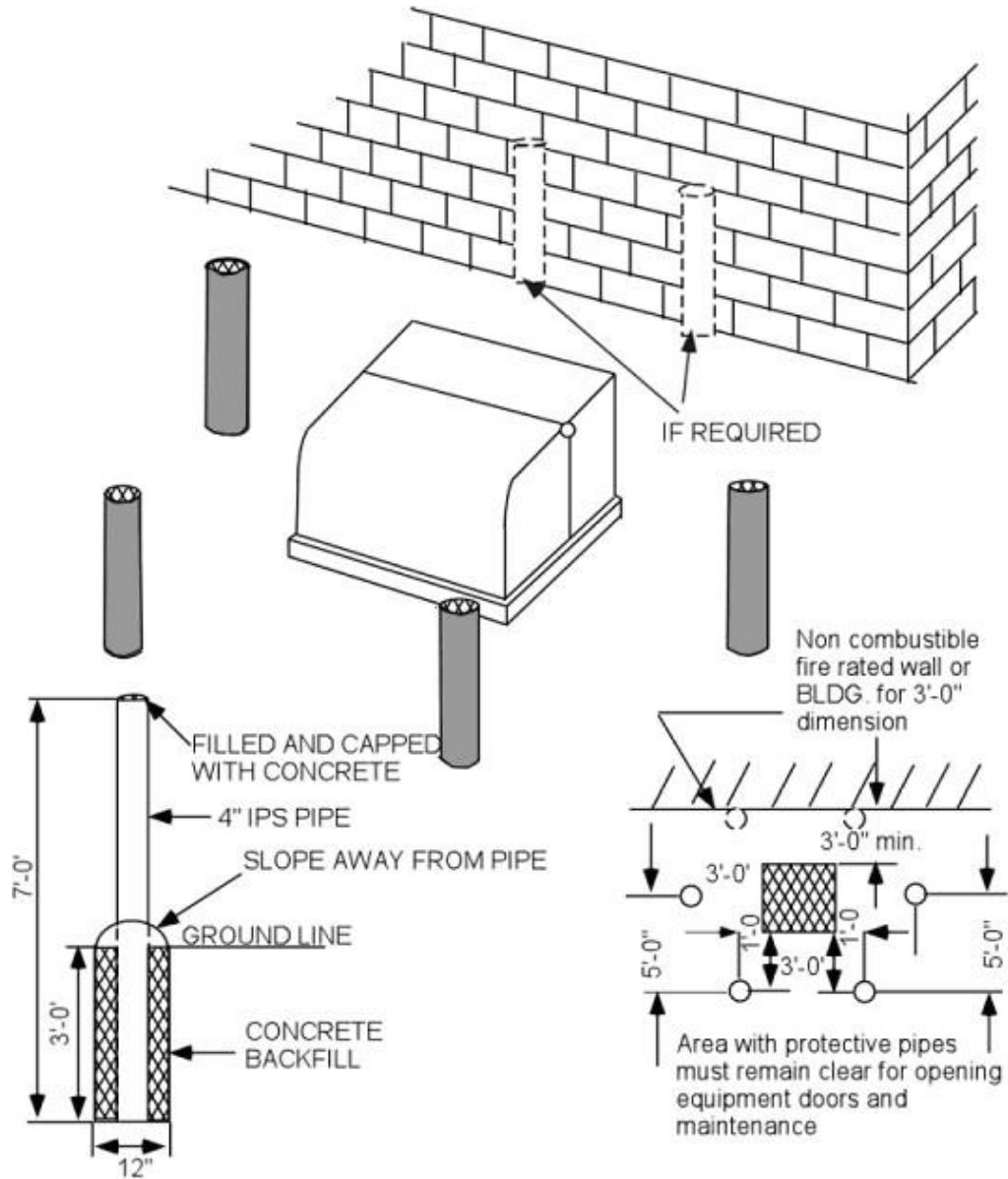
933. FIRE ESCAPES- CONTINUED



If the pad-mounted transformer is located under the fire escape a vertical, clearance of 10' shall be maintained.

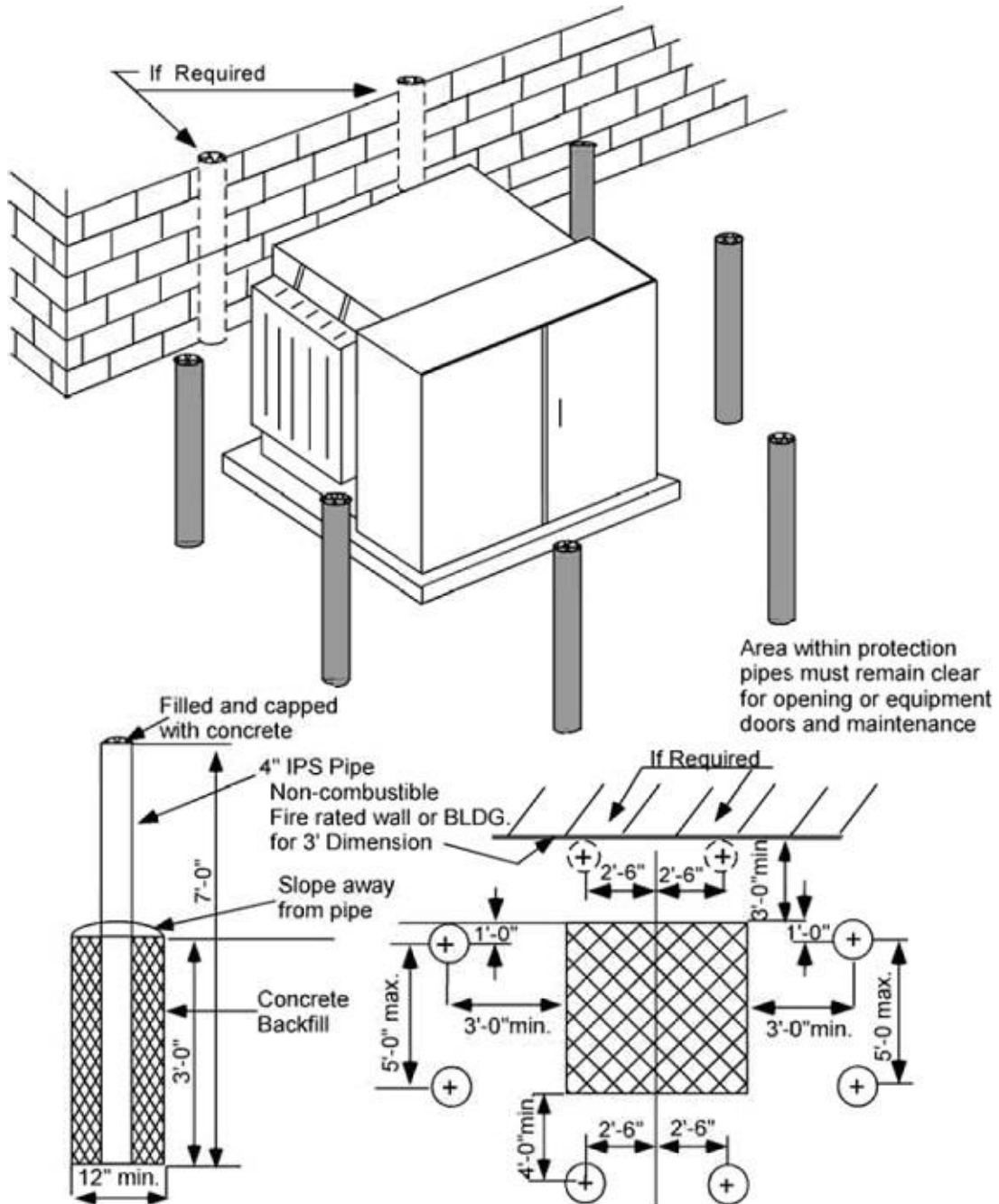
**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

934. SINGLE PHASE PAD MOUNTED TRANSFORMER-PROTECTION



WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION

935. THREE PHASE PAD MOUNTED TRANSFORMER-PROTECTION



**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

CHAPTER 10 - MANUFACTURED HOMES (MOBILE HOMES)

- 1000. General
- 1001. Definitions
- 1002. Service entrance equipment for mobile / manufactured homes
- 1003. Mobile / manufactured home courts
- 1004. Mobile / manufactured home service entrance pedestal – 100 – 200 amp
single phase 3 – wire 120 / 240 volt underground
- 1005. Manufactured home service pedestal mounted on – frost wall – permanent
foundation – single phase – 100 – 200 amp – 120 / 240 volts
- 1006. Manufactured home service pedestal mounted on – full basement permanent
foundation – single phase 100 – 200 amp 120 / 240 volts

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

1000. GENERAL

Waunakee Utilities will provide and install the service cable to individual or a group metering points for mobile / manufactured homes. The customer will provide and install the meter socket(s) and service equipment. Multiple mobile / manufactured homes receiving service at a central location shall obtain approval from Waunakee Utilities for each installation. Group metering installations shall follow the same rules as individually metered units.

Each meter socket shall be permanently marked or tagged to coincide with each mobile / manufactured home. Appropriate marking shall consist of permanent plaque or directory and, in addition, a permanent marking shall be indicated inside each meter socket base.

Meters shall not be installed until identification requirements are met.

Minimum rating of a mobile / manufactured home service entrance shall be 100 amps.
Receptacles shall have over current protection no greater than their rated capacity.

The mobile / manufactured home service entrance equipment shall contain a means for serving an accessory building, structure or additional electrical equipment located outside a mobile / manufactured home by a fixed wiring method. Mobile / manufactured home service entrance equipment is permitted to have additional receptacles for connection of electrical equipment located outside the home, and all such 120 – volt, single phase, 15 and 20 – amp receptacles shall be protected by listed ground – fault circuit interrupter protection.

All branch circuit breakers and feeder breakers shall be connected on the load side of a single service entrance breaker.

A field installed mobile / manufactured home service entrance shall be located adjacent to the mobile / manufactured home and, not mounted on or in the mobile / manufactured home and not more than 30 feet from the home. If the manufactured home is placed on a permanent foundation, a conventional service may be installed on the foundation, if the following provisions are met:

1. Service entrance rated equipment is located immediately adjacent to the meter pedestal or be an integral part of the meter pedestal.
2. The service entrance shall contain a means for serving an accessory building structure or additional electrical equipment outside the manufactured home by a fixed wiring method.
3. A four – wire feeder is run from the load side of the service entrance to the electrical panel in the manufactured home.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

1001. DEFINITIONS

Mobile Home: NEC 550.2 “A factory assembled structure(s) transportable in one or more sections that is built on a permanent chassis and designed to be used as a dwelling without a permanent foundation, connected to the required utilities and that includes the plumbing, heating, air-conditioning, and electric systems contained there in”.

Manufactured Home: NEC 550.2 “A structure transportable in one or more sections that is (8 ft.) or more in width, or (40 ft.) or more in length in the traveling mode or, when erected on site is 320 square ft or more, which is built on a chassis, and designed to be used as a dwelling with or without a permanent foundation when connected to the required utilities including the plumbing, heating, air conditioning, and electrical system there in”.

**1002. SERVICE ENTRANCE EQUIPMENT FOR MOBILE /
MANUFACTURED HOMES**

Mobile Home – NEC 550.32 (A) “The mobile home service **entrance equipment shall be located adjacent to the mobile home and not mounted in or on the mobile home.** The service equipment shall be located in sight from and not more than (30 ft.) from the exterior wall of the mobile home it serves”.

All HUD mobile homes shall be provided service according to this chapter.

Manufactured homes built according to HUD that are intended for use in the Midwest, are constructed with feeder panels. Consequently, manufactured homes built according to HUD, are provided service according to this chapter.

Manufactured homes built according to state electrical codes can be provided electrical service according the ESI chapter 1 – 6.

1003. MOBILE / MANUFACTURED HOME COURTS

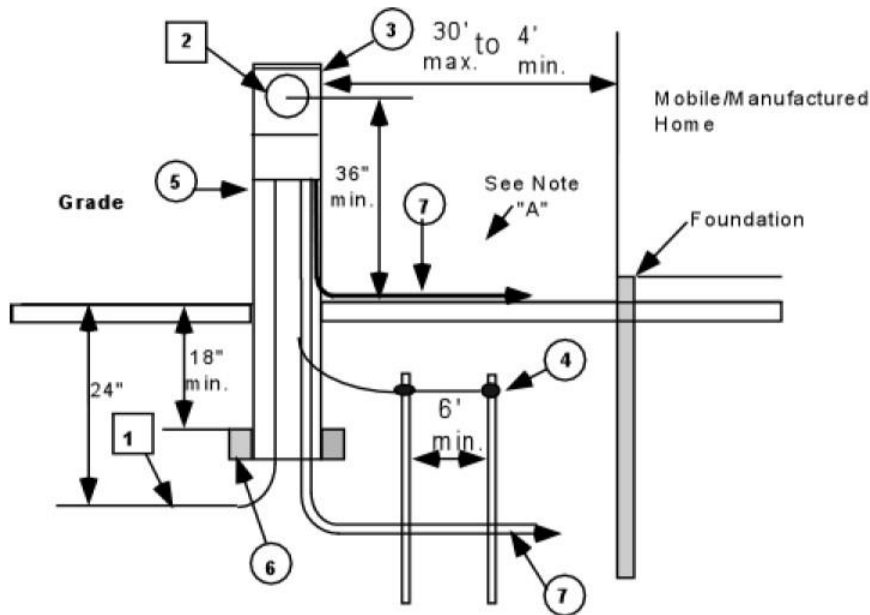
A mobile / manufactured home court is defined as a contiguous parcel of land that is used for the accommodation of occupied manufactured homes. The underground distribution system in the court will be installed and owned by Waunakee Utilities, in accordance with Waunakee Utilities underground extension rules. In accordance with Waunakee Utilities underground extension rules, the court owner may install and own the underground system.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

**1004. MOBILE / MANUFACTURED HOME SERVICE ENTRANCE
PEDESTAL 100 – 200 AMP SINGLE PHASE 3 – WIRE – 120 / 240 VOLT
UNDERGROUND**

○ Customer furnishes, installs and maintains □ Utility furnishes, installs, and maintains:

- | | |
|--|--|
| <ul style="list-style-type: none"> 3. Mobile/Manufactured home service entrance pedestal (refer to Appendix "C" Manufactured Home / Free Standing Pedestals) 4. Grounding in accordance with applicable electrical code (refer to Chapter 5) 5. Pedestal 6. Concrete or "stabilizing foot" 7. Mobile/Manufactured home 4-wire power supply cord or, Permanent installed 4-wire feeder | <ul style="list-style-type: none"> 1. Underground service lateral 2. Meter |
|--|--|



Notes:

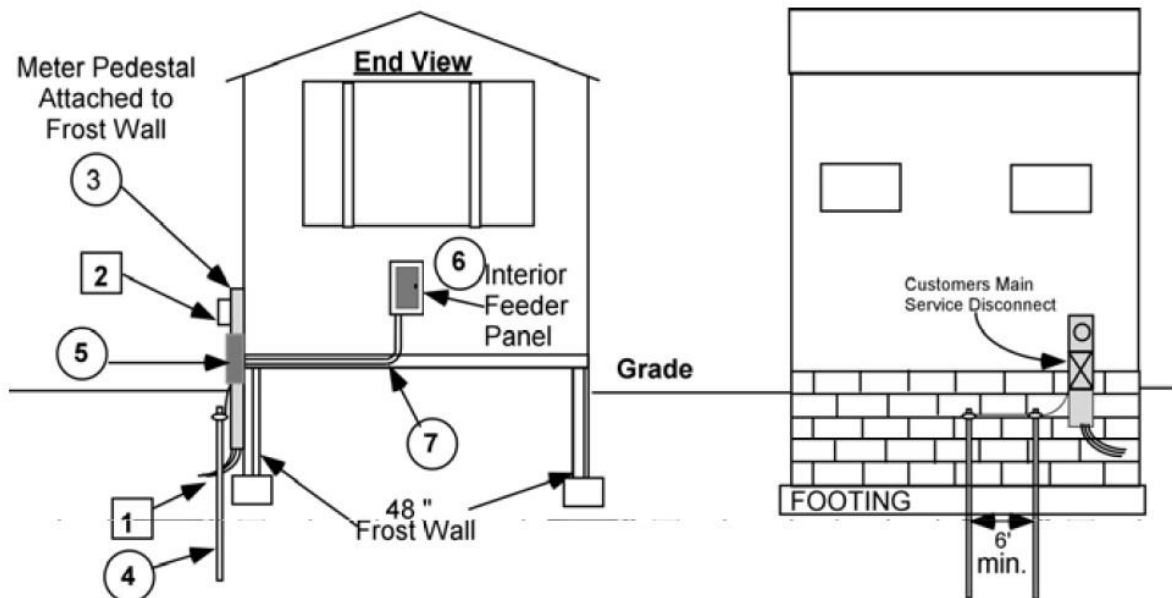
- A. A mobile/manufactured home service entrance pedestal or an additional disconnecting means listed as suitable for service entrance use shall be located in sight of and not more than 30 ft. from the exterior wall of the mobile/manufactured home it serves.
- B. A clear space of 4 feet shall be maintained in front of and in back of the meter pedestal.
- C. Commercially made mobile/manufactured home metered service entrance pedestals shall be listed as suitable for service equipment for manufactured homes.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

**1005. MANUFACTURED HOME SERVICE PEDESTAL MOUNTED ON –
FROST WALL – PERMANENT FOUNDATION – SINGLE PHASE -100 –
200 AMP – 120 / 240 VOLT**

○ Customer furnishes, install and maintains: □ Utility furnishes and installs & maintains:

- | | |
|--|--|
| <ul style="list-style-type: none"> 3. Service Entrance Pedestal 4. Grounding as indicated applicable codes
(Refer to Chapter 5) 5. Mobile/Manufactured Home Service
Entrance equipment, rated for outdoor use,
single main with provisions for feeder or
branch circuits. Can be foundation mounted or free standing. 6. Factory installed feeder panel 7. Permanently install 4-wire feeder to manufactured home | <ul style="list-style-type: none"> 1. Underground service lateral 2. Socket type meter |
|--|--|

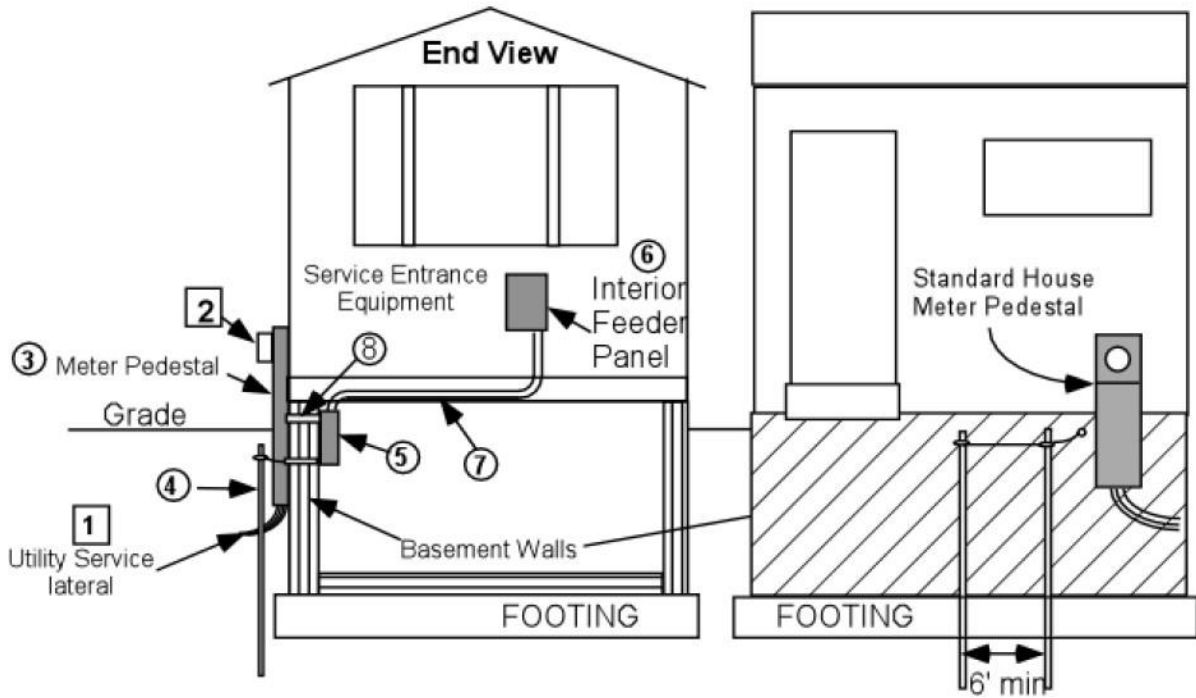


**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

**1006. MANUFACTURED HOME SERVICE PEDESTAL MOUNTED ON –
FULL BASEMENT PERMANENT FOUNDATION – SINGLE PHASE –
100 – 200 AMP 120 / 240 VOLT**

Customer furnishes, install and maintains: Utility furnishes and installs & maintains:

- | | |
|--|--|
| <ul style="list-style-type: none"> 3. Standard House Meter Pedestal 4. Grounding, as indicated in the applicable codes (Refer to Chapter 5) 5. Service Entrance equipment, single main, with provisions for feeder or branch circuits 6. Factory installed feeder panel 7. Permanently install 4-wire feeder to manufactured home | <ul style="list-style-type: none"> 1. Underground service lateral 2. Socket type meter |
|--|--|



**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

CHAPTER 11 - FARM SERVICES

- 1100. Scope
- 1101. Farm service yard pole or structure
- 1102. Overhead service to a farm yard pole – with grade level disconnect and over current protection – 300 amp max – 240 volt max
- 1103. Overhead service to a farm yard pole – with pole top disconnection
- 1104. Overhead service for farm / irrigation service 100 – 800 amp 4 wire – 277/480 volt.
- 1105. Underground service to a farm on field built structure with disconnect and over current protection – 300 amps max – 240 volts max
- 1106. Underground service to a farm on field built structure with over current protection 300 – 3000* amp 480 volts max

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

1100. SCOPE

This Chapter includes single and three phase services to farms and irrigation installations. Either the services will be provided as overhead or underground services, to Customer yard poles or Customer field built structures as shown in Section 600. Services for farm installations not covered in this Chapter shall be installed in accordance with services as shown in Chapters 8 & 9.

1101. FARM SERVICE YARD POLE OR STRUCTURE

The farm service yard pole is owned by the customer. This structure shall be located on the customer's property. Under no circumstances may the Customer's pole or structure be located in road right-of-way.

Farm services with livestock shall maintain a minimum 12 ft. horizontal separation between Waunakee Utilities underground transformer, or transformer pole and Customer's metering point.

For safety concerns, a Customer shall consult Waunakee Utilities before installing equipment on a yard pole.

All farm use meters shall be installed on the yard pole or structure. Meters for other uses are not permitted on the yard pole or structure.

All underground circuits extending from the yard pole or structure shall have over-current protection. Vertical runs on a yard pole shall be in rigid conduit.

The Customer shall protect the yard pole or structure and the equipment on it from damage by vehicles, farm operations. The equipment shall be maintained in good operating condition and repaired, or replaced when warranted.

Waunakee Utilities requires all meters be installed so the meter faces an area (usually a driveway) that will accommodate motor vehicle access to the meter. This will allow the meter to be read from the vehicle if necessary.

The bonding conductor from the pole top switch and all grounding and grounded conductors for the Customer's wiring system shall be connected together at the yard pole as shown in grounding Section 500.

The Customer's pole top transfer switch shall be approved by the Waunakee Utilities as a single switch unit mounted in one enclosure. Pole top switch installations shall have a minimum switch size of 400 amps. A Customer owned yard pole will be used to support the customer's electrical districal distribution center.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

1102. FARM SERVICE YARD POLE OR STRUCTURE-CONTINUED

Waunakee Utilities distribution poles may not be used as farm service yard poles.

Waunakee Utilities will not install additional service drops or laterals to any farm building or farm structure when any portion of the building or structure is located within 150 feet of the yard pole distribution center. If another yard pole service is warranted, the separation between the yard poles shall be 300 feet minimum, measured in a straight line.

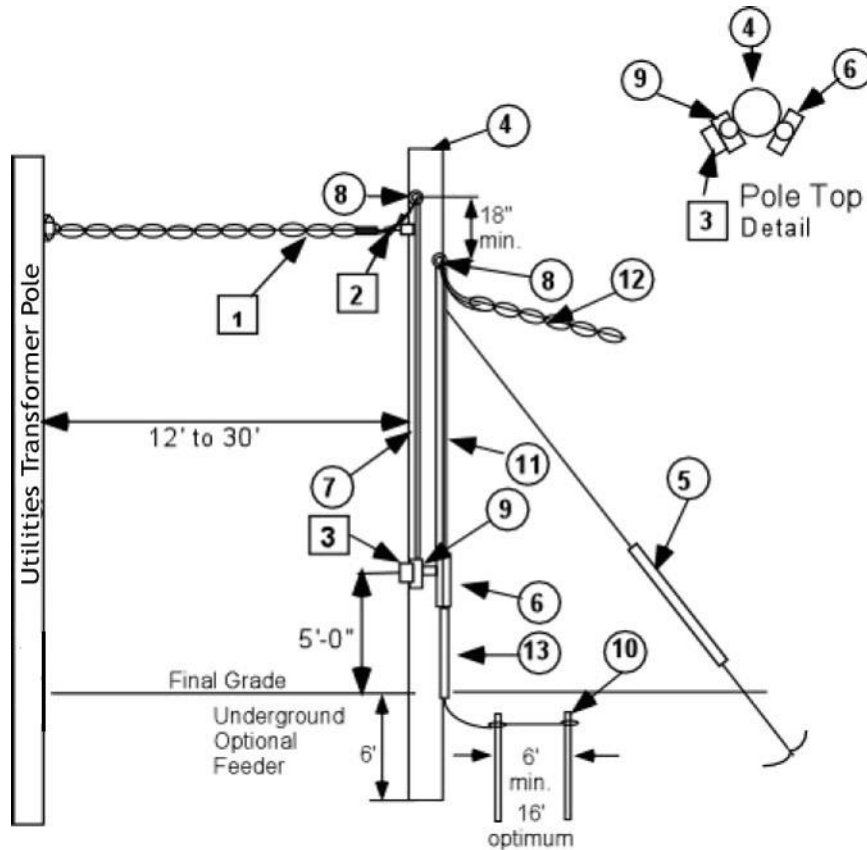
A separate service may be installed to a building on the farm site if that building is not part of the farm operation. The separate service may not originate from the yard pole or structure.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

**1103. OVERHEAD SERVICE TO A FARM YARD POLE-WITH GRADE
LEVEL DISCONNECT AND OVER CURRENT PROTECTION-300 AMP
MAX-240 VOLT MAX**

Customer furnishes, installs, & maintains: Utility furnishes, installs, & maintains:

- | | |
|--|--|
| <ul style="list-style-type: none"> 4. Pole - Treated 35' Class 5 min. 5. Guy, anchor, & Guy Guard 6. Service rated Disconnect & Overcurrent Protection 7. Rigid Conduit 8. Weather heads 9. Approved Meter Socket 10. Ground in accordance with the code (Refer to Chapter 5) 11. Rigid Feeder Conduit 12. Feeder Conductors (Customers) 13. Rigid conduit for Electrode Grounding Conductor | <ul style="list-style-type: none"> 1. Service Drop 2. Service Connectors 3. Meter |
|--|--|

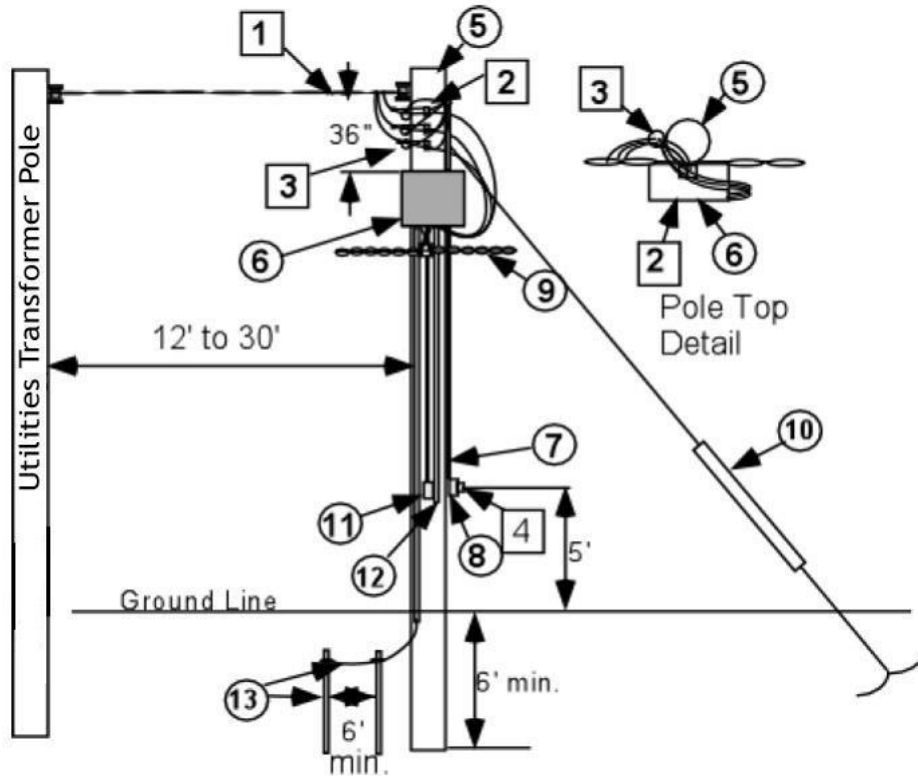


**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

1104. OVERHEAD SERVICE TO A FARM YARD POLE-WITH POLE TOP DISCONNECT

○ Customer furnishes, installs & maintains □ Utility furnishes, installs & maintains

- | | |
|---|--|
| <ul style="list-style-type: none"> 5. Pole - Treated 35' Class 5 6. Pole Top Disconnect
(Transfer Switch – 2-Pole for 1 Phase
3-Pole for 3 Phase) 7. Metering Conduit (1" Rigid Galv. Steel) 8. Meter Socket 9. Overhead Circuit (Customer's) 10. Down Guy , Anchor, Guy Guard 11. Stand-by Generator Circuit(Optional) 12. Operating Handle for Pole Top Disconnect 13. Ground in accordance with the code (Refer to Chapter 5) | <ul style="list-style-type: none"> 1. Overhead Service Drop 2. Current Transformers 3. Potential Transformers 4. Meter |
|---|--|

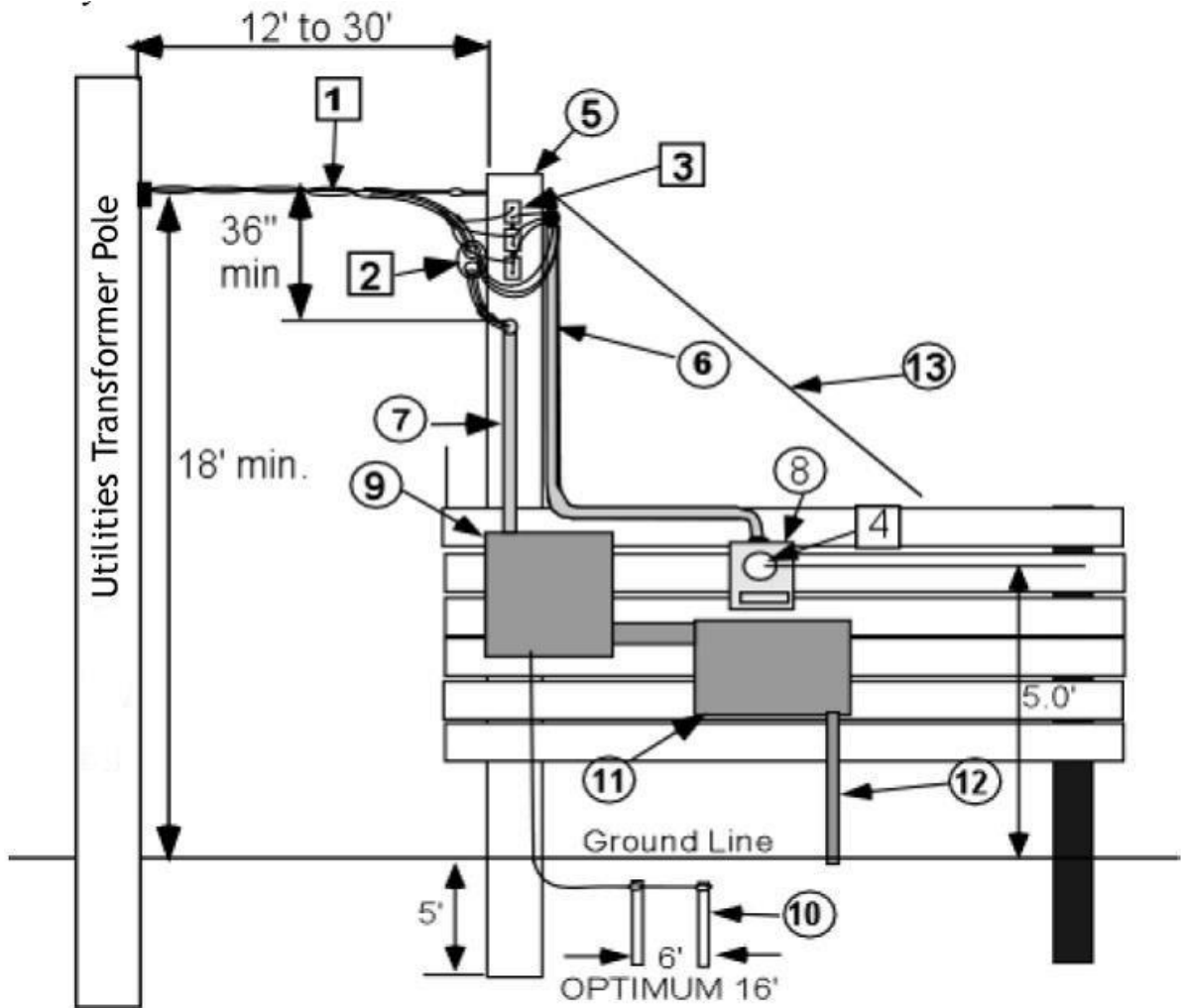


**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

**1105. OVERHEAD SERVICE FOR FARM / IRRIGATION SERVICE 100 – 800
AMP 4 WIRE – 277 / 480 VOLT**

○ Customer furnishes, installs and maintains □ Utility furnishes, install, and maintains

- | | |
|---|---------------------------|
| 5. Pole 35' Class 5 Min. - Treated | 1. Overhead Service Drop |
| 6. Metering Conduit - 1" Rigid Galv. Steel | 2. Current Transformers |
| 7. Service Riser Conduit | 3. Potential Transformers |
| 8. Meter Socket - 20 Amp - 13 Terminal | 4. Meter |
| 9. Service Disconnects | |
| 10. Ground in accordance with the code (Refer to Chapter 5) | |
| 11. Electrical Panel | |
| 12. Underground Circuits | |
| 13. Down Guy & anchor | |



**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

1106. UNDERGROUND SERVICE TO A FARM ON FIELD BUILT STRUCTURE WITH DISCONNECT AND OVER CURRENT PROTECTION – 300 AMPS MAX – 240 VOLTS MAX

Customer furnishes, installs & maintains Utility furnishes, installs & maintains

3. Approved Meter Socket

4. Field Built Pedestal

1. Underground Service Lateral

2. Meter

**5A. Main Service Disconnect-Optional
(Required if 5B Utilized)**

5B. Transfer Switch - 2 Pole or 3 Pole- Optional

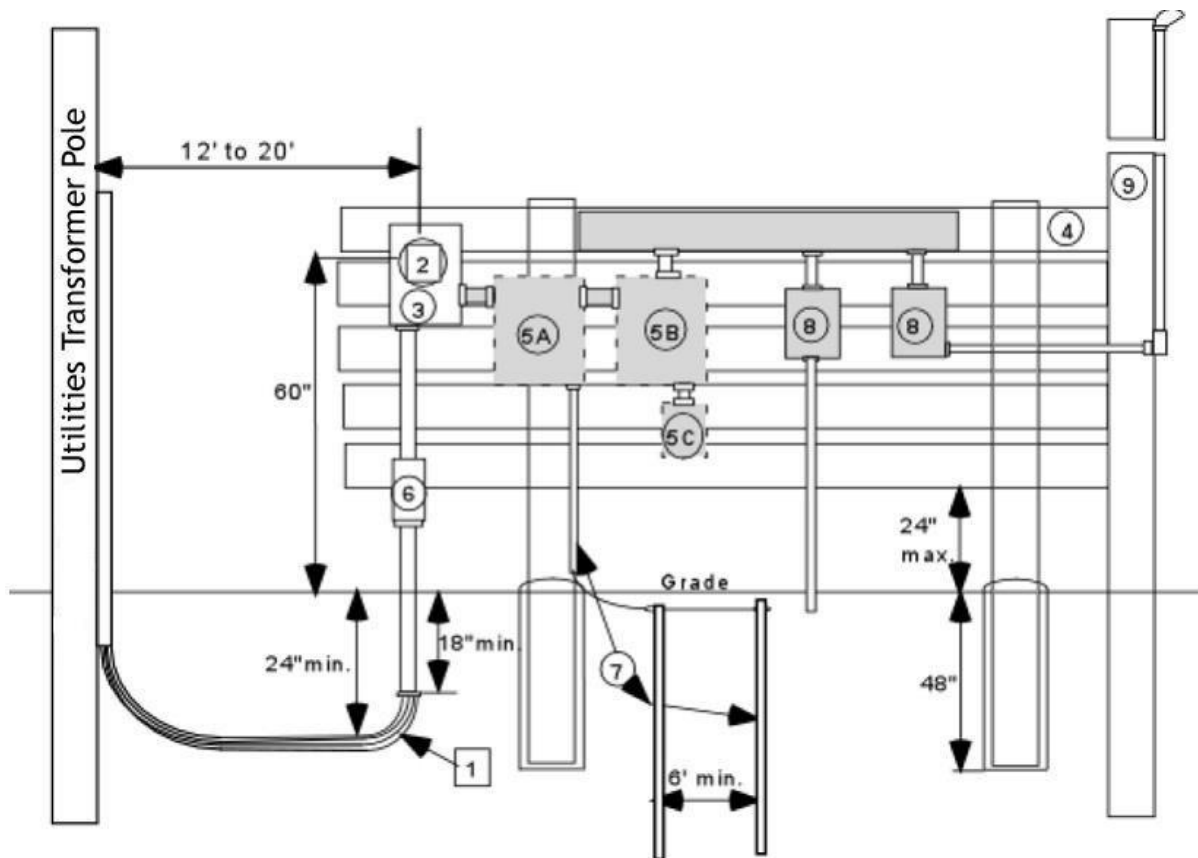
5C. Stand-by Generator Circuit & Outlet- Optional

6. Expansion Joints

7. Ground in accordance with the Code (Refer to Chapter 5)

8. Feeder Panels or Service Rated Equipment (1 to 6 Disconnects if no Main Service Disconnect used.)

9. Pole - Optional

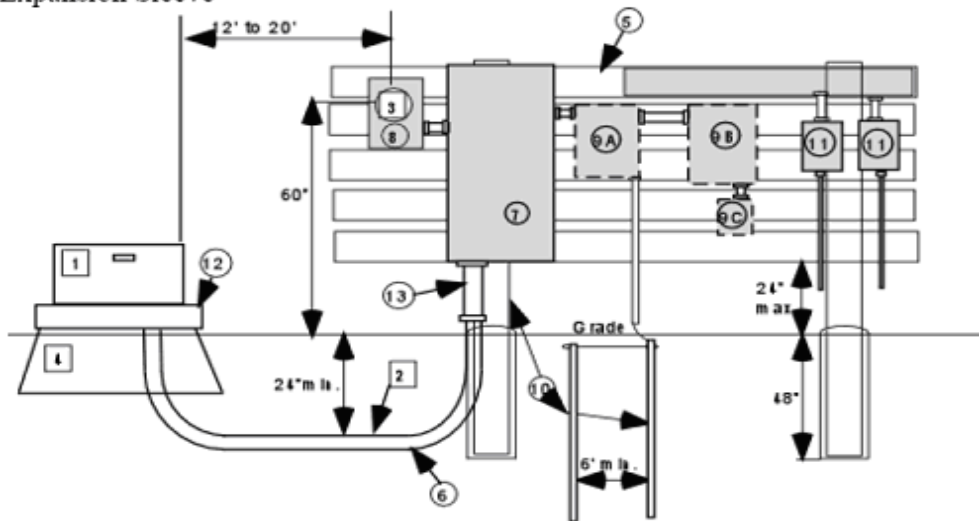


**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

**1107. UNDERGROUND SERVICE TO A FARM ON FIELD BUILT
STRUCTURE WITH OVER CURRENT PROTECTION 300 – 3000 AMP
480 VOLTS MAX**

Customer furnishes, installs & maintains Utility furnishes, install, & maintains

- | | |
|--|--|
| <ul style="list-style-type: none"> 5. Field Built Pedestal 6. Rigid Conduit 7. Metering Transformer Cabinet 8. Meter Socket 9A. Main Service Disconnect- Optional
(Required if 8B Utilized) 9B. Transfer switch - Optional
(2 Pole for 1 Phase, 3 Pole for 3Phase) 9C. Stand-by Generator Weatherproof Junction Box-Optional 10. Ground in accordance with the code (Refer to Chapter 5) 11. Feeder Panels or Service Rated Equipment (1 to 6 Disconnects if no Main Service Disconnect used.) 12. Transformer Foundation: - Concrete Pad for 3 Phase. 13. Expansion Sleeve | <ul style="list-style-type: none"> 1. Pad-Mounted Transformer 2. Underground Service Lateral 3. Meter 4. Box Pad for 1 Phase Transformer |
|--|--|



1. A clear space of 10 feet shall be provided in front of the transformer to provide “hot stick” operation by Waunakee Utility Employees
2. # 11 above is limited to 6 service disconnects without 8A
3. The 12’ to 30’ dimensions apply to farms with livestock.
4. * For services larger than 800 amps the customer’s service equipment shall be mounted on a building.
5. If the transfer switch is service entrance rated equipment and has a sufficiently high fault current rating a main disconnect is not required.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

CHAPTER 12 - PRIMARY VOLTAGE SERVICES

- 1200. General requirements
- 1201. Overhead primary service
- 1202. Underground primary service
- 1203. Underground primary service with overhead metering
- 1204. Underground primary service to metering enclosure

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

CHAPTER 12 - PRIMARY VOLTAGE SERVICES

1200. GENERAL

A “Primary Service” is defined as the Utilities overhead cables or conductors, or underground cables or conductors operating at greater than 600 volts, from the last pole, switchgear or other Waunakee Utilities structure to the service point.

Only 15 kV, 3 phase, Primary Voltage Service, is available at Waunakee Utilities.

Waunakee Utilities furnishes, installs, and maintains the primary service and metering equipment in accordance with Waunakee Utilities applicable rates, extension rules and the requirements of Chapter 1. Waunakee Utilities also furnishes, installs and maintains all primary service conductors and cable terminators up to the point of service.

The Customer furnishes, installs and maintains all service entrance facilities at the point of service including cabinets to house metering CT’s and PT’s and the installation of 1 inch galvanized steel metering conduits where required. The Customer shall make application to Waunakee Utilities for the proposed primary service and obtain approval of the location, equipment, and design before starting installation of the service entrance. Detailed shop drawings will be required for underground service terminations and metering sections in switchgear.

A 12-foot wide cable route shall be free of all obstructions, within 6 inches of the final grade for all underground services, prior to the installation of Waunakee Utilities underground service lateral. The Customer shall also provide a 12-foot wide route for all overhead facilities. The Customer will incur all cost for clearing either the overhead or underground routes, including tree removal, building and/or foundation or rubble removal and any other obstacles encountered.

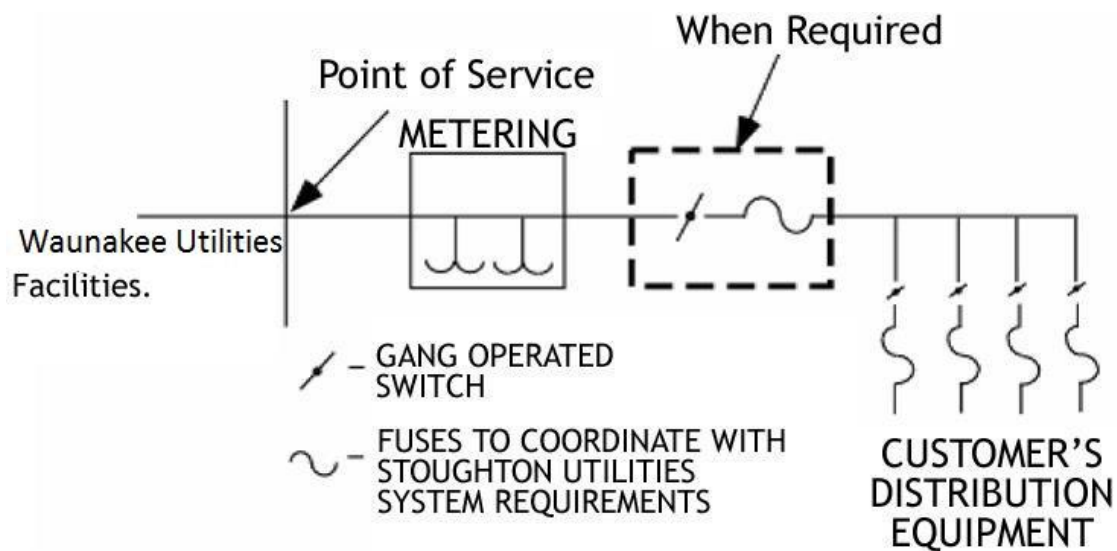
The Customer shall provide the necessary easements, at no expense to Waunakee Utilities for the installation and maintenance of the Primary Service. No permanent buildings or trees shall be place in the easement area.

WAUNAKEE UTILITIES ELECTRIC SERVICE RULES AND INFORMATION

CONTINUED

Primary Service is defined as a service where Waunakee Utilities meters the service at a primary voltage and the point of service is at a primary voltage metering piece of equipment (i.e. pole, metering enclosure or primary switchgear).

A plan view drawing of the installation shall be submitted to and approved by Waunakee Utilities Planning Division and metering, prior to finalizing order for service equipment to avoid delays and unnecessary expense for the Customer and Waunakee Utilities. Service entrance equipment locate at the point of service shall include a three-phase, gang-operated load break disconnecting means and over current protection for three phase service. The disconnect shall be located to provide a visible open and operating capabilities to both the Customer and Waunakee Utilities. The sequence of the equipment toward the load shall be meter-switch-fuse with variations approved by Waunakee Utilities.



Metering will normally be at a secondary voltage. Primary metering will be installed when service conditions warrant multiple primary extensions.

Primary metering installations is solely at the discretion of Waunakee Utilities.

If service of a special characteristic or facilities are desired by the Customer which are in excess of those provided for standard service, such facilities will be provided by the Customer or, at Waunakee Utilities option, furnished to the Customer for a special charge, which will be specified in the Customer's service contract as an "excess facilities charge".

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

1201. OVERHEAD PRIMARY SERVICE

- | | |
|--|--|
| <ul style="list-style-type: none">• Customer furnishes, installs and maintains: Arresters
Meter Socket
Grounding
Poles
Overhead Primary Conductor
Primary fusing
Conduit for Metering
Gang Operated Switch | Waunakee Utilities furnishes, installs and maintains
Overhead Primary service conductors
PT's and CT's with mounting hardware
Socket type meter
Dead-end shoes and insulators |
|--|--|

Notes:

- A. Customer shall provide two poles of adequate height that allows ground clearance in accordance with all codes for primary conductors including the neutral. The poles shall be of adequate class to provide strength to support conductors with ice and wind loading. Further information on this can be obtained from Waunakee Utilities Planning Division.
- B. Main disconnect shall be gang-operated, be operated from grade level, lockable in both the open and closed position, be operable by Waunakee Utilities, and have means to show visible open contacts, be capable of interrupting all load being served be capable of carrying all load requirements, and withstanding faults of 10,000 amps RMS symmetrical.
- C. Main fuses or breakers shall have adequate load carrying capacity and a minimum interrupting rating of 10,000 amps, RMS symmetrical, fuse and breakers shall coordinate with Waunakee Utilities system. The Customer shall verify this with Waunakee Utilities.
- D. The Customer shall supply a minimum 96" of vertical spacing for the installation of Waunakee Utilities metering bracket with current or potential transformers. Waunakee Utilities will supply the bracket for these transformers.
- E. Branch circuit switches, operated at primary voltage, should meet operating criteria similar to the main fuse or breakers to provide adequate protection to the transformers served. Fuse size for Waunakee Utilities owned transformers will be specified by Waunakee Utilities.
- F. The Customer shall provide adequate climbing space on the main service entrance structure as specified in the National Electrical Safety Code.

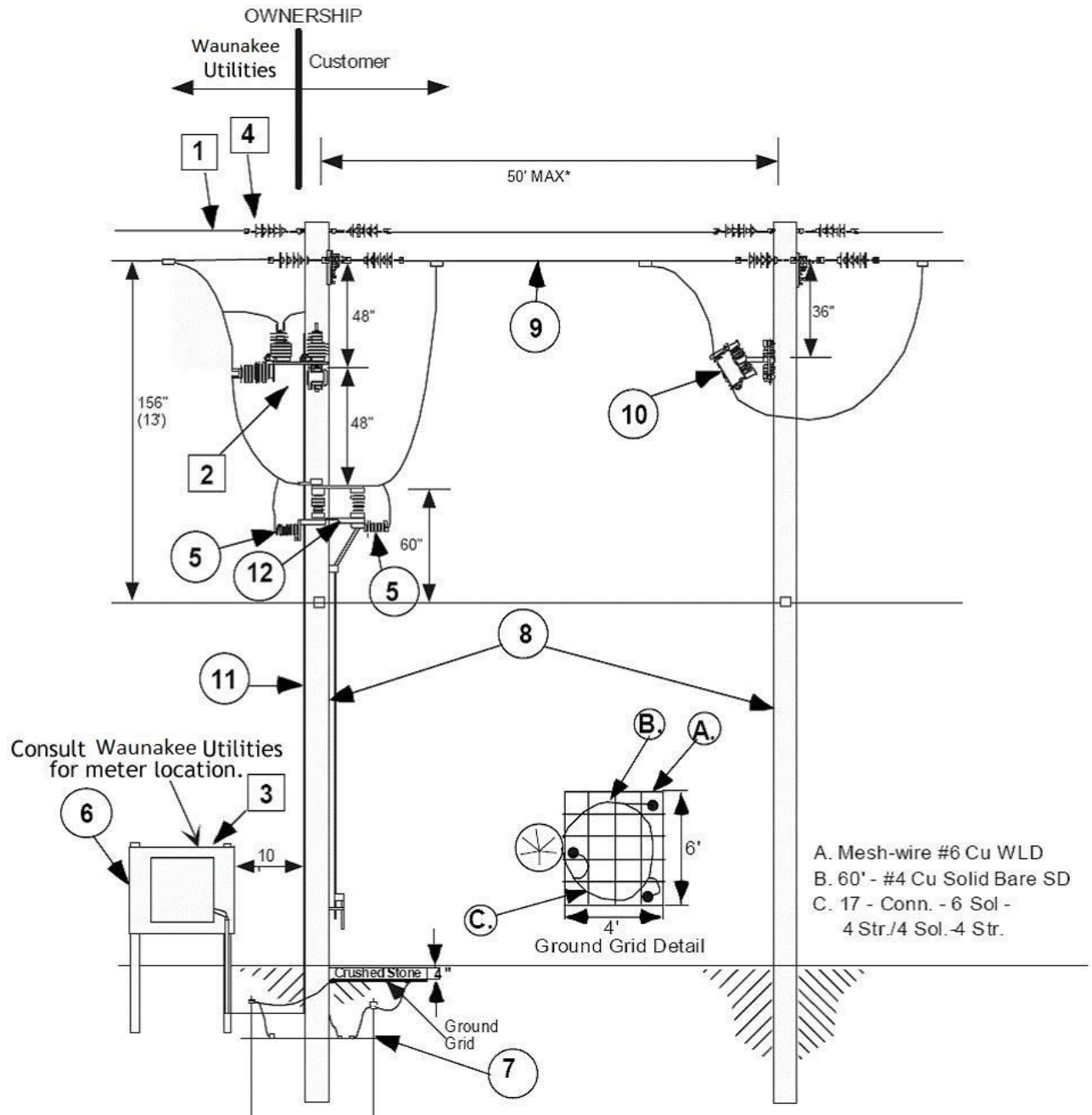
**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

- G. Metering conduit – 1” rigid steel conduit with weather head. Maximum allowable conduit run is 100 feet with a total of 90 degrees in bends. Excessively long runs or runs with more than 90 degrees in bends will require approval by Waunakee Utilities Metering Division.

- H. Customer shall install ground grid as shown.

WAUNAKEE UTILITIES ELECTRIC SERVICE RULES AND INFORMATION

1201. OVERHEAD PRIMARY SERVICE – CONTINUED



*Another pole may be installed within the 50' distance. If the overhead line extends farther than 50', a main fuse needs to be installed on a pole that is within 50' of the main disconnect as shown above. (NEC 230-91). Install a set of arrestors on the closest upstream pole from the metering pole to protect the CT's/PT's from over-voltage situations.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

1202. UNDERGROUND PRIMARY SERVICE

- | | |
|---|--|
| <ul style="list-style-type: none">• Customer furnishes, installs and maintains <ul style="list-style-type: none">Primary Switchgear6" Conduit1" metering conduitMeter SocketSwitchgear PadGrounding – Per NEC.250 (c) | Waunakee Utilities furnishes, installs and maintains <ul style="list-style-type: none">Underground Primary Service CablesTerminatorsPT's and CT'sSocket Type Meter |
|---|--|

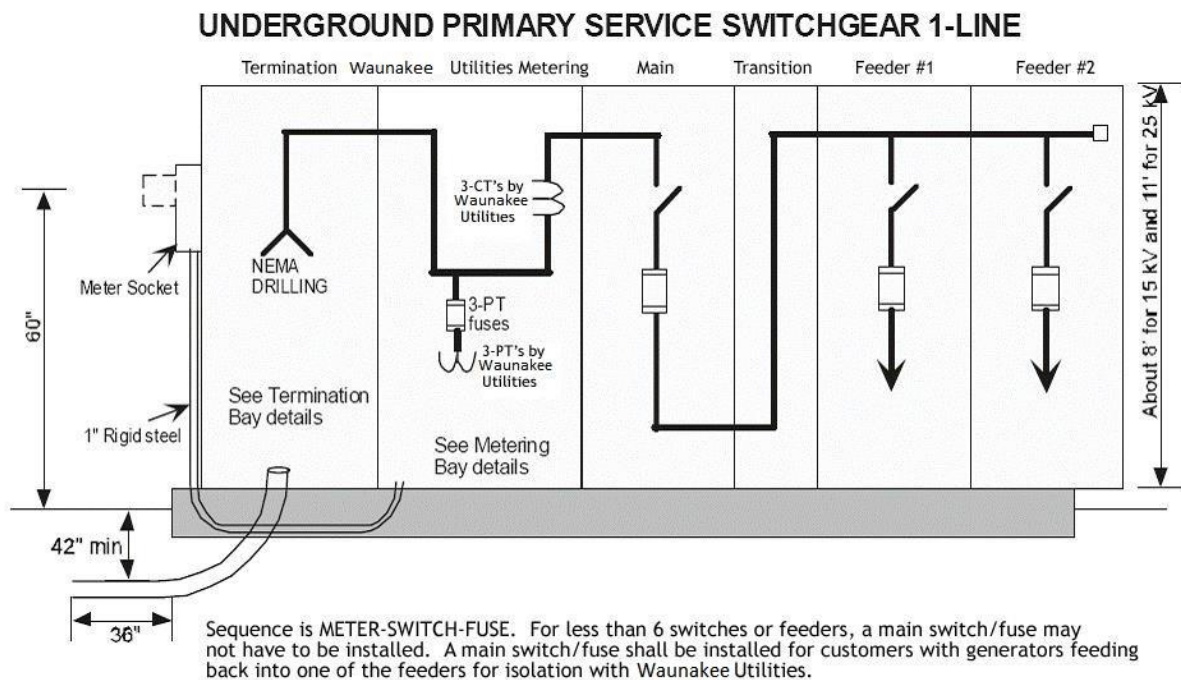
Notes:

- A. Switchgear drawings shall be submitted to Waunakee Utilities for approval before ordering.
- B. Utilities cables entering the switchgear bus shall be bottom connected. Clear space shall be provided for primary conductors below the termination points including room in the bottom of the cabinet(s) for 6" conduit to enter directly below the center point of the three termination points.
- C. All bus and cable bracing shall have adequate strength to prevent movement or damage to cable or bus at a maximum fault level of 10,000 amps (RMS symmetrical).
- D. Main disconnect may not be required If six or fewer branch circuits are present the main disconnect is not required by code. If on-site generation is present, the main disconnect is required regardless of number of branch circuits.
- E. If required, main disconnect shall be gang operated, be operated by Waunakee Utilities, have means to show visual open contacts, be capable of carrying full load requirements, and withstanding faults of 10,000 amps (RMS symmetrical).
- F. Branch circuit switches should meet operating criteria similar to the main disconnect.
- G. Customer owned main fuses or breakers shall have adequate load carrying capacity and minimum interrupting rating of 10,000 amps (RMS symmetrical) and shall coordinate with Waunakee Utilities system. Fuse size for Waunakee Utilities owned transformers would be specified by Waunakee Utilities.

WAUNAKEE UTILITIES ELECTRIC SERVICE RULES AND INFORMATION

CONTINUED

- H. Metering transformer space shall be adequate for 3 voltage transformers (PTs) and 3 current transformers (CTs). Waunakee Utilities will supply PT's and CT's similar to General Electric JWV-5 (outdoor) PT's and General Electric JKW-5a (outdoor) CT's for 15KV services.
- I. A two hole NEMA standard lug landing shall be provided for each service lateral cable in the termination bay including the neutral bus. Minimum height of 54" is required from termination lug to floor.
- J. Hinged doors with provisions for locking with a Waunakee Utilities padlock for direct working access to the termination and metering bays. In the metering, a second wire mesh inner door shall be provided.
- K. Grounding studs shall be provided for all 3 phases and primary neutral bus at the following locations: Termination bays, Metering bay, source side of main disconnect switch bay and load side terminals of switches in branch feeder bays.



**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

**1203. UNDERGROUND PRIMARY SERVICE WITH OVERHEAD
METERING**

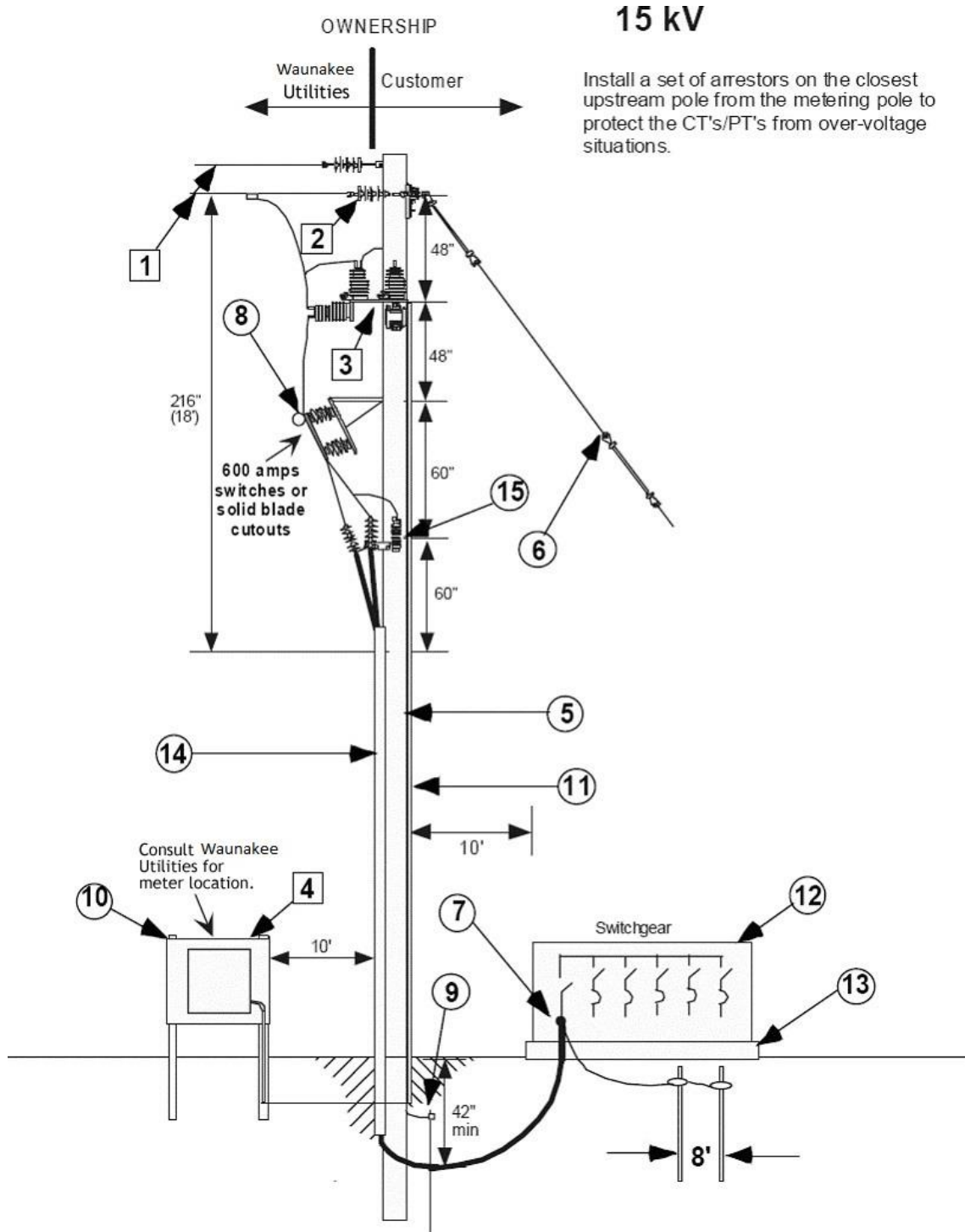
- | | |
|---|--|
| <ul style="list-style-type: none">• Customer furnishes, installs and maintains <ul style="list-style-type: none">PoleGuy and AnchorUnderground Primary Cable and terminatorsDisconnect SwitchesGrounding Per NEC. 250 (c)Meter SocketMetering ConduitSwitchgear and PadU-GuardArresters | Waunakee Utilities furnishes, installs and maintains <ul style="list-style-type: none">Overhead Primary ConductorsDeadend Shoes and InsulatorsPT's and CT's with mounting bracketSocket type meter |
|---|--|

Notes:

- A. Switchgear shall have a main disconnect that is gang operated, lockable with a visual open, be capable of carrying full load requirements and withstanding faults of 10,000 amps (RMS symmetrical)
- B. Customer shall provide the necessary dead-end equipment for installation of Waunakee Utilities conductors.
- C. Switchgear shall be located 10' from base of pole for safety when climbing metering pole and minimize the length of unprotected primary cable.
- D. Pole shall be of adequate height to allow for ground clearance in accordance with all codes for primary conductors including the neutral. The pole shall be of adequate class to provide strength to support conductors with ice and wind loading. Further information on this can be obtained from Waunakee Utilities Planning Division.
- E. The Customer shall provide adequate climbing space on the main service entrance structure as specified in the National Electric Safety Code.
- F. The Customer shall supply a vertical spacing of a minimum of 96" for the installation of Waunakee Utilities metering bracket with CT's and PT's.
- G. Disconnects on the pole shall have the ability to be opened under load with the use of a load buster tool.

WAUNAKEE UTILITIES ELECTRIC SERVICE RULES AND INFORMATION

CONTINUED



**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

1204. UNDERGROUND PRIMARY SERVICE TO METERING ENCLOSURE

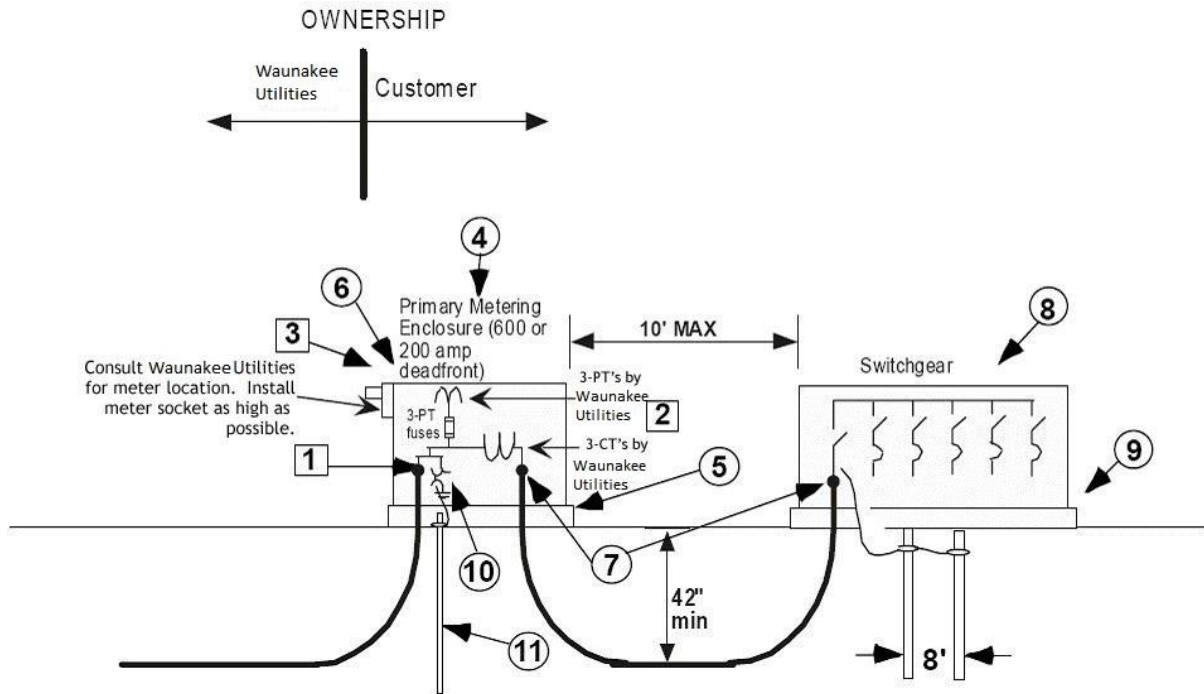
- | | |
|---|--|
| <ul style="list-style-type: none">• Customer furnishes, installs and maintains
Primary Enclosure
(see approved conductors equipment list
Below on Note: F.)
Box Pad
Meter Socket
Underground primary cable with terminations
Switchgear and Pad
Arresters
Ground rod and Grounding Conductor | Waunakee Utilities furnishes, installs and maintains
Underground Primary Service
with terminators
PT's and CT's
Socket type Meter |
|---|--|

Notes:

- A. Box pad shall provide adequate space for training of primary cable.
- B. Switchgear shall be located within 10' of metering enclosure to minimize the length of unprotected customer primary cable.
- C. Switchgear shall have a main disconnect that is gang operated, operable by Waunakee Utilities, lockable visual open, be capable of carrying full load requirements and withstanding faults of 10,000 amps (RMS symmetrical).
- D. Branch circuits switches operated at primary voltage should meet operating criteria similar to the main disconnect.
- E. Fuse size for Waunakee Utilities owned transformers will be specified by Waunakee Utilities.

**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

**1204. UNDERGROUND PRIMARY SERVICE TO METERING ENCLOSURE –
CONTINUED**



**WAUNAKEE UTILITIES
ELECTRIC SERVICE RULES AND INFORMATION**

CHAPTER 13- DISTRIBUTED GENERATION

- 1300. Scope
- 1301. Permission to Interconnect
- 1302. Technical Information
- 1303. Metering Equipment
- 1304. Waunakee Utilities Distribution System
- 1305. Labeling Requirements
- 1306. Point of Interconnection
- 1307. Interconnection Disconnect Switch Requirements

WAUNAKEE UTILITIES ELECTRIC SERVICE RULES AND INFORMATION

1300. SCOPE

This chapter includes distributed or customer-owned generation interconnected in parallel and operating with Waunakee Utilities' electric distribution system. This is not a standalone chapter meaning all chapters of the Electric Service Rules apply.

1301. PERMISSION TO INTERCONNECT

DG interconnection may be an option for single and three phase customers. Characteristics of Waunakee Utilities electrical system vary by circuit. Not every size, voltage or type of generator can be interconnected at every location.

The customer shall supply Waunakee Utilities with the required electrical drawings and application for the proposed DG prior to installation. Waunakee Utilities may specify and require certain protective schemes based on the size, location and other factors of the generating unit proposed.

1302. TECHNICAL INFORMATION

- National Electrical Code
- Wisconsin State Legislature (Wisconsin Administration Code)
Chapter PSC 119 – Rules for Interconnecting Distributed Generation Facilities

1303. METERING EQUIPMENT

Waunakee Utilities shall meter DG Facility based on Electric Service Rules Chapter 4, 5 and 6.

A bi-directional meter is required at all DG facilities to properly meter forward and reverse power flow. This may require a visit from Waunakee Utilities metering personnel.

Metering equipment may require replacement to accommodate DG metering.

Modifying or installing lugs in a meter socket, pedestal or metering transformer cabinet, other than what is listed on the manufacturer's drawing associated with the UL Listing is not allowed.

Metering Equipment shall be accessible to Waunakee Utilities personnel. Accessible means the metering equipment must be capable of being reached/accessed without climbing, moving obstacles, entering locked areas, etc. Metering equipment that is not accessible will be required to be made accessible by the customer before interconnection of the DG will be allowed.

1304. WAUNAKEE UTILITIES DISTRIBUTION SYSTEM

All modifications and additions to Waunakee Utilities electrical distribution system in order to accommodate distributed generation facilities will be at the customer's expense.

1305. LABELING REQUIREMENTS

It is the responsibility of the customer to comply with any and all labels required by the NEC or other jurisdictional codes and requirements.

Customer shall provide an "Interconnection Disconnect Switch" label at the DG disconnect.

Permanent labeling is required; Labeling shall be rigid engraved plastic, engraved self-sticking brass or engraved self-sticking aluminum.

Labeling shall use a minimum of ¼ inch block lettering.

WAUNAKEE UTILITIES ELECTRIC SERVICE RULES AND INFORMATION

1306. POINT OF INTERCONNECTION

Preferred Methods

1. DG connected via properly sized sub-breaker downstream from the main in service panel.
2. Meter Socket with Main for Alternative Energy
3. Meter Socket with factory installed dual lugs
4. Milbank U3412-O 400 Amp 1 Phase 2 Position Bus Wire Way

Not Permitted when connecting DG on line side of main service disconnect(s)

1. Splices
2. Split Bolts
3. Tap Connectors
4. Insulation Piercing Connectors
5. Installing more cables than lugs are designed to handle
6. Modifying or installing lugs in a meter socket, pedestal or metering transformer cabinet other than what is listed on the manufacturer's drawing associated with the UL Listing.
7. Any other modifications to meter sockets or metering transformer cabinets.

1307. INTERCONNECTION DISCONNECT SWITCH (DISCONNECTION DEVICE) REQUIREMENTS

A device capable of disconnecting DG facilities from the electrical distribution system shall be installed on every DG site.

The disconnection device should be located within 10 feet of the utility electric meter on residential and single building structures. Disconnection device shall be located in the accessible location. If the disconnection device cannot be located within 10 feet of the electric meter, a permanent placard shall be installed on the meter socket indicating the location of disconnect and the distance in feet from the meter socket.

Disconnection device must be mounted at a height between 36-72 inches.

Disconnection device shall open with a visual break, be able to be locked open, be capable of disconnecting and de-energizing distributed generation and shall conform to technical guidelines and state requirements.

Disconnection device shall disconnect DG only and shall not disconnect any load.

Any DG connection on the line side of the main service disconnect(s) shall have a service entrance rated disconnect switch with overcurrent protection.

The DG facility shall only be interconnected with a single metered service.

Note: This means customer is not allowed to feed DG from one building's electrical system into another buildings electrical system when the two buildings are fed from separate metered electrical services.

When a farm service utilizes a site-isolating device, the DG interconnection shall not be allowed on the line side of the site-isolating device as defined by NEC 547.9.

For facilities with multiple buildings where the DG is installed on a remote building, a permanent placard shall be installed on the meter socket indicating location of the interconnection disconnect switch and distance in feet from the meter to the disconnection device.

Main disconnection device for remote building may be used as the disconnection device at the meter. However, a separate DG only disconnect is recommended on the exterior of the remote building at the DG location.