



# **VERSANT POWER**

***Versant Power  
Requirements and Specifications for  
Electric Service Installations***

***Service Installations***

***Issued***

***September 29, 2011***

## Preface

This handbook is effective September 29, 2011 and is a revision of an earlier edition dated August 17, 2001. All earlier editions of, and supplements to, this handbook are superseded and should be destroyed.

If you need additional copies of this handbook, please call or write us at:

Versant Power  
Planning Department  
PO Box 932  
Bangor, Maine 04402-9987

As you read this handbook, you will see the words “Company” and “we” used many times referring to “Versant Power”.

Our corporate headquarters is located at:  
970 Illinois Avenue  
Bangor, Maine 04401  
207-945-5621

### Need More Information?

To contact us for information or assistance, please call our Customer Service Center at 947-2414 or 1-800-499-6600.

### Underground Wires

To contact Dig Safe to locate underground wires before construction  
please call 1-888-DIGSAFE or 1-888-344-7233.

### Power Outage

To report a power outage or other electrical trouble please call us at  
973-2020 or 1-800-440-1111.

### Overhead High-Voltage Line Safety Notice

In Accordance with Maine Law (Title 35A M.R.S.A., Chapter 7-A) a person may not erect, construct, operate, maintain, transport or store any equipment or item within 10 feet of an overhead high-voltage line (except as allowed for in the Law). When it is necessary to carry on any work or activity near an overhead high-voltage line, the person responsible for the work or activity must notify VERSANT POWER by calling 947-2414 or 1-800-499-6600 at least three (3) business days in advance. VERSANT POWER will make the necessary mutually acceptable precautionary safety arrangements.

## Table of Contents

### Section I. Introduction

101	Purpose (8)
102	National Electric Code (8)
103	National Electrical Safety Code (8)
104	Application of Specifications (8)
105	Special Conditions (8)
106	Revisions of Requirements (9)
107	Written Confirmation (9)
108	Customer’s Premises (9)
109	Customer’s Responsibility (9)
110	Access to Premises (9)
111	Customer’s Liability (10)
112	Protective Equipment (10)
113	Rates, Terms and Conditions (10)

## **Section II. Definition of Terms**

- 201 Company (10)
- 202 Customer (10)
- 203 Dwelling Units (10)
- 204 Multi-Family Dwelling (10)
- 205 One-Family Dwelling (11)
- 206 Voltage Class (11)
- 207 Service (11)
- 208 Service Drop
- 209 Service Lateral
- 210 Service Entrance Conductors—Overhead
- 211 Service Entrance Conductors—Underground
- 212 AWG
- 213 NEC & NESC
- 214 Terms and Conditions
- 215 Service Equipment

## **Section III. Safety and Adequate Wiring**

- 300 Work Site Safety Policy
- 301 Safe Use
- 302 Adequate Wiring
- 303 Approval and Permit Requirements
- 304 Voltage Variation
- 305 Unbalanced Load
- 306 Emergency or Standby Power

## **Section IV. General Information**

- 401 Application for Service
- 402 Temporary Service
- 403 Inspection
- 404 Right to Refuse and Disconnect Service
- 405 Connections
- 406 Removal of Seals
- 407 Customer Generation
- 408 Line and Load Side Conductors

## **Section V. Types and Applications of Electric Service**

- 501 General
- 502 Characteristics of Service
- 503 Applications of Service
- 504 High Capacity Services

## **Section VI. Overhead Connections from Overhead Secondary Mains**

- 601 General
- 602 Single Service Drop
- 603 Central Distribution Point
- 604 Point of Attachment of Service Drop
- 605 Service Drop Clearances
- 606 Low Buildings
- 607 Travel Trailers and Other Structures Not Suitable for Direct Service Attachment
- 608 Manufactured (Prefabricated) Buildings
- 609 Mobile Homes

## **Section VII. Service Entrance Conductors—Overhead**

- 701 General
- 702 Service Head
- 703 Installation Methods

## **Section VIII. Grounding**

- 801 General
- 802 Service Grounding Electrode System
- 803 Bonding
- 804 Grounding Conductor
- 805 Lightning Protection
- 806 Surge Protection

## **Section IX. Underground Services—General**

- 901 Customer Costs
- 902 Underground Scheduling
- 903 Other Underground Facilities
- 904 Insurance
- 905 Customer Work Responsibility
- 906 Soil Conditions
- 907 Terminal Poles
- 908 Existing Overhead Facilities

## **Section X. Privately Owned Underground Services**

- 1001 General
- 1002 Types of Services
- 1003 Company Responsibilities
- 1004 Customer, Developer, or Builder Responsibilities

## **Section XI. Underground Service from a Company Owned Underground Distribution System**

- 1101 General
- 1102 Types of Services
- 1103 Company Responsibilities
- 1104 Customer, Developer, or Builder Responsibilities

## **Section XII. Underground Service—From Existing Underground Mains**

- 1201 General
- 1202 Underground Ducts
- 1203 Underground Conductors
- 1204 Company Conversion to Underground Distribution System

## **Section XIII. Service Disconnecting Means**

- 1301 General
- 1302 Capacity
- 1303 Location
- 1304 Sequence of Disconnecting Means and Meter Equipment
- 1305 Metered and Unmetered Wires
- 1306 Type of Disconnecting Means

## **Section XIV. Metering Equipment**

- 1401 General
- 1402 Meter Sockets
- 1403 Meter Location
- 1404 Clearance for Metering Equipment
- 1405 Identification of Meters
- 1406 Multi-Connection Points
- 1407 Installation of Meter Devices
- 1408 Outdoor Meter Installation
- 1409 Pole Mounted Meters
- 1410 Prefabricated Meter Centers
- 1411 Meter Pedestals
- 1414 Instrument Transformer Cabinets
- 1412 Multiple Occupancy
- 1413 Instrument Transformer Metering

## **Section XV. Customer Equipment**

- 1501 General
- 1502 Motors
- 1503 Power Factor Correction
- 1504 Arc Welders
- 1505 Antennas

## **Appendix: Exhibits and Drawings**

- 105 Line Voltage Variations
- 150 Private Line Pole Marking
- 201 Vertical Clearances of Wires Above Ground, Roadway, Rail or Water Surfaces @ 120' F
- 202 Minimum Clearances for Service Drops
- 203.1 Clearances from Buildings and Other Installations Except Bridges
- 203.2 Clearances from Buildings and Other Installations Except Bridges
- 203.3 Conductor Categories for Clearances

204	Minimum Clearances for Services 0 – 750 Volts
207	Clearance Between Electric Meters / Equipment and L.P. or Natural Gas Equipment
208	Clearance Between Electric Cables / Equipment and L.P. or Natural Gas Equipment
209	DIGSAFE Safety Zone and Tolerance Zone
2201	Fiberglass Single Phase Padmount Transformer Foundation 25 to 50 KVA
2202	Precast Single-Phase Padmount Transformer Foundation 25 thru 167 KVA
2203	Precast Three-Phase Padmount Transformer Foundation 75 thru 750 KVA
2217	Trench & Conduit Depth for Primary Underground Installations
2218	Multi-Conduit Risers on VERSANT POWER Co Owned Poles
2219	Terminal Pole Except Public Way, 600 Volt or Less
2223	Terminal Pole Except Public Way, Single Phase 15 KV and 35 KV
2225	Terminal Pole Except Public Way, Three-Phase 15 KV and 35 KV
2227.1	Padmount Transformer Locations Near Structures and Roadways
2701	Temporary Service Structure for Use During Building Construction
2702	Rigid Steel Mast 100 - 400A Service to Low Building
2703	Rigid Steel Mast 100 – 400A Service – Multiple Meters to Low Building
2704	Overhead Conduit Service 200 Amps Maximum
2705	Overhead Cable Service 400 Amps Maximum
2706	Overhead Service to Mobile Home, Travel Trailer Customer
2707	Underground Secondary Service on Company Owned Poles
2708	100 – 400 Amp Self-Contained Meter Private Pole Mounted
2709	100 – 200 Amp Outdoor Underground Metering Pedestal
2710	Multi- Metering Pedestal Structure
2711	200 – 400 Amp Outdoor Underground Pedestal Metering
2712	4Class 320 Meter Enclosures
2714	Mast Mounted Current Transformers
2715	Building Mounted Current Transformers
2716	Outdoor Pedestal for Transformer Rated Pad Mount Metering
2718	Current Transformer Rated Service, Outdoor CT Cabinet
2901	Metering Standards for Three-Wire 120/240 Volt Single-Phase With Grounded Neutral (Removed)
2902	Metering Standards for Network Three-Wire 120/208 Volt (Removed)
2903	Metering Standards for Three-Phase Four-Wire Wye (Removed)
2904	Metering Standards for Three-Phase Three-Wire Delta (Removed)

## **REQUIREMENTS AND SPECIFICATIONS FOR ELECTRIC SERVICE INSTALLATIONS**

### **SECTION I**

#### **INTRODUCTION**

##### **101. Purpose**

These specifications are issued for the use of customers, architects, engineers and electrical contractors and are intended to establish standards that will insure safe and satisfactory service. These requirements are not a complete set of rules and cover the common types of installations as supplied by the distribution system of the Versant Power (VERSANT POWER). Installations not specifically addressed herein may require modifications to these requirements.

The customer shall comply with these specifications and the Company will cooperate with the customer and electrical contractor in the application of the specifications. These Standard Requirements are on file with the Maine Public Utilities Commission (MPUC).

##### **102. National Electrical Code**

These specifications are based on and supplementary to the latest edition of the National Electrical Code (NEC) issued by the National Fire Protection Association, and are not intended to conflict with the NEC or municipal and state ordinances. The NEC is hereby made a part of these requirements by reference. Each customer is responsible for having all wiring installed in accordance with the NEC and the requirements of any local inspection authority, and maintained in a safe condition. VERSANT POWER does not

accept responsibility for the condition of the customer's wiring and equipment, or damage that may result there from. The local or state electrical inspector is the "authority having jurisdiction" and is, therefore, responsible for interpretation and enforcement of the NEC.

### **103. National Electrical Safety Code**

The Company, by law (Title 35A M.R.S.A. Section 2305-A) is required to design, construct, operate and maintain its lines and equipment in conformance with the applicable provisions of the most recent edition of the National Electrical Safety Code (NESC). Additionally, any lines that the Company purchases must be in conformance with the edition of the NESC in effect at the time of purchase.

### **104. Application of Specifications**

These specifications apply to all new installations, all existing installations to which alterations are made, and all other installations that are considered unsafe and hazardous as determined by the Company's inspection.

### **105. Special Conditions**

When special conditions prevail or when more information is needed, Company representatives will give attention on request. In special installations the Company may alter these requirements, but any departure from the requirements will not be considered as establishing a precedent.

### **106. Revisions of Requirements**

The contents of this handbook are effective September 29, 2011, and supersede all similar requirements previously issued. Revisions of this information will be made when necessary, and the Company reserves the right to make such revisions. The Company will endeavor to notify those concerned when such changes are made but cannot guarantee to give such notice to all persons who may have received this handbook. It is urged that all architects, engineers, contractors, electricians and other who are interested submit their names and addresses to be included on the mailing list to:

Versant Power  
PO Box 932  
Bangor, Maine 04402-0932

### **107. Written Confirmation**

The Company will confirm in writing, upon request, all information given regarding service characteristics, applicable rate, service entrances and meter locations. The Company is not responsible for misunderstandings of any nature which may result from information given orally, unless confirmed in writing. In order to avoid delays and possible expensive changes, the above information should always be obtained before purchasing equipment or starting construction.

### **108. Customer's Premises**

In the absence of negligence or contract, the Company shall not be liable for damage to the person or property of the customer, or any other persons arising from the use of electricity, or the presence of the Company's appliances and equipment on the customer's premises. All property owned by the Company and located on the customers' premises shall be deemed to be personal property and title thereto shall remain in the Company, and the Company shall have the right at the expiration of service to remove all of its property whether affixed to the realty or not.

### **109. Customer's Responsibility**

The customer shall be responsible for the safekeeping of the property of the Company on his/her premises, and, in the event of damage to it, shall pay to the Company any cost of inspection and repairs. The customer shall protect the equipment of the Company on his/her premises, and shall not permit any person, except an authorized employee or a person authorized by the Company, to break any seals upon, or do any work on, any meter or other apparatus of the Company located on the customer's premises.

### **110. Access to Premises**

The Company shall have the right of access to a customer's premises and to all property furnished by the Company installed therein, at all reasonable times during which service is furnished to the customer, and on or after its termination, for the purpose of reading meters, or inspection and repair of Company facilities used in connection with its service, or removing its property, or for any other proper purposes.

### **111. Customer's Liability**

The customer shall give proper notice to the Company of any substantial increase or decrease proposed in his/her connected load or of any proposed change in characteristics, purpose of use, or location of load. Failure of the customer to give such notice will render

the customer liable for any damage to meters, transformers, wires and associated apparatus of the Company resulting from the use of increased or changed load.

#### **112. Protective Equipment**

During emergency conditions, it may be necessary to interrupt service without notice to perform necessary repairs or changes, and to restore service without notice when work is completed. In the process of restoring service, conditions of irregular voltage, single-phasing, or phase reversal may occur. Equipment which might be endangered or which might endanger life or damage property under these conditions, must be provided with suitable automatic protective devices by the customer.

All motors and electronic equipment such as computers and microprocessors, shall be controlled and protected, by the customer, from damage caused by single-phasing or abnormal voltage conditions. Such disturbances are inherent in all supply systems.

The Company cannot be held responsible for damages caused by the customer's failure to provide adequate protection.

#### **113. Rates, Terms and Conditions**

The customer, contractor and those interested are referred to the "Schedule of Rates" and the "Terms and Conditions" as filed with the MPUC, copies of which may be examined at any office of the Company. Customers or contractors shall also make themselves aware of the requirements as set forth in Section IV—General Information. Visit our web site at [WWW.VERSANTPOWER.COM](http://WWW.VERSANTPOWER.COM)

## **SECTION II. DEFINITION OF TERMS**

### **201. Company**

The Versant Power (VERSANT POWER).

### **202. Customer**

A present or prospective user of the Company's electric service.

### **203. Dwelling Units**

One or more rooms for the use of one or more persons as a housekeeping unit with space for eating, living, sleeping and permanent provisions for cooking and sanitation.

### **204. Multi-Family Dwelling**

A building containing two (2) or more dwelling units. An area being developed for multiple homes or businesses.

### **205. One-Family Dwelling**

A building consisting solely of one (1) dwelling unit.

### **206. Voltage Class**

Primary—2400 volts through 345,000 volts.

Secondary—120 volts through 480 volts.

See Section V Article 502 for standard secondary voltages.

### **207. Service**

The supply of electricity to a customer, also the conductors and equipment from the Company's lines to the customer's wiring system.

### **208. Service Drop**

The overhead service conductors from the last pole or other aerial support to and including the splices, if any, connecting to the service entrance conductors at the building or other structure.

### **209. Service Lateral**

The underground service conductors between the street main, including any risers at a pole or other structure or from transformers and the first point of connection to the service entrance conductors in a terminal box or meter or other enclosure with adequate space, inside or outside the building wall. Where there is no terminal box, meter, or other enclosure with adequate space, the point of connection shall be considered to be the point of entrance of the service conductors into the building.

### **210. Service Entrance Conductors—Overhead**

The service conductors between the terminals of the service equipment and a point usually outside the building, clear of building walls, where joined by tap or splice to the service drop.



### **211. Service Entrance Conductors—Underground**

The service conductors between the terminals of the service equipment and the point of connection to the service lateral.

### **212. AWG**

The American Wire Gauge (AWG) size of wires and applies to copper conductors where used in these requirements. When other material is used, the size shall have a capacity equivalent to copper.

### **213. NEC & NESC**

The current edition of the National Electrical Code (NEC) as published by the National Fire Protection Association.

The current edition of the National Electric Safety Code (NESC) as published by the Institute and Electrical and Electronics Engineers, Inc.

### **214. Terms and Conditions**

The Terms and Conditions portion of the Company's Schedule of Rates as filed with and approved by the MPUC.

### **215. Service Equipment**

The necessary equipment, usually consisting of a circuit breaker or switch and fuses, and their accessories, located near the point of entrance of supply conductors to a building or other structure, or an otherwise defined area, and intended to constitute the main control and means of cutoff of the supply.

## **SECTION III**

### **SAFETY AND ADEQUATE WIRING**

#### **300 Work Site Safety Policies**

Versant Power Company requires the use of proper personal protective equipment by all Company employees, contractors and customers that need to be present on a work site. Persons that are not essential for the work being performed will be asked to stay out of the work site. Persons that need to be present or involved in the work will be required to sign on to a risk assessment before the work begins. The risk assessment will address all hazards present at the work site. Whenever possible the hazard should be eliminated (I.E. Open and grounded lines.) If the hazard cannot be removed, the risk assessment will cover what personal protective equipment is needed and the placement of barriers such as shields or insulated cover up. When anyone new arrives on the work site, the work will stop and the new arrival will participate in and sign on to a revised risk assessment.

If there are people on the work site who are not wearing the proper personal protective equipment or participating and following the plan and risk assessment, Versant Power will cease work and leave the site. This may result in additional charges for subsequent trips to complete the work at a later date.

#### **301. Safe Use**

To safeguard the property of the customer and that of the Company, the customer is warned against over fusing either the main fuses or those on branch circuits. Installing overcurrent protection larger than approved by NEC for a specific wire size, or using pennies, or other methods which in any way make protective devices inoperative, CAN CREATE A SERIOUS HAZARD.

#### **302. Adequate Wiring**

The NEC states: "This Code contains basic provisions considered necessary for safety. Compliance therewith and proper maintenance will result in an installation essentially free from hazard, but not necessarily efficient, convenient or adequate for good service or future expansion of electrical use." The Company recommends that engineers, architects, electrical contractors and others make ample provisions for serving present and future loads. This may indicate more than Code Minimums such as a 100 ampere or larger service, larger wire size and more branch circuits. A wiring installation that will serve the future as well as the immediate requirements is a sound investment for the customer.

#### **303. Approval and Permit Requirements**

In municipalities where electrical inspections are required by local authorities, approval must be received before installations will be connected to the Company's distribution system. Such approval can be obtained from the local inspector by the customer or

contractor. Where local authorities do not require inspection approval, the wiring contractor shall be required to certify that the installation is in accordance with applicable provisions of the NEC. State law requires a permit for electrical work in other than one-family dwellings, electrical work and equipment incidental to a utility for rendering service, minor electrical repair work, industrials as applicable by state statute, and other installations and alterations subject to municipal resolution or ordinance. Electrical inspectors will continue to provide inspections for the municipalities they serve, but the state will provide inspections and permits for municipalities without inspectors. A Company employee will inspect the service for safety, clearance, grounding, and other requirements before connecting (see Section IV, Article 403).

### **304. Voltage Variation**

The Company will maintain the voltage delivered to its customers within the limits prescribed in “A” and “B” below. This voltage will be maintained at the Company’s service terminals, such as at the weatherhead for an overhead service drop or at the transformer secondary terminals for a customer owned underground service.

- A. For service rendered principally for residential or commercial purposes the normal voltage variation shall not exceed plus or minus five percent (+ or -5%) from the standard voltage for any period longer than one (1) minute.
- B. For service rendered principally for power purposes the normal voltage variation shall not exceed plus or minus ten percent (+ or -10%) from the standards voltage for any period longer than one (1) minute.

### **305. Unbalanced Load**

The customer shall at all times take and use energy or generate energy in such a manner that the load will be balanced between phases to within nominally 10%.

### **306. Emergency or Standby Power**

The following general requirements apply to customer generating facilities designed to operate isolated from the Company’s electrical system. The Company will provide, upon request, a booklet of recommendations for connecting emergency generators for residential customers.

VERSANT POWER strongly encourages all customers to have a licensed electrician install the equipment necessary to connect emergency generators to their home’s electrical system whether permanently connected or portable. The customer should contact their local electrical inspection authority for final approval.

Non-Parallel Operation—When the customer makes provision for or installs a generator for the purpose of supplying all or just part of the electrical load, the customers wiring shall be so arranged to prevent back-feeding on the Company power lines. This arrangement will prevent interconnection between the Company lines and the customers emergency or standby source of supply.

A positive acting, UL listed double-throw switch or transfer device which is acceptable to the Company and meets all of the following requirements shall be used.

- A. When service is manually transferred, this switch must be so arranged as to open all ungrounded conductors of the normal supply from the Company before any connection is made to the emergency supply.
- B. The double-throw switch or transfer device must be so constructed and connected as to positively prevent any possibility of power from the customer’s emergency source feeding back into the Company’s distribution system.

When it is desired to energize all of the customer’s distribution circuits from the emergency source, the above switch may be connected on the line side of the regular service disconnecting means. The switch should not, however, be connected to the source side of the Company power meter. Where this switch is exposed to the weather, it must be of a rain-tight construction.

Conductors that may be energized by emergency generating equipment shall not be located in the same conduit or raceway as service entrance conductors from the Company’s system.

When the emergency generator is arranged to serve only specific equipment by use of separate circuits that are not connected to the normal wiring system, a main transfer switch will not be required. Also refer to Section 407.

## **SECTION IV**

### **GENERAL INFORMATION**

#### **401. Application for Service**

Now that you have spoken with a Customer Service Representative, a VERSANT POWER Field Representative\* will visit your site to determine the location of our meter and the route required for additional poles or underground wires.

- \* If you haven't set up your new account yet, you must do so now. Application for new or enlarged electric service shall be made by calling our Customer Service Center at 947-2414 or 1-800-499-6600. To avoid delay in receiving service at the desired time, it is essential that the application be made as far in advance as possible.

When planning the installation, and before material is purchased, the customer is requested to confer with the Company to determine the availability of service and location of service and metering facilities. The following information will be required:

- Number, size and type of service entrance conductors.
- Exact location of premises.
- Date service will be required.
- Size of proposed load in KW and/or HP.
- Load sheet (form 2001) will be required for all 25kw load or 3ph services.
- HP and quantity of any motors.
- Special requirements.
- Temporary or permanent locations should be approved.

Point of attachment of customers service drop, transformer location and poles must be reviewed by the Company before any wires are installed. Poles used to support transformers and foundations supporting pad mounted transformers or other equipment must be accessible from maintained driveways or roads. Exact locations must be approved by the Company prior to construction. All pad mounted transformers and equipment must be protected from traffic by suitable barriers or bollards.

Effective May 12, 2002 MPUC Chapter 395 requires that private lines must be determined safe and reliable. Such determination may be provided by a Registered Professional Engineer, a person designated by the T&D utility or by a person licensed by the Maine Office of Licensing and Professional Registration. Qualified Versant Power employees will provide private line certification at rates found in the Company's Terms and Conditions.

#### **402. Temporary Service**

The service wiring for a temporary installation shall be made in the same manner as for a permanent installation, indoors or outdoors. Any temporary supports must meet with the approval of the Company. A typical temporary service structure is indicated by Appendix Drawing Number 2701. The installation must be properly grounded, as specified in Chapter 2 in accord with the NEC Article 250, and approved by the local inspection authority in areas where such inspection is required. The Company shall always be consulted before work is started to determine location of temporary and permanent service, and metering facilities.

The cost of installing and removing temporary service facilities by the Company may be charged to the customer.

#### **403. Inspection**

The Company inspects the service installation only, including all workmanship, wiring and related equipment from the Company's connection to and including the first customer-owned overcurrent device or devices. The Customer must provide the Company access to the service equipment. Approval shall be given by the local inspection authority where required and the Company requirements must be met before the service will be connected. If it is necessary for the Company's representative to make more than one trip to connect service due to installation not conforming to the Company's requirements, the cost of such extra time may be charged to the customer (see Section III, Article 303).

The Company shall not be responsible for the installation or maintenance of the customer's electrical equipment, nor shall there be any duty or obligation on the part of the Company to inspect the same.

**Municipal Inspections**—Certain communities rely on a municipal inspector to approve your electrical installation. The inspector will notify VERSANT POWER if your service meets their approval. If there is no municipal inspector in your area, regulations require that one of these forms be obtained:

- **Certificate of Electrical Inspection**—This form is approved by your electrician or the state electrical inspector. It is required for all single-family residences. It is not required for manufactured or mobile homes.
- **State Electrical Permit**—New or upgraded commercial facilities, multi-family dwellings (greater than one-family), and all temporary services require the State Electrical Permit. As a general rule, installations with more than one meter will require a State Electrical Permit. This form is signed by your electrician and approved through the State Electrician's Examine Board. A fee payable to the state is required for this permit. The State Electrical Inspectors want to inspect every job prior to connection. Please allow enough time for inspection by State Electrical Inspectors prior to asking for final Company service connection. Versant Power will proceed with the connections once you have given the Company your permit number.

#### **404. Right to Refuse and Disconnect Service**

The Company reserves the right to refuse electric service to a new or existing installation, or to disconnect an existing installation from the Company's lines, should it be determined by inspection that such installation does not conform to the requirements of the Company, or the NEC, or presents a safety hazard to the general public which might injuriously affect the customer's equipment, equipment of the Company, or the Company's service to other customers. Cases of dispute shall be referred to the authority having jurisdiction.

**405. Connections**

All connections of customer-owned equipment and material to the Company's facilities must be made by an authorized employee of the Company.

**406. Removal of Seals**

In general, Company seals shall be removed only by an authorized employee or a person authorized by the Company. The Company must be notified when the service is to be reenergized. In emergencies, qualified individuals may be given verbal permission to remove seals and de-energize service. A qualified individual must be an electrician with a currently active electrician license issued by the State of Maine. The license must be for a Master Electrician, a Journeyman Electrician or a Limited Electrician with a qualification for "House Wiring" which is restricted to one-family and two-family dwellings including modular and mobile homes. An will exist if there is the possibility of damage to property or injury to persons and the qualified individual must de-energize the service so that damage to property or injury will be avoided. Failure to contract VERSANT POWER prior to cutting a meter seal may lead to a charge to the customer or electrician.

**407. Customer Emergency Generation**

Versant Power strongly encourages all customers to have a properly licensed electrician install the equipment necessary to connect emergency generators to their home's electrical system. The customer should contact their local electrical inspection authority for final approval.

A positive acting double-throw switch or transfer device shall be used, so constructed and connected as to positively prevent any possibility of power from the emergency source feeding back into the Company lines. Specific requirements and specifications for various types and sizes of customer facilities shall be obtained from the electrical contractor.

The Company will provide, upon request, a booklet of recommendations for connecting emergency generators for residential customers. All installations must meet National Electrical Code. The Company recommends that following the installation of emergency generating equipment, the customer contact their local electrical inspection authority for final approval. Also refer to Section III Article 306.

**408 Line and Load Side Conductors**

Line and Load conductors shall not be permitted within the same conduit, cable or raceway. Metered and unmetered conductors shall not be permitted within the same conduit, cable or raceway.

**SECTION V. TYPES AND APPLICATIONS OF ELECTRIC SERVICE**

**501. General**

To avoid misunderstandings, delays and unnecessary expense, the customer shall always inquire of the Company as to the characteristics of service available before proceeding with the purchasing, installation, or wiring of equipment. This is very important as all classes of service are not available in the entire area served by the Company. The Company will supply only one service to the building as a general rule.

**502. Characteristics of Service**

Service in the territory served by the Company is supplied at 60 Hertz, single or three-phase alternating current at secondary voltages listed below. Primary voltages are available for special installations. Three-phase service is not always available, and may require additional customer costs.

<b>VERSANT POWER Approved Voltage Class—60 Hertz</b>		
<b>Number of Phases</b>	<b>Number of Wires</b>	<b>Nominal Voltage</b>
1	3	120/240
3	4	120/208
3	4	277/480

Three-wire (network) 120/208 volt service is available with approval from the Company prior to installation.

600 volt services are becoming increasingly difficult to support. Equipment is no longer available at this voltage. VERSANT POWER will not accommodate any increase in load or capacity and cannot guarantee continued service at this voltage. Customers are encouraged to make arrangements to take service at a VERSANT POWER approved voltage (see above). Customer services operating in the 600 volt class will not be reconnected if service is discontinued.

Service voltages of 240 volt three phase three wire delta and 480 volt three phase three wire delta are no longer standard voltages. The Company will not supply new services at these voltages. Increased loads on existing services operating at 240 volt three phase three wire delta and 480 volt three phase three wire delta will require approval by Versant Power Engineering.

Note: Since the Company does not use two-wire metering, service installations shall consist of at least three (3) service entrance conductors as specified in Section VII, Article 701 of this booklet. Any customer or contractor seeking exception to this policy shall make a request to the Meter Tech Department prior to any installation. The Company reserves the right to refuse connection of installations not in compliance with this policy.

### 503. Applications of Service

Applications of each class of voltage are as follows:

**1. Single-phase three-wire 120/240 volt service.** This type of service will be supplied to residential, commercial and industrial customers for lighting, heating, cooking and small power loads. See paragraph 1502 for motor limitations on single phase services.

Wherever the total connected load exceeds 50 KVA, the Company may require the customer to arrange his wiring for three-phase service.

**2. Three-phase, four-wire 120/208 volt service.** This type of service will be supplied for large lighting, heating, cooking and power loads or a combination of these loads, when size of load warrants. Lighting and other loads shall be balanced between respective phases as closely as possible. Service taken at this voltage must have a main disconnect no greater than 600 amps when served from pole-mounted transformers. Any disconnect greater than 600 amps will be served by a pad-mounted transformer.

**3. Three-phase, four-wire 277/480 volt service.** This type of service will be supplied for general service or power installations having demands of not less than 50KVA unless special circumstances so warrant. Service taken at this voltage must have a main disconnect no greater than 300 amps when served from pole-mounted transformers. Any disconnect greater than 300 amps will be served by a pad-mounted transformer.

**4. Service at primary voltage** is available through negotiation with the Company. The Company shall always be consulted regarding the class of voltage available. Service voltage higher than 480 volts available only by negotiation with the Company. The size and type of a customer's load must warrant such an installation.

### 504. High Capacity Services

**1. Transformer Installations.** Where high capacity services are required or where it is not feasible to use pole-mounted transformers. In the case of the outdoor installation, the customer should contact a Company representative to discuss other options before proceeding.

Before installing transformers adjacent to or within a building, it is the customer's responsibility to obtain approval from the insurance underwriters for the location selected.

**2. Multiple Service Conductors.** The number of parallel conductors per phase which may be connected to any overhead service drop shall not exceed two (2) in number, or which may be connected to the terminals of any transformer including pad-mounts shall not exceed four (4) in number. In cases where more than four conductors per phase are required, or where more than one service is involved, the customer may be required to install a terminal box or other facilities to accommodate the multiple conductors, subject to prior Company approval.

**3. Secondary Conduit Risers and Cable Size.** No more than two secondary cable conduit risers will be permitted on a single pole. The maximum cable size will be 500 kcmil.

## SECTION VI

### OVERHEAD CONNECTIONS FROM OVERHEAD SECONDARY DISTRIBUTION

#### 601. General

The customer will be responsible for providing and installing the point of attachment. The attachment will be either a "J" hook or an eye bolt. All wiring and related equipment, except meters, instrument transformers, test switches, and control cable (see Section XIV Article 1401), on the customer's side of the point of attachment of the service drop to a building shall be furnished, installed and maintained by the customer. This material includes the service head, service entrance conductors with three feet of slack for connection to the service drop, meter mounting equipment, conduits, service disconnecting means and ground connections. The service drop will be furnished, installed, and maintained by the Company. In general, wherever it is necessary to extend the service drop for more than 150 feet from the established road right-of-way limits, the customer shall furnish, own and maintain the suitable intermediate pole(s) and pay the cost of that part of the service drop which exceeds 150 feet from the road right-of-way limits (see Drawing 204).

#### 602. Single Service Drop

Only one service drop connected to the same overhead mains will be attached to any one building, and only one set of service entrance conductors shall be connected to each service drop except in cases specifically permitted by the NEC or where specific permission has been obtained from the authority responsible for the enforcement of the NEC. The drop may consist of parallel service cables for capacity. Overhead services may be provided up to and including 600 ampere single switch or 1,000 ampere total switch frame capacity unless limited by construction problems. Where greater capacity is required, other types of construction such as underground service must be used. Refer to Section IX.

#### 603. Central Distribution Point

On farms and other premises where several buildings are under one ownership, it may be desirable for the customer to take service for the buildings directly from one customer owned pole, if otherwise permitted under the Company's Terms and Conditions. The Company will permit metering on private poles. It will be the responsibility of the customer to furnish and install service drops and other service equipment for each building served that is beyond the meter. In no event will any customer owned services pass from the central distribution point back onto Company poles. For installations of this type, a weatherproof main disconnect switch be installed on the pole. All installations of this type shall be referred to the Company for approval before any wiring is started.

#### 604. Point of Attachment of Service Drop

The point of attachment of a service drop to a structure shall be designated by a representative of the Company before service wiring is started.

Customers having service wiring installed without first obtaining location approval for the point of attachment do so at the risk of having to relocate same.

#### 605. Service Drop Clearances

Location	Minimum Clearances
Sidewalks and spaces accessible to pedestrians only	12 feet
Over residential driveways	16 feet
Over railroad tracks	24 feet
Public streets, roads, alleys and commercial or industrial driveways	18 feet

The above clearances are the minimum required at 120 degrees final sag or 32 degrees and one half (1/2) inch ice, whichever produces the greatest sag. (NESC requirements.)

#### 606. Low Buildings

In order to obtain minimum clearances for various types of low buildings, it may be necessary for the customer to install a pole or a Company approved extension mast (see NEC Article 230-24 or Drawings 202 and 2702). If minimum clearances are not obtained, the service will not be connected.

#### 607. Travel Trailers and Other Structures Not Suitable for Direct Service Attachment

An approved rain-tight service disconnecting means rated at not less than 60 amperes and with appropriate overcurrent protection shall be installed in accordance with National Electrical Code Article 373-2, at the meter location (refer to Illustration No.

6 or No. 28 in Section XII). For recreational vehicles, the disconnecting means shall generally be located near the point of entrance of supply conductors in compliance with the NEC, Article 551.

### **608. Manufactured (Prefabricated) Buildings**

Manufactured (prefabricated) buildings, including modular homes, may have the service drop and meter mounted on the structure if of sufficiently sound construction and set on a permanent foundation. The service entrance conductors and equipment shall be in accordance with standard services in this handbook and the NEC, Article 230 and Article 545.

### **609. Mobile Homes**

#### **A. Service Equipment Separate from the Structure:**

An approved rain-tight service disconnecting means rated at not less than 100 amperes and with appropriate overcurrent protection shall be installed in accordance with NEC Articles 373-2 and 550 at the meter location (refer to Illustration No. 6 or No. 28 in Section XII). Company approved pre-wire combination meter and service equipment may be used.

If the meter is located more than 30 feet from the mobile home, then the disconnecting device with appropriate overcurrent protection shall be located within 30 feet of the mobile home in compliance with the NEC, Article 55-23. This disconnecting means shall then be considered the service entrance equipment and the disconnect at the meter location may be omitted. However, the service cable from the meter location to the service entrance equipment must comply with all Company standards for an underground service cable installation.

#### **B. Service Equipment installed on the Structure:**

A permanently-sited mobile home manufactured under a HUD seal, with undercarriage removed, and connected to water and sewer, may have the service equipment installed directly on the structure provided that it is installed in a manner acceptable to the "authority having jurisdiction" (local or state electrical inspector) as stated in NEC Article 550-23 (a), Exception No. 2.

The electrical inspector will generally require that the installation comply with the mobile home manufacturer's instructions on proper attachment to the structure.

## **SECTION VII. SERVICE ENTRANCE CONDUCTORS—OVERHEAD**

### **701. General**

The service entrance conductors are the conductors between the terminals of the service equipment and the connection to the Company's overhead service drop.

All service installations shall consist of at least three (3) conductors, of a type approved for this purpose by the NEC, and with a capacity sufficient to carry the load consistent with the NEC, with larger sizes recommended for future load growth.

The ungrounded conductors shall not be smaller than No. 6 AWG copper or equivalent, and the minimum neutral size per NEC Requirements.

For special limited applications, smaller conductor sizes may be used in compliance with NEC, and approved by the Company.

### **702. Service Head**

An approved service head shall be installed above and within approximately 12 inches of the service drop point of attachment. At least three (3) feet of the service entrance conductors shall extend beyond the service head, to provide suitable drip loops for preventing entrance of moisture.

### **703. Installation Methods**

Service raceway and service entrance conductors shall be continuous without taps, breaks, splices, junction or outlet boxes from service head to service disconnecting means, except at meter. Raceway or cable shall be exposed for its entire length except where it enters and passes through the building wall and except where a service mast passes through the roof overhang.

The raceway or cable shall be securely attached to building or structure and all connectors, screws or other metal devices shall be rust-proof.

It is recommended that when the exterior construction of the building consists of rough stone, brick, stucco, or metal siding, all service entrance conductors shall be installed in rigid or intermediate metal conduit, steel electrical tubing, or rigid non-metallic

conduit recognized for use above ground as permitted by Article 347 of the NEC. Raceway or cable must not be attached to chimneys or roofs.

Cable or raceway shall always be located so that entrance through building is at least 12 inches above ground level and so that proper clearance will be provided from rain spouts, fire escapes, telephone wires, windows and blinds.

The service entrance equipment shall be located as near as possible to the point of entrance of the conductors.

All services shall be installed in accordance with the NEC (see Appendix Drawings).

## **SECTION VIII. GROUNDING**

### **801. General**

A permanent and effective ground must always be provided for service equipment, in accord with the requirements of NEC Article 250—Grounding. The neutral conductor of the service shall always be grounded and the grounding connection shall be made in the outdoor meter socket and/or in the service cabinet. No conductor of a three-phase, three-wire service shall be grounded at any point in the wiring installation. All grounding shall be complete before the Company will make the service connection to its lines.

### **802. Service Grounding Electrode System**

In accordance with National Electrical Code Section 250-H, the service grounding electrode system shall consist of the following:

Two ground rods, driven to their full depth and separated by six feet must be installed. The rods must be connected together. They must be at least eight feet long, not smaller than 5/8 inch diameter if of galvanized steel, ½ inch diameter if of approved copper clad steel.

### **803. Bonding**

All grounding electrodes used on the premises shall be bonded together, and bonded to any interior metal piping system, heating systems, meter enclosures, troughs, metallic pole risers, conduits, cable armor and cabinets, or other extensive metal systems.

Bonding is effective as a means to prevent or mitigate problems due to the phenomenon commonly called stray voltage. The Company recommends that provisions be made to bond any steel reinforcing mesh or rod to the electrical grounding system whenever any concrete slabs are poured. This is particularly important for dairy barns and houses constructed on concrete slab foundations. Refer to NEC Article 547-8 for information regarding equipotential planes in agricultural buildings.

Whenever work is in progress on any premises, contractors are urged to inspect the condition of all grounds and bonds, and inform the owner accordingly. The connection to a metal underground water system shall be on the street side of the water meter, if practical, otherwise bonds shall be placed around all parts which may be disconnected, between the point of attachment and the street side of the water meter.

### **804. Grounding Conductor**

The grounding conductor shall always be rigidly supported, protected from mechanical damage and be securely attached to the grounding electrode with a cast metal clamp or other device or method as approved by the NEC. The size of the conductor must also meet the requirements of the NEC Article 250-92A and in no case be smaller than No. 6 AWG Copper. If a ground rod is placed away from a building foundation, the grounding electrode conductor shall be protected by burying beneath the surface of the ground.

### **805. Lightning Protection**

When electric service is installed in a building that is equipped with lightning rods (or vice versa) and both systems are grounded by driven electrodes, the NEC requires that a separation of at least six feet be maintained between electrodes wherever practical. The grounding electrode systems should be bonded together. The ground connections from a television antenna for the purpose of lightning protection should be treated the same as a lightning rod ground.

### **806. Surge Protection**

All whole house power surge devices must be connected on the load side of the meter and be installed by a licensed electrician.

## **SECTION IX**

### **UNDERGROUND SERVICES—GENERAL**

#### **901. Customer Costs**



Arrangements for the payment of any costs which are to be the responsibility of the customer in connection with the installation of underground service, shall be made in advance of construction of the system. Such cost can include but are not limited to the cost of underground cable, underground cable terminations, underground cable load break elbows, underground cable feed through devices, fusing / switch cabinets and the cost difference between pad mount transformers and pole mount transformers.

#### **902. Underground Scheduling**

Construction of underground systems shall not normally take place during winter or early spring. Installation of underground facilities involving Company owned equipment or facilities which will subsequently be owned by the Company shall not take place during such periods without the written consent of the Company. Any additional costs incurred as a result of installation of underground facilities during such periods shall be the responsibility of the customer.

#### **903. Other Underground Facilities**

Water and sewer facilities and other construction normally installed below the electrical facilities shall be completed before the electrical facilities are installed. The Company will require an easement for any Company owned underground facility on private property. The customer will provide an as built survey by a registered land surveyor that will be attached and filed with the easement at the registry of deeds.

#### **904. Insurance**

Customers desiring the installation of underground facilities shall consult with their insurance carrier concerning the location of such facilities, proper clearances, the presence of Company-owned equipment, and other matters.

#### **905. Customer Work Responsibility**

Work for which the customer is responsible involving Company-owned facilities or facilities which will subsequently be owned by the Company, shall be completed in accordance with the standards and specifications of the Company. Notification of work being done shall be required and trench inspections prior to back filling may be necessary.

#### **906. Soil Conditions**

Soil and terrain conditions must be suitable for an underground system, as determined by the Company's Engineering Department. Where ledge excavation is necessary, a reduction of cover may be allowed where supplemental protection is provided as permitted by the NEC (see NEC Articles 300-5(a) and 710-3(b), and NESC Section 35). All underground facilities will be installed with proper drainage. Conduit and foundation systems that do not properly drain will not be connected.

#### **907. Terminal Poles**

Company-owned terminal poles for underground service shall be 40 feet minimum length. No underground services will be installed on distribution/trans-mission poles without permission from the Company (refer to Drawing 2707). Whenever possible, underground services and line extensions will originate from new poles located outside the public way.

#### **908. Existing Overhead Facilities**

If primary underground facilities are ~~service~~ requested to replace existing overhead company facilities, the customer must pay the full replacement cost. All new company owned undergrounds replacing existing overhead lines will have redundant cable runs for reliability,

#### **909. Underground Service and Primary Cable Riser Construction**

When installing risers on de-energized structures, the electrician will have all of the cable and conduit riser construction complete and attached to the. If the electrician is not able to complete the work, then Versant Power will assist if resources are available. The electrician will be charged for the cost of the work.

When installing 2.5" (two and one half inch) risers on energized structures, the conduit, cables and weather head shall be assembled in one piece on the ground from the top of the sweep at the foot of the pole to the weather head. Versant Power will raise this assembled riser and mount it on the pole. The electrician will provide all materials needed for a complete installation.

On Energized structures with conduit risers in excess of 2.5" (two and one half inch) the electrician will install no more than one ten foot section of conduit on the pole. Versant Power will then assist with the installation of the remaining conduit, support brackets and hardware. Once the conduit system is complete, Versant Power will assist with the installation of the conductors. The electrician will provide all materials needed for a complete installation.

## **SECTION X**

### **FROM A PRIVATELY OWNED UNDERGROUND SERVICE**

#### **1001. General**

1. VERSANT POWER will allow private underground service to a customer subject to the customer providing and installing his material and equipment compatible with and approved by the Company. The service will be a customer-owned facility and subject to the excess cost and private overhead line provisions stated in these standards.
2. Underground services should be installed in complete accord with Company specifications to provide for possible future acceptance by the Company in case of service expansion to include other customers.
3. A plan of the underground facility should be provided for the project file.

#### **1002. Types of Services**

1. Residential underground primary or secondary service.
2. Commercial, industrial, and government underground primary and/or secondary service.

#### **1003. Company Responsibilities**

1. Furnish, install, own and maintain padmount transformer (as required).
2. Furnish, install, own and maintain lightning arresters, fused cutouts, terminations and load break elbows, on Company-owned facilities.
3. Install customer supplied conduit, conductors, bushings and conduit clips on Company-owned poles where energized power line are present.

#### **1004. Customer, Developer, or Builder Responsibilities**

1. Provide all excavation, ductwork, and backfill involving Company facilities in accord with Company specifications.
2. Furnish, install, own and maintain primary and/or secondary cable, which must be compatible with Company equipment.
3. Furnish and install duct system, as required, under all public ways.
4. Furnish terminal pole riser conduit(s) including necessary fittings. The Company will assist with the conduit installation on Company pole if energized power lines are present. (Refer to Drawing 2707).
5. Maintain safe operating conditions and keep building, bushes, and trees clear of Company facilities. Compliance of this rule must meet with Company approval.
6. Fuse cabinets and transformers must be located so that they are readily accessible by a Company truck. Access to this equipment will be from a maintained driveway, road or parking area. Pad mounted equipment will be protected from traffic and not exposed to damage from snowplowing. Pad-mount transformers and fuse cabinets shall not be located more than 20 feet from truck access or a paved way. (Refer to Drawing 2227.1).
7. The conduit system and transformer foundation must be provided with adequate subsurface drainage, and be graded for proper surface water run off. The foundation must meet Company standards. Refer to Standards Drawings for drainage details.
8. Transformer barriers or bollards must be provided to Company specifications, where danger of traffic or snowplow damage or snowplow exposure exists. . (Refer to Drawing 2227.1).
9. Pay all cost quoted by the Company including excess cost before construction.
10. Provide a Legal Description locating all Company facilities on private property.
11. Sign service agreements, service contract, and easements provided by the Company.
12. Check with local, county, state, and federal governments for necessary permits to locate underground facilities on or across public ways.

## **SECTION XI**

### **UNDERGROUND SERVICE— COMPANY-OWNED UNDERGROUND DISTRIBUTION SYSTEM**

#### **1101. General**

Versant Power will own an underground distribution system when requested by a customer, builder or developer. The Underground Distribution System will become a Company-owned system upon satisfactory completion as outlined in these standards, and approved by the Company's Engineering Department. The Underground Distribution Network will be subject to the excess cost provisions, all other applicable provisions under Section IX of these standards, and all provisions outlined within Section XI of these standards.

#### **1102. Types of Services**

1. Residential underground primary service.
2. Commercial, industrial and governmental underground primary service.
3. Residential, industrial and commercial underground primary distribution network, residential subdivision, industrial park, etc.

#### **1103. Company Responsibilities**

1. Furnish, install, own and maintain pad-mount transformer(s).
2. Furnish, install, connect, own and maintain primary power cable.
3. Acquire appropriate permits from local, county, state and federal governments.

#### **1104. Customer, Developer or Builder Responsibilities**

1. Provide all excavation, ductwork and backfill involving Company facilities in accord with Company specifications.
2. A pull wire must be provided by the customer in all ducts to facilitate the installation of cable.
3. Furnish to the Company four (4) complete copies of the site plan for the development as approved by the municipality. Such plans should show the grading, layout and dimensions of lots, sidewalks and curbs, the location of water systems, storm, sanitary sewer systems, and other underground structures.
4. Furnish to the Company four (4) complete copies of the electrical plans for the development. Such plans should show the electrical riser diagram, electrical load data, estimated electrical demand and meter arrangements.
5. Provide a legal description locating all Company facilities on private property.
6. Execute service agreements, service contract, and easements provided by the Company.
7. Furnish and install transformer foundation per standards Drawings 2201 through 2203.
8. Fuse cabinets and transformers must be located so that they are readily accessible by a Company truck. Access to this equipment will be from a maintained driveway, road or parking area. Pad mounted equipment will be protected from traffic and not exposed to damage from snowplowing. Pad-mount transformers and fuse cabinets shall not be located more than 20 feet from truck access or a paved way. (Refer to Drawing 2227.1).
9. Provide adequate subsurface and drainage for transformer foundations and conduit systems.
10. Transformer barriers must be provided to Company specification, where danger of traffic damage exists.
11. Maintain safe operating conditions and keep buildings, bushes and trees clear of Company facilities.
12. Upon completion of the Project, provide the Company with a reproducible "as built" site plan no larger than 8 1/2" x 14" Mylar showing the location of all underground facilities.
13. Pay all cost quoted by Company including excess cost before construction.

## **SECTION XII**

### **UNDERGROUND SERVICE—FROM EXISTING UNDERGROUND DISTRIBUTION**

#### **1201. General**

The Company must be consulted before any work of this type is started as requirements will be given for each individual installation.

#### **1202. Underground Ducts**

In areas where the distribution system is underground, the Company will furnish, install and maintain the necessary duct line within the limits of the public way, and the customer will be required to furnish, install and maintain any extension of the duct line beyond the street line to the service entrance equipment in his building. The customer will be responsible for the cost of the work within the street line and the cost of the extension.

### **1203. Underground Conductors**

The Company will furnish, install the necessary conductors from the distribution system to the service entrance equipment. The customer will be responsible for the cost of the conductors.

### **1204. Company Conversion to Underground Distribution System**

In cases where the Company converts from an overhead to an underground distribution system, the customer will be required to bear the cost of rearranging his service entrance to accommodate the underground connection.

## **SECTION XIII**

### **SERVICE DISCONNECTING MEANS**

#### **1301. General**

Each set of service entrance conductors shall be provided with an approved type of disconnect for disconnecting all ungrounded conductors from the source of supply. In multiple occupancy buildings, where required by the NEC or as specified by local ordinances, a main service disconnecting means shall also be installed so as to completely disconnect all ungrounded interior wiring at one point.

#### **1302. Capacity**

The service disconnecting means shall be of a type and size approved for such use by the NEC, with a minimum capacity of 100 amperes, three-wire, but not less than the load to be carried as determined in accordance with NEC Article 220 (see Section VI, Article 607).

For a one-family dwelling, the service disconnecting means shall have a minimum rating of 100 amperes, three-wire, where the initial computed load is 10KW or more.

The minimum size service disconnecting means for a temporary service shall be 20 amperes. (Revised November 2, 1987.)

#### **1303. Location**

The disconnecting means shall be located at a readily accessible point, as near as possible to the point of entrance of the service conductors into the building. It is recommended that the service disconnecting means should not be located in bathrooms, or other normally locked areas.

#### **1304. Sequence of Disconnecting Means and Meter Equipment**

The location of the service disconnecting means shall be on the load side of the metering equipment (meter-switch-fuse sequence).

**Exception 1**—In multiple meter locations where the NEC requires a main disconnect, the sequence shall be main disconnect-meter-switch-fuse.

**Exception 2**—The Company may allow a switch-fuse-meter sequence in switchgear. Prior Company approval is required.

When NFPA regulations require fire alarm systems to be tapped into the line side of the main disconnect, then the metering shall be on the line side of all disconnecting means. Meter-fire alarm-switch-fuse sequence.

#### **1305. Metered and Unmetered Wires**

All unmetered wires, except those used as service entrance conductors in cable, shall be run in steel or aluminum conduit, steel electrical metallic tubing, suitable rigid non-metallic conduit or sealable standardized metal troughs as permitted by the NEC. Metered and unmetered wires shall not be run in the same conduit, raceway or gutter.

#### **1306. Type of Disconnecting Means**

The minimum size and type of service disconnecting means is a 100 ampere switch or circuit breaker, which shall be approved for such use by NEC and meet the following requirements:

1. Externally and manually operable, and shall indicate whether it is in the open or closed position.
2. Solid neutral type with no overcurrent device in the grounded service conductor.

3. Approved for service equipment use, and for the prevailing conditions, by Underwriter's Laboratories, Inc., or other accepted testing laboratory.

The Company reserves the right to specify, and seal, the type of disconnecting means that must be used for any particular installation, as a general safety measure and protection against tampering by unauthorized persons.

For small or special installations which supply limited loads, the disconnecting means may be rated less than 100 amperes in compliance with NEC and approved by the Company.

## **SECTION XIV. METERING EQUIPMENT**

### **1401. General**

The customer shall furnish Company-approved meter mounting devices. All such enclosures must be sealable with padlock type seals and such seals shall be removed only by an authorized employee or a person authorized by the Company. All meter sockets, meter troughs, and meter modules shall have the Underwriter's Laboratory Label, or other accepted laboratory label. The Company will furnish and install all meters.

When required, current transformers, potential transformers, test switches, and control cable will be furnished by the Company for installation by the contractor in an enclosure furnished by the Company or in the customer's service equipment. Secondary electrical connections to the meter will be done by the Company. All metallic equipment used for metering purposes shall be properly grounded as required by Article 250 of the NEC.

A meter socket (enclosure) shall be permanently and solidly mounted before the meter will be installed. All outside meter enclosures must be secured by screws, #12 minimum, which are stainless steel or zinc or cadmium coated (no washers allowed). Whenever a meter enclosure is mounted on siding (no backboard) use of screws that accommodate a Phillips and/or slotted style screwdriver is requested. Self contained meter sockets attached to a building shall not be secured such that the cables will prevent subsequent access to the mounting screws. This requirement is to allow for future "floating" of the meter socket.

### **1402. Meter Sockets**

Socket meters will be standard for all single-phase and three-phase installations where the load does not exceed 200 amperes and 400 amp 120/240 single-phase and 120/208 three-phase. All poly-phase and 400 amp single-phase meter sockets must have a single handle-operated manual bypass which locks the meter blades in the socket jaws. The manual bypass operating mechanism must be visible when the meter is installed. It must not be possible to override the bypass by replacing the cover or sealing ring when the operating mechanism handle is in the bypassed position. Manual bypass operating mechanisms will be allowed on 200 amp single-phase meter sockets when there is a disconnect within sight of the meter socket.

None of the following features are allowed, and shall cause rejection of the meter mounting device and refusal to connect service until an acceptable device is installed.

- 1. Automatic by-passes.** Automatic by-passes are not permitted.
- 2. Horn-type by-passes.** Horn-type by-passes are not permitted.
- 3. Aluminum sealing rings.** Aluminum sealing rings are not permitted as a substitute for stainless steel sealing rings.

A special metering socket, which shall accept a fifth terminal at the 9 o'clock position, is required for a network service consisting of any two-phase conductors and a ground conductor obtained from a three-phase, four-wire system.

### **1403. Meter Location**

The location of all metering equipment shall be designated by a Company representative, and selected with regard to accessibility for reading and maintenance. Customers having wiring installed for metering without first obtaining Company approval do so at the risk of having to relocate same. Meters will always be located outdoors. Indoor meter installations will be allowed only when special advance approval has been obtained from the Company's representative.

### **1404. Clearance for Metering Equipment**

Not less than three feet of clear, unobstructed space shall be provided and maintained under and in front of all metering equipment. In the case of unguarded moving machinery, changes in floor level, etc., a distance of four feet shall be provided in front of all meters. A clearance of at least twelve inches shall be provided between the nearest obstruction above and on each side of any single meter or group of meters. Clearance measurements shall be made from the sides, top or bottom of the meter enclosure.

The Company shall be consulted in all cases where meter mounting space is limited. When meters are mounted in a group, special layouts shall be obtained from the Company before proceeding with equipment installation. Sufficient clearance shall be provided in choosing the location of all metering equipment so that the doors of all cabinets can be completely opened.

#### **1405. Identification of Meters**

Wherever there is more than one meter installed on any one premises, the area served by each meter, such as room or apartment number, floor or other area, shall be neatly and plainly marked on the service entrance equipment and, if the meter is mounted outdoors, on the top of the meter enclosure—**not on the cover**—with paint. Where meters may be stacked, the identification must be made on a permanent part of the equipment as near as possible to each meter. Do not put identification on the covers, as covers can be removed and interchanged.

#### **1406. Multi-Connection Points**

Single terminals of meters, or meter connection blocks, shall be used as a connection point for one conductor only. Where multiple conductors are used, terminal lugs or copper bus sections suitable for attaching to the source shall be furnished and installed by the contractor (see Drawing 2704a).

#### **1407. Installation of Meter Devices**

All meter sockets and mounting devices shall be rigidly secured with screws, to provide a clear space suitable for mounting the meter in a level and perpendicular position with meter rotor shafts plumb. Meter heights must not be over (5) five feet or less than (4) four feet from ground or floor level to the top of the meter. Exceptions to meter heights will be allowed only where special conditions exist (see Section XIV Article 1410).

#### **1408. Outdoor Meter Installation**

Socket type metering shall be used on all new self-contained outdoor meter installations, all reestablishments of inactive or abandoned services, all services to which alterations are being made, and those services that are considered unsafe by the Company's representative. The electrical contractor will install the meter socket furnished by the customer, which must be of a type approved by the Company's Meter Department. Approved fittings and gaskets must be used for all connections.

Without the approval of the Company, outdoor meter installations shall not be enclosed or obstructed in any manner.

#### **1409. Pole Mounted Meters**

Meters generally will not be allowed on Company poles. Meters installed on customer's poles should be done only after consulting with the Company's representative. Where more than one meter is or may be required in the future on this same pole, other arrangements may be necessary (see Drawing 2706).

#### **1410. Prefabricated Meter Centers**

Prefabricated meter centers, which are UL approved for the application and meet the following requirements, may be used for indoor or outdoor multiple meter installations:

1. The maximum number of meters allowed in vertical arrangement shall be four (4).
2. Minimum distance from floor level to top of bottom meter is 18 inches.
3. Maximum distance from floor level to top of top meter is 66 inches.

#### **1411. Meter Pedestals**

Meter pedestals used with underground services must be approved in advance by the Company. The meter pedestal must be installed so that the top of the meter will not be more than five feet or less than four feet above the finished grade or ground line (see Drawing 2715).

#### **1412. Multiple Occupancy**

The location of all metering equipment shall be designated by a Company representative, and selected with regard to accessibility for reading and maintenance. Customers having wiring installed for metering without first obtaining Company approval do so at the risk of having to relocate same. Meters will always be located outdoors. Indoor meter installations will be allowed only when special advance approval has been obtained from the Company's representative.

#### **1413. Instrument Transformer Metering**

Installations rated in excess of 200 amperes or 400 amp 120/240 or 120/208 three-phase, shall be arranged for instrument transformer metering. In such cases, the Company will furnish the necessary instrument transformers and meter connection box of either the indoor or outdoor type with test switch. The electrical contractor will install the cabinets, meter box, and 1¼" steel or IMC

conduit from each set of remote current transformers to each meter box for the secondary metering conductors. Conduit should be no more than 40 feet in length. Conduits underground should be 1 1/2" rigid or IMC (see Drawings 2714, 2715 and 2718.)

When the service equipment consists of prefabricated metal-enclosed cubicles or switchboards designed for built-in instrument transformers, the customer shall obtain specifications from the Company for the transformers which the Company will furnish. The cubicles or switchboard shall then be manufactured to accommodate the specified instrument transformers.

On installations where the neutral conductor does not pass through the transformer compartment, an insulated neutral conductor, not smaller than the service grounding conductor, shall be brought into and connected to an insulated terminal in the transformer compartments. Metered and un-metered busses or conductors shall be separated by barriers. The Company shall always be consulted before this type of metering transformer arrangement is specified.

#### **1414. INSTRUMENT TRANSFORMER CABINETS**

For installations where the service voltage does not exceed 480 volts, cabinets for instrument transformer ( C.T.s ) shall be furnished by the customer and be constructed and installed so as to meet the requirements of NEC Article 312. Cabinet size will be as specified by Versant Power (the Company)

All cabinets shall be constructed so the cover can be readily opened. The cover shall be attached with hinges. The cabinet must be mounted so that the cover does not interfere with installation or maintenance work. All cabinets shall be weatherproof or rain tight and be installed outdoors.

Provision must be made so that the cabinet can be securely sealed with a padlock type meter seal and padlock when the cover is closed. No customer owned devices other than conductors and connectors will be allowed in the C.T. cabinet.

Instrument transformer cabinets with mechanical connectors (Similar to Milbank S1855-O or Cooper B-Line 78205139309) which support bar type current transformers are required.

All line conductors, including the neutral, shall pass through the instrument transformer cabinet. A neutral connector shall be installed by the customer to provide for the connection of the metering neutral. The customer shall mount all instrument transformers and make all primary connections. Secondary metering wires are furnished and installed by the Company.

A separate 1 ¼" minimum metallic conduit for secondary wires between instrument transformer cabinets and meter enclosures shall be furnished and installed by the customer. This conduit shall be either rigid metal conduit (RMC) or intermediate metal conduit (IMC) and be properly bonded to provide an effective ground. The maximum run of this conduit will be 35 feet.

The top of the cabinet shall be between 5 feet and 6 feet from finish grade.

## **SECTION XV**

### **CUSTOMER EQUIPMENT**

#### **1501. General**

Electric service must not be used in such manner as to cause unusual fluctuations or disturbances in the Company's supply system, and in the case of violation of this rule the Company may discontinue service, or require the customer to modify his installation and/or equip it with approved controlling devices.

#### **1502. Motors**

Individual motors in excess of 5 hp and multiple motors totaling greater than 10 hp will not normally be served by a single phase service. Review by T&D Engineering is required if attempting to serve motors larger than the aforementioned by a single phase service.

The Company reserves the right to refuse service to polyphase installations totaling less than 10 hp. Furthermore, it is required that T&D Engineering approve all installations utilizing motors in excess of 5 hp

#### **1503. Power Factor Correction**

All customers whose rated capacity of electrical equipment exceeds 50 horsepower shall maintain an average power factor of 85 per centum for each month. If such power factor is less than 85 per centum in any case, the Company may request the customer to make such changes in or additions to his/her equipment as will bring the power factor to at least 85 per centum. If such changes or

additions are not made within three months after such request, then until such changes or additions are made, the monthly bill, so calculated under the rate applicable to the particular service, shall be multiplied by one of the following constants:

<b>Average Monthly Power Factor</b>	<b>Constants</b>
.85 to .81	1.00
.80 to .76	1.02
.75 to .71	1.05
.70 to .66	1.08
.65 to .61	1.12
.60 to .56	1.18
.55 to .51	1.24
.50 or less	1.33

The use of equipment by the customer for power factor correction must conform to requirements of the Company as to electrical characteristics of equipment and its operation and control. The customer may be required to limit the size of his static capacitor installation or to maintain effective control of his capacitors or other corrective equipment in order to prevent the use of such equipment from causing excessive voltage at the service. Corrective equipment installed by the customer must be located on the load side of his service disconnecting device.

#### **1504. Arc Welders**

Before service is connected the Company will require a customer to obtain specific permission from the Company for the installation of an A.C. arc welder. The Company reserves the right to refuse the supply of service to A.C. arc welders which cause interference or disturb the quality of service to other customers.

#### **1505. Antennas**

Antennas and satellite receivers shall not be erected over or under the lines of the Company or attached to poles with electric service, as this practice would create a serious hazard.

### **Versant Power's PLUS Program**

PLUS—Private Line Utility Support—gives you complete coverage (materials and labor) for repair/replacement of any broken or worn out parts of your private electric line. At a monthly cost per pole, you can purchase worry free protection from large unexpected expenses due to storms or other damage causing incidents. Contact Versant Power to inquire about this unique program, and upon a satisfactory inspection of your line, you will be enrolled in our PLUS program. More about the PLUS program can be found at [WWW.VERSANTPOWER.COM](http://WWW.VERSANTPOWER.COM)