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SECTION 1: GENERAL RULES

Section 1.1 Application for Service - Contract

Electric service shall be provided upon written application, such application being a contract for service, subject to the Electric Service Regulations of the District. Rates shall be as detailed in the applicable Rate Schedule.

Section 1.2 Compliance with Codes

All Customer electrical equipment and wiring must be in accordance with the current edition of the National Electrical Code (NEC) at the time of installation. In addition, the Customer must comply with State, County and Municipal Codes.

Section 1.2.1 Conflict Resolution

Any conflict between this policy and the NEC or other Codes shall be resolved by the Manager of the District.

Section 1.2.2 Variances

When conditions exist that renders the application of any particular requirement to be impracticable or impossible, a variance may be granted. A variance will not be granted that is justified only by cost savings. Variances to these Electrical Service Requirements can only be issued by the Chief Engineer, or the Operations Manager of the District.

Section 1.3 Inspection Approval Required

No new service connection will be made unless Contractor's or Customer's electrical work permit is attached to the service entrance or service switch and approved by the proper electrical inspection authority, in accordance with RCW 19.28.210. and District Policy.

No increased, relocated or otherwise altered service will be reconnected unless Contractor's or Customer's electrical work permit is attached to the service entrance or service switch.

Section 1.4 Space and Protection Provision by Customer

The Customer shall provide sufficient space and exercise proper care to protect District property on his/her premises. In the event of loss or damage to District property on the Customer's premises arising from neglect, carelessness, or misuse, the cost of necessary repairs or replacement will be billed to the Customer.

Section 1.4.1 Safe Access to Facilities

The Customer shall keep the area around all meters, transformers, and other District facilities on the Customer's property free of vegetation, health and safety hazards, debris, and obstructions, to ensure clear and safe access at all times.

Section 1.5 Valid Address Required for Service

Before a meter can be installed, the Customer must obtain a valid service address from the proper agency. Apartment unit or space numbers are considered part of the valid address. Certain exceptions may be approved by a District representative. Examples are services to highway lighting, signs or irrigation pumps.

Section 1.5.1 Clear Permanent Meter Marking

Each meter position and each service switch or breaker shall be clearly and permanently identified by the Customer to indicate the particular location supplied by it. Meters will not be installed nor service energized until marking is complete.

Examples of clear, permanent markings are:

- 1) An identification plate attached by screws or rivets
- 2) Commercially engraved tags with a raised relief surface
- 3) Waterproof paint applied with stencil

Clear identification means an apartment/store space letter or number, or street address/number. The store name may be included, however, it does not constitute a clear designation in itself.

Section 1.5.2 Owner Responsibility for Marking Meters

It is the responsibility of the Owner or Manager of multi-unit complexes to notify the District of any changes in unit or apartment numbering so that the District's personnel may verify metering circuits. Such notice must be given in writing to the District to permit re-designation of meters serving the premises. The Owner or Manager will be responsible for renumbering both the premises and meter sockets prior to dispatch of District personnel.

The Owner or Manager shall be present when the building is initially energized to verify that the proper service is energized as the District's connections are completed.

SECTION 1.6 LOAD BALANCE WITHIN 10 PERCENT

The Customer or his Contractor shall connect his equipment to keep the load, under normal operating conditions, balanced within plus or minus 10% of the average load across the phase wires.

Section 1.7 Customer Equipment on District Poles

No equipment, devices or wiring, other than service entrance equipment belonging to a customer, shall be attached to District-owned poles except by special permission from the District, and any such attachment shall be done strictly in accordance with District specifications.

Section 1.7.1 Meter Location and Rewiring

Meter locations required for new service or customer rewire work will conform to this policy even if other existing meters on the premise may not conform. Rewiring work shall include the upgrading of Customer metering equipment and requires that all new or modified equipment be installed and located in accordance with the requirements of these Electric Service Requirements. Rewiring work, as used in this section and other sections, does not apply to maintenance repairs and/or replacement of defective customer equipment with the same or similar equipment.

Section 1.7.2 Cost of Relocation

When any changes, alterations, or additions are made on the Customer's premises that violate these requirements, the Customer shall pay the cost of relocating District facilities.

SECTION 1.7.3 FAILURE TO COMPLY WITH THESE REQUIREMENTS AND ACCESS POLICY

Failure to comply with the current District Electrical Service Requirements, Regulations or Facility Access Policy may result in service to the Customer not being connected or discontinuation of an existing service.

SECTION 2: SERVICE WIRING

Section 2.1 General

Section 2.1.1 Availability of Service

The availability of service for the equipment to be used shall be determined from the District before proceeding with the wiring or the installation of equipment.

Section 2.1.2 Phase and Voltage To Be Supplied

The District will advise the Customer of, and supply him with, the most suitable phase and voltage available upon established circuits. Three-phase, 3-wire services are not allowed by the District.

Section 2.1.3 Fault Current

The District will advise the Customer of available fault current either at the transformer or the metering point. It will be the Customer's responsibility to provide service equipment rated for the available fault current. In no case shall Customer utilize "cable protectors" ahead of the meter to limit fault duty.

Section 2.1.4 Service Refusal

The District reserves the right to refuse to connect, or render service to, any applicant or any Customer where such connection and/or where the applicant or Customer has not complied with State, Municipal or District regulations concerning the rendition of service.

Section 2.1.5 Access to Premises for Maintenance

The District shall have the right, through its agents or employees, to safely enter the property of the Customer at all times for the purpose of reading, inspecting, repairing, or removing metering devices, appliances, and wiring of the District, trimming or removing trees and brush around meters, transformers, or other equipment that may interfere with the safe and efficient operation of the utility system, maintenance of utility lines, both overhead and underground, and inspection, replacement, installation and removal of District facilities.

Section 2.1.6 Protective Devices

Suitable protective devices on the Customer's premises may be required whenever the District deems such installation necessary to protect its property or that of its other Customers. See Drawing #35 regarding guard posts for padmount equipment.

Section 2.1.7 Conductor Common Legs Marked

All service conductors provided by the Customer will be marked by the Customer or Contractor with colored tape to identify common legs of the service at the point of connection to District facilities. (See Drawings #21, 22, 23, 25, 26, 27 & 28).

Section 2.1.8 Overhead Service by District

Overhead service drops will be furnished and installed by the District and attached to a connection point acceptable to the District, provided by the Customer, on a Customer's facility. (See Drawings #1, 2, 3, & 4). In the case of metering on a District pole, the District will run the drop to the pole and connect to the customer's wiring thereon. The point of demarcation is the connections between the District service wire and the customer's service wire, near the weatherhead on self-contained metering installations and at the current transformer on C.T. metered installations (See Drawings #7 & 8).

Section 2.1.9 Underground Service Cable in Conduit by Customer

The Customer will install underground service conductors in conduit, 2" minimum diameter between District facilities and the point of metering in accordance with specifications contained in these Requirements. (See Chart #2)

Section 2.2 Service Supply Conductors - Overhead

Section 2.2.1 District-Provided Service Poles

The District will furnish and install service poles where they are required. Payment for service poles shall be as determined in Section 3--Line Extension Regulations of the Electric Service Regulations.

Section 2.2.2 Metering on Service Pole

In the case of metering on a District pole, the District will run the drop to the pole and connect to the Customer's wiring thereon. (See Drawings #7 & 8).

Section 2.2.3 Attachment Vertical Clearance

Service drop clearances shall comply with appropriate requirements of the Washington Administrative Code (WAC), National Electrical Safety Code (NESC), and the NEC. Service drop conductors shall not be readily accessible to physical contact. Changes, additions, and/or grading on Customer premises shall not cause clearances under and around service wires to be less than indicated herein. District shall be advised when clearance problems exist. In some cases,

Customer may be responsible for costs incurred to restore clearances. Improper clearance is reason for disconnection of service. (See Drawings #4 & 5).

Section 2.2.4 Service Conductor Clearances Above A Roof

The point of service attachment on the building shall be such that both the attachment and the lowest point of the drip loop will be at least 10' above finish grade. The attachment must be high enough to allow 15' of conductor clearance over driveways, and the point of contact should be within 2' of the weatherhead. Where necessary, approved structures to support service conductors and for reinforcement of a building structure to provide adequate anchorage for service drop, conductors shall be provided by Contractor or Customer. (See Drawings #2, 4, and 5). Conductors shall have a vertical clearance as appropriate for pedestrian and vehicular traffic on roofs as shown on Drawings #4 and 5 herein.

Exception No. 1: Where the voltage between conductors does not exceed 300 and the roof has a slope of not less than 4" in 12", a reduction in clearance to 3' shall be permitted.

Exception No. 2: Where the voltage between conductors does not exceed 300, a reduction in clearance above only the overhanging portion of the roof to not less than 18" shall be permitted if:

- (1) Not more than 4' of service-drop conductors pass above the roof overhang, *and*
- (2) They are terminated at a through-the-roof raceway or approved support.

Section 2.2.5 Service Conductor Clearance above Ground

Service drop conductors, where not in excess of 600 V nominal, shall have minimum clearance from final grade as shown on Drawing #4.

Section 2.2.6 Service Conductor Clearances from Openings

Service conductors shall not be installed beneath openings through which materials may be moved, such as openings in farm and commercial buildings. Overhead wires shall not be run such that they obstruct entrance to these building openings.

Section 2.2.7 Service Drop Attachment

The service entrance must be located where there is adequate material and strength for the District to attach its service drop. The attachment must have sufficient height to provide the required service drop and drip-loop clearances as specified herein. The attachment point must be accessible by ladder.

Preferred points of attachment are building studs or solid masonry at least 1' from a corner. Some trim and soffit boards are acceptable when substantially reinforced. Weatherhead attachments are acceptable provided adequate clearance from the roof is maintained.

Where a mast is over 26" tall or the service attached to it is over 100' long, the mast shall be guyed. (See Drawings #2 & 3 for details).

Section 2.2.8 Low Building Provision

When the building is too low to obtain proper clearance for the service wire attachment, Customer must provide an approved upright or service mast of rigid metal conduit of sufficient strength and height for the attachment of the service drop wires. Minimum acceptable mast shall be 2" galvanized steel conduit. (See Drawings #2 & 3).

Section 2.2.9 Multiple Service Entrance-Spacing

When more than one service entrance is provided on a building, the spacing between the service entrances should not exceed 24" without special permission. Consideration for exceptions would include:

- Fire pumps where separate service is required
- Emergency required standby
- Multiple occupancy buildings with limited space for service entrance
- Capacity requirements in excess of 2000 ampere per service
- Large Area Buildings
- Different electrical characteristics (phase, voltage, phase, etc.)

Section 2.2.10 Service Entrance Clearance From Adjoining Property

Thirty-six inches is required as the minimum permissible clearance between the front of metering equipment and/or meter and the adjacent property line.

Section 2.2.11 Rewiring Existing Service Entrance

The service entrance from an existing supply bus on a building may be changed or increased in capacity at its present location if it is in compliance with existing District Requirements.

Section 2.3 Underground Service Supplied by Customer

The Customer shall provide and install service cable and conduit in a trench also provided by the Customer. See Section 8 for trench requirements.

Section 2.3.1 Underground Service Cable “Tails” by Customer

Service cables shall be provided by the Customer in lengths adequate to extend up the pole to the secondary or the transformer terminals (including street crossings). (See Drawing #6). For padmount transformers or pedestal sources, sufficient tails shall be left to reach the appropriate connectors. (See Drawings #31, 32, & 33).

Section 2.3.2 Lateral Not Enclosed

Service entrance provided from underground distribution systems shall be located and terminated in accordance with District design standards. The service lateral shall not be enclosed within or covered by any alteration, facade, or addition to the building. The meter conduit risers may be located within footing, foundation and wall of the exterior wall of any building that is constructed with a flush-mounted meter base.

Section 2.3.3 Cables Rated for Service Environment

Cables to be installed in conduit or buried in direct contact with the earth shall be a type designated by the Washington State Department of Labor and Industries or NEC for the application (e.g. direct buried in dirt, in conduit, exposed to UV).

Section 2.3.4 District Standards for Cable Sizes and Types, Number of Runs and Conduit Sizes

See Section 11, Charts 1, 2 and 3.

Section 2.3.5 Cable Connection By District at District Facility

Underground service runs provided and installed by the Customer or Contractor will be connected by the District, to District provided facilities. For all conductor sizes larger than 350 MCM, the customer or the customer’s contractor will furnish the District with 2-hole NEMA spades, 1-3/4” in width for each conductor to be terminated at the District’s transformer. (or as directed by District Rep)

Section 2.3.6 Cable Connection By Customer at Service

The Customer or Contractor will connect service cables at the point of metering.

Section 2.3.7 Maintenance of Underground Services

A) Residential Service Maintained by District

The District will maintain all underground **residential** services, installed to District specifications, up to the point of metering after a one-year warranty period. After the District accepts the installation, and after a one-year warranty period, the District will be responsible for the service up to, but not including, the meter base lugs on self-contained meter installations and at the current transformer on C.T metering installations.

Whenever a Customer requests changes to the service that affect the maintenance responsibility, the Customer will be so advised.

B) Apartments and Condominiums

The underground service or services to any multi-unit residential structure or structures containing more than 4 individually metered dwelling units, owned and operated as a single commercial entity, shall be classified as **commercial** with respect to the requirements of this section.

C) Commercial and Industrial Services Maintained by Customer

All underground services to **commercial** or **industrial** customers will be maintained by the customer or the customer's contractor at the customer's expense. The District will assist, by request, in the maintenance by providing available resources at the customer's expense.

Section 2.3.8 Trench Inspection by District

Residential service conduit on the source side of metering must be inspected and approved by a District representative after installation in the trench, but prior to backfill. (See Drawings #30, 31, and 32 for details).

Section 2.3.9 Splices Not Allowed

Splices are not accepted on new residential cable installations on the source side of metering.

Section 2.3.10 Residential Service Cable Burial Depth

Underground **residential** service to the point of metering shall be installed at a depth of 42". Where solid rock or obstructions prevent compliance with this depth requirement, reduction in depth and associated additional protective requirements shall be determined by a District representative. (See Drawing #30)

Section 2.3.11 Riser Conduits by Customer

All pole risers shall be installed on poles utilizing standoff brackets as indicated on Drawings #6, 7, and #8. The Customer or electrician shall attach only the first

10' section and the District will complete the installation. The Customer or electrician shall provide the remainder of the material and conductor to complete the installation as shown. If a conduit riser exists on a pole, the new riser must be installed using existing standoff brackets and mounted adjacent to the existing conduit.

Riser pole conduit shall be rigid galvanized metallic conduit or schedule 80 PVC for the lowest 10' section. Conduit above the lowest 10' section may be schedule 40 PVC. Nonmetallic conduit must be UV resistant.

Riser conduit on a building ahead of the meter base shall be rigid galvanized metallic or schedule 80 PVC. (See Drawing #11).

Section 2.3.12 No LB Fittings in Service Conduit

Conduit installations for District maintained cables shall not include conduit elbow fittings (LB). Standard conduit bends must be used. Bend radius should be 24" or larger. (See sweep specifications, Chart #1.)

Section 2.3.13 The Riser Bend

The Riser Bend shall be provided and installed by Customer between the continuous conduit and the pole riser. The bend shall be PVC Schedule 40 or Schedule 80, rigid non-metallic electrical conduit. The bend shall be installed at the time of conduit installation. The District will extend conduit up pole. The proper location of the Riser Bend on the pole (quadrant) shall be obtained from District representative. Where the Riser Bend is to be extended to a location requiring pole setting, replacement, or alteration by the District, such extension shall not be made until the pole work is completed by the District.

Section 2.3.14 Conduits Into Existing Transformers

Conduit into existing transformers or secondary pedestals is to be installed by the District. The Customer or Contractor shall install conduits for new commercial or industrial installations into the secondary area of the transformer site prior to the new transformer installation.

Section 2.3.15 Conduit Sealing for Below-Grade Locations

Termination of secondary distribution conduits within the building below grade is not a preferred installation due to water seepage problems. It has proven to be very difficult to insure long-term water tightness of the conduit and cables through the building wall. It is the Customer's responsibility to provide drainage and sealing as needed to prevent damage to the electrical facilities and other property inside the building.

SECTION 3: METERING

Section 3.1 General

Section 3.1.1 One Main Meter For Service Of Same Type

The District will furnish and install only one main watt-hour meter to register all energy of the same type of service supplied to Customer at any individual premises, unless accuracy of measurement, engineering, safety reasons, rates, or legal provisions require the installation of more than one meter except as provided for in Section 3.1.6 below. There may be Customer expense for additional requested meters.

Section 3.1.2 Customer Provides Meter Mounting Equipment

The Customer is required to purchase, install and maintain appropriate meter-mounting equipment in accordance with the requirements of the latest edition of these Requirements.

Section 3.1.3 Meter Mounting Equipment Defined

Meter-mounting equipment includes meter sockets, pedestal supports with concrete pad as required, current transformer cabinet, switchgear, landing pads, weatherhead, conductors, conduits, and supports as appropriate for the service. See Section 3.6 for additional details.

Section 3.1.4 Series Metering Not Allowed

Meter shall be located to directly measure Customer load. Series (subtractive) metering will not be allowed unless specifically approved by the District.

Section 3.1.5 Failure To Install Meter-Mounting Equipment

Failure to install meter-mounting equipment by Customer/Contractor meeting these requirements may lead to the delay of service until these requirements are met.

Section 3.1.6 Individual Meters Required

The District requires the installation of individual electric meters on all units in multi-occupancy residential and commercial buildings and mobile home parks, subject to certain exceptions.

Section 3.1.7 Adding New Meters To Existing Service

New meters may be added to the existing service subject to the ampacity limitations of the service entrance conductors or service equipment. If the added loads served from the new meters require rewiring, then all (new and existing) meters shall be located in accordance with the District's current meter location policy.

Section 3.1.8 Demand Metering

Demand metering shall be installed on services when total connected load is 100 kilowatts or more and on all reactive metered accounts.

Section 3.1.9 Reactive Metering

Reactive metering shall also be installed on motor loads exceeding 50 horsepower or when the District determines the power factor of the load would be less than 95 percent lagging.

Section 3.1.10 Customer Monitoring

In the event that demand Customers wish to monitor and control kWh use, the District, as engineering permits, will provide kWh pulses to the Customer equipment. District will own, install and maintain the output device. All pulse metering shall be provided on a cost basis. The end-of-interval timing pulse is not provided.

Section 3.1.11 Grounding of Metering Equipment

All metering equipment shall be bonded to ground rods installed at the location.

Section 3.2 Meter Locations

Section 3.2.1 General

In general, all electric meters must be located outdoors at the point closest to the service drop or lateral termination except as defined below. This policy applies to all new installations and rewire work where the meter and/or service equipment is involved. All meters shall be located and mounted in devices in accordance with the requirements of this manual, and acceptable to the District.

Meters shall not be enclosed or the installation modified in such a way so as to impede safe and convenient access to the meter and associated equipment. Nothing shall hinder or prevent the inspection, removal or installation of meters and other metering equipment, meter rings, meter seals or other locking devices.

Section 3.2.2 Location of District Facilities

The District shall determine the location of the remote metering pedestal, service entrance, service pole, or other metering equipment prior to installation. Customers who install wiring or equipment without an approved location from a District Representative shall be at risk of having to change the service location to conform to the requirements of the District. This requirement applies to all new installations and future modifications or repair work where the meter and/or service equipment is involved.

Section 3.2.3 Location Not at Rear of Residence

Residential meters may be located remotely or attached to the residence as shown on Drawing #12. Meters shall not be located at the rear of houses or buildings without pre-approval from a District Representative and safe and unrestricted access is provided at all times from an alley or street along the property line directly behind or on either side of the house or building. (See Electrical Requirements Drawing - #12)

Section 3.2.4 Meter on Outside Building Line

Installation of meters on buildings shall be on the outside lines of the building and shall be grouped in such a manner that a single service drop may serve all meters.

Section 3.2.5 Meters Shall Not Be Enclosed

Meters shall not be enclosed in garages, carports, breezeways, porches, or such locations where subsequent additions, rewiring, or remodeling could enclose the meter.

Section 3.2.6 Meters Shall Be Grouped

Individual meters associated with a single structure or facility shall be grouped at locations approved by the appropriate District representative. The number of meter centers in an apartment building shall not exceed 1 for 3 floors without District approval.

Section 3.2.7 Safe Meter Location Required

The Customer shall furnish a location to install the metering equipment that is acceptable to the District, not subject to excessive grade, and that will provide long-term, safe access to District employees, be free from vibration, corrosive atmosphere, abnormal temperatures, dust, water, etc.

Section 3.2.8 Meters Shall be Readily Removable

All meters shall be readily removable (i.e.: not plastered in or built in). The surface of the meter base shall not be recessed behind the exterior wall surface. A meter installed in any alley or driveway must be flush mounted on the wall and protected adequately to prevent damage from vehicular traffic. See Drawing #2.

Section 3.2.12 Manufactured and Mobile Home Service location

The National Electrical Code distinguishes between Mobile homes and Manufactured homes for the purpose of service equipment (NEC 550-32).

Section 3.3 Mounting Heights and Clearances

Section 3.3.1 Drawings

Meter mounting heights and clearances are shown on Drawings #7, 8, 10, 11, 13, 14, 15, 16, 17, 24, 25, 26 and 27.

Section 3.3.2 General

The Customer shall maintain clear access to and clearance in front of meters and metering equipment for District employees at all times for readings, testing, changing, removing, inspecting and servicing such equipment. The clear space in front of the meter equipment shall be a minimum of 36" deep, and as wide as the equipment or 36", whichever is greater; and to a minimum height of 6'-6" or the top of the equipment, if greater.

All meters shall be surface or flush mounted and not recessed. A minimum side and overhead clearance of 18" shall be maintained from the center of the meter opening, or any of the openings contained in a multiple meter socket.

Clearance, clear access, and working space shall be free of obstructions such as: piping, ventilating ducts, tanks, steps, rubbish, storage shelves, drums, pumps, air conditioning equipment, decks, chimneys, down spouts, building projections, and other equipment.

Section 3.3.3 Single Socket Meters

Except as otherwise stipulated by the District, individual meter sockets shall be mounted such that the center of the meter opening is between 5'-0" and 6'-0" above grade. (See drawings 4, 5, 7, 8 and 11)

Section 3.3.4 Single Meter Pedestals

Underground supplied individual meter pedestals shall be mounted such that the center of the meter opening is between 3'-0" and 4'-0" above grade. (See Drawings #14, 15, 16, and 17).

Section 3.3.5 Multiple Meter Sockets

Multiple meter sockets shall be arranged so that the minimum vertical distance between meter openings is 10" and the minimum horizontal distance is 8". Vertically grouped multiple meters shall be installed such that the top meter(s) are not more than 6'-0" from center of the meter opening to grade, nor the bottom meter(s) less than 3'-0" from center of meter opening to grade. (See Drawing #24).

Section 3.3.6 C.T. Meters Mounting Height

Current transformer rated test switches, phase shifting transformers, and recorders shall not be less than 24" above finished grade or floor immediately below the socket with the reference point the bottom of the device in question.

Section 3.3.7 Protect Meters From Hazards

Meter sockets and enclosures shall not be elevated to avoid hazards but must be protected from pedestrian and vehicular traffic or parking hazards by Customer. (See Drawing #35 regarding guard posts).

Section 3.3.8 Meters More Than 6' Above Grade

If, as a result of an action of the Customer that causes the meter to become more than 6' above grade and in the opinion of the District it is feasible and preferable to lower the metering equipment to a location between 5' and 6' above grade, the metering equipment shall be lowered at the Customer's expense. With approval of a District representative, a permanent meter access platform and steps with a skid-free surface may be installed by the Customer that meets or exceeds the current local Uniform Building Code (UBC). Installation and maintenance will be at the Customer's expense. After construction, the center of the meter must be between 5' and 6' above the surface of the platform as shown on Drawing #13.

Section 3.3.9 Platforms For Flood Areas

In flood areas, the bottom of the meter device must be raised a minimum of 3' above the highest water line on record. If necessary to raise a meter more than 6' above grade, a permanent platform and steps with a skid-free surface shall be installed by the Customer that meets or exceeds the current local UBC and maintained at the Customer's expense. A platform constructed 3' or more above grade must have a secure handrail installed on the steps and platform that meets or exceeds the local UBC. After the platform is constructed, the center of the meter must be between 5' and 6' above the platform surface. A District Representative must be consulted for approval prior to construction. (See Electrical Service Requirements - Drawing # 13)

Section 3.4 Access To Meter Equipment

Section 3.4.1 Meters Not Enclosed

Meters shall not be enclosed or the installation modified in such a way so as to impede safe and convenient access to the meter and associated equipment. Nothing shall hinder or prevent the inspection, removal or installation of meters and other metering equipment, meter rings, meter seals or other locking devices.

Section 3.4.2 Paths to Meters Clear

All pathways providing access to any meter shall be a minimum of 3' in width and shall be kept clear of all obstacles and safety hazards, including, but not limited to, landscaping, brush, debris, obstructions, holes, aggressive or dangerous animals, etc.

Section 3.4.3 Walkway Over Open Ditch

Any pathway on the Customer's property that encounters an open ditch of any type over 2' wide shall have a flat, solid, and structurally stable walkway, 2' wide with a skid-free surface spanning the entire width of the ditch. All walkways over open ditches must provide a minimum of 1' clearance above any water or hazard in the ditch and must not sag more than 1" the entire length of the walkway when subjected to a weight of 300 pounds per square foot.

Section 3.4.4 Walkway With Handrail Over Open Ditch

Any walkway on the Customer's property constructed over an open ditch with a width and depth of 3' or more shall have a structurally sound handrail along the entire length of the walkway that will not flex more than 1/2" when subjected to a side load of 40 pounds per square foot along the entire length of the handrail.

Working space provisions of the NEC, the current issue, shall be adhered to at the time of installation.

Section 3.5 Security Requirements

Section 3.5.1 Metered And Unmetered Conductors, Same Wireway

Metered and unmetered conductors shall not be installed in the same wireways, pull box, enclosure, etc., except for at metering enclosures.

Section 3.5.2 Sealing Provisions of Service Equipment

Adequate provisions must be made for the sealing and security of meter, unmetered service equipment, and circuits. Covers and provisions for sealing of all unmetered service equipment, pull boxes, troughs, wireways, busways, etc.,

shall be provided by the Customer. Unmetered disconnects shall be sealed by the District and accessed only by the District and the Fire Department. Breakers and fuses will not be allowed in unmetered circuits except for flat rate service as specified elsewhere.

Section 3.5.3 Single Sealing Hasp for Covers

All meter base covers shall be equipped with 1 or more securely fastened hasp or stud for padlocking and sealing by the District. Depending on the cover size, non-sealable fasteners may be used to mechanically secure the cover in addition to the single sealing hasp. Covers that secure more than 1 meter shall not be allowed by the District.

Section 3.5.4 Unused Hubs or Openings Closed

Unused hubs or openings shall not be left open. Hubs shall be closed with a blank hub and knockouts with knockout closures, locked in place from the inside. Open, unused breakout, or knockout in meter sockets shall not be allowed.

Section 3.5.5 Watertight Meter Equipment

Raceway or conduit connections at top of meter device shall be watertight and the bottom knockouts closed as detailed in Section 3.5.4.

Section 3.6 Customer Furnished Meter-Mounting Equipment

Section 3.6.1 Socket Forms Allowed

Socket forms allowed or arrangements to provide correct metering for the various systems used in the District are illustrated in Drawing #18.

Section 3.6.2 Line-side Installation of Meter Sockets

Individual meter sockets shall be installed on the line side, ahead of Customer service equipment except as provided for elsewhere.

Section 3.6.3 Meters To Be Top Connected

The supply conductors to a self-contained socket shall be connected to the top terminals, and the load supply conductors shall be connected to the bottom terminals. (See Drawings #19, 20, 21, 22, and 23).

Section 3.6.4 Cable Lugs Rated for Conductor

Customer/Contractor shall provide appropriate cable lugs for the termination of District-maintained conductors. When aluminum conductors are used, the meter socket must be listed or approved and clearly marked by the manufacturer that it is acceptable for aluminum conductor.

Section 3.6.5 Oxide Inhibitor Used On Aluminum Conductor

When aluminum service entrance conductors are used in the meter device, the wire should be thoroughly cleaned with a wire brush and then liberally coated with oxide inhibitor.

Section 3.6.6 Meter Base Bonding

The neutral service conductor may be bonded to the meter base using the grounding screw or bonding terminal. The neutral service conductor may be continuous from the weatherhead to the switch box. (See Drawing #20).

Section 3.6.7 Automatic Circuit Closing Devices

Automatic circuit closing devices are not permitted in meter sockets.

Section 3.6.8 Surface Mounting of Meter Sockets

All meter socket equipment shall be surface mounted or flush mounted, not recessed.

Section 3.6.9 Meter Socket Cover Retaining Rings

Meter socket covers may be ringless or ring type. Meter retaining rings shall be screw type. Other types are not acceptable.

Section 3.6.10 Plumb and Rigid Mounting

Meter socket mounting must be plumb and rigidly supported to prevent movement, sway and vibration and able to withstand forces of the installation or removal of the meter. Meter sockets not mounted to a permanent structure must be supported in a manner approved by the District. Refer to Section 3.6.29 and Drawings #14, 15, 16, 17, and 26 for a preferred meter socket support.

Section 3.6.11 Bolt-in Meters

Bolt-in-meter bases, such as the Duncan 400, will not be allowed on any new service.

Section 3.6.12 Circular Cast or Drawn Sockets

Circular cast or drawn sockets may be used for temporary services only. (See Drawings #9 and #10 for Temporary Services).

Section 3.6.13 Five-Terminal Sockets Are Required For 120/208

Five-terminal sockets are required for 120/208-volt single-phase services rated up to 200 amperes. The fifth terminal shall be at the nine o'clock position. A #10 AWG wire from the neutral grounded conductor shall be connected to the fifth terminal. (See Drawing #18, socket type "B").

Section 3.6.14 Box or Trough Sockets

Box or trough sockets may be used in place of circular cast or drawn sockets and are required on 120/208 Volt, 3-wire and 3-phase services. This type of socket shall be limited to self-contained installations with service entrance conductors that do not exceed #2 AWG copper or #1/0 aluminum and the NEC current rating does not exceed 100 amperes. This type of socket shall also be used for instrument meter services but shall be a minimum of 4" deep. The exterior face of the meter base shall not be recessed behind the exterior wall surface.

Section 3.6.15 7-Terminal Meter Socket

Up to 200 ampere 3-phase services require a self-contained 7-terminal socket. The neutral tap must be connected to the terminal second from the right on the bottom or load side. The socket shall include a grounding electrode bonding clamp. (See Drawing #21).

Section 3.6.16 High Leg Connection

The high voltage-to-ground phase conductor of a 4-wire, delta, 3-phase service, shall always be connected to the right-hand terminal, top and bottom. (See Drawing # 21).

Section 3.6.17 Residential Single Phase, 400 Amps or Less

Residential single-phase services rated 400 amperes or less, shall be self-contained metering.

Section 3.6.18 Bypass Meter Bases

Lever and block or shunt type bypasses will be allowed and encouraged for all self-contained meter installations. Automatic bypasses are not allowed. See Section 3.6.7.

Section 3.6.19 Single-Phase Greater Than 400 Amp

Six-terminal sockets with room for test switches are required for single-phase services rated above 400 amperes (two current transformers located in C.T. enclosure). (See Drawings #25 and 26).

Section 3.6.20 Single-phase Commercial or Industrial Services Greater than 320 Amps

Single-phase commercial or industrial services rated over 320 amperes shall be CT metered.

Section 3.6.21 No Network or Three-Phase Class 320 Locations

Class 320-meter sockets shall **not** be permitted on any network (120-208 single Phase) or 3-phase meter installations. Class 320 single-phase sockets are not permitted on non-residential service of more than 320-amp rating unless approved by WA State Electrical Inspector.

Section 3.6.22 Three Phase Greater Than 200 Amp

Above 200 ampere 3-phase requires one 13-terminal meter base with room for test switch. (See Drawings #27 and 28).

Section 3.6.23 Combined Fuse/Meter Equipment

Where Customer disconnects and/or fuses are combined with the meter equipment, the cover for the meter and the cover for Customer access to the switch/fuse and load side wiring shall be separated such that District meter and line-side service compartments may be secured and sealed separately from Customer side. On such combination units, internal barriers shall be permanently installed to prevent access to meters and unmetered wiring via Customer compartments. On multi-meter equipment, the line-side cable terminal compartments shall have sealable and lockable covers separate from meter covers.

Section 3.6.24 Pedestal Meter Height

Pedestal meter height shall be not less than 36" or greater than 48" from finished grade with the reference point being the center of the meter. (See Drawings #14, 15, 16, and 17).

Section 3.6.25 Ground Rod Required

Every pedestal-mounted meter shall have at least one ground rod at the meter location with a minimum #6 copper ground wire connecting the ground rod(s) to the meter base. Two ground rods are required at the service panel location. (See Drawings #14, 15, 16, & 17).

Section 3.6.26 Meter Pedestal On Same Lot As Customer Served

When a remote meter pedestal is utilized, it shall be located on the same lot as the Customer being served.

Section 3.6.27 Parking Area Protection

When a meter pedestal is located in a parking area, it must be so located that parked vehicles will not restrict meter accessibility nor meter pedestal be damaged by vehicular traffic.

Section 3.6.28 Transformer-Meter Pedestal Clearance

The meter pedestal shall not be closer than 5' to the side of a padmount transformer without prior approval of the District. (See Drawings #14, 15, 16, & 17).

Section 3.6.29 Meter Pedestal Support

1. An assembled meter pedestal, which is composed of a meter socket and conduit or raceways, must be secured in a minimum 36"x 36"x 4" concrete slab. (See Drawings #14, 16, and 17) and supported by any one of the following:
 - (a) A single 1"x 4" galvanized steel channel
 - (b) Two pieces of heavy duty, 1-5/8" x 1-5/8" galvanized, uni-strut.
 - (c) Two pieces of 2" galvanized rigid conduit.
 - (d) Two pieces of 2" x 2" galvanized angle iron.
2. A one-piece, metal sleeve mobile home base assembly must be set a minimum of 2 feet in the ground and secured in a minimum 36"x36"x4" concrete slab (see Drawing #15).

The customer is responsible for maintaining the pedestal in plumb (vertical) position and to fulfill all other maintenance requirements. (See Section 3.6. 31)

Section 3.6.30 Meter Socket Maintenance by Customers

It is the responsibility of Customer/Building Owner to maintain, repair, and replace the meter mounting (socket) equipment in order to keep such equipment in a safe, secure, and useable condition. This shall include any and all maintenance that is discovered by the District during authorized activities including, but not limited to, meter testing, meter maintenance, meter change-out, meter disconnect or connect. When such equipment is subject to vandalism or damage, it is the responsibility of Customer/Building Owner to remedy the situation by protective measures or by changing meter location.

Section 3.6.31 The District Will Perform Emergency Repair

The District will perform emergency repair in an attempt to maintain or restore service and to protect the public safety. In the event that the hazard posed by the equipment is critical to safe operation, immediate disconnection of service may be necessary until corrections are made by the Customer/Building Owner. The District will notify Customer/Building Owner and the Inspection Authority when an unsafe meter socket and/or service equipment problem is found. The District will allow a reasonable time, normally not to exceed 30 days, for the repair or replacement of meter socket equipment, subject to the hazard involved. The District emphasizes the need for the responsible Building Owner to minimize safety hazards to all concerned by maintaining meter socket equipment and service compartments in a safe and good working order.

SECTION 4: CURRENT TRANSFORMER INSTALLATIONS

Current transformers (C.T.s) shall be furnished, installed, and owned by the District. Contractor installed 1" diameter rigid galvanized conduit shall extend from the terminal strip to the meter enclosure for instrument transformers located within 50' of the meter and 1-1/2" rigid galvanized conduit for instrument transformer located within 150' of the meter. For distances greater than 150', contact the District. No conduit outlet bodies or other non-sealable fixture shall be allowed in the rigid conduit between the C.T. enclosure and meter socket.

Instrument metering socket shall be grounded to the system neutral by a minimum of #10 solid or stranded copper green-colored insulated conductor for distances of up to 50' and #8 copper for distances of up to 150'. For greater distances, contact a District representative. Connections to be made by the District. The Contractor shall identify and tag all conductors indicating common phase and whether they are source or load.

Section 4.1 Ampacity Up To 800 Amps

Section 4.1.1 General

District C.T.s shall be mounted in Customer provided, owned, installed and maintained enclosure, compartment, box, or as part of panel boards as specified herein. The C.T. enclosure, compartment, box, etc., is dedicated for metering purposes only. Unauthorized access is not permitted. No Customer equipment or other wiring shall be allowed in or to pass through the dedicated space. C.T.s shall normally be installed on the source-side of the service disconnect - unless otherwise approved by a District Engineer.

Section 4.1.2 Outdoor Installation

All C.T.s located outdoors shall be installed in weather tight approved cabinets, except C.T.'s mounted on poles (See Section 4.1.11).

Section 4.1.3 C.T. Enclosure and Conduit by Customer

Customer provides the C.T. enclosure with landing pads rated for the service ampacity, installs line and load-side wiring, and provides necessary "meter conduit." The Customer shall terminate all service conductors to the current transformer landing pad. All connectors shall be bolted to the landing pads with stainless steel bolts, flat washers, Belleville washers and silicone bronze nuts as per detail on Drawing #33.

The high leg conductor of a delta service shall be marked with orange tape and connected on the right-hand side in the C.T. enclosure.

Section 4.1.4 District Instrument Transformers

The District provides and installs bar-type C.T.s. The District attaches the C.T.s to the landing pads mounted to the back of the current transformer enclosure and installs the metering conductors and test switches and installs the meter.

Section 4.1.5 The C.T. Enclosure Sizes Required

The C.T. enclosure sizes required shall be as listed below:

<u>Service Size</u>	<u>Minimum Enclosure size (H x W x D)</u>
400 Amperes Single Phase	24" x 36" x 11"
400 Amperes Single Phase	36" x 24" x 11"
600 Amperes Single Phase	36" x 36" x 11"
800 Amperes Single Phase	36" x 36" x 11"
400 Amperes 3-Phase	36" x 36" x 11"
600 Amperes 3-Phase	36" x 48" x 11" with Hinged Door
800 Amperes 3-Phase	36" x 48" x 11" with Hinged Door

In some instances, larger enclosures may be required to accommodate conductor bending radius requirements.

Section 4.1.6 Cabinet Cover Size

Cabinet covers, pull box covers, C.T. cabinet covers, and any miscellaneous service equipment covers shall be limited to 36" by 48". All covers 36" x 48" shall be hinged. Unhinged covers may be equipped with two handles for removal. All doors shall be equipped with provisions for locking.

Section 4.1.7 Cabinet Mounting Height

Current transformer enclosures shall be mounted such that the bottom of the enclosure is no higher than 3' above grade or the bottom lower than 6" above grade. (See Drawing #26).

Section 4.1.8 No Meters on C.T. Enclosure Cover

The cover of an instrument transformer enclosure shall be free of meters or equipment.

Section 4.1.9 C.T. Enclosure Not a Conductor

The current transformer enclosure shall not be used as a current carrying conductor.

Section 4.1.10 Enclosures Shall Be Grounded

All outdoor current transformer enclosures shall be grounded with a #6 copper ground wire to a ground rod at the meter location. (See Drawings #25, 26, 27, & 28).

Section 4.1.11 C.T.s Mounted On Service Poles

C.T.s may be mounted on service poles when the Customer wiring extends directly from the service pole to multiple load centers. The customer shall supply a suitable mounting bracket for the C.T. (See Drawing #8).

Section 4.1.12 Mast-mounted Current Transformers Shall Not Be Allowed

Section 4.1.13 Outdoor Installation Locations

The meter device shall normally be mounted on an outdoor building wall, a remote pedestal, or a service pole. The meter enclosure or socket, subject to meter location policy, should be located as close as practical to the C.T.s. Enclosures shall not be located in carports, breezeways, porches, or such locations where subsequent addition, rewiring, or remodeling could enclose the enclosure. An enclosure installed in an alley or driveway must be recessed in the wall or protected adequately to prevent damage from vehicular traffic.

Section 4.1.14 Metering Not On District Equipment

Metering, except current transformers, shall not be mounted on or in District equipment except on service poles if approved in advance. All pole-mounted meter equipment shall be grounded with a #6 copper ground wire to a ground at the meter location. (See Drawings #7 & 8).

Section 4.2 Service Ampacity Larger Than 800 Amperes

Section 4.2.1 Switchgear C.T.

For services with ampacity greater than 800 A, the C.T. enclosures shall be part of the Customer service panels or switchgear. The District should be consulted for review of compartment size and service prior to purchasing and installing equipment. The C.T. space shall have bus bars through the C.T.s that are removable from within the C.T. compartment space. The C.T.s shall be furnished and installed by the District. Cables must be landed on hardware independently supported from the bus link through C.T. window. Cables shall not be brought

through the C.T. window. Customer or Contractor shall terminate all conductors with 2-hole connectors and bolt to the current transformer landing pad bus bars. (See Drawing #29).

Section 4.2.2 Enclosures To Be Accessible

Enclosures shall not be installed on ceilings. If the enclosure is installed on a balcony or platform, it must be available by a permanent stairway and be surrounded by a railing, both of which conform to OSHA requirement.

Section 4.2.3 C.T.s Readily Accessible

On switchboards, the instrument transformers shall be installed in such a manner as to be readily accessible after all bussing is in place. Installation plans regarding size of cubicle and placement of equipment shall be approved by the District before switchboard manufacturing. Neutral connections for metering shall be readily accessible and sealable.

Section 4.2.4 Unmetered Conductor Compartments Sealed

All sections of the switchgear that contain unmetered conductors shall have provisions for sealing compartment doors or covers.

Section 4.3 Primary Voltage Meter Installations - Over 600 V

Section 4.3.1 Metering Location Approval

Primary service is metered with the instrument transformer(s) located outdoors and will be either pole-mounted or pad-mounted. The location of all instrument transformer metering installations must be approved by the District in advance of any work by the Customer or Customer's contractor. The primary metering shall be located at the interface between District facilities and the Customer's facilities.

Section 4.3.2 District Provides, Installs, Maintains and Owns Metering and Associated Equipment

The District will provide, install, maintain and own all equipment associated with primary metering up to the load side of the current transformer(s) on all pole or pad-mounted installations.

Section 4.3.3 Customer Provides Switches, etc.

Customer provides all necessary— primary wiring, switches, fusing or other over-current protection, lightning arresters, grounding and etc., from the load side of the current transformer to the Customer's service equipment.

Section 4.3.4 Customer's Wiring Connected by District

The District will connect Customer's wiring to District primary voltage supply conductors and instrument transformers.

Section 4.3.5 Pole Mounted Primary Metering

Pole mounted primary metering will be mounted on a District owned pole.

Section 4.3.6 Pad Mounted Metering Enclosure

The District will provide, install, own and maintain pad-mounted metering enclosures for underground installations.

SECTION 5: CUSTOMER WIRING AND INSTALLATION

Section 5.1 Notify District of New or Rewire Work

Customer or Contractor should promptly notify the District (refer to Section 1) of the electrical work planned. Prompt notification will minimize wiring problems and avoid unwanted delays when work is completed.

Section 5.2 Wiring Inspection

Customer wiring may be subject to inspection and approval by Washington State Wiring Inspector. Contact Department of Labor and Industries for requirements. Circumstances generally requiring wiring approval before service can be connected or reconnected are:

- New wiring is installed or existing wiring is added to, repaired, or altered.
- Fire - Service has been ordered disconnected by the Fire Department, disconnected by the Fire Department themselves, or disconnected by the District personnel because of hazard to the public.
- Storm or Vandal Damage - Disconnected by the District personnel because of danger or hazard to the public. The District will promptly notify the inspection authority.
- Ordered disconnected by an electrical inspection authority because of defective or hazardous wiring.
- Disconnected by District personnel upon observing a hazard to the public caused by Customer wiring. The District will promptly notify the electrical inspection authority.
- Disconnected by District personnel at the request of the Customer or their electrical Contractor in order to add to, repair, or change the wiring. (Contractor can usually arrange by telephone for the electrical inspection authority to give verbal wiring approval to the District).

Section 5.3 Emergency Repairs After Hours, Weekends and Holidays

Reconnection can be made for emergency reasons if Contractor provides the District with electrical license and work permit number. The District will promptly notify electrical inspection authority of this action.

Section 5.4 Diversion of Service

It is illegal to tamper with a District meter or metering equipment and to make unauthorized connections and reconnections of service with the intent to divert electrical energy from being properly metered. Such diversion is subject to service cutoff and legal action.

Section 5.5 Contractor Access

Contractor may access Customer-owned and District secured meter and C.T. equipment in the pursuit of legitimate work. The Contractor is required to inform the District within 24 hours of this action and the work intended, by calling the appropriate District office. Failure to provide prompt notification will cause access to be considered unauthorized and subject to legal action.

Section 5.6 Grounded Neutral

All services shall have a grounded neutral. Three-phase, 3-wire services will not be allowed.

Section 5.7 Communication Bonding

Telephone and/or other electronic equipment may require grounding external to Customer premises. Such ground connections are not permitted inside District sealed and secured cable and meter compartments.

Section 5.8 Distribution Center Pole Metering

Farm Customer may desire service at a number of locations making it uneconomical to distribute from a meter located at the residence. In such cases, Customer can request a distribution center pole on which District meter is installed and from which Customer extends service to the various locations.

Section 5.9 Transfer Equipment

Transfer equipment, including transfer switches, shall operate such that all ungrounded conductors of District source of supply are disconnected before any ungrounded conductors of the second source are connected.

Section 5.10 Customer Generation

The following general requirements apply to customer generation facilities designed to operate directly connected to the District's electrical system (parallel operation) and those that are designed to operate isolated from the District's system (non-parallel operation). Requirements and specifications for various types and sizes of customer facilities shall be obtained from the Customer Service Representative prior to installation.

1) Standby Generation (Non-Parallel Operation)

The Customer may install a standby generator to supply all or part of the load in the event of a service interruption. The customer's wiring shall be arranged so as to prohibit the interconnection of the District's service and the customer's alternate source of supply. This will require the installation of a double-throw switch or its equivalent as approved by the District. Drawing #37 schematically illustrates some typical installations of standby generating equipment.

Note: Precautions must be taken where alternate means of generation are employed, whether emergency or otherwise, to eliminate the possibility of electrical connection between the District's service and the customer's alternate source of supply. The customer must notify the District and provide electrical details of generator installation and isolation from the District's system.

2) Auxiliary Generation, Net Metering and Production Metering (Parallel Operation)

Prior to the installation of any auxiliary generation facilities (e.g. wind turbine, solar panel, etc.) and net-metering or production metering, the customer must notify the District to obtain approval for the installation and enter into an agreement for metering. Additional information and requirements can be found in the District's **In-State Revenue grade production Incentives For Renewable Energy Development (INSPIRED)** requirements.

3) Cogeneration (Parallel Operation)

Co-generators are defined as facilities that produce electrical energy and utilize the heat energy by-product for other purposes (e.g., heating or cooling). The customer must notify the District prior to the installation of this equipment in order to provide design information and obtain approval for connection of the equipment to the District's facilities.

SECTION 6: MOTORS AND APPARATUS

Section 6.1 General

Customer is advised to consult the District before purchase, installation, or wiring of motors or other apparatus to determine the kind of service that will be supplied and the manner in which such equipment should be connected.

Section 6.2 Motor Characteristics

All motors, apparatus, and appliances shall have such characteristics, which enable the District to maintain a satisfactory standard of service to Customer being served and all other Customers in the immediate area, including starting current and harmonic characteristics. Customers shall install no motors whose starting shall cause a voltage drop greater than 3% at the service meter point nor greater than 2% at a neighboring point of service. Changes in District service equipment to accommodate such motors may be at Customer expense.

Section 6.3 Service Type Designation by District

The District reserves the right to select the type of service to be supplied and should be consulted before equipment is purchased or ordered. Single phase motors 7-1/2 horsepower and larger or where the aggregate load of smaller motors is more than 20 horsepower require the approval of the District.

Section 6.4 Motor Starting

Motors for irrigation purposes, up to and including 50 horsepower, may be started across the line. Motors larger than 50 horsepower require starting facilities which are subject to the approval of the District.

Industrial Motors (covers all other applications). These applications up to and including 25 horsepower would be permitted to be started across the line. Over 25 horsepower would require starting facilities, which are subject to approval by the District.

Section 6.5 Special Motors

Special Motor consideration will be given to:

- 1) Application of 3-phase motors beyond single phase conversion devices and
- 2) Larger single-phase motors with current limiting starting mechanisms.

SECTION 7: PROTECTION AGAINST ABNORMAL CONDITIONS

Section 7.1 Under-voltage Protection

All motors and special apparatus should be equipped with suitable undervoltage time delay tripping devices to protect against sustained undervoltage or service interruption and to prevent automatic disconnection of equipment upon momentary voltage disturbance.

Section 7.2 Single-Phase Protection

Three-phase motors should be equipped with suitable protective devices to prevent single-phase operation, improper direction of rotation and excessive heating due to over current.

Section 7.3 The District Will Not Be Responsible For Damage

The District will not be responsible for damage to Customer equipment due to failure of Customer to provide adequate protection.

Section 7.4 Uninterruptible Power Supply

Customer should consider installing an Uninterruptible Power Source (UPS) or voltage suppressers where momentary or extended outages or voltage fluctuations will cause inconvenience, loss of electronic memory, or trip alarms, etc.

SECTION 8: TRENCHING REQUIREMENTS

Section 8.1 General Cable Trench Requirements

1) Customer Provided

All trenches shall be provided by the Customer. Inspection and acceptance by the utility's representative is required.

2) Definition

Trench shall be defined to mean trenching, bedding, backfilling, restoration, and maintenance of subsequent ditch settling for electrical cables and conduits.

3) Notification

The District, all participating utilities, and the Underground Locating Center, shall be notified a minimum of 48 hours in advance of the date and time for the right-of-way trenching and facility placement. Locating services notification is required by state law.

Section 8.2 Root and Rock Restrictions

The trench shall be free of rocks or roots greater than 2" in diameter.

Section 8.3 Specification Drawings

The trench shall be dug to the specifications shown on Drawings #30, 31, & 32, unless otherwise approved by a District representative.

Section 8.4 Water-Free Trench

The Customer is responsible for installing well points, pumping, or other measures to provide reasonably water-free trenches.

Section 8.5 Access, Construction

To facilitate installation, the Customer shall place all excavated material in a manner, which allows the District's installation vehicle to drive on the opposite side of the trench the full length of the project unless other specific arrangements are approved by the District representative.

Section 8.6 Sloping and Shoring

Any area where District personnel must enter the trench shall be excavated in accordance with Chapter 296-155 WAC of the Washington State Safety Code. The Code requires that the excavated material be at least 2' from the edge of the trench and that any trench over 4' deep be sloped, shored, sheeted, or otherwise adequately protected.

Section 8.7 Joint Use Of Trenches (See Drawing #30)

Section 8.7.1 Direct Buried Cable Separation

A minimum vertical and horizontal separation of one foot must be maintained between direct buried electric cables and communication cables.

Section 8.7.2 Electric Cable In Conduit, No Separation Required

Electric cables installed in conduit and communication cables may be buried together at the same depth with no deliberate separation between facilities.

Section 8.7.3 Water and Sewer Lines

A water service line, up to 1½" may be installed at 18" above District cables. No sewer lines or water mains will be allowed in any electrical trench.

Section 8.8 Permanent Access

All surface areas above direct-buried cable and cable in conduit must be accessible for future District operations including, but not limited to, maintenance, location, repair, and replacement. The Customer shall not construct any building, fence, landscaping device, or other obstruction over the direct-buried cable route that restricts said access. In addition, customers should consider that cable in conduit routes may also need to be accessed in the event the conduit system fails or otherwise needs to be repaired or maintained. All transformers and other aboveground devices must remain accessible to District vehicles at all times and the opening side of the device must have at least 10' of clearance from any obstruction. The District handout on padmounted equipment requirements provides more details. (See Drawings #34 and 35). Failure by the customer to maintain accessibility to all District facilities may result in delays in repairs and the restoration of service to the customer.

Section 8.9. Cable Pulled Into Continuous Conduit

When service cable is installed in continuous conduit, the cable shall be pulled into conduit after it has been assembled (conduit shall not be installed by slipping over cable as it introduces rock and dirt into the conduit and does not allow for an adequate sealing procedure). See Chart #1 for minimum conduit and sweep sizes allowed for conductor sizes.

Section 8.9.1 PVC Joints Must be Glued

Each PVC conduit joint must be permanently glued, prior to cable installation.

Section 8.9.2 Maximum Number of Bends in Service Conduit

Total number of bends in a service run shall not exceed 360 degrees. All bends shall be long radius type (24-inch minimum). See Chart #1 for minimum sweep dimensions for various conduit sizes.

Section 8.9.3 Conduit Under Buildings

The District will only allow power lines to be installed under a building when it is absolutely unavoidable and must have written approval of the Manager of the District.

- 1) The required conduit(s) shall be paralleled by an equal spare conduit(s) from the pole to the vault or between vaults.
- 2) Conduits shall not pass through nor conflict with the building's foundation walls.
- 3) Conduit(s) shall be encased in concrete. Minimum encasement shall be 2" thick on all sides of the conduit.
 - a. Exception: The concrete encasement requirement can be waived if the building will have a minimum 4" thick concrete slab first floor and no basement.
- 4) A Hold Harmless Clause will become part of the power line easement.
- 5) Total number of bends shall not exceed 180 degrees.

Section 8.10 Equipment Locations Permanent

The Customer is responsible for establishing the location and grade of the cable trench route and transformers, junction boxes, or secondary pedestals that are shown on the sketches provided by the District. The transformer, junction box, and pedestal locations are considered permanent and moving them is difficult and expensive. In the event any of these facilities need to be relocated, the entire cost will be at the Customer's expense. We recommend that a licensed surveyor be used to determine the lot lines, property corners, right-of-way, and easements to ensure that the facilities are properly located.

Section 8.11 The Customer Shall Provide Final Grade

The Customer shall provide final grade at the site of a transformer or other aboveground devices. After installation, the Customer shall not change the cable depth by cutting or filling without the express consent of the District.

Section 8.12 Backfill Bedding Material

Bedding material for backfill will be subject to approval by a District representative. The Customer will provide the appropriate bedding material when native material is unsuitable. The Customer shall place the approved bedding material in the trench in sufficient quantity to protect the conduit, prior to installation. The Customer shall place an equal amount of approved bedding material over the installed conduit prior to backfilling with native materials. The typical requirement is 6" of bedding below and 6" above the conduit.

Section 8.13 Backfill Compaction

All trenches shall be compacted to the satisfaction of the District in the following manner:

- Compacted sufficiently to prevent later settling of the fill material.
- Compact in lifts to attain 95% compaction. The Customer shall provide compatible 1" minus granular material (i.e. sand, screen reject, or pit run) should the District determine that native material is unsuitable for backfill. The surface material shall be replaced with material equal to existing surface (crushed rock, asphalt, concrete, etc.).
- Below transformers, pedestals, and above-grade devices - Compact in lifts to attain 95% compaction. The Customer shall provide compatible 1" minus granular material (i.e. sand, screen reject, or pit run) should the District determine that native material is unsuitable for backfill.

Section 8.14 Road Bores

All road bores should begin at a depth of 42 inches to the bottom of the bore hole and exit or end with a depth of no less than 36" or no more than 48" below grade. Lesser or greater depth will not be accepted without the approval of a District representative. In addition, a gradual transition from the end of the bore into the 42 inch trench or excavation must be provided by the contractor.

Section 8.15 Requirements Before Construction

The District will schedule the Customer's project only after required easements are received and necessary monies are paid. Trenching should not be started before consultation with a District representative and a date scheduled for the work. At this consultation, any special requirements for the trench will be outlined. The trench shall then be dug prior to the arrival of a District crew on the scheduled date.

SECTION 9: AREA LIGHTS AND STREET LIGHTS

Section 9.1 General

District will install area lighting facilities on District poles. New light installations are to conform to the specifications listed below and in accordance with WAC 296 46B. Existing contracts may be supplemented with additional lights utilizing previous installation methods as subject to NESC and NEC code restrictions.

Section 9.2 Maintenance by District

District-owned light fixtures and services are maintained by District.

Section 9.3 Rates

Rates are based upon the light output and installation requirements. Contract rates apply with municipal Customers; flat rates apply for individual Customers as per District Rate Schedules.

Section 9.4 Served From Overhead Systems

Section 9.4.1 District Lights On District Poles

District-owned and installed lights are installed on District owned and installed poles. If a new pole and/or transformer is required for service, special installation and monthly rates will apply. The following procedures apply:

- 1) Service contract signed by Customer.
- 2) Installation charges paid by Customer.
- 3) District installs pole, light, runs service, and maintains facilities.

Section 9.5 Served From Underground System

Section 9.5.1 District Lights on District Poles

District owned and installed lights are installed on District owned and installed poles. If a new transformer is required to provide service, an installation and special monthly rate will apply. The following procedures apply:

- 1) Service contract signed by Customer.
- 2) Installation charges paid by Customer.
- 3) Trench and backfill by Customer from source to light pole, if required.

- 4) Cable (minimum #12/2 cu, UF rated)) and conduit, installed by customer from transformer or secondary pedestal to pole.
- 5) District installs pole, light, connects service cable and maintains facilities.

SECTION 10: COMMUNICATION EQUIPMENT ON DISTRICT POLES

Section 10.1 Contact Approval Required

Contact approval is required for foreign contacts on District poles. Approval requires prior request to install and field check by District representative to determine that adequate space is available.

Section 10.2 District Riser Requirements

District Riser requirements regarding standoff brackets apply. A minimum of 6" of space between the cabinet and the surface of the pole to which it is mounted shall be maintained.

Section 10.3 Washington State Wiring Permit Required

Wiring permit requirements apply. The equipment wiring shall be inspected by the Washington State Wiring inspector and approved prior to electrical connection by the District.

Section 10.4 Dimension and Weight Limits

Maximum size shall be 26" wide x 36" high x 16" deep and weigh 500 pounds or less.

Section 10.5 Equipment Grounding as per NEC

The equipment shall be effectively grounded to a grounding system installed by the communications company. Ground rod(s) shall be installed a minimum of 18" from the base of the pole on which the equipment is mounted.

Section 10.6 Clearances As Per NESC

The schedule 40 PVC or galvanized metallic conduit, capped with a weatherhead, shall terminate 8" below the level of the District's overhead secondary attachment or neutral position. The service shall include 18" of tail at the weatherhead. The Cabinet shall be mounted with the bottom no lower than 12' above ground.

Section 10.7 Voltage and Protection

The unit shall be designed to operate from connection to a 240/120-volt, single-phase District secondary and will include back-feed voltage protection to prevent power from the unit being routed into the District's system.

Section 10.8 Battery Flame Protection

Battery pack auxiliary power supplies shall have batteries in the assembly, which have flame arrester vent caps and shall be protected from electrical spark by having separate metal containers. The batteries shall be located above the

assembly's power inputs and transformer units to insure isolation of any gasses from open flame or spark. The battery containers and the cabinet shall be well vented.

Section 10.9 Load Information Required (Wattage of Power Supply)

The District shall be notified of the connected load of the power supply prior to connection.

Section 10.10 Rates

In addition to the standard attachment fee, the customer shall pay the District a flat rate to cover the cost of providing electrical service to the auxiliary power supply unit. This rate shall be based upon the connected load.

Section 10.11 Transfer and Relocation

In the event that it is necessary to replace or relocate a pole on which an auxiliary power supply unit is mounted, the customer shall transfer or relocate the unit at no cost to the District.

SECTION 11: CHARTS

CHART # 1 Non-Metallic PVC Direct-Buried Conduit

PVC Conduit must meet the following requirements:

- 1) The following information shall be imprinted on all PVC conduit:
 - a. Manufacturers name or trademark
 - b. Nominal size
 - c. Material (PVC)
- 2) Schedule 40 or 80 PVC is required for service riser according to the NEC and NEMA STANDARD for applications listed below:
 - a. Type III - Designed for normal-duty applications above ground (Sch 40).
 - b. Type IV - Designed for heavy-duty applications above ground (Sch 80) (Hazardous areas, e.g. next to driveways) .
 - c. Conduit bends shall be long-radius type.
 - i. Minimums:
 - 2" - 24" Radius
 - 2 ½" -30" Radius
 - 3" - 30" Radius
 - 4" - 48" Radius
 - 6" - 60" Radius
- 3) Residential secondary service conduit shall be a minimum 2" Schedule 40 PVC, NEMA Standard TC-2.
- 4) 5" conduit is not a District standard; must use 6" to be compatible when the District will be extending customer/contractor-installed conduits.

CHART # 2 Minimum Conduit Size Based on Maximum Fill Requirements, Triplexed and Quadruplexed Secondary Conductors

XLP CONDUCTOR		TRIPLEX			QUADRUPLEX		
SIZE		NOMINAL	ONE	TWO	NOMINAL	ONE	TWO
PHASE	NEUTRAL	O.D.	RUN	RUNS	O.D.	RUN	RUNS
1/0	2	1.06"	2"	3"	1.42"	3"	3"
2/0	1	1.17"	2"	3"	1.59"	3"	4"
3/0	1/0	1.27"	2"	3"	1.72"	3"	4"
4/0	2/0	1.39"	2"	3"	1.88"	3"	4"
250	3/0	1.53"	2-1/2"	4"	2.08"	3"	4"
350	4/0	1.72"	3"	4"	2.34"	3"	6"
500 (300)		2.00"	4"	6"	2.71"	4"	6"
750 (400)		2.35"	4"	6"	3.22"	4"	6"
1000 (500)		2.66"	4"	6"	3.63"	4"	n/a

(400) and (500) minimum size for neutral ampacity.

(300) size per Essex Cable Handbook could be 250 and have required neutral ampacity.

5" conduit is not District standard; must use 6" to be compatible when the District will be extending customer conduits.

Use NEC conduit sizing where the District will not own the conductors.

Chart # 3 Conductor Sizes and Types Allowed for District Service Wiring Installations

Residential Service Conductors

Aluminum Only

2

1

1/0

2/0

3/0

4/0

250

350

500

See Charts 1 & 2 For District Conduit Requirements

Commercial and Industrial

Copper or Aluminum

Per NEC

SECTION 12: DRAWINGS

Drawings contained here illustrate items of text and some typical service and meter arrangements. Further detail on these and other types of service arrangements may be obtained from the District. All installations must comply with the current NEC at the time of installation, and local ordinances or other requirements.

- 1) Service Brackets
- 2) Overhead Strike to Residence
- 3) Guying - Stiff Leg Type
- 4) Clearances: Services Over Ground and Roofs - A
- 5) Clearances: Services Over Ground and Roofs - B
- 6) Service Assembly Underground from Overhead Take-off
- 7) Metering Assembly, Self Contained, Pole Installation
- 8) Metering Assembly, CT, Pole Installation
- 9) Service Assembly, Overhead Temporary
- 10) Service Assembly, Underground Temporary
- 11) Metering Assembly, Wall Mounted, Self Contained
- 12) Meter Location On Buildings
- 13) Platforms For Elevated Meters
- 14) Meter Pedestal, Self-Contained
- 15) Meter Pedestal, Mobile Home
- 16) Meter Pedestal, 320 Amp Service
- 17) Meter Pedestal, CT Meter
- 18) Meter Socket Clip Arrangement
- 19) Meter Socket, 200 Amp, Single Phase
- 20) Metering, Self-Contained, Overhead Service, Single Phase
- 21) Metering, Self-Contained, Overhead Service, Three Phase

- 22) 320 A Lever Type Bypass Meter Base (Underground)
- 23) 320 A Lever Type Bypass Meter Base (Overhead)
- 24) 208/120V 3-Phase 4-Wire to Serve Multiple Occupancy
- 25) CT Enclosure Wiring, Single Phase, 400 to 800 A, Overhead
- 26) CT Enclosure Wiring, Single Phase, 400 to 800 A, Underground
- 27) CT Enclosure Wiring, Three-Phase, 400 to 800 A, Overhead
- 28) Metering, Overhead Service, 3-Phase, C.T. 400 to 800 A
- 29) Metering, Underground Service, 3-Phase, C.T., 800 A or greater
- 30) Trench Requirements - Depth, Width, Clearances
- 31) Underground Service, Wall Mounted Meter
- 32) Underground Service, Meter Pedestal
- 33) Conductors Terminated in Padmount Transformers by Customers
- 34) Padmount Transformer Clearances
- 35) Guard Posts for Padmount Transformers
- 36) Area lights - Underground and Overhead Service
- 37) Standby Generator Schematic Connection Diagrams