

SINGLE PHASE SERVICE CONDUCTOR & CONDUIT SIZES

SERVICE SIZE, AMPS CONTINUOUS	CONDUCTOR				CONDUIT	
	TYPE	QTY/ PHASE	SIZE		QTY	SIZE, INCHES
			PHASE	NEUTRAL		
200	AL	1	4/0	2/0	1	2
320	AL	1	350 KCM	4/0	1	3

1. CONDUIT SHALL BE SCHEDULE 40 PVC.
2. CONDUIT RUN FROM SECONDARY BOX TO METER BASE SHALL BE 150 FEET, MAXIMUM, IN LENGTH AND CONTAIN NO MORE THAN 360 DEGREES OF BENDS.
3. ALL BENDS SHALL BE FACTORY ELBOWS. ALL BENDS SHALL HAVE 36" RADIUS EXCEPT FOR THE ELBOW INTO THE SECONDARY BOX WHICH CAN BE REDUCED TO A 24" RADIUS.
4. CONDUCTOR SHALL BE LABELED AS TYPE USE-2 PER UL 854, OR TYPE RHW-2 OR XHHW-2 PER UL44.
5. PROVIDE 36" OF CONDUCTOR IN SECONDARY BOX FOR TERMINATION OF RESIDENTIAL SERVICES. FOR COMMERCIAL SERVICE PROVIDE CONDUCTOR LENGTHS SHOWN IN EWEB STANDARD EC5-2.0100.
6. CONDUIT SHALL BE DEEP ENOUGH AT OPEN BOTTOM SECONDARY BOX TO ALLOW ELBOW TO BE INSTALLED 1 1/2" (± 1/2") ABOVE BOX BASE WITHOUT CUTTING ELBOW. CONDUIT DEFLECTION FROM HORIZONTAL SHALL BE 5% MAX.

**ELECTRIC SERVICE REQUIREMENT STANDARD
EUGENE WATER & ELECTRIC BOARD - EUGENE, OREGON**

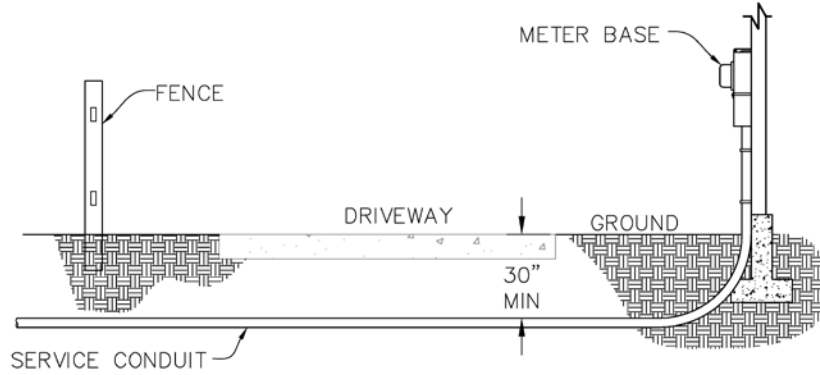
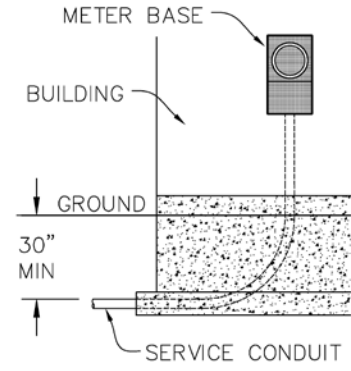
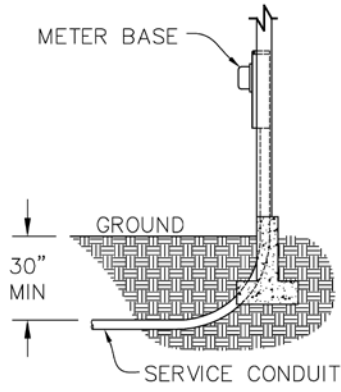
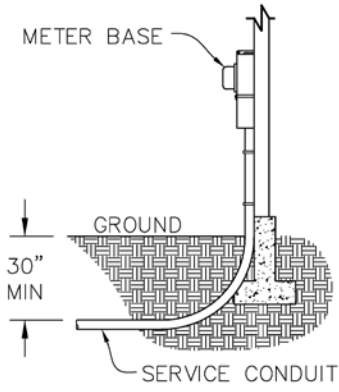
**UNDERGROUND SERVICE
CONDUIT AND CONDUCTOR REQUIREMENTS**

Approved April 21, 2023

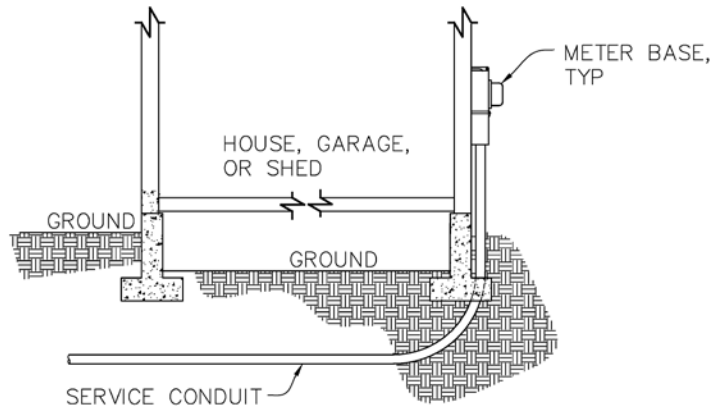
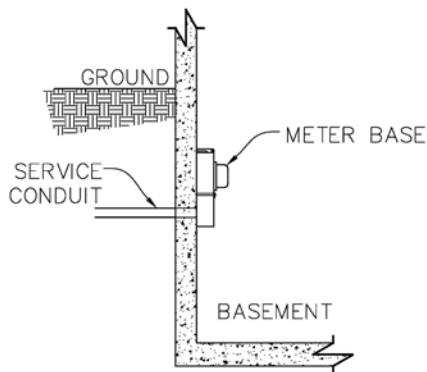
EC5-B.1000

Page 1 of 5

**REV
8**



ACCEPTABLE



NOT ACCEPTABLE

ELECTRIC SERVICE REQUIREMENT STANDARD
 EUGENE WATER & ELECTRIC BOARD - EUGENE, OREGON

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8

1.0 SCOPE

- 1.1. This standard contains the requirements for underground service conductors and conduit. See table on page 1 for conduit and conductor requirements for single phase services for loads up to and including 320 amps, continuous. For larger single phase services, or three phase services, contact EWEB Electric Distribution Engineering.
- 1.2. Any deviations from any of these requirements must be approved by EWEB Electric Distribution Engineering prior to installation.

2.0 SERVICE REQUIREMENTS

- 2.1. For additional electric service requirements see EWEB's Customer Services Policies and Procedures, Electric Utility at <http://www.eweb.org/about-us/policies-and-procedures>.
- 2.2. For a 320 amp continuous single phase service, provide a meter base with safety socket manual bypass and line lugs rated for 90 degrees C, Eaton model 324N or equal.
- 2.3. Trench and backfill requirements:
 - 2.3.a. The bottom of trench shall be level and free of rocks and debris which may damage conduits. If bottom of the trench is not level, use ¾" minus crushed rock (Class B) to fill voids to provide a level bed for the conduit.
 - 2.3.b. Native material is acceptable for backfill. Remove any rocks larger than 2" diameter or other debris which may damage conduit prior to backfilling.
- 2.4. Service conduit shall meet the following requirements:
 - 2.4.a. Suitable for underground use with 90 degree C insulated conductors and meet the requirements of UL 651.
 - 2.4.b. Heating and field bending of conduit is not allowed. All bends shall be factory elbows.
 - 2.4.c. Other than the vertical elbows at the meter and into the secondary box, no vertical bends or offsets shall be installed without prior approval from EWEB Electric Distribution Engineering.
 - 2.4.d. At no point shall conduit be installed beneath permanent structures nor enter building below grade. It is acceptable for the service conduit to be installed in the building footing and into an exterior wall to a flush mounted meter base provided removal of the front of the meter base is not restricted in any way. See page 2 for examples of acceptable and unacceptable installations.
 - 2.4.e. Shall not contain any LB's or junction or pull boxes.
 - 2.4.f. If a 3 inch conduit knockout is not available in the meter base, a 3 inch to 2 inch smooth walled (swedge) conduit reducer is acceptable to be installed at the meter base on a 3 inch conduit.
 - 2.4.g. Provide a bushing on the end of the conduit inside the meter base to provide a smooth surface to prevent damage to conductor jacket during pulling.
 - 2.4.h. If exposed end of the conduit elbow in the secondary box is cut, it shall be cut off square and burrs removed to provide a smooth surface for conductors.

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REV
8

Page 3 of 5

- 2.4.i. All conduits shall enter the same end of the secondary box.
- 2.4.j. Installed per conduit manufacturer requirements including applying manufacturer recommended adhesive to all joints.
- 2.4.k. Shall have 12 inch separation from all other utilities.
- 2.4.l. Fiberglass conduit elbows are acceptable to use instead of PVC conduit elbows.
- 2.5. Service conductors shall meet the following requirements:
 - 2.5.a. The outer surface of the insulation shall be durably marked throughout its length with the manufacturer's identification, type of insulation, size of conductor, conductor material, and rated voltage.
 - 2.5.b. Provide matching phase tape on each end of all parallel conductors.
 - 2.5.c. Shall not contain any splices.
 - 2.5.d. Oxide inhibitor shall be used at all aluminum conductor terminations.

3.0 SERVICE INSTALLATION PROCESS

- 3.1. Contact EWEB:
 - 3.1.a. Electric Distribution Engineering at 541-685-7521 for design questions.
 - 3.1.b. Electric Operations at 541-685-7457 to schedule service inspections, access to secondary box, and energizing service.
 - 3.1.c. For additional information see <http://www.eweb.org/contractors-and-developers/building-and-renovations/new-or-temporary-service>.
- 3.2. Install service conduit per this standard and as directed by EWEB. Conduit shall be installed to within 3 feet of secondary box, last elbow not yet installed and trench left open. The trench shall be dug as close as possible to the secondary box without entering or compromising the secondary box.
- 3.3. Contact EWEB Electric Operations to schedule conduit inspection.
 - 3.3.a. If contractor is ready to complete conduit installation into secondary box, EWEB personnel or qualified representative will open secondary box for contractor to complete this work. Otherwise, the conduit installation into secondary box shall be done during the second EWEB site trip to energize the service.
 - 3.3.b. If EWEB or qualified representative approves conduit installation, trench may be backfilled.
 - 3.3.c. If conduit fails inspection, contractor shall correct conduit installation and reschedule EWEB Operations to re-inspect conduit. A charge shall be incurred for each return visit to re-inspect installation as per EWEB Customer Services Policies and Procedures Electric Utility section E-V D.
 - 3.3.d. All conduits shall be cleaned and tested and determined to be free from obstruction with the use of an appropriately sized mandrel after backfilling has occurred. If a mandrel cannot be successfully pulled through the completed conduit system, it will be the customer's responsibility to locate and repair the conduit. (Refer to EWEB Standard GC5-2.3600)

- 3.3.e. If contractor is ready to install service conductors, EWEB personnel or qualified representative will verify service conductors are the proper size, type, and insulation. If approved, contractor shall pull in service conductors, terminate them at the meter base, and leave enough conductor coiled in secondary for future termination by EWEB line technician after the service has passed inspection by the local authority.
- 3.4. After the service has passed inspection by the local authority, the contractor shall contact EWEB Operations to schedule energizing service.
 - 3.4.a. If service conductors were not installed during the first EWEB inspection, EWEB line technician will verify service conductors are the proper size, type, and insulation.
 - 3.4.b. If approved, EWEB line technician will open secondary box. Contractor shall complete conduit installation into secondary box (if not already installed during the first EWEB inspection), pull in service conductors, and terminate them at the meter base.
 - 3.4.c. EWEB line technician will terminate the service conductors at the secondary box and install the meter, energizing the service.

4.0 QUALIFICATIONS

- 4.1. WARNING, EWEB SECONDARY BOXES MAY BE ENERGIZED AND ARE DANGEROUS. DO NOT ENTER OR FORCE CONDUIT INTO EWEB SECONDARY BOX.
- 4.2. Oregon state licensed electricians shall pull and terminate conductors. Oregon State law allows home owner certain rights to work on their own property.
- 4.3. Contractors are responsible for wearing proper personal protective equipment (PPE) to meet OSHA and NEC requirements.

5.0 REFERENCE STANDARDS

- A Refer to EC5-2.0400 for above grade secondary box and lid.
- B Refer to EC5-A.0500 for Customer requirements vegetation management for underground systems.
- C Refer to EC5-2.0100 for required conductor makeup lengths in vaults and secondary boxes.
- D Refer to GC5-2.3600 for mandreling and cleaning of conduit.