



1. APPLICATION

- A. 600 volt insulated single, triplexed and quadraplex conductors are installed in conduits underground and exposed outside on riser poles in EWEB’s secondary voltage distribution system.

2. REFERENCE STANDARDS

- A. The cable furnished shall meet the latest editions, revisions, and amendments of the following standards unless otherwise stated in this specification:
 - 1) ANSI/NEMA WC 70/ICEA S-95-658 Power Cables Rated 2, 000 Volts or Less for the Distribution of Electrical Energy
 - 2) UL 854 Standard for Service Entrance Cables
 - 3) The Aluminum Association Code Words for Underground Distribution Cables
 - 4) NEMA WC 26 Binational Wire and Cable Packaging Standard
 - 5) Applicable ASTM Standards

3. PRODUCTS

A. General

- 1) Cable shall be suitable for use in wet or dry locations, in underground or exposed conduits, direct buried, or outdoor above ground exposed to sunlight.
- 2) Cable shall be rated for 90°C conductor temperature for continuous operation, 130°C for emergency overload conditions, and 250°C for short-circuit

MATERIAL SPECIFICATION		
EUGENE WATER & ELECTRIC BOARD		
UNDERGROUND SECONDARY CONDUCTORS	JAN 16, 2015	REV.
600 VOLT	ES5-8.1150	0
ENGINEERING REVIEW REVIEW <u> <i>JZO</i> </u>	STANDARDS COMMITTEE APPROVAL <u> <i>LMW</i> </u>	Page 1 of 5

conditions. Emergency overloads are those overload conditions that are in existence for less than 100 hours per year.

- 3) Cable shall be labeled as: Type USE-2 per UL 854.

B. Conductor Material

- 1) Copper: Phase and neutral conductors shall be Class B copper concentric-stranded non-compact, annealed, and soft drawn conforming to ASTM B-8.
- 2) Aluminum: Phase and neutral conductors shall be 1350 grade aluminum, Class B, concentric-stranded, non-compact, and half hard conforming to ASTM B-231.

C. Insulation

- 1) The insulation shall be crosslinked polyethylene, of thickness shown in Table I for phase and neutral conductors.

**TABLE I
INSULATION THICKNESS**

<u>SIZE AWG OR KCMIL</u>	<u>INSULATION THICKNESS, MILS</u>
8 TO 2	60
1 TO 4/0	80
225 TO 500	95
525 TO 1000	110

D. Phase and Neutral Conductor sizes.

- 1) Triplex and quadraplex cables shall consist of phase conductors of equal size and a neutral of reduced size wound together and held by their own rigidity. The size of the phase conductors and neutral are shown in Table II.

MATERIAL SPECIFICATION EUGENE WATER & ELECTRIC BOARD		
UNDERGROUND SECONDARY CONDUCTORS 600 VOLT	JAN 16, 2015	REV. 0
		Page 2 of 5

TABLE II
CONDUCTOR/NEUTRAL SIZES

<u>PHASE CONDUCTORS</u> <u>AWG OR KCMIL</u>	<u>NEUTRAL CONDUCTORS</u> <u>AWG OR KCMIL</u>
6	6
4	4
2	4
1/0	2
2/0	1
3/0	1/0
4/0	2/0
250	3/0
350	4/0
500	350
750	500

E. Cable Identification

- 1) All Cables: The outer surface of the insulation on all conductors shall be durably marked throughout its length with the manufacturer's identification, type of insulation (i.e., XLP, not manufacturer's trade name), size of conductor and neutral, whether aluminum or copper rated voltage, and UL Type USE-2.
- 2) Neutral Conductors: The outer surface of the insulation on neutral conductors of triplex and quadraplex cables shall be black with three yellow stripes permanently bonded to the jacket approximately 120° apart.

4. TESTS

- A. All tests shall be in accordance with the latest edition of the referenced standards.

5. WARRANTY

- A. Provide a warranty period of eighteen (18) months, minimum after the date of acceptance.
- B. Vendor shall warrant the goods/equipment be free from defects in material or workmanship, and shall repair or replace any unit that fails during normal use, including all parts and labor at no cost to EWEB.

MATERIAL SPECIFICATION EUGENE WATER & ELECTRIC BOARD		
UNDERGROUND SECONDARY CONDUCTORS 600 VOLT	JAN 16, 2015	REV. 0
		Page 3 of 5

6. PACKAGING AND DELIVERY

- A. Quadraplex cable shall be on reels not more than 72" diameter and outside width of 45".
- B. All other cables shall be on reels not more than 72" diameter and outside width of 40".
- C. Cable reels shall be shipped with axis horizontal.
- D. All phase and neutral conductors shall have a waterproof cap and seal on each end.
- E. Provide protective covering for cable reels per the latest revision of NEMA WC 26.

7. SUBMITTALS

- A. Submit the information required in Exhibit A

8. EWEB STORES INFORMATION

- A. This specification shall be used to purchase the material with the following stock codes:

436 - 0000959 through 436 -0000970

MATERIAL SPECIFICATION EUGENE WATER & ELECTRIC BOARD		
UNDERGROUND SECONDARY CONDUCTORS 600 VOLT	JAN 16, 2015	REV. 0
		Page 4 of 5

EXHIBIT A
SPECIFIC INFORMATION REQUIRED WITH BID
UNDERGROUND SECONDARY CONDUCTORS
600 VOLT
 (Submit Separate Sheets for each Item)

Manufacturer's Name: _____

Code Name (for aluminum conductors): _____

Distributor's Name: _____

1. SINGLE CONDUCTOR

- a. Conductor Size _____
- b. Conductor Material (CU or AL) _____
- c. Number and size of strands _____
- d. Insulation thickness _____ mils
- e. Diameter over insulation _____ mils

2. TRIPLEX OR QUADRAPLEX CABLES

- | | Phase | Neutral | |
|----------------------------------|-------|---------|------|
| a. Conductor Size | _____ | _____ | |
| b. Conductor Material (CU or AL) | _____ | _____ | |
| c. Number and size of strands | _____ | _____ | mils |
| d. Insulation thickness | _____ | _____ | mils |
| f. Diameter of complete cable | _____ | _____ | mils |

EXCEPTION(S) TO EWEB SPECIFICATION:

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600 VOLT	ES5-8.1150	0
Page 5 of 5		