

ITEM 026260

Item 0262601 - COMMUNICATIONS CABLE NO. 19 AWG-3 PAIR

Item 0262602 - COMMUNICATIONS CABLE NO. 19 AWG-6 PAIR

Item 0262603 - COMMUNICATIONS CABLE NO. 19 AWG-12 PAIR

Item 0262604 - COMMUNICATIONS CABLE NO. 19 AWG-18 PAIR

Item 0262605 - COMMUNICATIONS CABLE NO. 19 AWG-25 PAIR

Item 0262606 - COMMUNICATIONS CABLE NO. 19 AWG-12 PAIR IN SBC DUCT

Item 0262607 - COMMUNICATIONS CABLE NO. 19 AWG-18 PAIR IN SBC DUCT

Item 0262608 - COMMUNICATIONS CABLE NO. 19 AWG-25 PAIR IN SBC DUCT

Item 0262609 - COMMUNICATIONS CABLE NO. 19 AWG-12 PAIR OVERHEAD

Item 0262610 - COMMUNICATIONS CABLE NO. 19 AWG-18 PAIR OVERHEAD

Item 0262611 - COMMUNICATIONS CABLE NO. 19 AWG-25 PAIR OVERHEAD

DESCRIPTION

The Contractor shall furnish and install a complete and fully operational communications cable network. The cable network routing and schematic shall be as shown in the Plans.

Work under this item shall consist of furnishing and installing all necessary equipment and materials for a complete and operational communications cable network. Work shall include, but not be limited to, furnishing and installing cable of the size specified, bonding and grounding, performing communications cable tests, and furnishing all labor, tools, materials, equipment, storage, transportation and other incidentals necessary to complete the work. Items of work or equipment not specified but required for a fully operational network to provide the functions defined in these Special Provisions shall be provided by the Contractor as incidental to the work and no additional payment shall be made.

REFERENCED ITEMS

Item 0222401

REQUIRED SUBMITTALS

Material Certificate of Compliance:

Submit 5 copies of material certificate of compliance for the Communications Cable in accordance with the contract general requirements.

Shop Drawings:

Submit 5 copies of shop drawings for Communications Cable in accordance with the contract general requirements.

MATERIALS

The communications cable shall conform to Rural Electrification Administration (REA) Specification PE-22 for Aerial and Underground Cables. The conductors shall be twisted in pairs, and shall be solid copper #19 AWG with high density polyethylene insulation, color coded per REA Standards.

The cable shall be aluminum shielded. The outer jacket of the cable shall be black polyethylene. Cable sizes required are specified on the Plans.

The overhead "Figure-8" communications cable shall conform to REA Specification PE-38 for Self-Supporting Cables. The conductors shall be twisted in pairs, and shall be solid copper #19 AWG with high density polyethylene insulation, color coded per REA Standards.

CONSTRUCTION METHODS

The communications cable shall be installed in new and existing conduit, SBC municipal duct, handholes, and SBC manholes, or supported on a messenger cable or signal span as shown on the Plans. All cable shall be furnished on reels and handled with care to avoid damage to the conductors or to the jacket. Cable installation shall conform to the appropriate articles of the National Electrical Code and REA Guidelines for the installation of this type of cable.

The Contractor shall snake all conduit runs prior to commencing any communications cable installation. The Contractor shall clean existing conduit as may be required for the installation of the communications cables. Any cleaning process shall first be approved by the Engineer. Where cleaning of existing conduit is required, said cleaning shall be paid for separately under Item No. 0222401.

Where communication cables are to be installed in conduit with existing cables that will remain, the Contractor shall take care not to damage the existing cable facilities. Should the Contractor cause damage to any existing cables and/or equipment, he shall immediately notify the Engineer and the affected owner. Corrective action will be made by the cable owner. The cost to repair any damages caused by Contractor's actions in this situation shall be deducted from monies owed to the Contractor, and paid to the cable owner for cable repair purposes.

It shall be the Contractor's responsibility to coordinate his construction activities on a continuing basis with each local utility having facilities in the area of construction. The Contractor shall request special utility service adjustments and utility company inspectors sufficiently in advance of his needs to permit reasonable response by the

utility organization. Contractor-claimed delays due to utility delays in adjusting their facilities shall be considered for time adjustments only if proper and complete documentation is provided.

Cable shall be hand pulled through conduit with a minimum of dragging on the ground or pavement. The cable shall be protected from injury, (i.e., vehicles driving over the cable, etc.) during installation. When pulling in conduit, the Contractor shall use an approved lubricant, as required. The lubricant shall not be of the type to damage the cable or deteriorate the performance of the insulation. The ends of the cable shall be sealed to prevent moisture and other contaminants from entering the cable during installation.

Cables shall be looped in and out of cabinets and handholes to provide adequate slack and the least amount of stress on conductors and connectors. When installed overhead, drip loops of a minimum one foot diameter shall be provided.

Where Communications Cable is to be installed overhead, proper clearance shall be maintained as required by the existing utilities along that route. Cable closures shall be installed at each branch circuit. The Figure-8 cables shall be supported at each pole by Figure-8 suspension cables supplied by the cable manufacturer. When it is required to avoid contact or conflicts with the existing cables at the pole cable extension arms shall be used. The built in messenger wire in the Figure-8 cable shall not be cut for clamping purpose other than at the end of each home run between controllers. At the controllers the messenger wire shall be secured to the pole as recommended by the cable manufacturer or to the requirement of utility company.

1. CABLE TERMINATION

Communications cable shall run continuously without splicing from termination point to termination point. Cable terminations shall be performed only on approved terminal blocks inside a controller cabinet or, where provided, an auxiliary termination cabinet. The Contractor shall furnish and install the necessary terminal blocks as required. The terminal blocks shall be installed in existing controller cabinets as directed by the engineer. The terminal blocks shall be quick connect type (R66) and shall provide for the termination of a minimum of 25 pairs. All cable pairs entering a cabinet shall be terminated. Cable pairs shall be terminated color to color and in accordance with the (communications cable) termination plan.

Where a cable termination cannot be completed, slack cable shall be coiled and placed in a safe place. Ends of each cable shall be sealed to prevent

water from entering the cable. The protective seal shall remain until cable termination is completed.

2. **BONDING, GROUNDING, AND LIGHTNING PROTECTION**

The communications cable shield shall be bonded to the shield of all other communications cables at all termination points and as directed by the Engineer. The communications cable shield shall also be bonded to the ground rod at the auxiliary termination facilities as directed by the Engineer. Provisions shall be made such that in the event of a field cabinet knockdown, wherein accidental over-voltage conditions could be produced in the communications network, the location experiencing the problem will be isolated. In addition, protective devices shall be furnished and installed by the Contractor to positively isolate and protect the system against damage from lightning.

3. **SBC DUCT AND MANHOLES**

The Contractor shall furnish and install communications cable in the "Municipal Duct" of the SBC duct network and in SBC manholes as shown on the Plans. The Contractor shall also install communication cable in laterals between the SBC manholes and controller cabinets, auxiliary termination cabinets, or handholes, at those locations shown on the Plans.

The Contractor shall snake the municipal duct prior to commencing any communication cable installation. SBC manhole covers shall not be removed nor shall manholes be entered except in the presence of a SBC inspector. All communication cables shall be properly supported and marked for identification in each manhole in accordance with SBC requirements.

For cables in SBC ducts, SBC will perform the required excavations at no charge to clear those blockages which are attributable to a fault in the duct structure itself. Clearing of blockages due to silting, tangled existing cables, etc. shall be the responsibility of the Contractor.

All new conduit laterals from SBC manholes require SBC approval as to the entry location and shall be performed under SBC supervision. All holes for such conduit laterals shall be drilled, not pounded, in manhole walls and shall be drilled from the inside out. The conduit entry holes in the SBC manhole structure shall be grouted at both sides.

All conduits from SBC manholes to traffic control cabinets shall be sealed at both ends to minimize the hazard of gas explosion.

Hard hats and safety glasses are to be worn by all personnel working in SBC manholes. Ventilating manholes and the uses of flashers, cones, barricades, signs, and flagmen shall fulfill all SBC requirements.

In the event of existing construction in SBC facilities being in such a condition as to constitute a hazard, or apt to affect continuity of telephone service, immediate action shall be taken to arrange or reconstruct in accordance with these guidelines. Failure to comply with the SBC requirements outlined in this subsection shall result in the immediate curtailment of construction activities in the SBC facilities at no cost to the City.

METHOD OF MEASUREMENT

The quantity to be paid under the item "Communications Cable No. 19 AWG - number Pair" shall be the actual number of linear feet of the size specified, measured along the center of the cable, installed in City conduit and facilities overhead, tested, and accepted in place with all necessary terminations and connections.

The quantity to be paid under the item "Communications Cable No. 19 AWG - number Pair in SBC Duct" shall be the actual number of linear feet measured along the center of the cable, installed in SBC ducts and manholes, tested, and accepted in place.

The quantity to be paid under the item "Communications Cable No. 19 AWG - number Pair Overhead" shall be the actual number of linear feet measured along the center of the cable installed, tested, operational and accepted in place.

BASIS OF PAYMENT

This work shall be paid for at the contract unit price per linear foot for "Communications Cable" of the type and size specified, which price shall include furnishing and installing communications cable of the size specified; all the supporting hardware for overhead Figure-8 cable installation including any cable extension arms and other related hardware and tools; terminating the cables on terminal blocks; bonding, grounding and lightning protection; SBC inspectors, installation of new conduit laterals into SBC manholes; performing communications cable acceptance tests specified in Special Provisions, and furnishing all labor, snaking tools, materials, equipment, storage, transportation and other incidentals necessary to complete the work.

<u>PAY ITEM</u>	<u>DESCRIPTION</u>	<u>PAY UNIT</u>
0262601	Communications Cable No. 19 AWG-3 Pair	LF
0262602	Communications Cable No. 19 AWG-6 Pair	LF
0262603	Communications Cable No. 19 AWG-12 Pair	LF
0262604	Communications Cable No. 19 AWG-18 Pair	LF
0262605	Communications Cable No. 19 AWG-25 Pair	LF
0262606	Comm. Cable No. 19 AWG-12 Pair in SBC Duct	LF
0262607	Comm. Cable No. 19 AWG-18 Pair in SBC Duct	LF
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0262610	Comm. Cable No. 19 AWG-18 Pair Overhead	LF
0262611	Comm. Cable No. 19 AWG-25 Pair Overhead	LF