

Meeting Date
July 11, 2017



AGENDA	
Section	New Business
Item No.	V.F.2

AGENDA REPORT
 BREVARD COUNTY BOARD OF COUNTY COMMISSIONERS

SUBJECT:	Illegal and unauthorized PVC pipes in County Rights of Way by ATT
DEPT/OFFICE:	Citizen Request, Mr. Bruce E. Stevenson

Requested Action:
 It is requested the Board of County Commissioners not allow ATT's illegal and unauthorized installation to continue and direct appropriate County officials to exercise their oversight responsibility to cause ATT to cease installation of those PVC pipes and remove others "to keep Brevard Beautiful".

Summary Explanation & Background:

Brevard County has failed to cause the removal of numerous ugly orange covered PVC pipes, some 6 feet tall and in clusters. Others 20-100 ft. apart, illegally installed by ATT in County Right of Way.

Brevard County officials have been notified by attached emails and photographs of ATT illegal and unauthorized installation of subject PVC pipes. Brevard County officials have recognized this problem by have only responded that ATT has not been contacted even though this contact information should be in the County permit files and was provided by email i.e. Jackie Zirkle. Telephone 725-7848/586-6372. Nevertheless, this improper installation has continued.

Your consideration is appreciated.

Contact: Mr. Bruce E. Stevenson, 321-255-2695; brustev32@gmail.com

Clerk to the Board Instructions:

Exhibits Attached: emails; photos

Contract /Agreement (If attached): Reviewed by County Attorney Yes No PR

Interim County Manager	Assistant County Manager Venetta Valdengo	Department Director / Extension
Frank Abbate	Interim Assistant County Manager John Denninghoff	



Tammy Rowe, Clerk to the Board, 400 South Street • P.O. Box 999, Titusville, Florida 32781-0999

Telephone: (321) 637-2001
Fax: (321) 264-6972
Tammy.Rowe@brevardclerk.us

July 12, 2017

M E M O R A N D U M

TO: Andrew Holmes, Interim Public Works Director

RE: Item VI.F.2., Citizen Request by Bruce E. Stevenson for Illegal and Unauthorized PVC Pipes in County Rights-of-Way by AT&T

The Board of County Commissioners, in regular session on July 11, 2017, directed you to work with the utility companies for a procedure remedying the illegal and unauthorized PVC pipes within County rights-of-way; to provide feedback to the Board, if there is any pushback from the utility companies of not wanting to remedy; to find a way to minimize the number and size of the six foot poles; to halt immediate permitting on PVC pipes; and to halt immediate issuance of any further permits for markers.

Your continued cooperation is greatly appreciated.

Sincerely yours,

BOARD OF COUNTY COMMISSIONERS
SCOTT ELLIS, CLERK

Tammy Rowe

Tammy Rowe, Deputy Clerk

/ds

cc: Each Commissioner
Interim County Manager
Interim Assistant County Manager

Meeting Date



AGENDA	
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Item No.	

AGENDA REPORT
BREVARD COUNTY BOARD OF COUNTY COMMISSIONERS

SUBJECT:	ILlegal and onauthorized PVC pipes in County Rights of way by ATT.
DEPT/OFFICE:	CITIZEN REQUEST; Bruce E STEVENSON

Requested Action:

Not allow ATT's illegal and unauthorized installation to continue and direct appropriate County officials to exercise their oversight responsibility to cause ATT to cease installation of these PVC pipes and remove others to "Keep Brevard Beautiful"

Summary Explanation & Background:

Brevard County has failed to cause the removal of numerous ugly orange covered PVC pipes, some 6 feet tall and in clusters, other 20-100 ft apart, illegally installed by ATT in County Rights of way.

Brevard County officials have been notified by attached emails and photographs of ATT illegal and unauthorized installation of subject PVC pipes. Brevard County officials have recognized this problem but have only responded that ATT has not been contacted even though this ~~contact~~ information should be in the County permit files and was provided by E-mail i.e. Jackie Zirkle, tel 725-2848 / 586-6372. Nevertheless, this improper installation has continued.

Your consideration is appreciated. tel: 321 255-2695
 Bruce E. Stevenson BRUSTEV32@Gmail.com

Clerk to the Board Instructions:

Exhibits Attached:

Contract /Agreement (If attached): Reviewed by County Attorney		Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	PR	<input type="checkbox"/>
Interim County Manager	Assistant County Manager	Department Director / Extension					
Frank Abbate	Venetta Valdengo						
	Interim Assistant County Manager						
	John Denninghoff						

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From: Holmes, Andrew <Andrew.Holmes@brevardfl.gov>

To: bstevenson001@cfl.rr.com <bstevenson001@cfl.rr.com>, Abbate, Frank B <Frank.Abbate@brevardfl.gov>, Denninghoff, John P <John.Denninghoff@brevardfl.gov>, Valliere, Jennifer <Jennifer.Valliere@brevardfl.gov>, todd foley <tfoley@suntreeflorida.com>, Woodard, Patrick <patrick.woodard@brevardfl.gov>, zirkle,jackie <jz327@att.com>, jeanne <jmargarets@juno.com>, zirkle,jackie <jz327@att.com>

Cc: zirkle,jackie <jz327@att.com>, Woodard, Patrick <patrick.woodard@brevardfl.gov>, todd foley <tfoley@suntreeflorida.com>

Subject: RE: Ugly orange covered ATT pvc poles up to 6 feet tall being closely installed throughout rights o...

Priority: Normal **Date:** Thursday, June 15, 2017 11:44 AM **Size:** 9 KB

Hi Mr. Stevenson,

Thank you for your email. As I have communicated previously, there is no Brevard County Code requirement that mandates the installation of these markers.

Thank you,

Andy

Andrew J. Holmes, PE
Interim Public Works Director
Brevard County Public Works
2725 Judge Fran Jamieson Way
Bldg. A, Room 201
Melbourne, FL 32940
321-637-5437 Ext. 56524

-----Original Message-----

From: bstevenson001@cfl.rr.com [bstevenson001@cfl.rr.com]
Sent: Thursday, June 15, 2017 10:11 AM
To: Abbate, Frank B; Denninghoff, John P; Holmes, Andrew; Valliere, Jennifer; todd foley; Woodard, Patrick; zirkle,jackie; jeanne; zirkle,jackie
Cc: zirkle,jackie; Woodard, Patrick; todd foley
Subject: Ugly orange covered ATT pvc poles up to 6 feet tall being closely installed throughout rights of way in Brevard County.
Importance: High

Regarding subject PVC poles, be advised that Todd Foley, Community Manager, Suntree Master Homeowner Assn., telephone 242-8960, advised that Brevard County Public Works office stated that the County required 3 foot PVC poles every 200 feet in rights of way.

The position of ATT is not known as Jackie Zirkle, ATT manager, telephone 725-7840/586-6372, has not returned my phone calls. However, requiring 6 foot, 3 foot, pvc clusters or any marker in our beautiful county rights of way is unnecessary and ridiculous as ATT already has 2 foot square markers in the ground marking their cable locations and it is self evident to contractors and others that utilities have underground cables in rights of way. Also, the county should not have to pay for additional lawn maintenance around these poles. These poles are still being installed on Wickham Road in the Suntree area and should be stopped now!! Is legal action the only remedy? KEEP BREVARD BEAUTIFUL. Please reply.

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From: Todd Foley <tfoley@suntreeflorida.com>

To: bstevenson001@cfl.rr.com, 'abbate' <frank.abbate@brevardfl.gov>, 'denninghoff' <john.denninghoff@brevardfl.gov>, 'holmes' <andrew.holmes@brevardfl.gov>, 'jennifer,v' <jennifer.valliere@brevardfl.gov>, 'woodard' <patrick.woodard@brevardfl.gov>, 'zirkle,jackie' <jz327@att.com>, 'jeanne' <jmargarets@juno.com>, 'zirkle,jackie' <jz327@att.com>

Cc: 'zirkle,jackie' <jz327@att.com>, 'woodard' <patrick.woodard@brevardfl.gov>

Subject: RE: Ugly orange covered ATT pvc poles up to 6 feet tall being closely installed throughout rights o...

Priority: Normal **Date:** Thursday, June 15, 2017 12:29 PM **Size:** 4 KB

Mr. Stevenson et all,
I think you understood my statements backwards when we spoke.

My recollection of last years conversations was the ATT Rep that said "her ATT work order for new line installation required the markers". I did not state that the county required them.

Suntree's Board certainly agrees that the markers are ugly and could likely be much less conspicuous. Additionally, they do require string trimming instead of just mowing over the ground service box.

I sense from my conversations with ATT last year that this is a marker that assists them only and they did not consider the aesthetics as they asked for the county approval to add fibreoptic lines in the county right of ways.

Regards, Todd Foley Suntree

-----Original Message-----

From: bstevenson001@cfl.rr.com [bstevenson001@cfl.rr.com]
Sent: Thursday, June 15, 2017 10:11 AM
To: abbate; denninghoff; holmes; jennifer,v; todd foley; woodard; zirkle,jackie; jeanne; zirkle,jackie
Cc: zirkle,jackie; woodard; todd foley
Subject: Ugly orange covered ATT pvc poles up to 6 feet tall being closely installed throughout rights of way in Brevard County.
Importance: High

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Staff Report
11 July 2017
BOCC Agenda Item VI F 2

Prepared by: Brevard County Public Works Department Staff

Prepared For: Brevard County Board of County Commissioners

Subject: Underground Utility Markers – Aesthetic Considerations

Description of the Issue

Underground Utility Markers are being placed in Brevard County Rights of Way and Public Utility Easements. The markers consist of white PVC Pipe capped with an orange section and some explanatory language affixed to the pipe using printed stickers. The pipes range in height from less than three feet above ground level to approximately six feet above ground level.

Mr. Bruce Stevenson, a Brevard County resident, has contacted the County Manager's Office, The District 4 Commission Office, and the Public Works Department to express his opinion that the markers are unsightly and should be removed. His contention is that the markers impair the aesthetic aspects of Brevard County Roadways.

Purpose of Underground Utility Markers

The purpose of underground utility markers is to alert contractors and other individuals who may excavate in the vicinity of underground utilities that underground utilities are present and should be specifically located prior to any excavation taking place. The goal of placing the markers is to reduce unanticipated disturbance of the line and the resulting service interruptions that the public will experience as a result.

Permitting

All work within the Brevard County Right of Way or Public Utility Easements is subject to permitting by the Brevard County Public Works Department, Right of Way Permitting Section in the Engineering Program. A cursory review of past permits issued for underground utility work within the right of way indicates that some of the utility markers have been shown on permit drawings and some have not. In theory, all of the work to be done within the right of way is supposed to be depicted on the drawings that accompany the permit application. The utility markers that were not shown on the permit drawings could be considered to be installed within the right of way without a permit.

Regulations

Brevard County Public Works staff has investigated whether the Brevard County Code actually requires the utility markers to be installed and found that the Code appears to be silent on this issue. We have not found any state statute that requires the markers to be installed.

Upon consulting the Florida DOT Specifications Section 630, we did find that for Fiber Optic Lines that serve ITS systems, the FDOT does advocate installation of utility markers. A copy of the pertinent section of the FDOT Specifications is attached for your reference. Note that Brevard County Public Works typically follows the FDOT Technical Specifications, with some exceptions.

Recommendations

Staff recommends the following:

1. Board of County Commissioners consider the issues raised by Mr. Stevenson, and make a policy decision regarding the installation of underground Utility Markers on Brevard County Right of Way and within Public Utility Easements.
2. Board of County Commissioners may want to consider directing staff to engage in a dialog with affected utility companies in order to gain perspective on the potential impact of removing or not placing the markers.
3. Board of County Commissioners may want to consider directing staff and CAO to amend the Brevard County Code accordingly.

SECTION 630 CONDUIT

630-1 Description.

Furnish and install conduit for traffic control signals and devices, highway lighting, and other electrically powered or operated devices as shown in the Contract Documents.

630-2 Materials.

630-2.1 Conduit: Use materials that have been tested and listed by a Nationally Recognized Testing Laboratory to the following industry standards:

Schedule 40 and 80 Polyvinyl Chloride (PVC) ¹	UL 651
Fiberglass Reinforced Epoxy ²	UL 2420
Intermediate Metal ³	UL 1242
Rigid Galvanized Metal ^{3,4}	UL 6
Rigid Aluminum ⁴	UL 6A
PVC Coated Intermediate Metal ⁴	ASTM A135/A135M, ASTM A513, ASTM A568/A568M, NEMA RN1-2005
Liquid Tight Flexible Metal	UL 360
High Density Polyethylene (HDPE) Standard Dimension Ratio (SDR) 9-11 ⁵	ASTM F2160
HDPE SDR 13.5 ⁵	ASTM F2160, NEMA TC-7
Schedule 40 and 80 HDPE	UL 651A

1. Use conduit with solvent weld slip-fit plastic couplings unless approved by the Engineer.

2. Use conduit having a minimum stiffness value of 250. Ensure that each section has a duct bell with an integral gasket on one end and a duct spigot on the other end.

3. Use conduit that is hot-dipped galvanized with a minimum coating of 1.24 ounces per square foot on both the inside and outside of the conduit. The weight of the zinc coating shall be determined using ASTM A90.

4. Use conduit with both ends reamed and threaded.

5. Can be used with preassembled cable and rope-in-conduit.

630-2.2 Locate Wire: Ensure that locate wire is a single copper conductor with a minimum gauge of No. 12 AWG. Ensure locate wire is insulated using a 45 mil minimum thickness polyethylene sheath that is orange in color and marked to identify the manufacturer and the conductor size.

630-2.3 Locate Wire Grounding Unit: Ensure that locate wires are attached to a wire grounding unit (WGU) dedicated to safely dissipate high transient voltages or other foreign electrical surges induced into the designated system. Ensure the WGU conforms to the following:

1. Allows signals generated by locate system transmitters to pass through the protection system without going to ground.

2. The protection system automatically resets and passes locate system transmitter signals after the unit has been grounded to dissipate over-voltages.

3. Is intended for below or above grade applications. Ground the WGU to a driven rod within 10 feet of the system using a No. 6 AWG single conductor wire with green insulation.

Ensure that the WGU is enclosed for protection from environmental hazards and is accessible for the connection of portable locate system transmitters.

4. The WGU system meets the minimum standards listed in Table 1 for surge protection:

Table 1: Minimum Standards for Surge Protection	
Surge Element	3-element maximum duty fail-safe gas tube.
Rating	40,000 A surge capacity (single-cycle, 8 by 20 microsecond waveform).
Life	Minimum 1,000 surges (1000 A to ground).
Fail-Safe	Integral fail-short device.
Insulation Resistance	1,000 megohm minimum at 100 volts of direct current (V_{DC}).
Clamp Voltages	a. Impulse at 100 volts per microsecond: Typically 500 volts. b. Direct Current: 300 to 500 volts.

630-2.4 Warning Tape: Ensure that the buried cable warning tape is flexible, elastic material 3 inches wide, 6 mil thick, intended for burial and use as an underground utility warning notice, and that the surface of the warning tape is coated and sealed to prevent deterioration caused by harsh soil elements. Ensure that the warning tape color follows the American Public Works Association color code for underground utilities and has the repeating message “CAUTION: FDOT CABLE,” or other wording approved by the Engineer, permanently printed on its surface. Ensure that the tape material and ink colors do not change when exposed to acids, alkalis, and other destructive chemical variances commonly found in Florida soils.

630-2.5 Route Markers: Route markers may be either a standard route marker (SRM) type or an electronic route marker (ERM) type. Ensure the SRM is a rigid, tubular, driven post used for location and notification purposes only. Ensure the ERM is physically identical to the SRM, but also includes a termination board to provide aboveground access to locate wire buried alongside conduit and cable runs.

Ensure that each SRM is labeled and identified as an FDOT fiber optic cable marker unless otherwise shown in the Plans. The labels must include the Department’s logo, contact information for the local FDOT District, and a telephone number to call prior to any excavation in the area. Ensure that the identification information is permanently imprinted on the top fitting, and will not peel, fade, or deteriorate.

630-2.5.1 Standard Route Marker (SRM): Ensure that SRM posts are white with an orange top fitting cover with black or white lettering and graphics. Ensure that the SRM is a tubular configuration, and both the marker post and the top fitting are made from virgin Type 111 HDPE. Ensure that any fasteners used with the SRM are constructed of stainless steel.

Ensure that all SRMs have a minimum outside diameter of 3.5 inches with a minimum wall thickness of 0.125 inches. Ensure that the top fitting cover is a minimum of 1.5 feet long and has an outside diameter of 3.75 inches with a minimum wall thickness of 0.125 inches. Ensure that each SRM provides a tensile strength of 4,200 pounds per square inch as required in ASTM D638. Ensure that each SRM is manufactured for use in temperatures range of minus 30° to 165°F in accordance with NEMA TS 2.

Ensure the SRM can withstand an impact force of 70 pounds per foot at 32°F in accordance with ASTM D2444, before and after UV conditioning for 2,000 hours in accordance with ASTM G154. Ensure that the control sample of any material tested maintains a minimum of 70 percent of its original tensile strength.

Ensure that SRMs installed at the minimum 2 foot depth can withstand at least one impact at 45 miles per hour by a vehicle weighing at least 3,500 pounds and that after impact, post returns to an upright position within 10 degrees of vertical alignment within 30 seconds from the time of impact.

630-2.5.2 Electronic Route Marker (ERM): Ensure ERMs meet the same material and performance requirements as the SRMs with the following exceptions. Equip each ERM with a removable, top-fitting cover that is black with white lettering. Ensure that each ERM contains a terminal board equipped with locate wire and ground connectors.

Ensure that the terminal board is made from corrosion-resistant materials and includes terminal facilities labeled according to function and provides uniform spacing between connection points.

630-3 Installation Requirements.

630-3.1 General: Install the conduit in accordance with NEC or National Electrical Safety Code (NESC) requirements and the Design Standards. Consider the locations of conduit as shown in the Plans as approximate. Construct conduit runs as straight as possible, and obtain the Engineer's approval for all major deviations in conduit locations from those shown in the Plans. Include buried cable warning tape with all trenched conduit. Mark the location of the conduit system with route markers as shown in the Plans and approved by the Engineer. Ensure that all route markers used are new and consistent in appearance.

For conduit installed by directional bore, install in accordance with Section 555. For conduit installed by jack and bore, install in accordance with Section 556.

Use only intermediate metal conduit, rigid galvanized metal conduit, rigid aluminum conduit or PVC coated intermediate metal conduit for above-ground electrical power service installations and rigid galvanized metal conduit or rigid aluminum conduit for underground electrical power service installations. Meet the requirements of Section 562 for coating all field cut and threaded galvanized pipe.

Use Schedule 80 PVC or fiberglass reinforced epoxy conduit in structural elements in or on bridge decks.

Use HDPE with an SDR number less than or equal to 11, Schedule 80 PVC or Schedule 40 PVC for underground installations in earth or concrete for ITS and traffic control signal applications, except, use only HDPE with an SDR number less than or equal to 11 for blown fiber optic cable installations on limited access facilities.

Use HDPE with an SDR number less than or equal to 13.5, Schedule 80 PVC, or Schedule 40 PVC for underground installations of electrical conduit in earth for lighting applications and landscape irrigation applications.

Use HDPE with an SDR number less than or equal to 13.5, Schedule 80 PVC, Schedule 40 PVC, or rigid galvanized metal for underground installations of electrical conduit in concrete for lighting applications.

Do not place more than the equivalent of three quarter bends or 270 degrees of bends, including the termination bends, between the two points of termination in the conduit, without a pull box. Obtain the Engineer's approval to use corrugated flexible conduits for short runs of 6 feet or less.

When a conduit installation changes from underground to above-ground, make the change a minimum of 6 inches below finished grade.

Install a No. 12 AWG pull wire or polypropylene cord inside the full length of all conduits. Ensure that a minimum of 24 inches of pull wire/cord is accessible at each conduit termination.

Ensure the conduit includes all required fittings and incidentals necessary to construct a complete installation.

When earth backfill and tamping is required, place backfill material as per Section 120 in layers approximately 12 inches thick, and tamp each layer to a density equal to or greater than the adjacent soil.

When backfilling trenches in existing pavement, use a flowable fill meeting the requirements of Section 121.

Provide a standard clearance between underground control cable and electrical service cable or another parallel underground electrical service cable that meets NESC requirements.

Prevent the ingress of water, dirt, sand, and other foreign materials into the conduit prior to, during, and after construction. Seal the ends of conduit after wiring is complete with a moisture resistant sealant that is designed for this specific application.

630-3.1.1 Fiber Optic Cable Conduit: Install the conduit system so the fiber optic cable maintains a minimum bend radius of 20 times the cable diameter. Use approved methods for connecting inner duct or conduit within or between plowed portions, trenched portions, and bored portions. Submit the conduit manufacturer's coupling method and material to the Engineer for approval.

630-3.2 Conduit Sizes: Size the conduit to be used on all installations, unless otherwise shown in the Contract Documents. Use conduit of sufficient size to allow the conductor to be installed without any damage and meeting NEC requirements. Use conduit that is at least 2 inches in diameter, with the following exceptions:

For conduit protecting the ground wire on the side of a pole, use conduit that is at least 1/2 inch in diameter.

For ITS applications where Contractor chooses to install fiber optic cable by blowing, use conduit that is at least 1-1/4 inch in diameter.

For traffic control signal and device electrical service conduit, use the minimum conduit size required by the local maintaining agency and the electrical service provider.

630-3.3 Conduit Joints: Make conduit joints using materials as specified by the manufacturer. When conduit crosses an expansion joint of a structure and where shown in the Plans, install an expansion or expansion/deflection fitting as specified by the manufacturer. Certify that expansion/deflection fittings are rated to accommodate a minimum rotation of 30 degrees and that both the expansion and expansion/deflection fittings are rated to accommodate the anticipated longitudinal movement (minimum of 2 inches for deflection fittings and 0.7 inches for expansion/deflection fittings). Ensure that all installed joints are waterproof. As an exception to the threaded coupling for intermediate metal conduit, at locations where it is not possible to screw the threaded coupling properly, the Contractor may use a waterproof slip-joint coupling approved by the Engineer. Secure the joint, and tighten threaded connections.

Prior to insertion into the coupling, clean, prime and coat the ends of PVC conduit with solvent-type cement as specified by the manufacturer.

630-3.4 PVC Coating: Apply PVC coating to exposed metal surfaces of the conduit, except for the threads, to attain a nominal thickness of 40 mils. Ensure that the coating is free of sags and drips.

Attach the coupling to the conduit prior to the application of the coating for conduit of 1 inch diameter or less.

Use a coupling with sleeve extensions on conduit larger than 1 inch. Ensure that the sleeve extensions on all threaded female openings have a length equal to the diameter of the conduit up to and including size number 53.

630-3.5 Conduit Terminations: Fit the terminating ends of all metal conduit and metal conduit sleeves with an appropriate bushing.

For conduit to be encased in concrete, wrap with tape or otherwise protect all terminations to prevent the entrance of concrete.

Connect new underground conduits to existing underground conduits with a pull box.

Install conduit terminating in a concrete strain pole through the cable entry hole and up the center of the pole to a location approximately 6 inches below the handhole.

Seal conduits terminating in a controller base, pole, pull box, junction box, or pedestal base with a moisture resistant sealant approved by the Engineer.

For a controller base, pole or pedestal base, and junction boxes, terminate conduit runs into the center of the base or box at least 2 inches above the surface of the base.

630-3.6 Restoration of Trench Areas: Restore the conduit trench construction area to an acceptable condition. Such work includes repair or replacement of all pavement areas, sidewalks, driveways, curbs, structures, landscaping, grass areas (including removal of excavated materials and spoils), removal and disposal of drilling fluids, and backfilling areas disturbed by the conduit installation.

630-3.7 Above-Ground Installation: Use conduit designed and manufactured for use in long-term above-ground applications with UV stabilization to prevent material deterioration. Securely attach above-ground conduit installations to the surface of the supporting structure using conduit straps. As a minimum, use conduit straps located on 5 foot centers. Use galvanized metal conduit straps when installing intermediate metal conduit, fiberglass reinforced epoxy conduit, rigid galvanized conduit, rigid aluminum conduit or PVC coated intermediate metal conduit above ground.

Use the same PVC coating for the metal straps as the conduit, when using PVC coated intermediate metal conduit.

630-3.8 Elbows: The radius of curvature of the centerline of any bend shall not be less than shown below:

Size	Standard Radius
1/2 inch	4 inches
3/4 inch	4-1/2 inches
1 inch	5-1/2 inches
1-1/4 inches	7-1/4 inches
1-1/2 inches	8-1/4 inches
2 inches	9-1/2 inches
2-1/2 inches	10-1/2 inches
3 inches	13 inches

Size	Standard Radius
3-1/2 inches	15 inches
4 inches	16 inches
5 inches	24 inches
6 inches	30 inches

630-3.9 Fiber Optic Cable Locate Wire: Install locate wire in the trench or bore with all underground conduits to provide end-to-end electrical continuity for electronically locating the underground conduit system. Bury locate wire along the centerline of the top outer surface of installed conduit. Do not install locate wire in a conduit with fiber optic cable.

Do not run locate wires into field cabinets. Terminate locate wires at the first and last pull boxes in the conduit run or as shown in the Plans. Ensure that wire termination occurs in a pull box as shown in the Design Standards, Index No. 17700.

In a trenching operation, install the locate wire no more than 3 inches above the conduit. Ensure that the locate wire enters all pull and splice boxes, and that a minimum of 10 feet of slack locate wire is coiled and neatly stored in each box.

In a boring operation, install the locate wire in an encasement, install the conduit detection wire external to the conduit with no separation between conduit and wire, or use conduit with integral locate wire. Locate wire may also be placed in the void between the inner wall of conduit and innerducts contained within the conduit as long as no other cables are present within the void.

Perform continuity tests and insulation resistance tests on all locate wires and provide the Engineer with all test results. Replace, or repair defective locate wire at no additional cost.

Make locate wire splices in a flush grade-level box. Ensure that locate wire splices are waterproof and suitable for direct burial. Ensure that locate wire splices at the pull box meet NEC requirements. Ensure that locate wire splices are constructed of and in the following order: a mechanical crimp connection with a butt sleeve, an oxide-preventing aerosol lacquer, mastic electrical splicing tape, and standard electrical tape. At the completion of the installation, provide the Engineer with as-built drawings that document all splice locations.

Install WGUs in pull boxes and splice boxes as shown in the Plans or directed by the Engineer. Mount the device in a location high enough from the bottom of the box to allow access to terminal facilities without disturbing cables present within the box. Terminate the locate wires and connect the WGU to ground in accordance with the manufacturer's instructions.

Test the locate wire system after installation to ensure that it functions and can be used to accurately locate the conduit system.

630-3.10 Route Markers: Install route markers for fiber optic cable installations and ensure the following:

1. Markers are plumb and level and the notification information is clearly visible when viewed from the side facing the roadway.
2. Markers are set within the right of way.
3. Markers are placed at a 1 foot offset from the conduit system.
4. The top of the marker post is a minimum of 5 feet and maximum of 6 feet above the finish grade
5. Markers are spaced a maximum of 500 feet apart.
6. A clear line of sight is maintained from one marker to the next.

7. Markers are installed on both sides of the roadway at any crossing point where the conduit system changes to the opposite side of the roadway.

8. Markers are installed at the center point of any conduit run between two pull or splice boxes.

9. Markers are installed at gate locations when the conduit system is adjacent to a fence line.

10. Markers are installed on both sides of a stream, river, or other water crossing, and on both sides of aboveground attachments such as bridges and walls.

Remove and replace all marker posts damaged during installation at no additional cost. Ensure that route marker signs are labeled with a unique identification number, as detailed in the Plans or as approved by the Engineer. Provide as-built documentation at the completion of installation that includes identification number and location of all installed route markers and correlates the marker to the fiber optic infrastructure that it signifies.

Ensure that installation of ERMs includes connection of the route marker to the locate wire associated with the conduit run that the markers identify. Install locate wire through the base of the marker and terminate the locate wires to connectors mounted on the terminal board inside the marker. Install an underground magnesium anode a minimum of 10 feet away from the marker and perpendicular to the conduit system. Terminate the anode lead on the connector mounted on the terminal board inside the marker. Install the bond straps between the anode connector and all locate wire connectors to provide cathodic protection for the locate wire conductor.

630-4 Method of Measurement.

630-4.1 General: Measurement for payment will be in accordance with the following work tasks.

630-4.2 Furnish and Install: The Contract unit price per foot of conduit, furnished and installed, will include furnishing all hardware and materials and all testing as specified in this Section and the Contract Documents, and all labor, casings, removal of excavated materials and spoils, removal and disposal of drilling fluids, locate wire, trenching, boring, backfilling, flowable fill and restoration materials necessary for a complete and accepted installation.

Payment for conduit placed underground will be based on the horizontal length of the trench or bore measured in a straight line between the centers of pull boxes, cabinets, poles, etc., in linear feet, regardless of the length or number of conduits installed. No allowance will be made for sweeps or vertical distances below the ground.

Payment for conduit placed aboveground or bridge mounted will be based on the actual length of conduit installed.

630-5 Basis of Payment.

Price and payment will be full compensation for all work specified in this Section.

Payment for conduit placed under existing turf will be made as open trench.

Payment for conduit placed under existing pavement (roadway, driveways, or sidewalk) will be made as directional bore. If conduit is being placed under both existing turf and existing pavement between two pull boxes, payment for the total pull box-to-pull box length will be made as directional bore. Payment for conduit placed by jack & bore will be made as jack & bore, for the total pull box to pull box length.

No additional payment will be made for multiple conduits in the same trench.

No payment adjustment will be made if the Contractor chooses to use an alternative method approved by the Engineer.

No payment will be made for failed bore paths, injection of excavatable flowable fill, products taken out of service, or incomplete installations.

Payment will be made under:

Item No. 630- 2- Conduit – per foot.