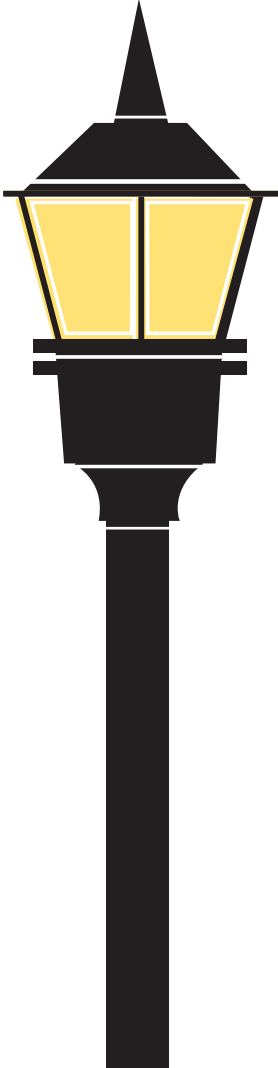




OUConvenient *Lighting*



**Construction
Manual**

Introduction

This manual is provided by OUC – The Reliable One as a guide for use by customers, electrical contractors, engineers, architects, and local inspecting authorities. The specifications and procedures in this manual are subject to change without notice. Therefore, communication between the user and OUC is essential in all circumstances. OUC contact information is provided on the following page.

If items in this manual fall short of the most recent National Electric Safety Code (NESC), or local inspecting authority standards, the NESC, National Electric Code (NEC) and/or local standards will prevail. However, OUC reserves the right to exceed the NESC, NEC, and local authority standards on installations that it serves.

Under no circumstances is compliance with the information contained within this manual to relieve the user of his/her responsibility for compliance with all applicable codes or safety standards.

Lighting Division

Call 407.737.4234

Spot A Street Light Out?

Call OUC at 407.737.4222

or visit www.ouc.com

For Inspections

Call 321.436.6324

Flow Process for Conduit Being Installed by Customer/Contractor

Before any lighting installation begins, the customer/contractor shall use the following checklist and OUC's construction standards dealing with conduit, junction boxes, and underground secondary risers which outline the customer/contractor's responsibilities.

This checklist is to outline the responsibilities of the customer/contractor that are to be completed before lighting installation begins.

The customer/contractor:

- ❑ Two-inch conduit runs for secondary as shown in Figure 1. Conduit runs shall be Schedule 40 Electrical Grade PVC or better, buried to a minimum depth of 24 inches, and not to exceed 30 inches below final grade. Galvanized rigid steel conduit shall be used on all sweeps and elbows, unless otherwise noted. An OUC special electrical warning tape shall be installed 12 inches above the buried conduit. The bottom 10 feet of all above-ground secondary conduit risers shall be galvanized rigid steel, or schedule 80 PVC. The upper 10 feet shall be Schedule 40 PVC or better. A polyolefin pulling string shall be installed by each conduit. Tape or tie the string around the conduit stub. After the secondary conduit is installed, the customer/contractor must provide test holes every 100 feet and at every sweep and arrange for inspection by OUC. Contact the OUC Lighting Engineer 48 hours before the inspection is needed in order to schedule the inspection. The secondary cable will not be installed until the conduit is inspected for compliance with OUC specifications. The developer is responsible to maintain proper cover over the conduit system and will pay for all costs involved in relocating the conduit and cable if the proper cover is not maintained.
- ❑ Install streetlight junction boxes per OUC specifications in the location shown on the drawing.
- ❑ All transformers must be installed according to OUC distribution engineering specifications.

The Orlando Utilities Commission (OUC) shall provide and install the following:

- ❑ All secondary cables and terminations.

- ❑ All streetlight poles and fixtures according to contract.

To successfully coordinate installation of streetlight facilities, the customer/contractor should contact the Lighting Division prior to starting the project. Upon receipt of this checklist, any changes made to the design could cause a delay in the service to the customer. Inspection by OUC does not release the customer/contractor from any required responsibilities stated in this checklist. Hopefully, the benefits of this would be a savings to the customer and aid in expediting the project.

To arrange for inspection call:

OUConvenient Lighting

Phone: 321.436.6324

Fax: 407.737.4233

Email: whale@ouc.com

Conduit Riser Pipe Installation

Instructions

Assemble 10' section of galvanized or schedule 80 PVC pipe to a 90° galvanized elbow. Add one 10' section of PVC conduit.

Take a 10' section of 2" galvanized conduit and put a galvanized coupling on the end of the galvanized conduit. Tighten coupling with a pipe wrench. Screw the 10' section of galvanized conduit to a 90° galvanized elbow and tighten elbow down. Now install one section of PVC conduit onto the elbow. Clean the end of conduit and galvanized elbow. Spread a generous amount of PVC glue onto the bell coupling end or coupling and on the galvanized elbow. Place the section of PVC conduit or coupling over the galvanized elbow. Do this with a slight turning motion. If the conduit does not go all the way into the elbow, it may be necessary to tap the other end of the conduit so that the conduit will go all the way over the elbow. Allow about 5 minutes so the glue will set up. Continue adding 2" schedule 40 PVC up pole to 12" below system neutral. Add 2" weatherhead. (See Figure 2).

Overhead Vertical Spacing Requirements

The space on a pole is strictly defined. 18' to 22' is reserved for communication cable. A clear space of 40" will be maintained above this. Therefore, the lowest OUC attachment will be at 25'4". A teed-street light bracket may be mounted in the clear space when bonded to the pole ground. The 14/3 cable will loop no lower than 23' giving 12" of clearance above communications space. Therefore, a height of 26' is desirable for mounting street lights.

Some poles will have transformers or other hardware already attached. The light will then have to be lowered under the secondaries depending upon the situation.

Select a location on the pole with enough height to provide a good distribution of light. Care must be taken when mounting the light so that it will provide proper clearance from primary wires. Care must also be taken to keep the bracket and fixture from rubbing against house service.

Material Used To Mount Bracket

After choosing the position to mount the light, holes must be drilled through the pole. Drill the holes and then insert the proper size machine bolt in the top hole, making sure it is inserted on the same side that the light is to be mounted. Next add the flat washer and nut. Leave enough bolt sticking out from the pole so the bracket can be mounted. Now attach the bracket and light. Lift the light assembly and place it on the bolt. The bolt can be tightened with hand tools or a hydraulic gun and socket. When tightening the bolt, make sure the bracket is straight on the pole. When the bolt is tight, insert the proper size bolt through the lower hole in the bracket into the pole and tighten. This secures the bracket. The light fixture must be checked to see if it is level.

After the leveling is completed and the light is secure, the secondary connections are made.

Different Voltages

When installing street lights there are fixtures which require different voltages to operate. There are volt fixtures which will require some changes to be made on the wiring terminal block. These fixtures have a multi-voltage ballast and can operate on different voltages. There is usually a wiring diagram placed on the inside of the fixture.

High Pressure Sodium

At the present time, OUC is converting some of its (mercury vapor) lighting to high pressure sodium 400 mv to 250 hps and 175 mv to 100 hps. These fixtures are wired to the secondaries in the same manner as the mercury vapor fixtures. The only difference is the bulb and some internal parts which do not affect the basic wiring to the secondaries. High pressure sodium produces more light with a lower watt bulb.

Lamp Type	Wattage Rating	Initial Lumen Output
Mercury Vapor	100	3600
Mercury Vapor	175	7000
Mercury Vapor	175	7000
Mercury Vapor	250	11000
Mercury Vapor	400	20000
Mercury Vapor	1000	50000
Metal Halide	1000	100000
High Pressure Sodium	70	5800
High Pressure Sodium	100	9500
High Pressure Sodium	250	27500
High Pressure Sodium	400	50000

Making The Secondary Connections

On installations, the neutral wire will be bare or marked by white insulation. The wire, which is to be made hot, will be black and the ground wire will be bare or green.

After these wires have been identified, clean a place on the neutral and one of the hot secondaries using a wire brush. The neutral should be connected first, then connect the load wire from the light next. Use the proper connector when making these connections. If the bulb has not been installed, do so now. Next, the photocell will need to be installed. Notice on the photocell there is a window for which light enters. The light entering through this window controls the on and off operation of the light. This window should be pointing north. It should also not be pointing towards any existing light that would hinder its operation.

Determine the direction of the photocell. This is done by loosening the two screws on the eye socket. This socket is located on top of the light fixture itself. Notice the arrow on the socket. This will determine the direction the window on the photocell will face. Turn the arrow in the desired direction and re-tighten the two screws. Install the photocell and check the light to see if it's operating. To operate, cover the photocell so light cannot enter the window of the cell. The light should come on. This completes the installation.

Installing URD Connected Street Lights

When installing URD connected street lights, the feed for the fixture itself must come underground from a source to the pole, up through the pole, through the bracket, to the light itself. To do this several methods are used. The wire has to be pulled through the pole. To do this a fish tape is used. The fish tape is pushed through the pole: this can be done from either end of the pole. Some concrete poles have a built-in conduit for this purpose; other types are hollow; metal poles are all hollow. The fish tape is pushed through these poles and the wire is taped on to the fish tape. The wire is then pulled through the pole, leaving enough wire at the top for the make-up of the bracket and light. At the bottom of the pole enough wire must be left for connecting to the feed lines. These poles have exit holes for the wire at the top and the bottom.

Street light wire is #14 wire, 3 conductor cable. The hot leg is black in color with a white neutral, green ground. All metal poles must be grounded at luminaire and pole to grounding system. Gel tap assemblies shall be used in junction boxes.

When setting concrete or metal poles, enough wire must be left at the base to connect to the feed. This excess wire is usually taped to the pole just below the gain mark to allow the pole to be set. This keeps the wire from being tangled or dropped in the hole while the pole is being set. When setting poles, two methods are usually used. The first method discussed is to set the pole complete with the fixture, bracket, and wire installed. (This shall not be done near energized conductors.) The second method is to set the pole with the wire installed. When using this method, the wire should be secured to the pole to keep it from being pulled back out.

After the pole has been set, the secondary connections must be made. If the pole was set next to a transformer or a hand hole, enough wire should have been left to go directly to the secondaries. A trench then must be dug from the pole to the source of feed. The trench should be at least 24-30 inches deep. In some cases, conduit will be installed and stubbed up at a predetermined location. This conduit will come from either a transformer or a hand hole. The work order will indicate the necessary information. If the pole is to be set next to the stubbed conduit, a feed wire will have to be pulled through the conduit from the transformer or hand hole and connected to the wire in the pole. All direct buried cables must be sleeved with 1" PVC or 3/4" liquidtight under all sidewalks and driveways. Mark ends of sleeves with PVC out of ground for locating purposes.

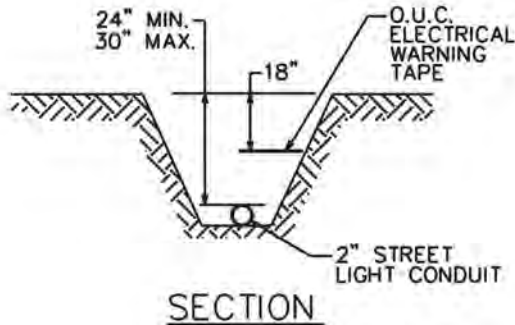
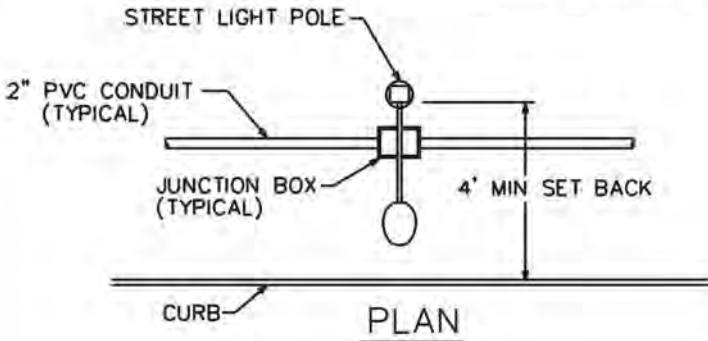
The wire which is pulled through the conduit is usually the same type used to make up the pole. This wire is 14/3 street light wire. Number 8 bugs are used to make this connection: they are tightened with pliers and nut driver. After the wire has been tightened, it must be taped.

TYP. JUNCTION BOX, STREET LIGHT & ELECTRICAL CONDUIT LOCATION PLACEMENT

Fig. 1

NOTE:

1. THE CENTER LINES OF STREET LIGHT POLE AND JUNCTION BOX WILL BE ALIGNED WITHIN 2" UNLESS SPECIFIED BY ENGINEER.



CONSTRUCTION STANDARDS
OUConvenient Lighting
Orlando Utilities Commission

No.	Date	Revision	Clk.	Drawn by	Checked by	Approved by	Date
				JJORDAN	X	X	06-19-02

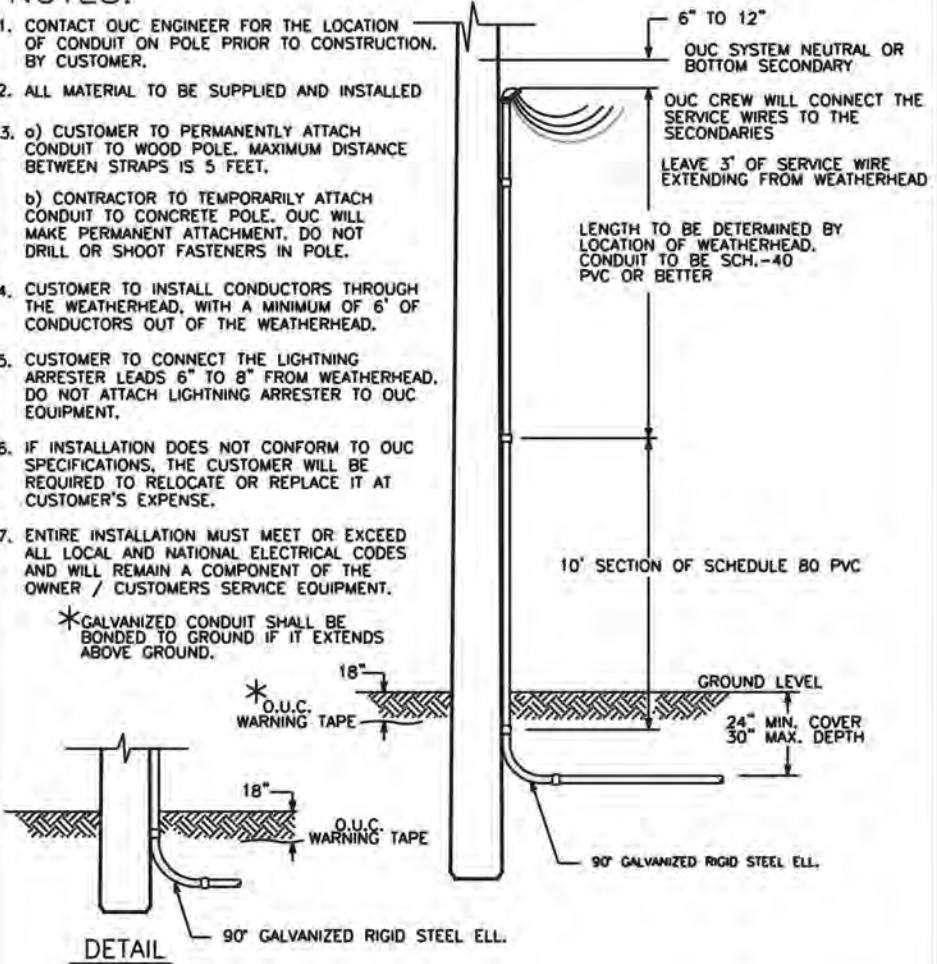
Fig. 2

UNDERGROUND SECONDARY RISER

NOTES:

1. CONTACT OUC ENGINEER FOR THE LOCATION OF CONDUIT ON POLE PRIOR TO CONSTRUCTION. BY CUSTOMER.
2. ALL MATERIAL TO BE SUPPLIED AND INSTALLED
3. a) CUSTOMER TO PERMANENTLY ATTACH CONDUIT TO WOOD POLE. MAXIMUM DISTANCE BETWEEN STRAPS IS 5 FEET.
b) CONTRACTOR TO TEMPORARILY ATTACH CONDUIT TO CONCRETE POLE. OUC WILL MAKE PERMANENT ATTACHMENT. DO NOT DRILL OR SHOOT FASTENERS IN POLE.
4. CUSTOMER TO INSTALL CONDUCTORS THROUGH THE WEATHERHEAD, WITH A MINIMUM OF 6" OF CONDUCTORS OUT OF THE WEATHERHEAD.
5. CUSTOMER TO CONNECT THE LIGHTNING ARRESTER LEADS 6" TO 8" FROM WEATHERHEAD. DO NOT ATTACH LIGHTNING ARRESTER TO OUC EQUIPMENT.
6. IF INSTALLATION DOES NOT CONFORM TO OUC SPECIFICATIONS, THE CUSTOMER WILL BE REQUIRED TO RELOCATE OR REPLACE IT AT CUSTOMER'S EXPENSE.
7. ENTIRE INSTALLATION MUST MEET OR EXCEED ALL LOCAL AND NATIONAL ELECTRICAL CODES AND WILL REMAIN A COMPONENT OF THE OWNER / CUSTOMERS SERVICE EQUIPMENT.

*GALVANIZED CONDUIT SHALL BE BONDED TO GROUND IF IT EXTENDS ABOVE GROUND.



CONSTRUCTION STANDARDS
OUConvenient *Lighting*
Orlando Utilities Commission

Drawn by	Checked by	Approved by	Date
JJORDAN	X	X	06-18-02

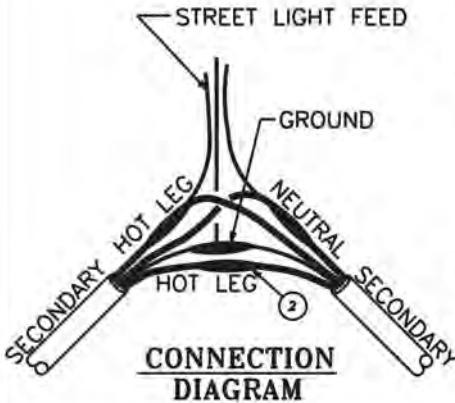
No.	Date	Revision	Ch.

Fig. 3

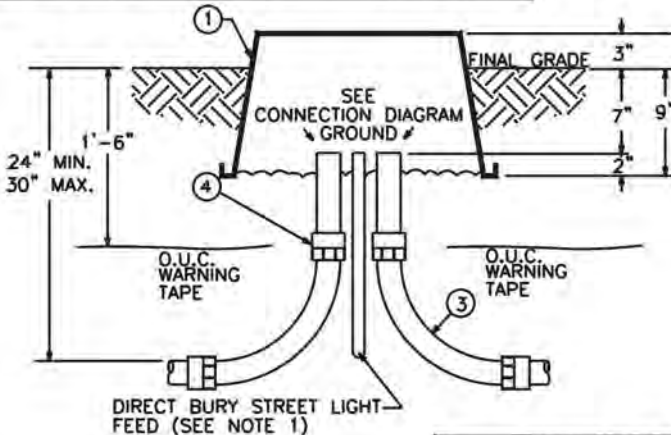
STREET LIGHT JUNCTION BOX CONNECTIONS

NOTES:

1. BOX AND COVER TO BE OUC STOCK NO. 036-26039
2. IF STREET LIGHT POLE IS 5 OR MORE FEET FROM JUNCTION BOX, THE STREET LIGHT CONDUCTOR MUST BE INSTALLED IN A 1 INCH CONDUIT. IF WIRES UNDER CONCRETE AT ANY POINT BETWEEN BOX & POLE MUST BE IN 1" CONDUIT.
3. ON DIRECT EMBEDMENT POLE INSTALLATIONS USE DIRECT BURY "UF" CONDUCTOR TO POLE.
4. TOP SURFACE OF JUNCTION BOX TO BE 3" ABOVE FINAL GRADE.



ITEM	QUANTITY	DESCRIPTION	OUC STOCK NO.
1	1	STREET LIGHT JB	036-26039
2	3	CONNECTOR, INSUL. SLEEVE	016-110--
3	2	ELL, 2 INCH GALV. 90	046-05220
4	4	ADAPTER, 2 INCH	046-26020



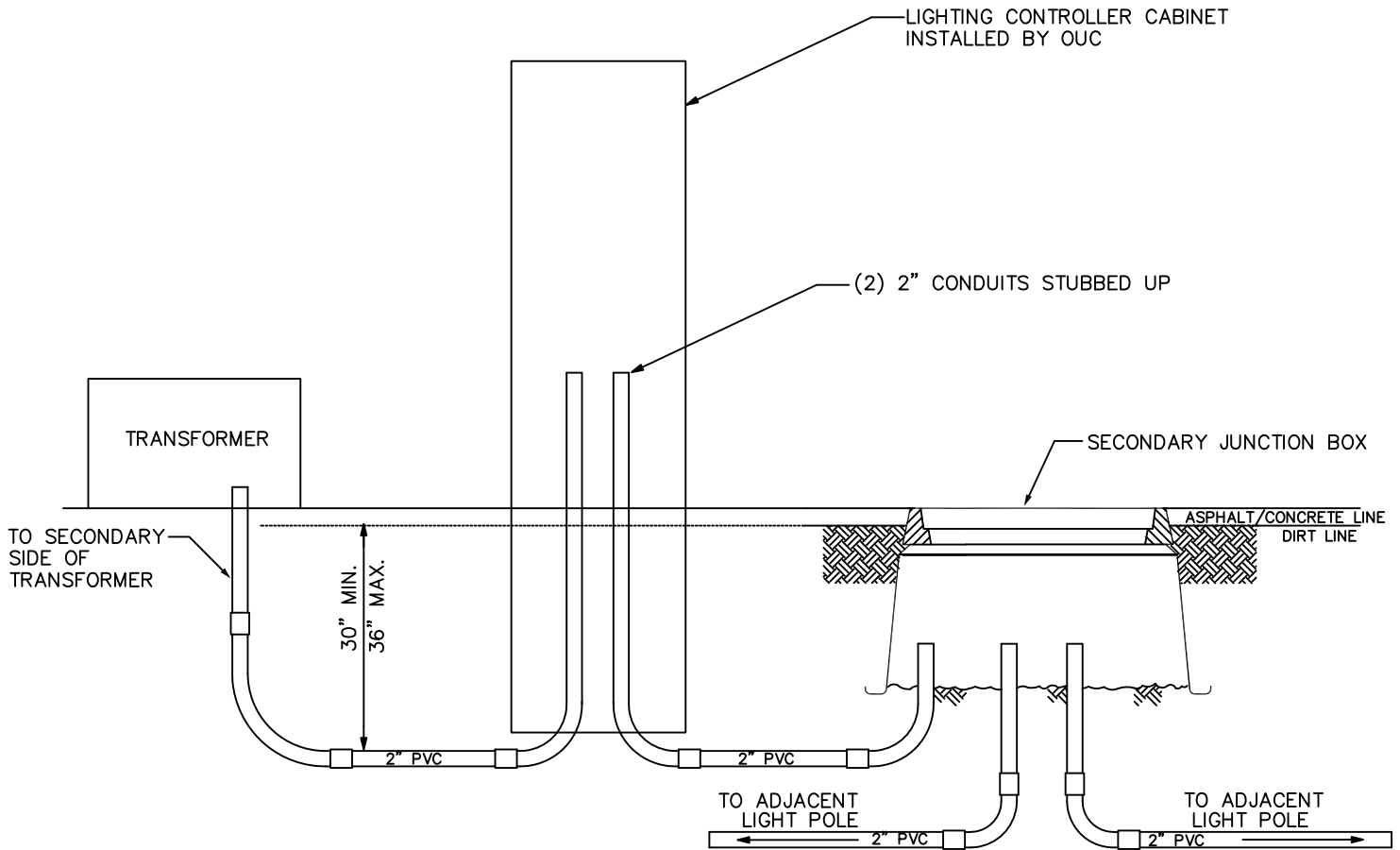
CONSTRUCTION STANDARDS
OH & UG Distribution System
Orlando Utilities Commission

No.	Date	Revision	Ck.	Drawn by	Checked by	Approved by	Date
	02-18-98	ADDED GROUND		J. JORDAN			06-18-02

TYPICAL LIGHTING CONTROLLER CONDUIT DETAIL

NOTES:

1. IF JUNCTION BOX IS INSTALLED IN DIRT AREA, TOP OF BOX SHALL BE 1 1/2" ABOVE DIRT LINE.
2. WARNING TAPE TO BE INSTALLED 18" ABOVE TOP OF CONDUIT.
3. ALL 90° ELLS TO BE RIGID GALVANIZED
4. MAXIMUM DISTANCE FROM POWER SOURCE TO CONTROLLER SHALL BE 10' UNLESS OTHERWISE SPECIFIED BY OUC ENGINEER.



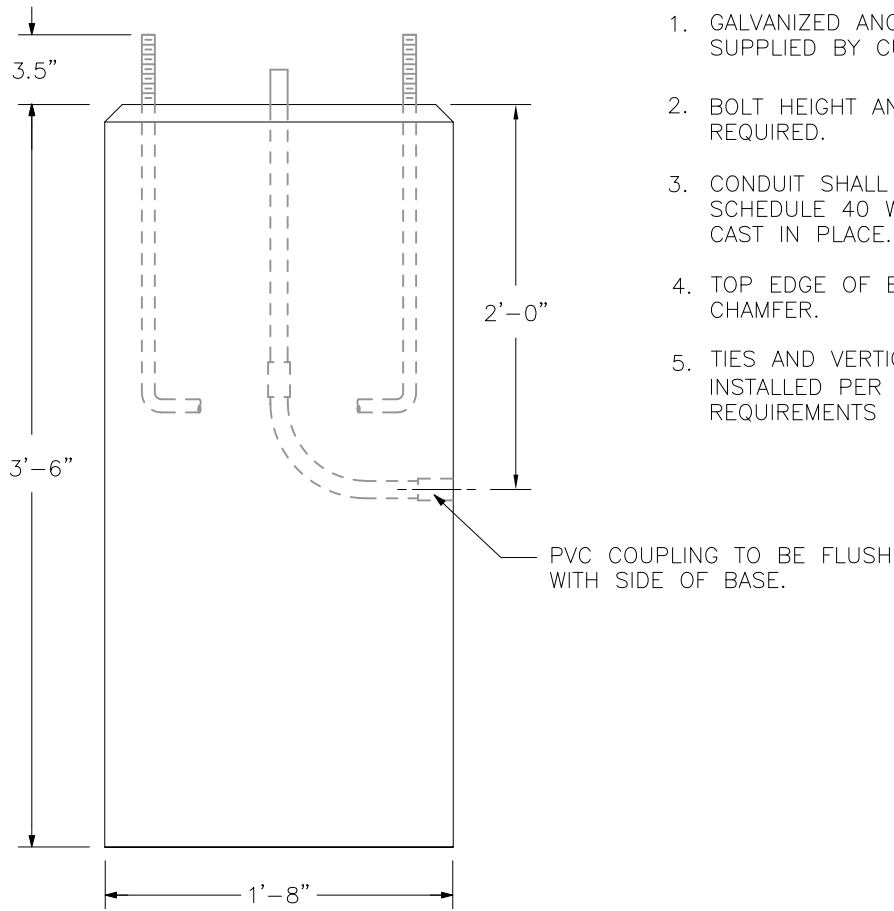
CONSTRUCTION STANDARDS
OUConvenient *Lighting*
Orlando Utilities Commission

				Drawn by	Checked by	Approved by	Date
No.	Date	Revision	Ck.	RAD	RAD	VLF	01-15-08

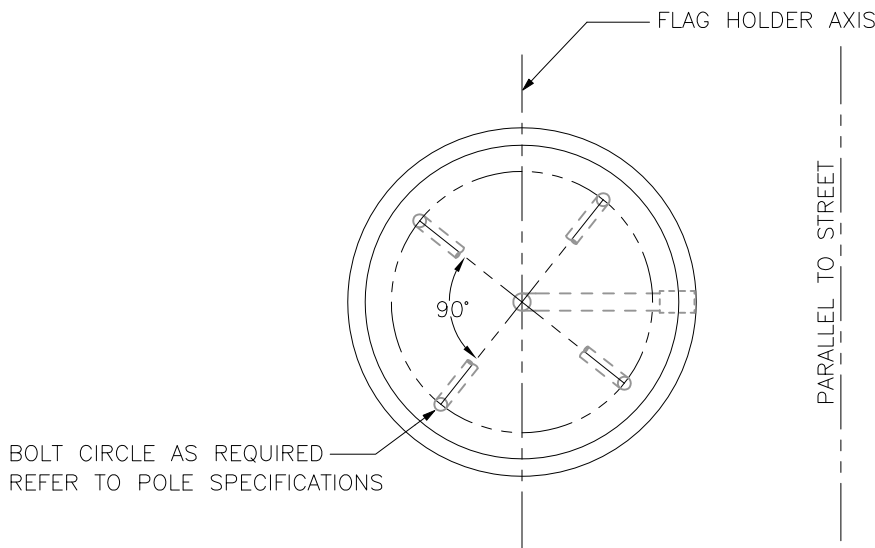
STREET LIGHT ANCHOR BASE "B" FOR DECORATIVE ALUMINUM POLES

NOTES:

1. GALVANIZED ANCHOR BOLTS SHALL BE SUPPLIED BY CUSTOMER.
2. BOLT HEIGHT AND BOLT CIRCLE AS REQUIRED.
3. CONDUIT SHALL BE 1.0" DIA. °PVC SCHEDULE 40 WITH A 90 PVC ELBOW CAST IN PLACE.
4. TOP EDGE OF BASE SHALL HAVE 1" CHAMFER.
5. TIES AND VERTICAL REBAR TO BE INSTALLED PER PRECAST COMPANY'S REQUIREMENTS



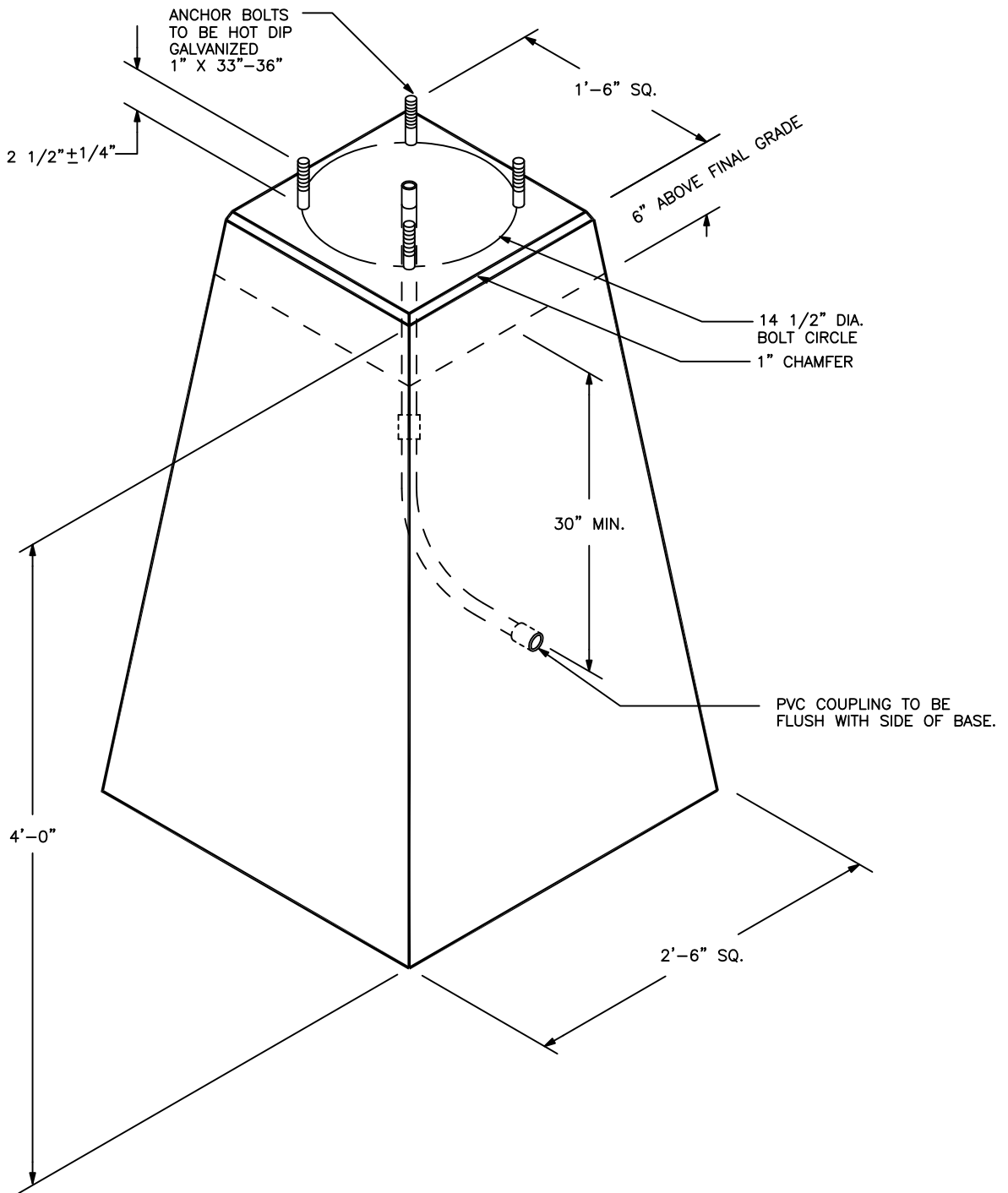
PVC COUPLING TO BE FLUSH WITH SIDE OF BASE.



CONSTRUCTION STANDARDS
OUConvenient *Lighting*
Orlando Utilities Commission

No.	Date	Revision	Ck.	Drawn by	Checked by	Approved by	Date
				J JORDAN	RAD	RAD	10-16-06

STREET LIGHT ANCHOR BASE "C" SHOE BOX STYLE LIGHTS



NOTES:

1. GALVANIZED 1" X 33" ANCHOR BOLTS SHALL BE SUPPLIED BY CUSTOMER.
2. BOLT HEIGHT AND BOLT CIRCLE AS REQUIRED.
3. CONDUIT SHALL BE 1" DIA. PVC SCHEDULE 40 WITH A 90° PVC ELBOW CAST IN PLACE.

BROOKS PRODUCTS INC.
AB 1830 BASE
WT. 1,600 LBS.

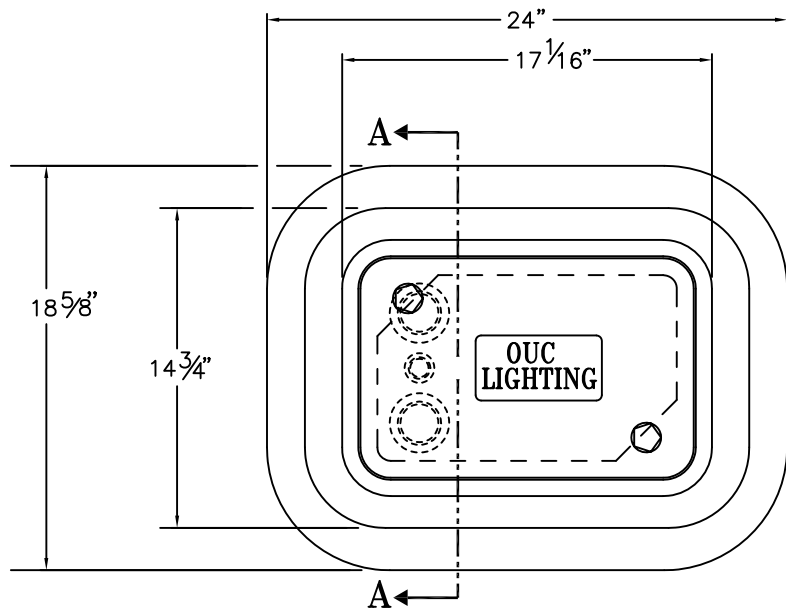
CONSTRUCTION STANDARDS
OUConvenient *Lighting*
Orlando Utilities Commission

No.	Date	Revision	Ck.	Drawn by	Checked by	Approved by	Date
				J JORDAN	X	X	06-04-02

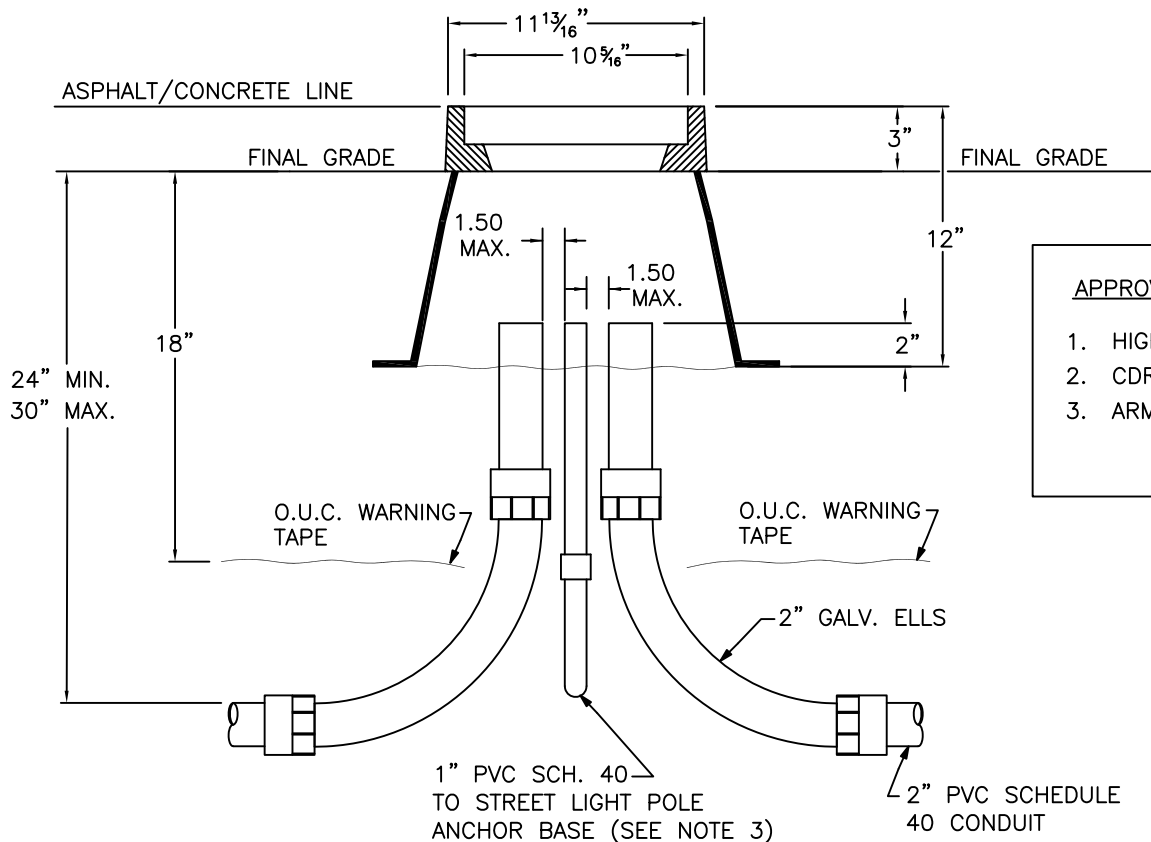
STREET LIGHT JUNCTION BOX

NOTES:

1. BOX AND COVER TO BE OUC STOCK NO. 036-26039
2. IF STREET LIGHT POLE IS 5 OR MORE FEET FROM JUNCTION BOX, THE STREET LIGHT CONDUCTOR MUST BE INSTALLED IN A 1 INCH CONDUIT. IF WIRES UNDER CONCRETE AT ANY POINT BETWEEN BOX & POLE MUST BE IN 1" CONDUIT.
3. ON DIRECT EMBEDMENT POLE INSTALLATIONS USE DIRECT BURY "UF" CONDUCTOR TO POLE.
4. TOP SURFACE OF JUNCTION BOX TO BE 3" ABOVE FINAL GRADE.



PLAN



APPROVED MANUFACTURERS

1. HIGHLINE #CHA101512S0731
2. CDR #PA10-1015-12
3. ARMORCAST #A6001923AX12

SECTION A-A

CONSTRUCTION STANDARDS
*OUC*onvenient *Lighting*
 Orlando Utilities Commission

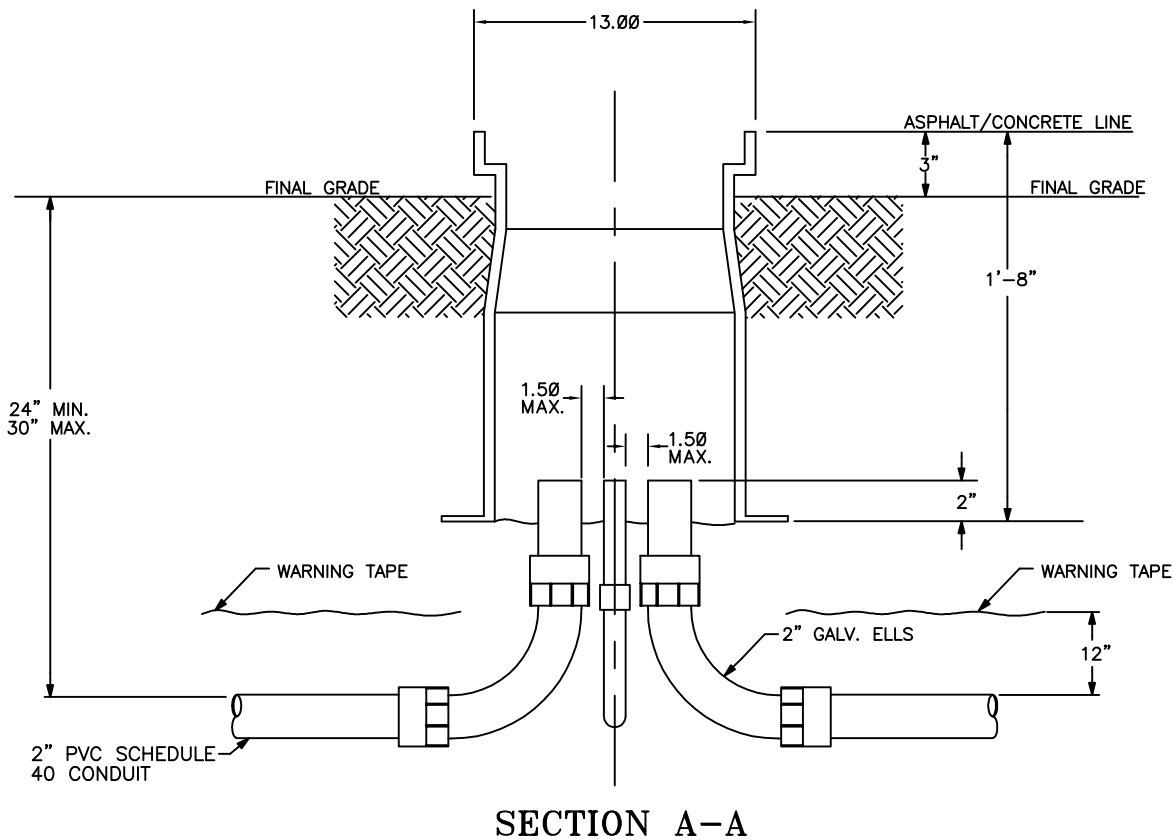
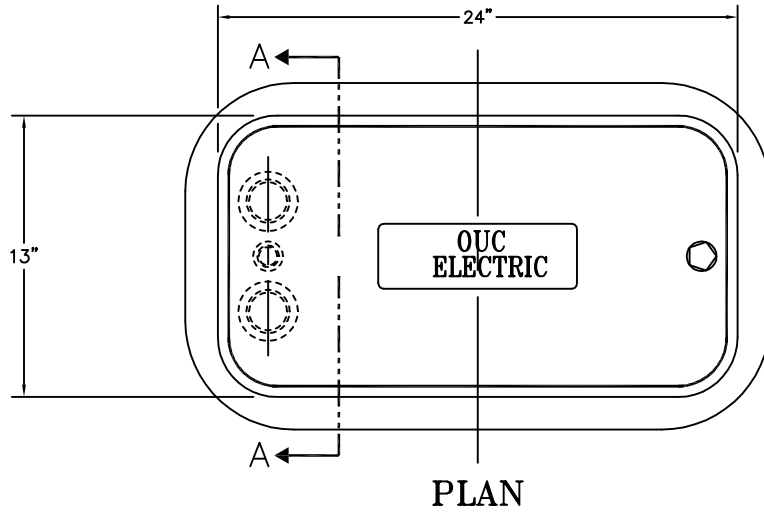
No.	Date	Revision	Ck.	Drawn by	Checked by	Approved by	Date
				JJORDAN	RAD	RAD	08-14-14

LIGHTING SECONDARY JUNCTION BOX

FIG. 9

NOTES:

1. BOX AND COVER TO BE OUC STOCK NO. 046-08000
2. TOP SURFACE OF JUNCTION BOX TO BE $\pm 3"$ ABOVE FINAL GRADE.
3. ALL CONDUIT SHALL EXTEND 2" VERTICALLY ABOVE GROUND.



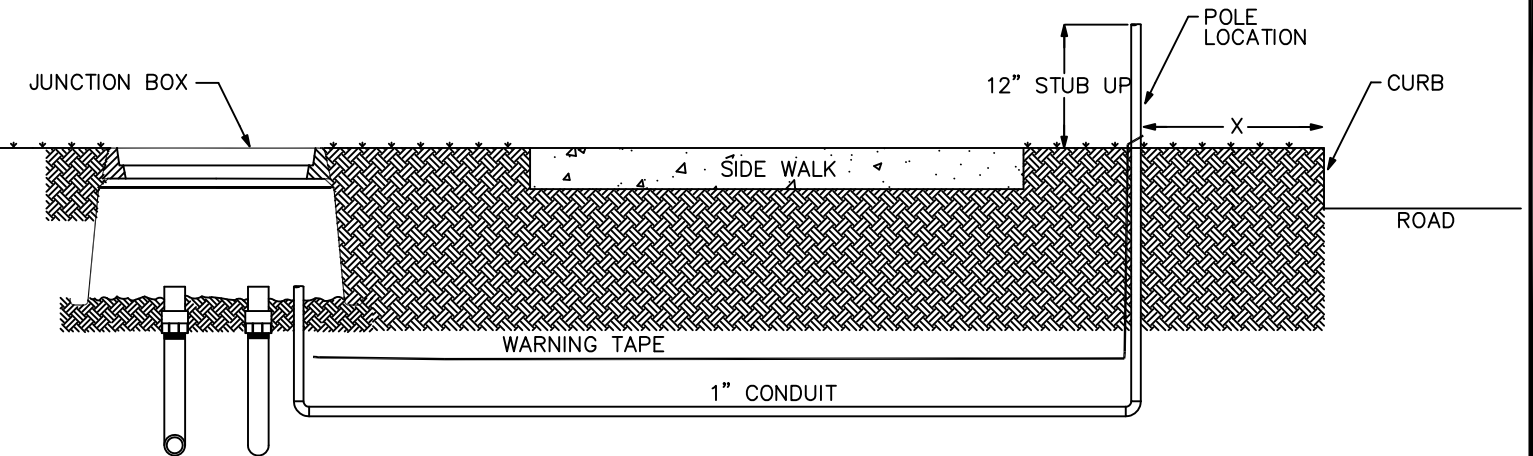
CONSTRUCTION STANDARDS
OUC *Convenient Lighting*
Orlando Utilities Commission

No.	Date	Revision	Ck.	Drawn by	Checked by	Approved by	Date
				JJORDAN	X	X	03-21-06

TYPICAL 1" CONDUIT SLEEVE DETAIL

NOTES:

1. WARNING TAPE TO BE TIED TO THE STUB OUT PIPE
2. "X" FEET INDICATES 4' FOR F-TYPE CURB OR 6' FOR "MIAMI" CURB

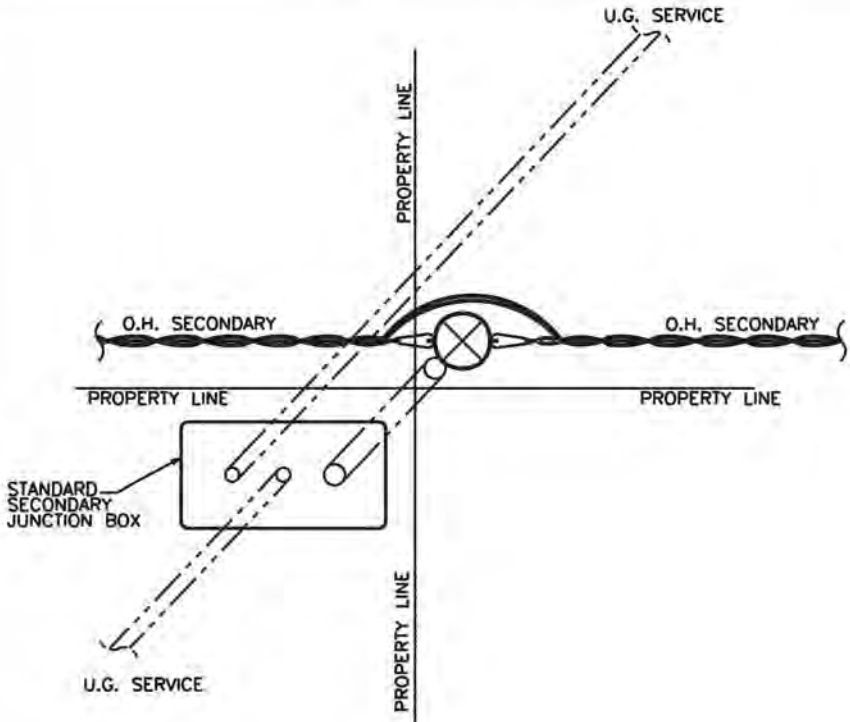


CONSTRUCTION STANDARDS
 OUConvenient *Lighting*
 Orlando Utilities Commission

No.	Date	Revision	Ck.	Drawn by	Checked by	Approved by	Date
				RAD	X	X	06-19-12

TYPICAL SECONDARY RISER
(PLAN VIEW)

Fig. 11



NOTES:

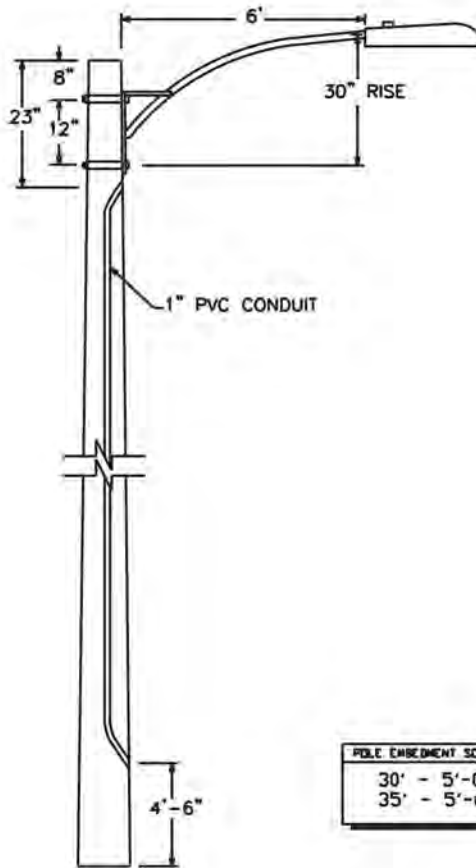
1. FOR RISER, USE 3" SCHEDULE 80 PVC CONDUIT FOR FIRST 10'. REMAINING LENGTH WILL BE 3" SCHEDULE 40 PVC. TOTAL LENGTH OF RISER WILL BE DETERMINED BY LOCATION OF 3" WEATHER HEAD.
2. CUSTOMER RESPONSIBILITY IS TO USE 2" SCHEDULE 40 PVC BETWEEN JUNCTION BOX AND CUSTOMER'S METER.

CONSTRUCTION STANDARDS
 OUConvenient *Lighting*
 Orlando Utilities Commission

No.	Date	Revision	Cl.	Drawn by	Checked by	Approved by	Date
				XX	X	X	07-17-02

STREET LIGHT
POLE

Fig. 12



POLE EMBEDMENT SCHEDULE	WEIGHT
30' - 5'-0"	1340 LBS
35' - 5'-6"	1820 LBS

CONSTRUCTION STANDARDS
OUConvenient *Lighting*
Orlando Utilities Commission

No.	Date	Revision	CL.	Drawn by	Checked by	Approved by	Date
				Oliver	X	X	07-17-02

Fig. 13

TYPICAL
SHOE BOX LUMINAIRE

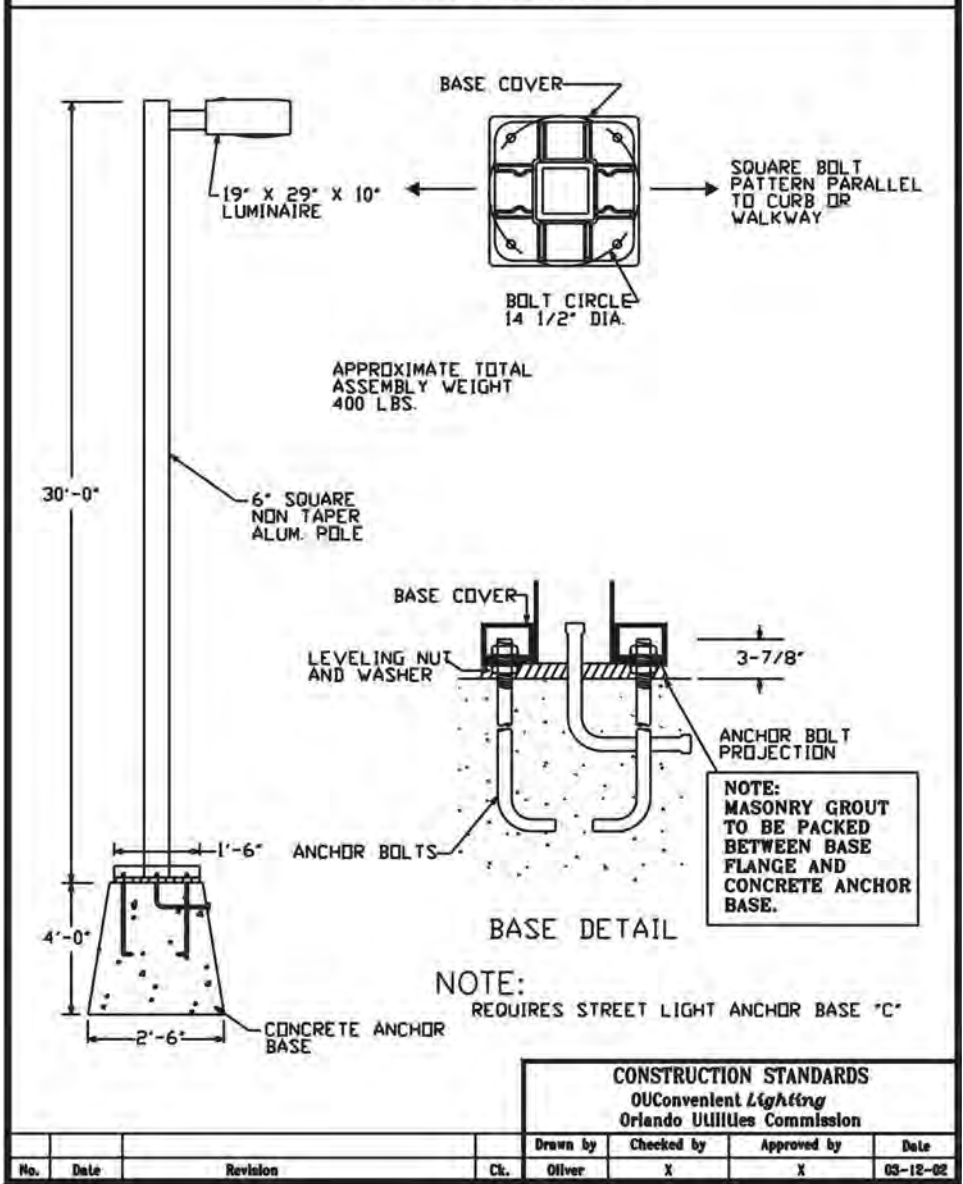
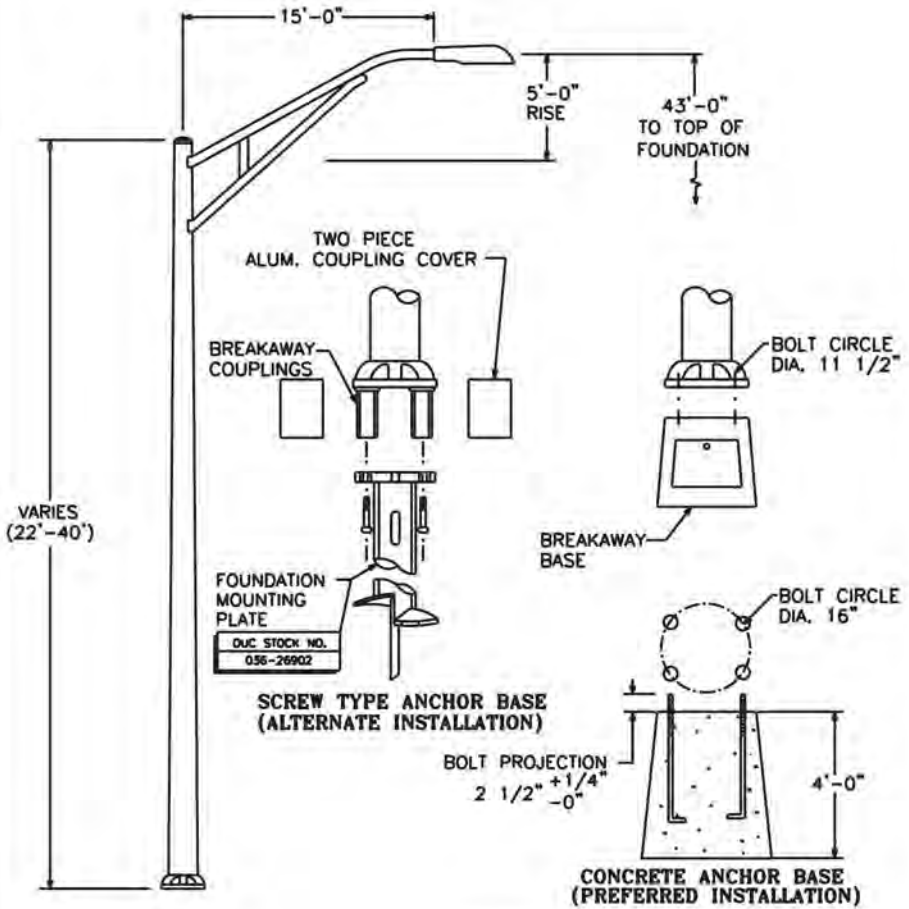


Fig. 15

TYPICAL EXPRESSWAY
POLE & LUMINAIRE



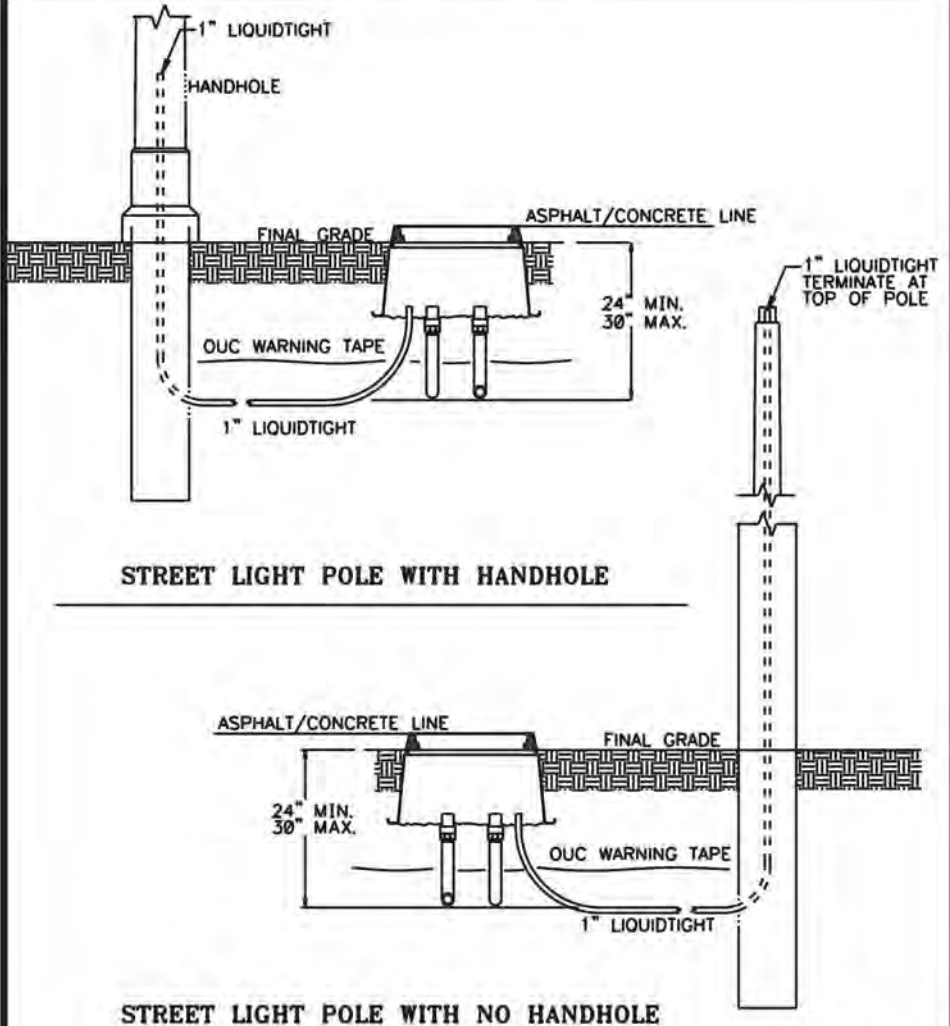
NOTE:
REQUIRES STREET LIGHT ANCHOR BASE "C"

CONSTRUCTION STANDARDS
OUConvenient *Lighting*
Orlando Utilities Commission

No.	Date	Revision	Cl.	Drawn by	Checked by	Approved by	Date
1	5-25-5	ADDED BREAKAWAY BASE	DM	B. OLIVER	X	X	12-11-02

Fig. 16

INSTALLATION OF LIQUIDTIGHT



STREET LIGHT POLE WITH HANDHOLE

STREET LIGHT POLE WITH NO HANDHOLE

CONSTRUCTION STANDARDS
 OUConvenient *Lighting*
 Orlando Utilities Commission

No.	Date	Revision	Clk.	Drawn by	Checked by	Approved by	Date
				XX	X	X	07-17-02



OUConvenient *Lighting*

WWW.OUC.COM