UG Lateral Design Guidelines

Power Delivery
Distribution UG Lateral Hardening Guidelines

1 Philosophy

1.0 Design Methods

1.0.1 Conventional URD (Preferred)

- Design should be according to FPL URD standards with front lot easements. . All above ground facility to be install in easement See DCS L-17.0.5.
- Primary and seconday and handholes are to be install in the right of way
- Follow URD Loading Criteria per DERM Section 5.3.1
- Do not install spare conduits, only the number required per number of phases.
- Do not propose FPL facilities on properties where the customer is not part of the lateral conversion.

1.0.2 Rear-of

- To be initially approved by PM during conceptual phase
- Rear-of route will be approved on a case by case basis, where UG easements can be acquired or already exist and boring equipment can be used for installation.

1.0.3 European Model (See Section 10)

- Install OH or UG transformer per loading requirements, then run UG secondary and service for each customer. Verify the voltage drop (Vd) and flicker (Vf) calculations are acceptable per FPL standards.
- Optimize cable and transformer sizes for constructability
- Maximize the capacity of the TX within acceptable limits

1.1 Design Tools/Options

1.1.1 Transfer customers to the better performing source by moving the normal open location. For example, set the normal open at the last elbow position on the loop and switch off customers to the reliable feeder source.

1.1.2 Break up or combine existing UG loops, as needed, to have all customers fed from a reliable source. Verify loop loading criteria.

1.1.3 You may incorporate adjacent OH lateral(s) that are not part of the original scope, if it will improve the overall design and reliability. Verify the

additional lateral(s) meet the program criteria and are approved by the Project Manager.

2 Handholes (HH):

2.0 Placement:

2.0.1 Whenever possible eliminate using HHs to reduce potential point of failures. Always use the minimum number of handholes to accomplish the objective. Go up and down the road as possible to eliminate crossings which will also reduce the number of handholes on the job.

2.0.2 Handholes should be used to permit utilization of a transformer to its maximum customer capacity. Handholes can be considered when they can eliminate enough cable and conduit to pay for themselves.

2.0.3 Verify voltage drop & flicker calculations meet or exceed FPL standards

2.0.4 For European models fed from overhead TX, handholes will be needed to transition from secondary to service.

2.0.5 Do not cascade handholes, instead install individual runs to each handhole from the transformer. See section 10.

2.1 Sizes

2.1.1 Refer to DCS L-17.0.7 Table I for HH sizes, number of connections and corresponding multi-tap

- Install 30” handholes whenever possible to allow additional work space
- For 4 services or more and parallel secondary minimum 30” handhole is required

3 Padmount TX

3.0 Placement:

3.0.1 Maintain 3’ clearance in the side and back of TX and 8’ clearance in front of TX according to DCS UN-21.0.0.

3.0.2 TXs will be allowed in the rear-of however the designer should attempt to install facilities in the front according to our preferred URD layout. See 1.0.1.

3.0.3 Place TX on minimum required easement, see Section 5.0. Ideally transformers would be located within one property lot to minimize the customer outreach and easement acquisition.

3.0.4 For residential area the transformer shall not be located closer than 15 feet from a door or window. Refer to ESS Section V.

3.1 3-phase Transformers

3.1.1 Coordinate initial design with Project Manager

4 Services

4.0 Converting Service to UG

4.0.1 OH/UG Junction Box to be designed per DCS L-18.0.0
4.0.2 OH service to be removed on UG Install WR

4.1 Inventory

4.1.1 Verify OH and UG service count match
- SV-TPX-1/0-J (OH SVC REMOVED)
- SV-FPL-TPX-XX (UG SVC INSTALL)
  Example: SV-FPL-TPX-1/0

5 Easements

5.0 Requirements

5.0.1 Easements should not be requested for properties that are not being incorporated in the lateral conversion.
5.0.2 10’ easement is required for placement of FPL UG facilities
5.0.3 Single Phase TX - 10’ x 10’ easement required
5.0.4 Open Delta TX - 10’ x 13’ easement required
5.0.5 Three Phase TX – Varies (10’ x 10’ to 20’ x 20’)
5.0.6 Switch Cabinet / Cap Bank - 25’ x 25’ easement required

6 Street Lights / Outdoor Lights / Other Services

6.0 Street Lights

6.0.1 Maintain service to existing OH street lights

- Do not remove streetlights that are part of the OH primary being removed, they need to remain in service and fed from new UG source.
- Cut and top poles that will only have Streetlight and Secondary Circuit.

6.0.2 For energy only street lights maintain service to existing handhole or point of service

6.1 Outdoor Lights (OL's)

6.1.1 Outdoor Lights are to be removed as part of the project.

- Customer Outreach Specialist will inform the customers that outdoor lights will be removed.
- A table showing the lights to removed shall be placed on the plans to record disconnect date.

6.1.2 Do not remove the outdoor light and pole in the OH removal job. This will be handled by an area WR. See SPO 21476.

6.1.3 Create a list of Outdoor Light Locations with TLN#'s and attach to Documentum on the OH removal job.

6.2 Traffic Signals

6.2.1 Coordinate all traffic signal service points with the Project Manager, the county and other agencies will need to be involved.

6.3 Other Services

6.3.1 Maintain power to other services such as communication, lift stations, etc. Include as part of UG Install Design.

7 Vaults (coordinate with PM)

7.0 General

7.0.1 Vault should be looped if practical

- Will need a spare conduit and adequate space for additional equipment

7.1 Radial Vault

7.1.1 Install padmount PME-4 if vault cannot be looped

7.1.2 Request additional easement for PME-4

8 Foreign Utilities/Joint Use

8.0 FPL Poles

8.0.1 Cut and top poles where existing joint use attachments are present

8.0.2 Assign NJUNS REQ 245 to AMGNJUNS

8.1 ATT poles

8.1.1 Only remove FPL facilities, do not inventory pole removal and pole cuts

9 AMI Network Equipment

9.0 Identifying

9.0.1 Identify any smart grid equipment that is on the OH line to be removed (Ex: Repeater, Access Point, Relay)

9.0.2 If any smart grid is present assign REQ 242 to AMRADM1

9.1 Construction Print Note

- AMI Device Type
- Physical address of AMI device
- TLN#
- GPS Coordinates

10 European Model

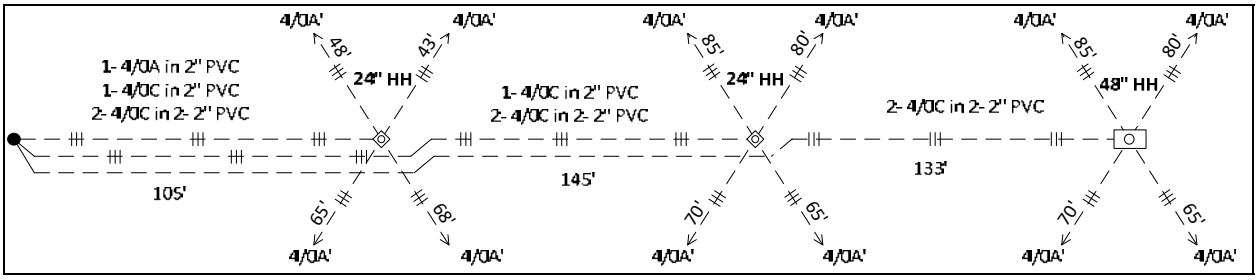
- Install individual secondary runs to each handhole. Do not cascade handholes as this would decrease reliability benefits if a multi-tap or cable were to fail. See diagram below.
- Install a separate duct when paralleling cable to avoid any further derating of the cable.
- Verify Voltage Drop and Flicker is within acceptable FPL standards.
  - Voltage Drop (Vd) – 4.0% Max Residential / 6.5% Max Commercial
  - Voltage Flicker (Vf) – 5.0% Max
- Conservative design practices dictate that a lesser drop 3½% be the target (4% maximum) for a new installation electrically distant from the source of regulation and that 4% be the target (5% maximum) flicker.
- Maximum service length for residential service should be limited to 400 feet. Exceeding this length is permissible provided Vd and Vf are met, requires project manager approval.

Individual service to the meter should be limited to 4/0C.

Sec Cable Sizes:

Cable Size	Ampacity	PVC
#1/0A TPX	123	1-2"
#4/0A TPX	184	1-2"
2-#4/0A TPX	276	2-2"
1-#4/0C TPX	278	1-2"
3-350A	291	1-5"
2-#4/0C TPX	417	2-2"
2-SETS 3-350A	436.5	2-5"

One-line Display:



AMG Dwg Example: