



FTTP ONT Installation

Prepared for ACE

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Memphis, Tennessee

by Mark Massman

RVW, Inc.

(402)564-2876

mmassman@rvwinc.com



ONT Installation Topics

- **ONT - Definition**
- **Pre-Construction Challenges**
 - Services
 - Exterior Premises Challenges
 - Interior Premises Challenges
 - Off Premises Challenges
- **Construction Challenges**
- **Summary**



ONT - Definition

- **Optical Network Terminal**
 - Optical to electrical converter placed onto the subscriber premises in a Fiber-To-The-Premises (FTTP) deployment.
 - Typically has one (or more) POTS interfaces
 - Typically has one (or more) Ethernet interfaces
 - Typically has battery interface for power and alarms
 - Typically includes “NID” functionality of subscriber access point.
 - May have other interfaces (RF Video, T1s, Special Circuits) depending on model and vendor.



Pre-Construction Challenges

- **Services**

- Need to know number of lines and types of other services for every subscriber to be served.
- For ILEC this can be as simple as reviewing existing records.
- For CLEC or for a new acquisition, this must be investigated for every subscriber.
- ONT models and sizes can vary by service.



Pre-Construction Challenges

- **Exterior Premises Challenges**

- Location of the ONT

- Look for the power meter!
 - NEC Bonding requirements (more on this later)
 - Typically one ONT should be placed per meter unless a master meter exists or is added by the phone company
- Look for existing inside wiring
- Power cord limitation (see Interior Premises Challenges)
- Look for drop access
- Coordinate with home/business owner



Pre-Construction Challenges

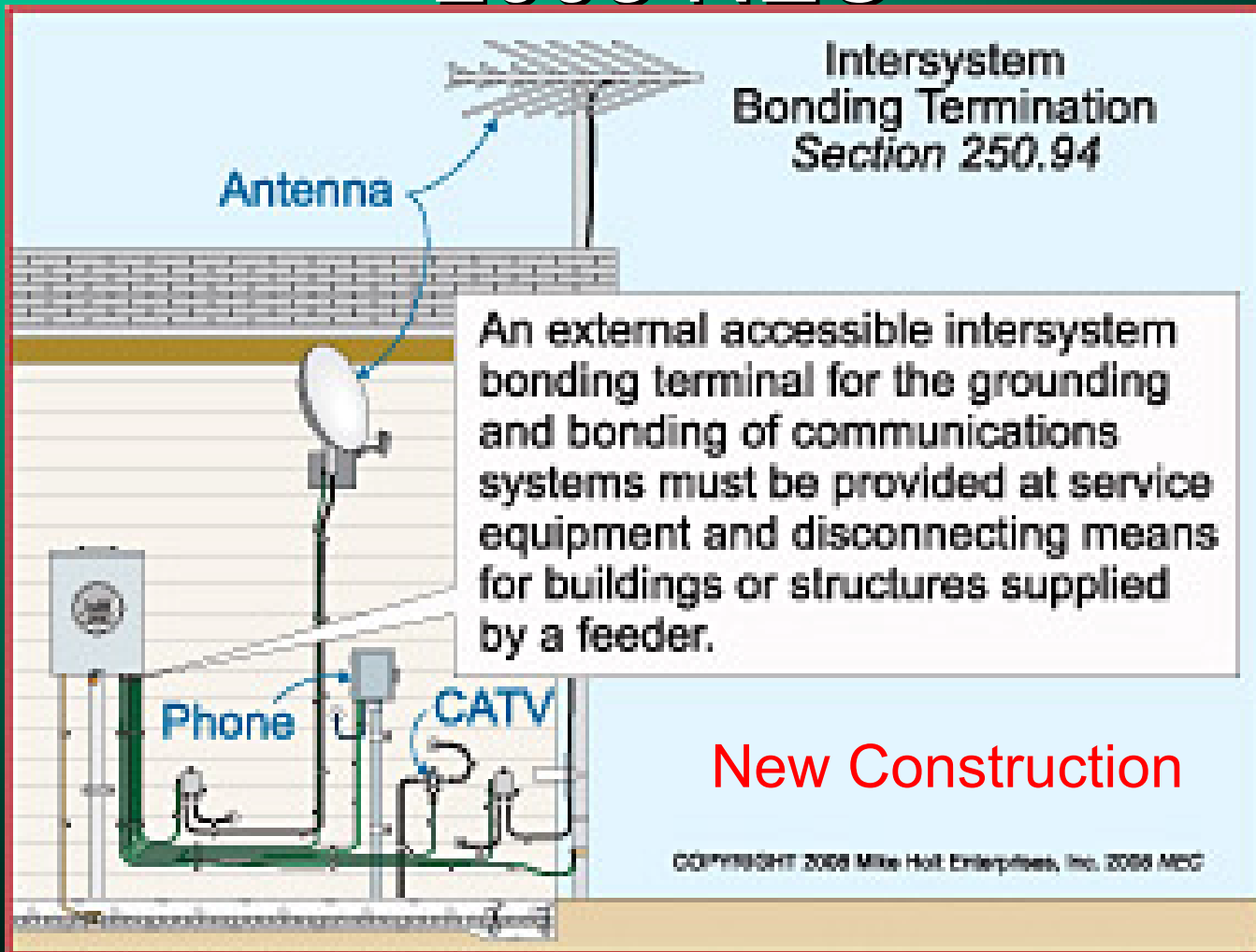
- **Exterior Premises Challenges (cont.)**
 - National Electrical Code
 - Must be bonded to building grounding electrode system regardless of distance.
 - Minimize potential between systems
 - Safety Hazard (shock, fire)
 - Equipment Protection
 - Grounding **does not** equal Bonding!!!!
 - A very long bond is still better than an isolated ground rod.



Intersystem Bonding Challenges

- Yard Poles
 - Farmsteads
 - Suburban/Fringe Rural
 - Often have meter on pole in central location or utility easement
 - Often buried entrances to building(s)
 - Electrical system grounding often “accessible” only at the yard pole!
- Direct Entrance of power via aerial mast
- Others

Solution per Section 250.94 of 2008 NEC





Pre-Construction Challenges

- **Interior Premises Challenges**

- Placement of the ONT

- Allowed length from UPS to ONT varies by vendor – 30 feet to 100+ feet.
- Placement of ONT and UPS must be coordinated!

- Placement of UPS

- Coordination with home/business owner
- Grounded outlet is required by some vendors but not by others.
- UPS should be placed in an easily accessible location for periodic battery replacement.
- Environmental conditions – some locations may require hardened/outdoor battery pack.



Pre-Construction Challenges

- **Off Premises Challenges**

- Allowed length from ONT to phone

- Varies by vendor
- GR-909 calculations result in approximately 500 feet of 22 gauge allowed
- Some vendors allow more than this

- Data/IP Video requirements at OPE

- Approximately 330 foot maximum reach with CAT5 cable

- Above issues may result in a separate fiber drop and ONT being required for what was an OPE.



Construction Challenges

- **Protection of fiber until ONT mounted**
 - Check with vendor to be sure that the ONT housing can be shipped prior to the electronics.
 - This leaves the electronics in the hands of the cutover crew and only requires placement of the housing by the OSP contractor
- **Use of connectorized drops**
 - Slack storage
 - Size drop duct and cane large enough to fit connectorized drops.



Residential ONT Installation Summary





Questions???



Mark Massman

(402) 564-2876

mmassman@rvwinc.com

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