



# NES

## **Pole Attachment and Conduit Usage Guidelines**

**Procedures, Guidelines and Requirements  
Covering the Installation of Communication Cables,  
Wireless Equipment, Banners and Seasonal Equipment  
on NES Poles and in NES Conduits**



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# 1. Introduction

## A: Overview

The information contained in this document is intended to communicate the requirements for pole attachment requests from companies who have a valid Infrastructure Use Agreement with Nashville Electric Service (NES). Adherence to these guidelines, procedures and requirements will improve timeliness of application and approval processes.

This document outlines situations under which NES considers the attachment of facilities to its poles and usage of its conduit. It also outlines the requirements and procedures for granting such permission as well as the physical installation and maintenance of facilities on NES poles.

It is the responsibility of all organizations that apply for attachment to NES facilities or use NES conduits to follow all applicable standards.

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# 1. Introduction

## B: Definitions

1. The following terms, phrases, words, and their derivations shall have the meaning given below. The words "shall" and "will" are mandatory and "may" is permissive. Words not defined shall be given their common and ordinary meaning.
  - 1.1 "Anchor" means an anchor owned by NES which is a device to reinforce the pole to which it is attached by a guy wire.
  - 1.2 "Applicant" means any person who applies to access and make attachment to or otherwise occupy NES infrastructure.
  - 1.3 "Applicable Standards" means all applicable engineering and safety standards governing the installation, maintenance, and operation of facilities and the performance of all work in or around electric infrastructure and includes the most then-current versions of the National Electrical Safety Code (NESC), as adopted by the State of Tennessee, the National Electric Code (NEC), and the regulations of the Occupational Safety and Health Administration (OSHA), "A Local Government Officials Guide to Transmitting Antenna RF Emissions Safety: Rules, Procedures, and Practical Guidance," by the Federal Communications Commission, Local and State Government Advisory Committee, June 2, 2000, each as may be amended from time to time, and/or other reasonable construction, safety and engineering requirements of NES (including this document) or other federal, state, or local authority with jurisdiction over NES' infrastructure.
  - 1.4 "Application" means an application by the operator to install an attachment.
  - 1.5 "Attachment" means with respect to the operator, wireline facilities or wireless equipment affixed to or placed within NES infrastructure to provide communications services, and as further designated in the application and with respect to other users, any communications or electric facilities or equipment affixed to or placed within NES infrastructure.
  - 1.6 "Cable" means any communications cable, wire, or strand, including without limitation fiber optic cable, coaxial cable, and twisted pair copper cable.
  - 1.7 "Communications System" or "System" means the operator's wire line facilities, including but not limited to cables and electronics, as well as any and all associated equipment and facilities owned or controlled by the operator to provide any communications services, and attached to NES infrastructure.
  - 1.8 "Communications Space" means the vertical space, agreed upon by joint and/or infrastructure use agreements, identified on the pole below the communication worker safety zone onto which communication facility attachments can be made.
  - 1.9 "Conduit Attachment" means an attachment consisting of a single communications cable or other object occupying one linear foot of a single conduit, duct, innerduct, or other enclosed structure in NES' underground conduit system.
  - 1.10 "Conduit System" means all the underground conduits owned by NES.
  - 1.11 "Communication Worker Safety Zone" (CWSZ) means as defined in the NESC, section 235C4.

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## B: Definitions

- 1.12 "Corrections" shall mean any of the operator's facilities found to be in violation of the applicable standards. The operator shall use all reasonable efforts to correct such violation immediately. Should the operator fail or be unable to correct such situations immediately, NES may correct the violation and bill the operator for one hundred twenty-five percent (125%) of the actual and documented costs incurred. If any of the operator's facilities are found to be in violation of the applicable standards and such violations do not pose a potential emergency conditions, NES will give the operator notice, and the operator shall have thirty (30) days from receipt of notice to correct any such violation.
- 1.13 "Defective Pole" means a pole that is no longer serviceable due to decay, damage, or deterioration.
- 1.14 "Emergency" means a situation exists which, in the reasonable discretion of the operator or NES, if not remedied immediately, will result in a threat to public safety, a hazardous condition, damage to property or a service outage.
- 1.15 "Equipment Attachment" means each power supply, amplifier, pedestal, banner, decoration, appliance or other single device or piece of equipment affixed to or contained in or around any unit of NES' infrastructure.
- 1.16 "Ground Space" means the area of a pole that is accessible by workers standing on the ground or using a short step ladder. This is typically the first eight feet (8') of the pole.
- 1.17 "Infrastructure" means NES distribution poles, transmission poles with distribution underbuild, ducts, conduit, vaults, anchors, fiber optic cable capacity and active communications capacity, facilities and all other utility infrastructure and associated materials and equipment on or connected to these structures which are owned by, or under the control of, NES.
- 1.18 "Innerduct" means a flexible conduit installed by NES inside a larger conduit for the placement of fiber optic cable.
- 1.19 "Joint-Use Agreement" means an agreement whereby each party in agreement owns poles and has agreed that the other party has the right to attach to and occupy space upon the poles owned by it.
- 1.20 "Joint User" means a joint user which may attach to a pole or anchor, or occupy conduit, either solely or partially owned by NES, in return for granting NES equivalent rights of attachment to poles and anchors and/or occupancy of conduit which it owns, either solely or partially.
- 1.21 "License" means the written consent of NES for the operator to make its attachment.
- 1.22 "Make Ready" means all work that NES reasonably determines to be required to accommodate the operator's attachments or those of another user, and/or to comply with all applicable standards. Such work includes, but is not limited to, administrative work, engineering work, rearrangement and/or transfer of NES facilities or existing attachments, inspections, permitting work, tree trimming (other than tree trimming performed for normal maintenance purposes), pole replacement and construction, or conduit system clearing, but does not include the operator's routine maintenance.

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## B: Definitions

- 1.23 "NJUNS" means the National Joint Utility Notification System, an organization that facilitates efficient utility communications through an electronic online system built to communicate and track information regarding joint utility ventures.
- 1.24 "Overlash Attachment" means each additional cable owned and operated by the operator placed onto an existing licensed cable owned and operated by the operator already attached to a pole. The operator shall not allow third-party overlash or overlash to unauthorized attachments without NES' prior approval.
- 1.25 "Overloaded Pole" means a Pole that (without consideration of Operator's proposed Attachment) exceeds the loading requirements set forth in the Applicable Standards.
- 1.26 "Operator" means the company or organization that will be applying for attachment to NES infrastructure.
- 1.27 "Pole" means a utility pole that is owned by NES that supports power lines or streetlights. Poles may be wood, steel, aluminum, or concrete.
- 1.28 "Pole Attachment" means each communications wire or line attached to a pole, including, but not limited to, cables and service drops. A span wire required to support an unbalanced load shall be considered a pole attachment if the operator does not have a licensed attachment on that same pole.
- 1.29 "Pole Fee" or "Conduit Fee" means annual charges per attachment or per linear foot of conduit, per year. The standard annual pole attachment fee shall be calculated annually, on a per attachment basis.
- 1.30 "Pre-Construction Survey" means all work or operations required by applicable standards and/or NES to determine the make ready work necessary to accommodate the operator's attachments on a pole or within a span of conduit. Such work includes, but is not limited to, a pole loading analysis by a professional engineer licensed in the state of Tennessee (with respect to poles), field inspections and administrative processing.
- 1.31 "Rearrangement of Attachment" or "Rearrange" means the moving of attachments from one position to another on the same pole or in the same conduit.
- 1.32 "Reserved Capacity" means capacity or space on a pole or within a portion of conduit that NES has identified and reserved for its own future electric utility requirements pursuant to a bona fide development plan existing at the time of the license grant, including the installation of communications circuits for operation of NES' electric system.
- 1.33 "Riser Attachment" means each metallic or plastic encasement material placed vertically on NES' infrastructure to guide and protect wires and cables when transitioning from underground to overhead or overhead to underground.

# 1. Introduction

## B: Definitions

- 1.34 "Safety Inspection" shall mean upon twelve (12) months advance written notice from NES, and not more frequently than every five (5) years, NES may at its option jointly perform a safety inspection in all or in part of the territory covered by this agreement with all users to identify any safety violations of all attachments and facilities on or within NES infrastructure. Such notice shall describe the scope of the inspection and provide the operator and all users an opportunity to participate. The operator, NES and other users shall share proportionately in the actual and documented safety inspection costs (based on the proportion of attachments of NES and each other user) irrespective of whether NES elects to perform the safety inspection itself or have it performed by a contractor.
- 1.35 "Service Drop" means a cable used to connect directly to a customer's location from one pole and attached to no more than one additional pole where the additional pole does not support voltage greater than six hundred volts (600V) or a cable used to connect a customer's location through the use of multiple licensed poles where service drop make ready has been performed.
- 1.36 "Supply Space" means the vertical portion of the structure that contains the electrical supply facilities. Generally this space extends from the top of the structure to the lowest point that the electrical supply facilities extend. The lowest point may be:
- Bottom of a bracket
  - Bottom of a piece of equipment (i.e., Transformer, Sectionalizer, Recloser, Capacitor, etc.)
  - Conductor
  - Top of a conduit riser for electrical supply conductors
- NOTE: Under certain conditions street light conductors and hardware are excluded from this list per NESC 238C.
- 1.37 "Transition Space" means the area located above the ground space and below the communication space.
- 1.38 "Tag" means the placement of permanent identifying markers on attachments to make the nature of the attachments and their ownership readily identifiable to NES and other users. The acceptable methods for identifying communication cables are defined in this document.
- 1.39 "Transfer of Attachments" or "Transfer" means the removing of attachments from one pole and placing these onto another pole or moving of attachments from one location in NES' conduit system to another location in NES' conduit system.
- 1.40 "Unauthorized Attachment" means any attachment placed on or within NES infrastructure without authorization. An unauthorized attachment shall not include any attachment that the operator is permitted to affix to a pole pursuant to their agreement with NES, even if the installation of such attachment does not meet applicable standards or differs from the design described in the applicable application.

# 1. Introduction

## B: Definitions

1.41 "User" means any entity that has received approval from NES to place facilities on or within NES infrastructure.

1.42 "Wireless Telecommunications Attachment" means any installation on NES poles that sends and/or receives radio frequency signals, including but not limited to directional, omnidirectional and parabolic antennas, structures to support sending or receiving and/or transmitting devices, cabinets, accessory equipment and other ancillary equipment.

A span wire required to support an unbalanced load for a wireless telecommunication attachment shall be considered a pole attachment if the operator does not have a licensed attachment on that same pole.

## 2. Basic Procedures

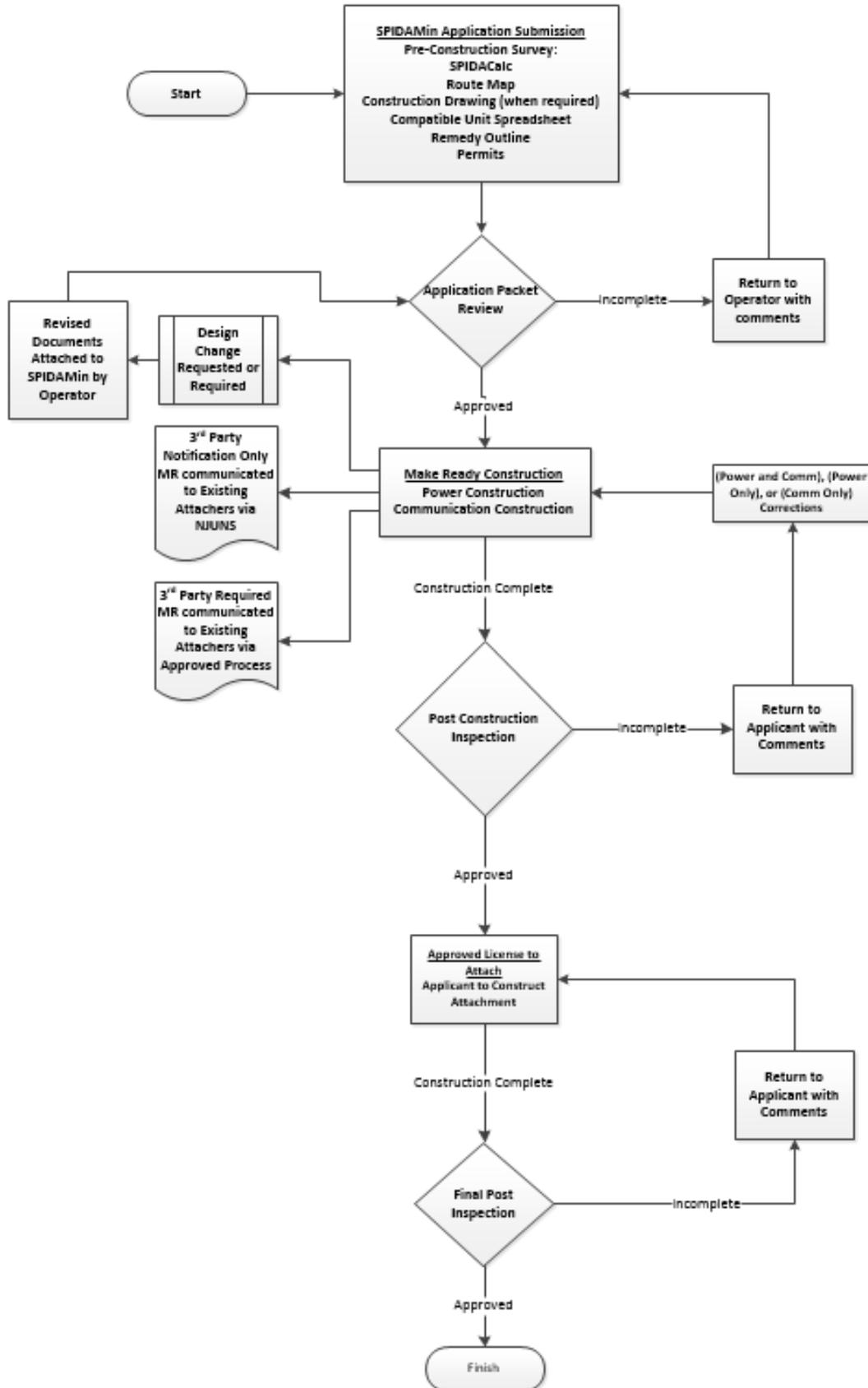
1. **Enter Into Use Agreement:** Prior to making attachments, the applicant must enter into an Infrastructure Use Agreement (IUA) and apply for and obtain prior permission for the use of each pole. To initiate this process, call 615-747-3970 or send an e-mail to [attachments@nespower.com](mailto:attachments@nespower.com). There will be a \$750 initial set up fee invoiced to the applicant. Once the fee is received, NES legal will send an agreement.
2. **Obtain NJUNS Code:** Prior to making attachments, the applicant shall obtain an NJUNS member code. NJUNS is a national organization of member utilities formed for the purpose of improving coordination for pole attachment transfers and other related issues. Go to [web.njuns.com](http://web.njuns.com) to initiate the registration process. Users with less than fifty (50) attachments are not required to have an NJUNS member code.
3. **Submit Design Package:** The applicant will be responsible for providing a design package including the NES utility poles proposed for attachment. There is a limit of thirty (30) poles per application
4. The applicant shall submit a proposal with the following:
  - Route Map
  - Attachment Construction Details
  - Pre-Construction survey files and results (optional, see appendices A & B)
  - Completed SPIDA®Calc file with necessary data (optional, see appendices A & B)
  - Construction drawing depicting adjustments to existing poles (optional, see appendices A & B)
  - Compatible unit spreadsheet for power construction (optional, see appendices A & B)
  - Pole load analysis stamped by a Professional Engineer licensed in the state of Tennessee. (optional, see appendices A & B)
5. **Obtain Permits:** Where attaching installations involve city, county and/or state road rights-of-way or property owned by others such as Army Corp of Engineers, TVA or railroad companies, NES strongly recommends the applicant contact (early in their planning process) the appropriate authorities to obtain the necessary permit(s). The applicant will be required to submit copies of the following permits (if required) before any license can be finalized:
  - Metro ROW and Road Crossing Permits: <http://www.nashville.gov/Public-Works/Permits.aspx>
  - TDOT Permits: <http://www.tdot.state.tn.us/environment/permits/waterquality.htm>
  - US Army Corps of Engineer Permits: <http://www.lrn.usace.army.mil/Missions/Regulatory/ObtainPermit.aspx>
  - Railroad Crossing Permits: [http://www.csx.com/fuseaction=about.property\\_corridor](http://www.csx.com/fuseaction=about.property_corridor)
  - TVA Crossing Permits: <http://www.tva.com/river/26apermits/howto.htm>

## 2. Basic Procedures

6. **Private Property Permission:** At a minimum, applicants shall obtain written permission from all private property owners when work related to the application results in anchors, poles, attachments or other facilities will be located on or crossing private property.
7. **Pay Fee:** The operator shall be charged an application fee for each unit of NES infrastructure. The application fee is due within forty five (45) days from receipt of invoice. At the time of this publication the application is \$65. NES reserves the right to revise the application fee at any time to recover the actual costs incurred while processing applications.
8. **Costs:** Actual costs will be included in the Infrastructure Use Agreement. Reimbursements shall include, but not necessarily be limited to, all design, engineering, administration, supervision, payments, labor, overhead, materials, and equipment. Below is a list of additional costs that may be occurred or are applicable.
  - **Cable** is charged based on each position on the pole.
  - **Banners** are charged based on the linear footage of the pole that is occupied.
  - **Conduit usage** is charged based on the linear footage.
  - **Equipment** charges vary based on the size and nature of the equipment.
  - **Recurring Fees** shall include a standard annual pole fee and an annual conduit rental fee.
  - **Make Ready** work and other associated costs.
  - **Anchor Use Fees** if allowed and agreed upon.
  - **Penalties** if necessary.

# 2. Basic Procedures

## A: Process Flow Chart



# 3. License Application Process

## A: Pole Attachment and Licensing Process

1. **The Standard Pole Application and Licensing:** The application process set out below shall be followed.
  - 1.1 **Submission and Review of License Application:** Operators shall submit their proposed attachment through SPIDA®Min and the application shall contain the following:
    - A route map with each pole that the operator will be attaching
    - A list of materials that will be used for attaching
    - Operator's construction standards
    - Required permits
    - Final OD for any overlashed spans with a final OD greater than two inches (2").
  - 1.2 When new Equipment Attachments are proposed, the operator is to provide construction drawing/specs and build a mockup of any proposed equipment for engineering and operations review.
  - 1.3 If the operator's application does not include a pre-construction survey, NES shall review the application and perform a pre-construction survey. If the attachment can be accommodated, a description of any necessary make ready work will be prepared. NES will respond to properly executed and complete permit application for routine installations as promptly as is reasonable. NES' response will either: (a) provide a description of make ready and a cost estimate for the NES portion of that make ready; or (b) provide a written explanation as to why the application is being denied.
  - 1.4 Upon receipt of NES' make ready cost estimate, the operator shall have fourteen (14) days to approve the estimate, and provide payment, if NES is going to perform the make ready.
  - 1.5 All of the poles listed must be in close proximity to one another to be considered as part of the same license application.
2. **Make Ready Work:** Once NES determines that the attachments can be accommodated consistent with applicable standards, NES will either: (a) advise the operator that it agrees with the operator's description and estimate of the kind of make ready necessary to accommodate the attachments, including the need to rearrange and/or transfer attachments of other users, or; (b) NES will prepare its own estimate of the kind of the make ready and explain the reasons for the difference; or (c) NES will recommend modifications to the operator's description and estimate of the kind of make ready necessary to accommodate the attachments, including the need to rearrange and/or transfer attachments of other users.
  - 2.1 Make ready work in the electric supply space may be performed only by NES and/or a qualified contractor authorized by NES to perform such work. NES may give operator the option of either having NES perform any necessary make ready work, at the operator's cost,

# 3. License Application Process

## A: Pole Attachment and Licensing Process

or allowing the operator to complete make ready work through the use of qualified contractors authorized by NES.

- 2.2 If NES is to perform make ready work it will use good faith efforts to complete routine make ready work within sixty (60) days of receipt of operator's approval of the make ready estimate. If there are extenuating circumstances that make the necessary make ready more complicated or time-consuming, including, but not limited to, the application requesting attachment to more than one hundred (100) poles, or seasonal weather conditions, NES shall identify those factors in the make ready description and cost estimate and the parties shall agree upon a reasonable timeframe for completion
  - 2.3 Upon completion of the make ready work performed by NES, NES shall invoice operator for NES' actual and documented cost of such make ready work. The costs of the work shall be itemized and if NES received advance payment, the costs shall be trued up. The operator shall be responsible for entering into an agreement with existing other users to reimburse them for any costs that they incur in rearranging or transferring their facilities to accommodate the operator's attachments.
  - 2.4 In performing all make ready work to accommodate operator's attachments, NES will endeavor to include such work in its normal work schedule. If the operator requests, and NES agrees, to perform make ready work on a priority basis or outside of NES' normal work hours, the operator will pay any resulting increased actual and documented costs.
  - 2.5 Before starting make ready work, NES shall notify all existing users of the date and location of the scheduled work and notify them of the need to rearrange and/or transfer their facilities at operator's cost within the specified time period, or NES will transfer its right to the operator. To the extent that NES has the legal authority, it shall rearrange and/or transfer existing facilities of such other users that have not been moved in a timely manner. The operator shall pay for any such rearrangement or transfer
  - 2.5 In instances where the operator is performing make ready, where an existing user has not relocated or otherwise undertaken work required to complete make ready (such as repairing existing attachments not in compliance with applicable standards) within thirty (30) days of notice by NES or operator to such other user; the operator may be authorized, to relocate or repair the other user's attachments on behalf of NES.
3. **License as Authorization to Attach:** Upon completion and inspection of any necessary make ready work, NES will issue a license to the operator which shall serve as authorization for the operator to make its attachments.
    - 3.1 All of the operator's installation, removal, and maintenance work, by either the operator's employees or authorized contractors, shall be performed at the operator's sole cost, in a good and workmanlike manner, and shall not adversely affect the structural integrity of NES infrastructure or other facilities or other users' facilities or equipment.

## 3. License Application Process

### A: Pole Attachment and Licensing Process

- 3.2 The operator shall assure that any person installing, maintaining, or removing its facilities is fully qualified and familiar with all applicable standards, including standards for working in the supply space.
4. **Notification of Make Ready Work Performed by NES:** Before starting make ready work, NES shall notify all applicable existing users of the date and location of the scheduled work and notify them of the need to rearrange and/or transfer their facilities at the operator's cost, or repair their facilities at such user's cost. The operator shall reimburse the owner or owners of other facilities attached to NES poles for any actual and documented cost incurred by them for rearranging or transferring such facilities, in order to accommodate the operator's attachments.
5. **Repair:** When an existing user has not undertaken work required to repair existing attachments not in compliance with Applicable Standards within thirty (30) days of notice by NES or the operator to such other user, the operator may be authorized, to repair the other user's attachments on behalf of NES.
6. **Payment for Make Ready Work:** NES shall invoice the operator for NES' actual and documented costs of such make ready work. The costs of the work shall be itemized and trued up. The operator shall be responsible for entering into an agreement with existing attaching users to reimburse them for any costs that they incur in rearranging or transferring their facilities to accommodate the operator's attachments.

# 3. License Application Process

## B: Post Installation Inspection

1. NES or its contractors may perform a post-installation inspection for each attachment made to NES infrastructure. Within thirty (30) days of written notice to NES that the operator has completed installation of an attachment (including overlash, riser attachments, and/or service drops), the operator shall pay the actual and documented costs for the post-installation inspection.
  - 1.1 If NES elects to not perform any post-installation inspection, such non-inspection shall not be grounds for any liability being imposed on NES or a waiver of any liability of operator.
  - 1.2 NES will notify operator if the post-installation inspection reveals that the operator's facilities have been installed in violation of applicable standards or the approved design. The operator shall have thirty (30) days from the date of receipt of such notice to correct such violations. NES may perform subsequent post installation inspections once the correction has been made to ensure operator's attachments have been brought into compliance.
  - 1.3 NES will provide notice of the continuing violation if the operator's attachments remain out of compliance with applicable standards or approved design after any subsequent inspection. The operator will have thirty (30) days from receipt of such notice to correct the violation.

# 3. License Application Process

## C: Cable Identification

1. Each user shall have a unique three digit code assigned to their cable. The user will be assigned the three digit code by NES.
2. Cables shall be marked at the time of installation.
3. All tags shall:
  - Be secured so as to remain permanently affixed to the attaching company's cable.
  - Be resistant to fading from the effects of weather, chemicals, etc.
  - Indicate the users three digit code in black characters on a yellow background. Have characters no less than one inch (1") and no greater than two inches (2") in height.
  - Avoid the use of sharp edges and corners to prevent injury to personnel and damage to cables.
  - Markers should be affixed at the point of attachment.
  - Multiple attachments on same pole shall be marked separately.
  - Have no information other than the three digit number assigned by NES. i.e.: Phone number and/or company name are not acceptable.
  - Be located within two feet (2') from a pole.
4. Please contact the NES Attachments Group for a listing of current markers and identifiers of other companies attached on NES poles.
5. Cables should be tagged at the time of installation. Attaching companies should make tagging an ongoing effort, and work toward complete tagging of all existing cables not previously tagged.
6. It is the responsibility of the Operator to install tags such that the numbers are easily identified from the ground.

## **3. License Application Process**

### **D: Expediting Large Projects**

1. The user should provide a plan with volume and expected turnaround time for the project.
2. The user and NES should agree on resources.
3. MOU with commitment to plan.
4. Allow eight (8) weeks to ramp up resources.

# 4. Conduit Application and Use Requirements

## A: General Requirements

The following procedures and requirements shall apply to the use of the conduit system.

1. **Route Investigation/Survey:** If the operator wishes to use a portion of NES conduit for placement of its cables, the operator shall first request a Route Investigation/Survey to be completed by NES. The Route Investigation/Survey shall be performed at operator's cost. Such costs are to be actual and documented. Upon receipt and review of a Route Investigation/Survey, the operator may apply for installation of its cable within the conduit system.
2. **Conduit Usage License Application:** The operator shall submit a properly executed Conduit Usage License Application, which shall include detailed plans for the proposed attachments, including:
  - A construction drawing indicating the location of and specifying the type of cable to be installed.
  - All application requests shall be made through SPIDAMin
3. NES will review the application and discuss any issues with the operator, including engineering or make ready work requirements associated with the Application.
4. NES shall review and respond to properly executed and complete Applications for routine installations as promptly as is reasonable. NES' response will either provide a written explanation as to why the Application is being denied, or provide an estimate of the costs of all necessary make ready work.
5. Upon receipt of NES' make ready estimate, the operator shall have fourteen (14) days to approve the estimate and provide payment.
6. Upon receipt of payment of estimated make ready NES will begin routine make ready work within the conduit and shall advise the operator of any extenuating circumstances that make the necessary make ready more complicated or time-consuming.
7. **Work Rules:** NES will specify the type of construction required with respect to the conduit system. NES will furnish to the operator written materials which will specify and explain the required construction.
  - 7.1 NES' manholes or transformer vaults shall not be opened or tampered with by an employee, agent or contractor of operator.
  - 7.2 No employee, agent or contractor of the operator shall enter or work in any of NES' manholes or transformer vaults without an authorized representative of NES present.
  - 7.3 NES shall place, remove, change, and maintain all cable in the conduit system with materials supplied by the operator. Once approved by NES and delivered to the location designated by NES.
  - 7.4 The operator's cable shall be permanently identified by tags (per the applicable standards) at each manhole or other access opening in the conduit system. Tags shall be of a type and wording reasonably satisfactory to NES, and consistent with NES guidelines. All cost of this identification shall be the responsibility of operator.

## **4. Conduit Application and Use Requirements**

### **A: General Requirements**

- 7.5 Where manholes or transformer vaults must be pumped in order to allow work operations to proceed, pumping shall be done by NES at operator's cost, such cost to be actual and documented.
  - 7.6 Any leak detection liquid or device used by the operator or operator's agents, employees or contractors shall be of a type approved in writing by NES.
  - 7.7 No equipment or facilities other than cables are permitted within NES underground structures. Slack loop and coils are not allowed within NES underground structures.
  - 7.8 While work is performed around any part of NES' conduit system located in the streets, alleys, highways, or other public rights-of-way or easements granted to NES or City of Nashville, the protection of persons and property shall be provided by the operator. The operator shall be solely responsible for providing adequate barricades, warning lights, traffic cones, danger signs, and other similar devices to protect all traffic, persons, and property around the work area from danger. The operator shall be required to provide uniformed police during construction or installation in any areas of the City of Nashville where NES is required.
  - 7.9 NES' authorized representative shall have the authority to terminate operator's work operations around NES' manholes or transformer vaults if any hazardous condition arises or any unsafe practice is being followed by operator's agents, employees or contractors.
  - 7.10 The operator further agrees to comply with all safety laws, regulations, ordinances, and statutes pertaining to the work to be performed and the tools and equipment used to accomplish such work, bear the solely responsible for the compliance therewith by its employees, agents, servants and/or contractors.
8. Conduit Attachment Procedures
- 8.1 All installations in conduits must be approved and performed by NES. The operator shall reimburse NES for all actual and documented costs incurred.
  - 8.2 The operator's representative shall be present during all NES installation of underground cable, innerduct, splice capsules and accessories. The operator's representative shall be knowledgeable and experienced in underground cable, innerduct, splice capsules and accessory installation and shall be authorized by the operator to answer questions and make decisions on the operator's behalf regarding problems and questions that occur during NES installation of underground cable, innerduct, splice capsules and accessories. The operator's representative shall be furnished at operator's cost. NES will maintain ownership of the unused innerduct cells for future use.
  - 8.3 NES may reserve conduit and ducts for its core electric service. NES may pull a cable into any of NES' conduits either occupied by or scheduled to be occupied by operator's facilities. Should it become necessary for NES to use a conduit occupied by the operator. The operator's cable may upon notice be removed by NES. The operator may request NES to expand conduit or duct capacity, at the cost of the operator.

## **4. Conduit Application and Use Requirements**

### **A: General Requirements**

- 8.4 The operator shall compensate NES for the actual and documented cost, including engineering and administrative cost, for the connection of the operator's conduit which connects to NES' manhole or transformer vault. The section of connecting conduit shall not be longer than five feet (5') and shall be maintained by NES at the operator's cost.
- 8.5 The operator shall compensate NES for the actual and documented cost, including engineering and administrative cost, for any work required to make a conduit usable for the initial placing of the operator's cable and/or innerduct.
- 8.6 NES may rearrange the operator's cable at the cost of the operator when necessary to make maximum use of its conduit system. The cost to will be the actual and documented.
9. Emergency Circumstances
  - 9.1 NES' work shall take precedence over any and all operations of the operator.
  - 9.2 The operator is responsible for supplying to NES a points of contact for non-emergency and emergency twenty four (24) hour service and for informing NES of any change in points of contact.
  - 9.3 In the event the operator experiences an emergency with its attachments located in NES' conduit system, an NES representative shall be at the site before the operator enters a manhole and/or works on the cable in NES' conduit system for any reason. NES will respond to an emergency as arranged between the operator and an NES representative. An emergency call associated with the operator or NES' customers out of service will be treated on a "priority" basis. NES' response time will be based on the situation existing at the time of the emergency. All NES labor and material associated with any operator emergency that does not arise from faults in the conduit system or the acts or omissions of any other user of the conduit system will be billed to the operator.

## 5. Construction Guidelines

NES distribution poles are part of an overhead electrical distribution system. The power lines attached to these poles should always be presumed energized. All persons, including the operator's employees and contractors must exercise caution and take all reasonable precautions when working on or near electric utility poles, and/or near high voltage lines. NES employees and contractors are specially trained to perform their jobs safely by adhering to OSHA safety requirements.

1. Prior to proceeding with their physical installations on NES poles, operators should ensure their workers (whether employees or contractors) are qualified to work on NES poles or near NES electrical lines.
2. At all times during their construction activities on NES poles, operators should adhere to the following:
  - When installing or maintaining its facilities, the operator's construction crews, whether employees or contractors, must be able to show some form of written interim permission covering the specific construction.
  - Communication cables must be properly guyed and anchored before tensioning. This means the operator must install separate guying and anchoring devices to secure their cables.
  - On existing steel or concrete poles, use existing holes or banding. No new holes should be drilled.

**NOTE: The operator is responsible for the costs of any damage to NES facilities resulting from improper guying, anchoring, and/or loading.**

3. New wireline attachments should typically overbuild existing wireline attachments, while satisfying all applicable standards.
4. **Pole Replacements:** At the operator's request, an existing pole may be replaced with a taller or stronger pole in order to accommodate an attachment. The operator shall pay the actual and documented cost of the pole replacement including but not limited to all labor and material. NES will replace a pole that is determined to be defective or overloaded (without consideration of operator's proposed attachment), provided the communications space on the existing pole could have been arranged with sufficient spacing to accommodate the operator's proposed attachments. Primary riser poles and gang-operated switch poles shall always be replaced with a steel pole. In all cases the associated materials and equipment, including but not limited to crossarms, cut-outs, insulators, and minor materials such as nuts, bolts, washers, etc., shall be replaced and considered part of the pole replacement.
5. **Equipment Attachments:** The operator shall compensate NES for the actual and documented cost, including engineering and administrative cost, for rearranging, transferring, and/or relocating NES infrastructure to accommodate operator's equipment attachments. The operator shall reimburse the owner or owners of other facilities attached to NES infrastructure for any actual and documented cost incurred by them for rearranging or transferring such facilities to accommodate the operator's equipment attachments.
6. **Authorized Contractors:** The operator shall only use authorized, qualified contractors approved by NES to conduct make ready work (or any other work) in or around the electric supply space on a pole.

## 5. Construction Guidelines

7. **Guys and Anchor Attachments:** The operator shall place guys and anchors to sustain any unbalanced loads caused by operator's attachments. Under unusual circumstances NES may allow the operator to attach its guys to anchors owned by NES. The operator will be charged a one-time anchor fee. NES will notify operator of the changes necessary to provide an adequate anchor or guy. The operator will compensate NES for the actual and documented cost including engineering and administrative cost for changing the guy and anchor.
- New anchors six inches (6") diameter or less should be set at minimum three feet (3') from existing NES power and NES communication anchors. Manta Ray driven anchors are included in the less than six inch (6") category.
  - Anchors larger than six inches (6") should be placed five feet (5') from NES power anchors and three feet (3') from NES communication anchors.
  - The installing anchor should be installed a few degrees away from existing to ensure proper spacing at installed depth.
  - No anchor shall be installed closer than four feet (4') from a pole.
8. **Guying Exceptions.:** The first and best option is to always guy. Situations where operators are exempt from guying are outlined below. All criteria must be evaluated from the Remedy layer analysis.
- Each communication company is allotted 22% of the Pole Stress Percentage without guying if the conditions below are met. The stress percentage is confirmed with owner utilization in SPIDACalc and is based on the appropriate load case (e.g. Medium Load (Grade C @ Xings) or Medium Load (Grade B)).
  - Pole passes Deflection Check (Pole top deflection equal to or less than 1.67% of AGL using Deflection Check load case)
  - Overall pole stress percentage is less than 100% based on the appropriate load case (e.g. Medium Load (Grade C @ Xings) or Medium Load (Grade B)).
  - If the operator cannot achieve what is outlined above, they must install a higher class pole until these constraints are met.

### Example 1:

Operator has proposed an unguyed attachment on a 50 C1, wood pole set standard depth. Owner Utilization shows the company's attachment contributes 20% of the overall pole loading. Pole is loaded 85%.

The pole top deflects 6".  $\left( \frac{6}{43 * 12} * 100 = 1.16\% \right)$   
Result - Pass

### Example 2:

Operator has proposed an unguyed attachment on a 50 C1, wood pole set standard depth. Owner Utilization shows the company's attachment contributes 23% of the overall pole loading. Pole is loaded 85%.

The pole top deflects 6".  $\left( \frac{6}{43 * 12} * 100 = 1.16\% \right)$   
Result - Fail  
Solution - Install a higher class pole until the criteria above is met or guy.

## 5. Construction Guidelines

### Example 3:

Operator has proposed an unguyed attachment on a 50 C1, wood pole set standard depth. Owner Utilization shows the company's attachment contributes 5% of the overall pole loading. Pole is loaded 85%.

The pole top deflects 9.3". ( $\frac{9.3}{43 \times 12} * 100 = 1.8\%$ )

Result – Fail

Solution – Install a higher class pole until the criteria above is met or guy .

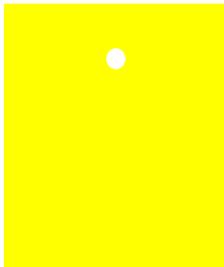
9. Grounding and connections of the operator's equipment to NES' neutral system will be made for the documented costs at the operators expense. All grounds installed by the operator shall be in accordance with NES' standards.
10. Service drops between poles must be bundled.
11. Upon completion of construction, the licensee must notify NES by e-mail ([attachments@nespower.com](mailto:attachments@nespower.com)) or telephone (615-747-3970). Any existing codes violations should be brought to NES' attention at this time.
12. Refer to the most recent edition of the NESC; including but not limited to, Part 4 Work Rules for the Operation of Electric Supply and Communication Lines and Equipment; Section 41 - Supply and Communication systems - Rules for Employers; Subsection 411E - Identification and Location.
13. Banners may be permitted on decorative street light poles, but may require additional approvals and shall meet the following conditions.
  - Banner installations and their content shall be approved by the owner of the property in which the pole is located.
  - All banner arms shall be of the breakaway type.
  - Banners shall not be permitted in the power supply space.
13. Christmas decorations may be permitted on decorative streetlight poles but may require additional approval and shall meet the following conditions.
  - Christmas decorations shall have the approval of the owner of the property in which the pole is located.
  - Powered Christmas decorations shall follow the same process as other powered equipment.

# 5. Construction Guidelines

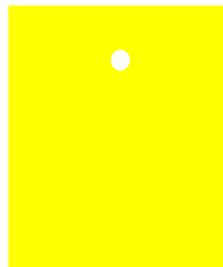
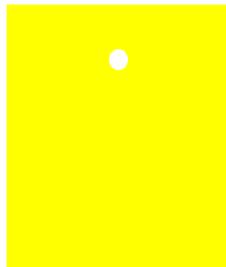
## A: Inspection Markings

Shown below are the universal symbols used by Osmose to identify defective poles.

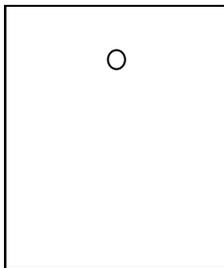
Several types of metal tags and flags are used to identify the condition of NES poles. These tags also designate poles which have been inspected and/or subjected to a chemical treatment process.



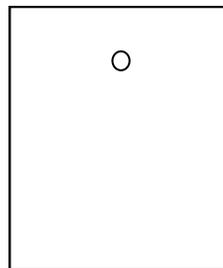
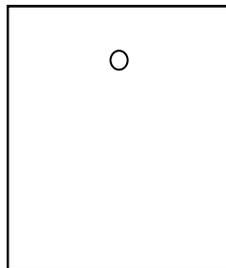
One yellow reject tag is used to denote that the pole is a reinforceable reject.



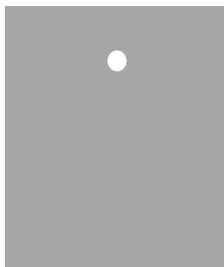
Two yellow tags are used to denote that the pole is a danger or priority pole that is reinforceable.



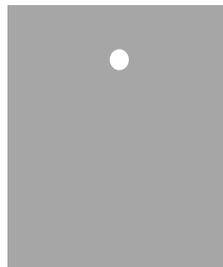
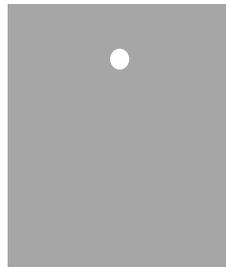
One white tag may be used to denote that the pole is a non-reinforceable reject.



Two white tags may be used to denote a priority pole that is non-reinforceable.



One silver tag may also be used to denote that the pole is a non-reinforceable reject.



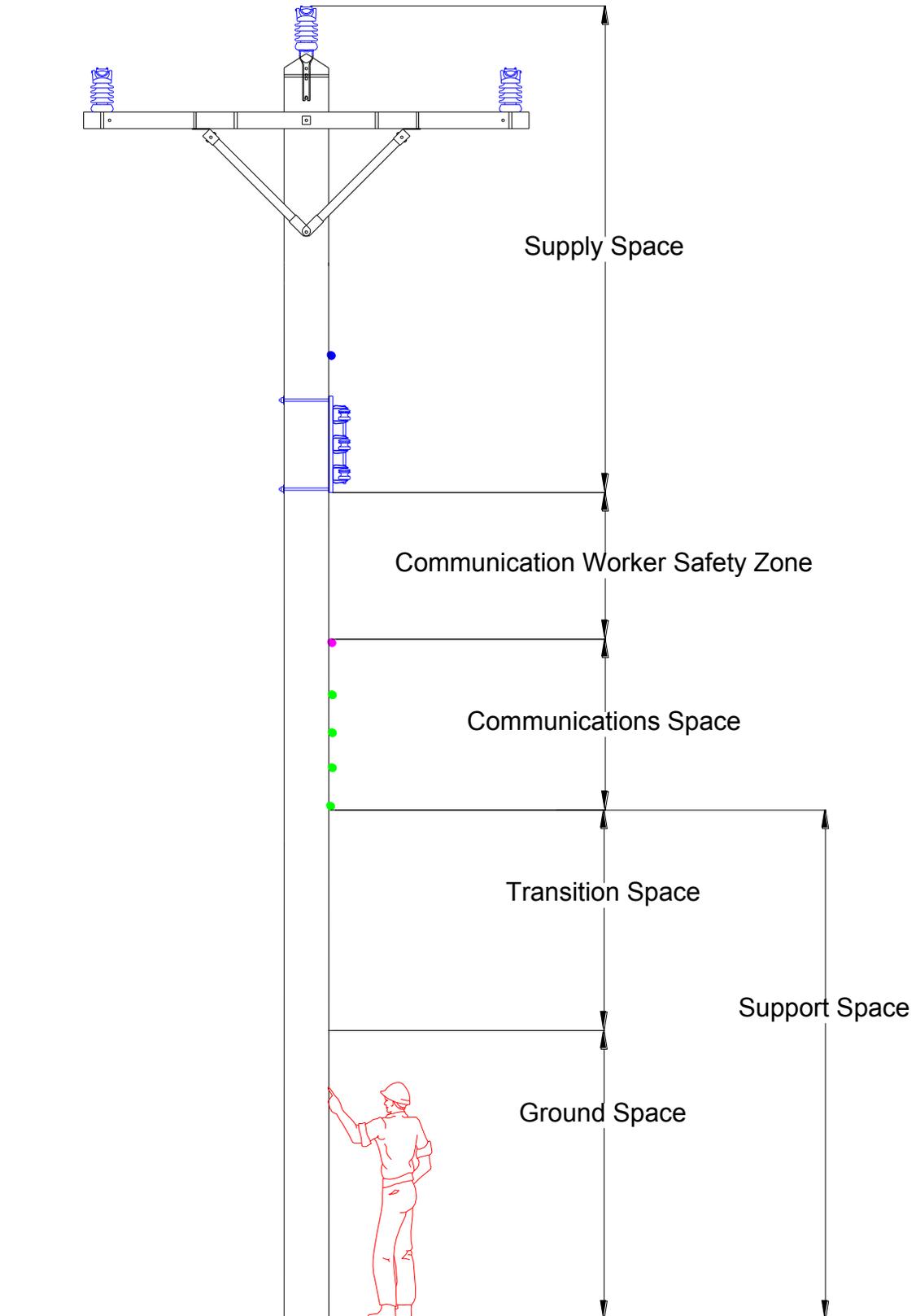
Two silver tags may also be used to denote a priority pole that is non-reinforceable.



Oval tags designate poles which have been inspected and are deemed suitable condition without any preservative treatment.

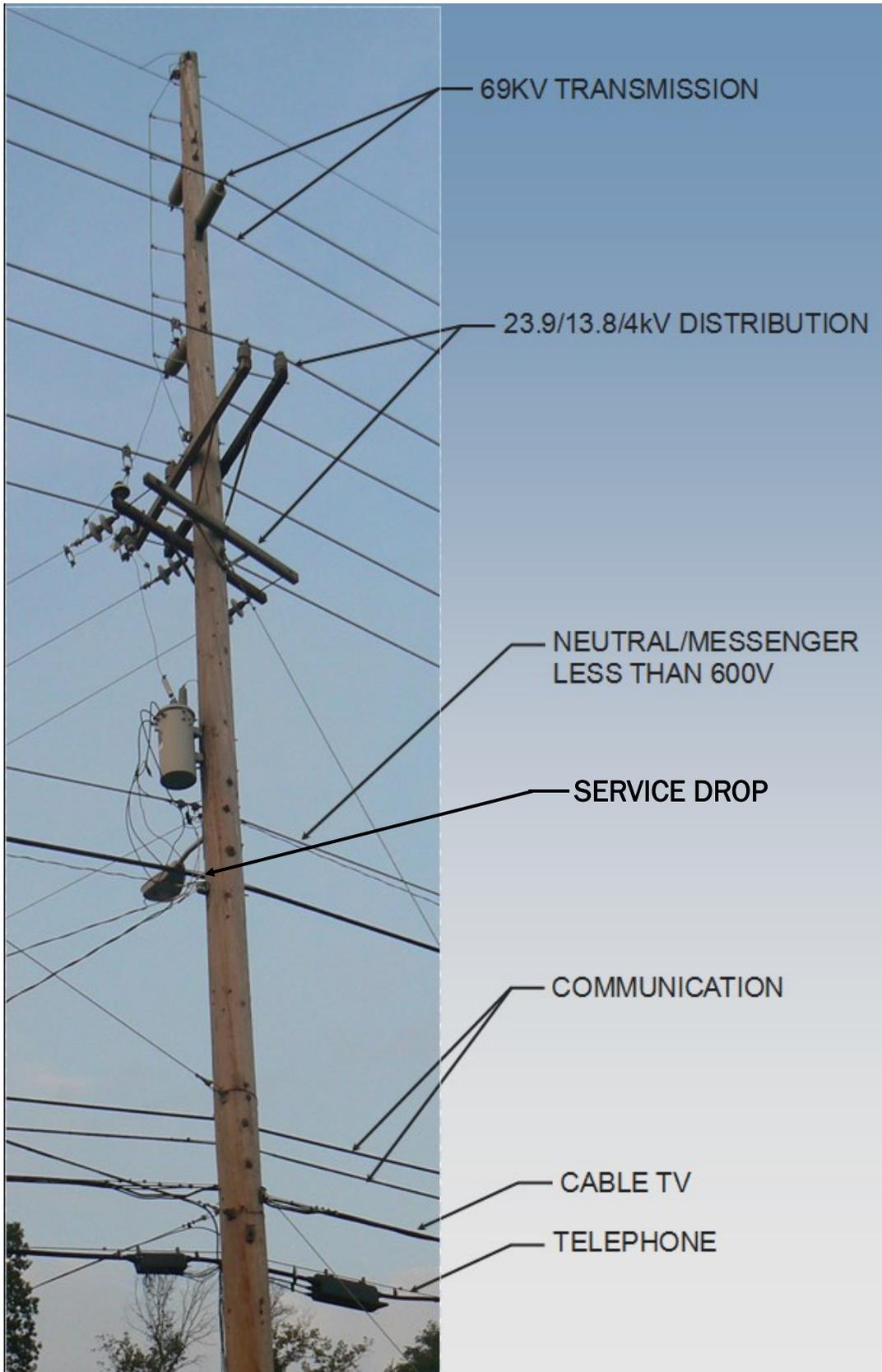
# 5. Construction Guidelines

## B: Utility Operator Basics



# 5. Construction Guidelines

## C: Identifying NES Cables



# 5. Construction Guidelines

## D: Communication Line Clearance Requirements

1. NES' requirements for vertical clearances of wires, conductors, and cables are based NESC Rule 232. It is the responsibility of the owner to ensure that all installations meet or exceed the requirements listed in the NESC. In some situations NES requirements will exceed the NESC requirements. All **NES Minimum** clearance requirements are based on worst-case sag conditions. Note that weather conditions can cause significant changes in sag.

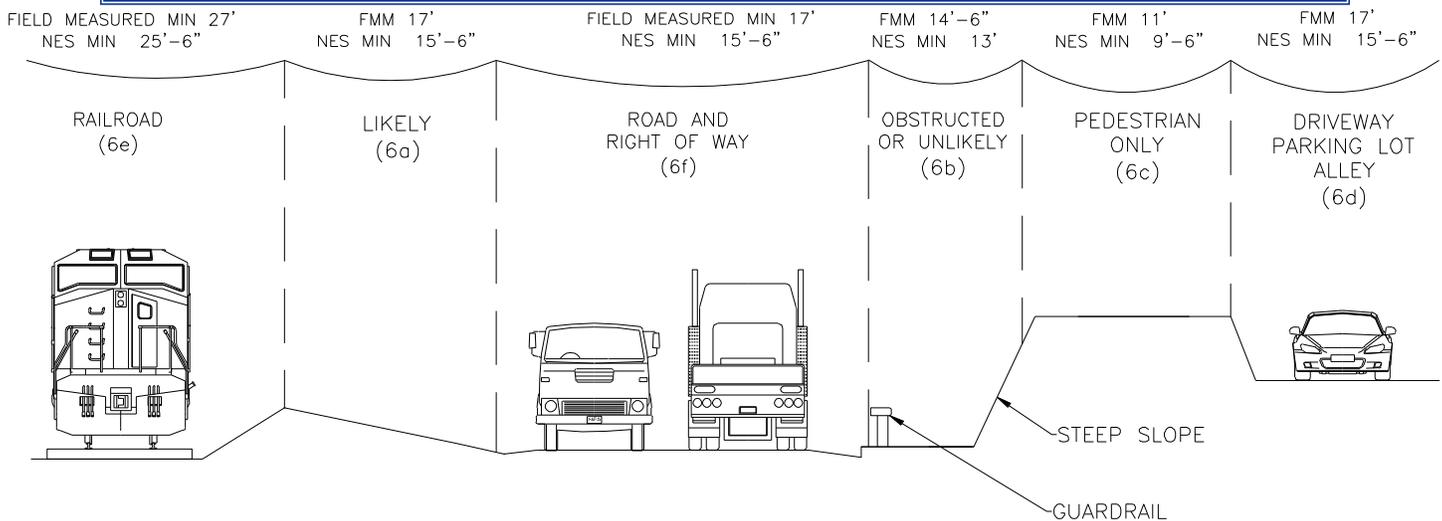
Acknowledging that enforcing worst-case sag can be difficult, NES has established the following standard to assist Attachers in remediation of clearance issues on NES owned poles.

NES objective is for **Field Measured Minimum** ground clearance to be one foot – six inches (1'-6") greater than the **NES Minimum**.

2. NES shall not allow installation of new facilities or lowering of existing facilities below this **Field Measured Minimum**.
3. Existing facilities that are discovered to be less than **NES Minimum** shall be brought up to **Field Measured Minimum** during remediation unless sag charts are provided to confirm that the remediated facility complies with **NES Minimum** clearances.
4. Existing facilities will be allowed to remain below the **Field Measured Minimum** with the understanding that it is the responsibility of the existing facility owner to ensure that all installations meet or exceed the **NES Minimum**.
5. Again, weather conditions can cause significant changes in sag. Ice loading typically results in worst-case sag. NES does not expect that Attachers will be remediating existing or installing new facilities to this **Field Measured Minimum** when ice is present on the line. In all cases, it is the responsibility of the attachment owner to ensure that all installations meet or exceed the **NES Minimum**.

# 5. Construction Guidelines

## D: Communication Line Clearance Requirements

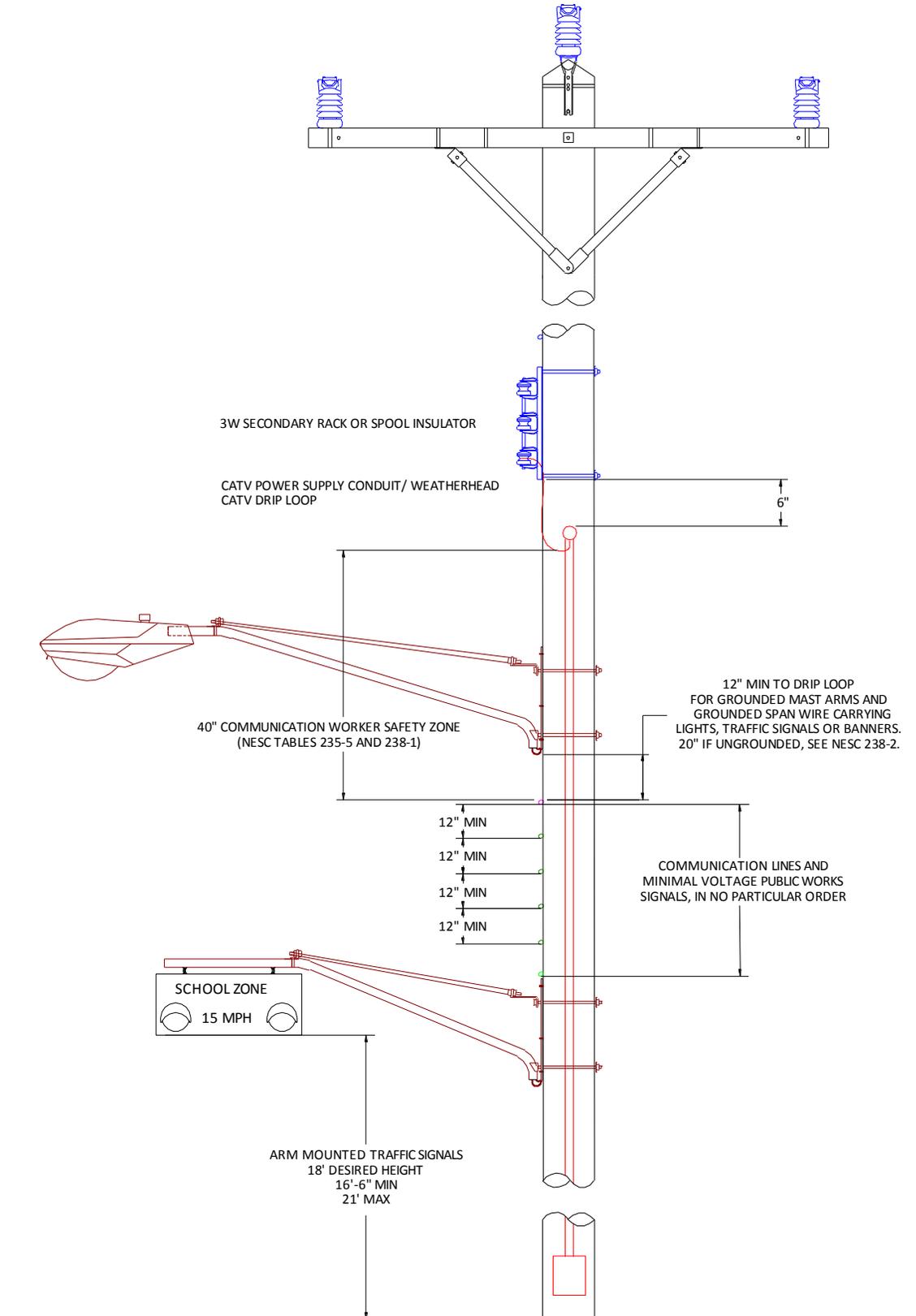


6. NES-required **Field Measured Minimum** and **NES Minimum** ground clearance for communication cables for common situations follow below. In most cases **NES minimum** equals NESC minimum.
- Parallel to highways, roads, streets, alleys or other road rights-of-way.** Field Measured Minimum: seventeen feet (17'-0"). NES Minimum: fifteen feet - six inches (15'-6"). *The clearances may be reduced by six inches (6") if the pole is located behind a curb.*
  - Parallel to highways, roads, streets, alleys or other road rights-of-way where travel is obstructed or it is unlikely that vehicles will be crossing under the line.** Field Measured Minimum: fourteen feet - six inches (14'-6"). NES Minimum: thirteen feet (13'-0"). *Note: fences, ditches, slopes greater than 15%, etc. must be present to apply this clearance, mere presence of a curb is not sufficient. Spaces should be considered likely unless it clearly meets the unlikely criteria.*
  - Areas subject to pedestrian traffic only.** Field Measured Minimum: eleven feet (11'-0"). NES Minimum: nine feet - six inches (9'-6"). Spaces and ways subject to pedestrians or restricted traffic only are those areas where riders on horses or other large animals, vehicles, or other mobile units exceeding a total height of 8 ft. are prohibited by regulation or permanent terrain configurations, or are otherwise not normally encountered nor reasonably anticipated.
  - Driveways, Parking Lots and Alleys:** Field Measured Minimum: seventeen feet (17'-0"). NES Minimum: fifteen feet - six inches (15'-6"). Exception: If this is a service drop to a residential building and if the driveway under the cable would not be expected to be used by delivery trucks, emergency support vehicles, moving vans and the like, a Field Measured Minimum: thirteen feet (13'-0") and NES Minimum: eleven feet - six inches (11'-6") can be applied. *Note: this does not apply where a driveway meets the right of way. This applies on private property only.*
  - Railroad Crossings:** Field Measured Minimum: Twenty seven feet (27'-0"). NES Minimum: Twenty five feet - six inches (25'-6"). *Note: Always check the individual requirements of each railroad being crossed. Where railroad requirements exceed NES Minimum, meet railway clearance requirements set by the operator of the rail the line will be crossing.*
  - State Roads and Interstates:** Field Measured Minimum: seventeen feet (17'-0"). NES Minimum: fifteen feet - six inches (15'-6").

For additional information, please reference Table 232-1 of the NESC.

# 5. Construction Guidelines

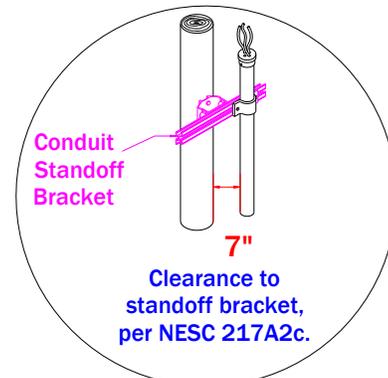
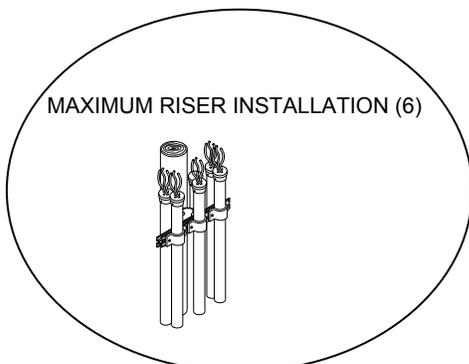
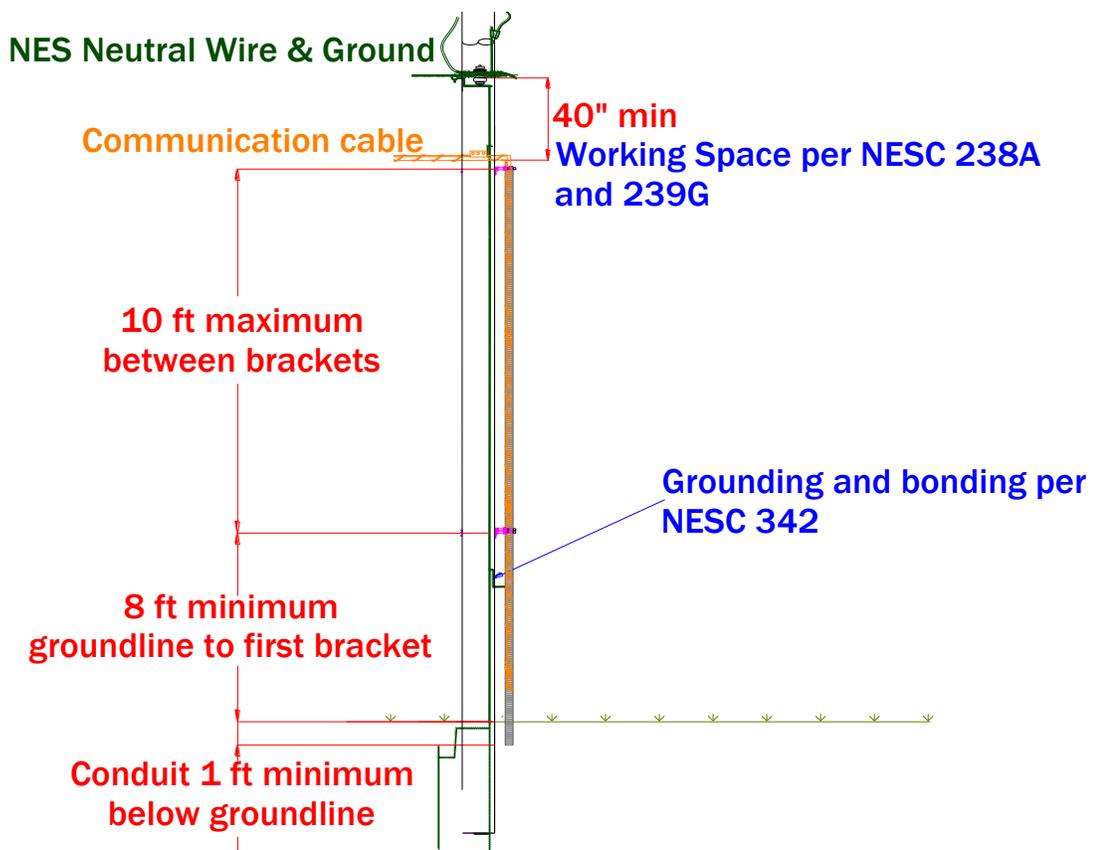
## E: Attachment Clearance Requirements



# 5. Construction Guidelines

## F: Communication Riser Requirements

1. Attachment conduit must be no larger than two inches (2") unless the maximum fill per the latest version of the NEC is exceeded by the cable to be installed at the time of construction.
2. A maximum of six risers and one bracket shall be allowed on any riser pole. NES power risers should always be closest to the pole.
3. The operator shall relocate their riser at their expense if NES replaces or relocates the pole.
4. The first operator to attach shall provide approved conduit brackets (AlumaForm part # 6B-CS0-18 or Barfield part # BASOCL-6H-18). Future operators shall use the existing conduit support system if space is available.

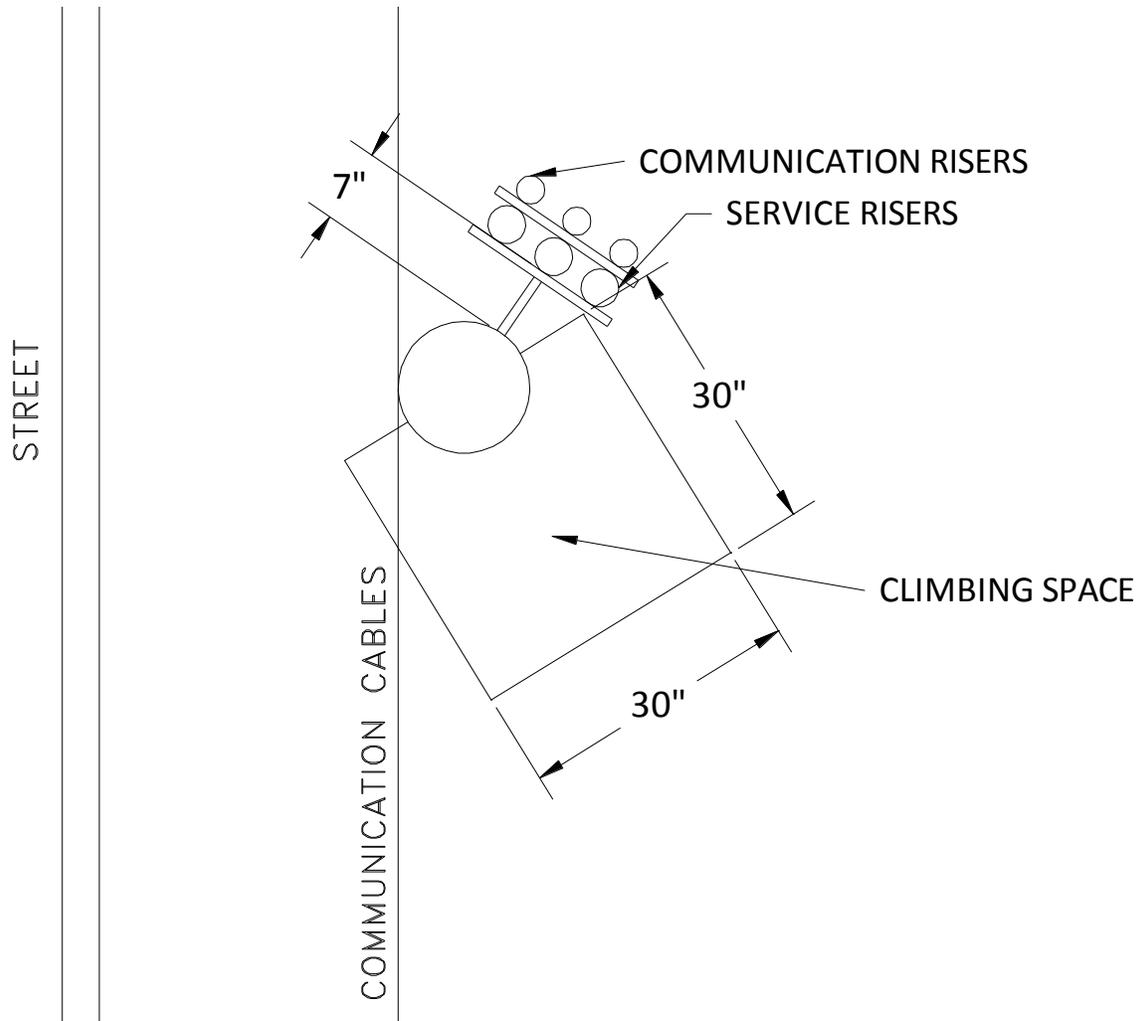


# 5. Construction Guidelines

## F: Communication Riser Requirements

### 5. Required Climbing Space

5.1 Poles selected for attaching equipment shall be bucket truck accessible. However, the NESC requires climbing space to be reserved as shown.



# 5. Construction Guidelines

## F: Communication Riser Requirements

### 6. Treatment of Poles with Existing Riser Installations

#### 6.1 Existing Pole not being replaced.

If six (6) or more risers (including conduit and cables not installed in conduit) are present, additional communication risers cannot be added. Reconfiguration of existing risers is not expected.

##### 6.1.1 Existing Communication Only Risers

- If less than six (6) risers (including conduit and cables not installed in conduit) are present, new riser conduit(s) may be installed only in a new or existing standoff bracket, up to a total of six (6) (including existing conduits).

##### 6.1.2 Existing NES Power Only Risers

- If less than six (6) riser conduits are present, new riser conduit(s) may be installed only in a new or existing standoff bracket, up to a total of six (6) (including existing conduits).

##### 6.1.3 Existing Communication and NES Power Risers

- If less than six (6) riser conduits are present, new riser conduit(s) may be installed only in a new or existing standoff bracket, up to a total of six (6) (including existing conduits).

#### 6.2 Existing Pole is to be Replaced

If six (6) or more risers (including conduit and cables not installed in conduit) are present, additional communication risers cannot be added. The owners of existing risers shall transfer to the new pole and comply as closely as possible with the standards.

##### 6.2.1 Existing Communication Only Risers

- If less than six (6) risers (including conduit and cables not installed in conduit) are present, new riser conduit(s) may be installed in a new standoff bracket, up to a total of six (6) (including existing conduits). Existing communication risers shall transfer to the new bracket.
- The new pole shall be installed in a location as close as practical to a majority of the existing risers.

##### 6.2.2 Existing NES Power Only Risers

- If less than six (6) riser conduits are present, new riser conduit(s) may be installed in a new standoff bracket, up to a total of six (6) (including existing conduits) after existing NES power risers are transferred to the new bracket.
- The new pole shall be installed in a location as close as practical to a majority of the existing risers.

##### 6.2.3 Existing Communication and NES Power Risers

- If less than six (6) riser conduits are present, new riser conduit(s) may be installed in a new standoff bracket, up to a total of six (6) (including existing conduits) after existing NES power risers are transferred to the new bracket.
- The new pole shall be installed in a location as close as practical to the existing NES Power risers.

# 5. Construction Guidelines

## G: Equipment Attachments

### 1. Scope

This section establishes the requirements for installation of non-traditional equipment and commonly known as “equipment attachments” on Nashville Electric Service (NES) structures.

### 2. Approval

2.1 Installation of non-wireless equipment requires notification to NES within 30 days of installation.

2.2 Antenna equipment shall be approved on a pole-by-pole basis.

### 3. Operation and Maintenance

3.1 Equipment attachments shall not restrict the operation or maintenance of the power distribution system equipment.

3.2 All equipment attachments that are located within the supply space shall be installed, repaired, modified, and removed by qualified electrical workers who are employed by NES or its approved contractors.

3.3 Cabinets should be used to house equipment. The maximum envelope of the cabinet can be no larger than 70”H x 24”W x 24”D. The mounting must meet one of these three conditions.

- If the cabinet measures 6”H x 12”W x 4”D or smaller it may be direct mounted to the pole.
- Cabinets up to 70”H x 24”W x 24”D may be directed mounted to the pole if the pole is located within 15’ of a bucket truck accessible paved road.
- Cabinets up to 70”H x 24”W x 24”D not located within 15’ of a bucket truck accessible paved road, must be mounted on a standoff bracket that does not interfere with NES fall arrest equipment. That bracket and the cabinet must still fall inside that 24” depth measurement.

### 4. Labeling

4.1 All equipment cabinets, boxes, and enclosures shall be clearly marked with:

- The equipment owner’s name.
- A 24-hour contact phone number.
- Alpha/numeric designation such that the owner can determine the equipment location, type and function.
- NES-assigned three (3) digit code.

# 5. Construction Guidelines

## G: Equipment Attachments

### 5. Suitable Poles

5.1 Existing equipment that would exclude a pole is listed but not limited to the following:

- Three phase gang-operated switches or three phase transformer bank
- Capacitor Banks, reclosers
- Distribution lines in more than two directions
- Poles with existing cabinets and/or wireless equipment including but not limited to power equipment controls, traffic controls, antennas and communications/CATV equipment

5.2 All antenna installations may be made on poles that are located within 15' of a bucket truck accessible paved road.

5.3 Decorative Light Poles shall be approved on a case by case basis.

### 6. Suitable Locations for Antenna Equipment

6.1 Where installation of antenna equipment is requested, installation said facilities shall not be allowed within the in the communication space or communication worker safety zone.

6.2 Antenna facilities will generally be installed on the top of the distribution pole. It shall be the sole discretion of NES as to the location of the antenna facilities on NES owned poles.

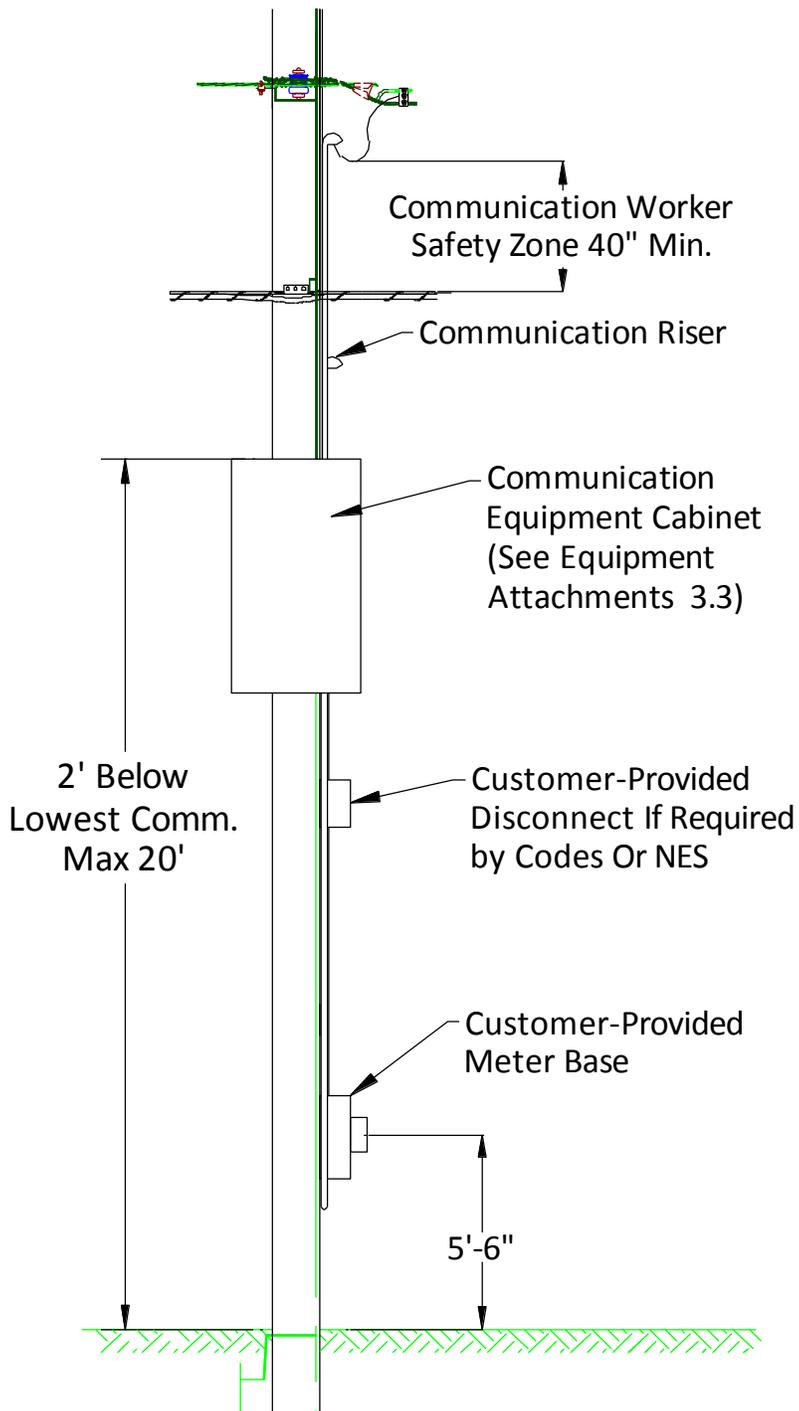
### 7. Emergency Electrical Supply

7.1 Generators or other means of emergency electrical supply to communication cable facilities are prohibited unless specifically approved by NES Engineering. Any generation or back-up power supply shall not be interconnected with the NES electrical system.

# 5. Construction Guidelines

## G: Equipment Attachments

### 8. Communication Power Supply Riser



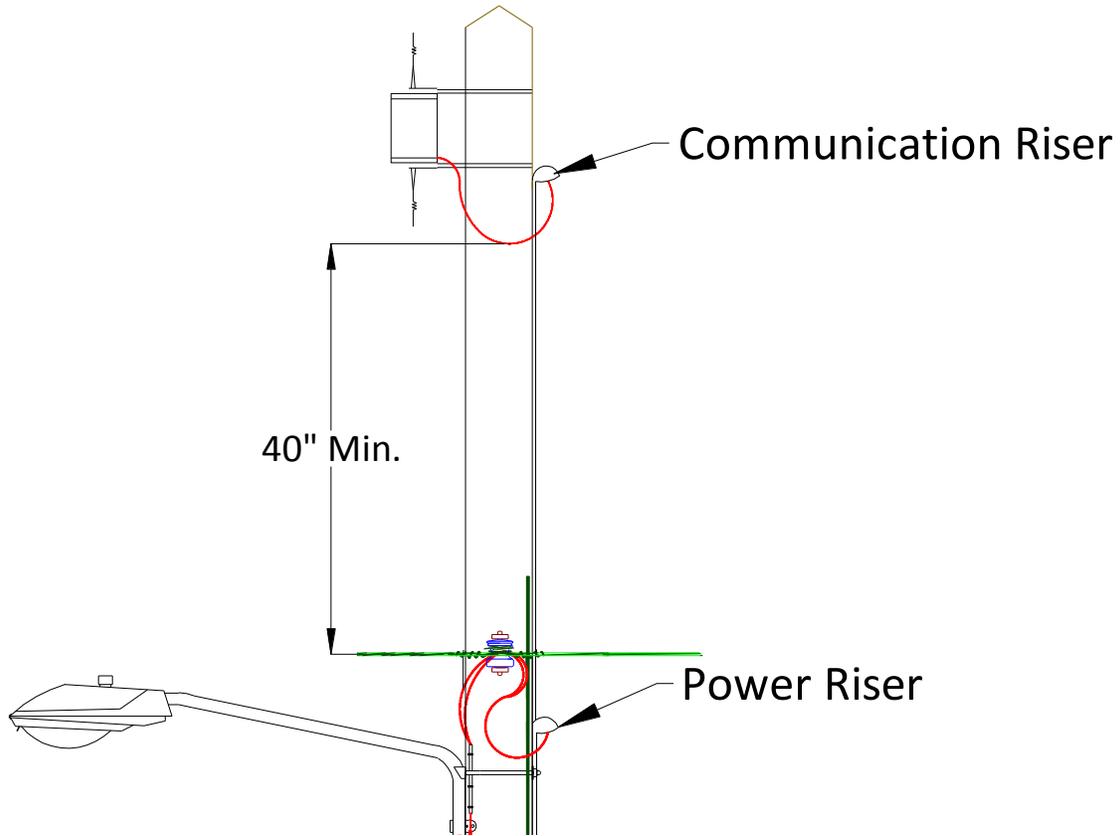
#### Notes:

1. Supply conduit cannot go through equipment cabinet and must run directly to the meter base.
2. Meter base to be provided by communications company.
2. Meter shall be mounted 5'-6" from ground.
3. Meter shall not face the street, alley, or property side of the pole.
4. Meter base and disconnect shall be bonded to a separate ground from the pole ground with conductor having a current capacity than no less than #6 solid copper conductor.
5. Conduit not to exceed 2" in diameter without approval.
6. Conduit may be mounted directly to the pole or u-guard may be used if the pole is within 15' of a bucket truck accessible paved road. If not accessible and the conduit is greater than 1 1/2", the conduit is to be mounted with a standoff bracket that provides 7" clearance from the pole to the conduit.
7. Meter Base to be a single position, ring-style, single phase, 4 terminal 100/125 amp overhead/underground meter base unless it is fed from a three phase transformer. If fed from three phase it will require a fifth terminal kit.
8. Meter base to be mounted to pole using a Barfield Pole Mounting Bracket # BAPMBL
9. Service will be provided at 120/240 V (not just 120V).
10. A "DANGER DO NOT CLIMB" sign should be securely attached at eye level on the pole.
11. Equipment cannot overhand the roadway.
12. The customer disconnect can not be locked.

# 5. Construction Guidelines

## G: Equipment Attachments

9. Communication Power Supply Riser on a street light or secondary only pole



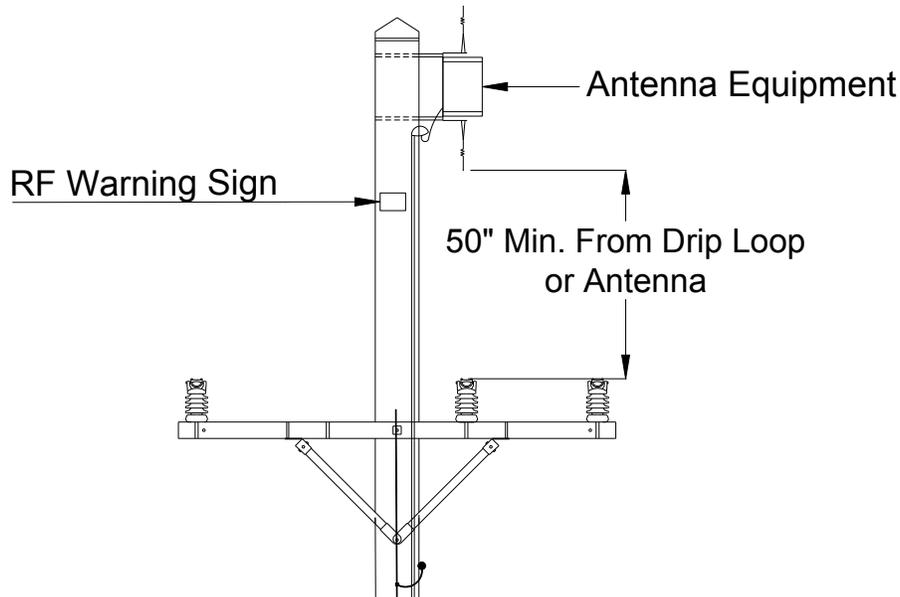
### Notes:

1. All notes from 8. Communication Power Supply (previous page) still apply.
2. Equipment attachments on decorative and foundation poles will be considered on a case-by-case basis.

# 5. Construction Guidelines

## G: Equipment Attachments

### 10. Suitable Locations for Antenna Equipment Mounted to Poles



Equipment Mounted Above Primary Circuits

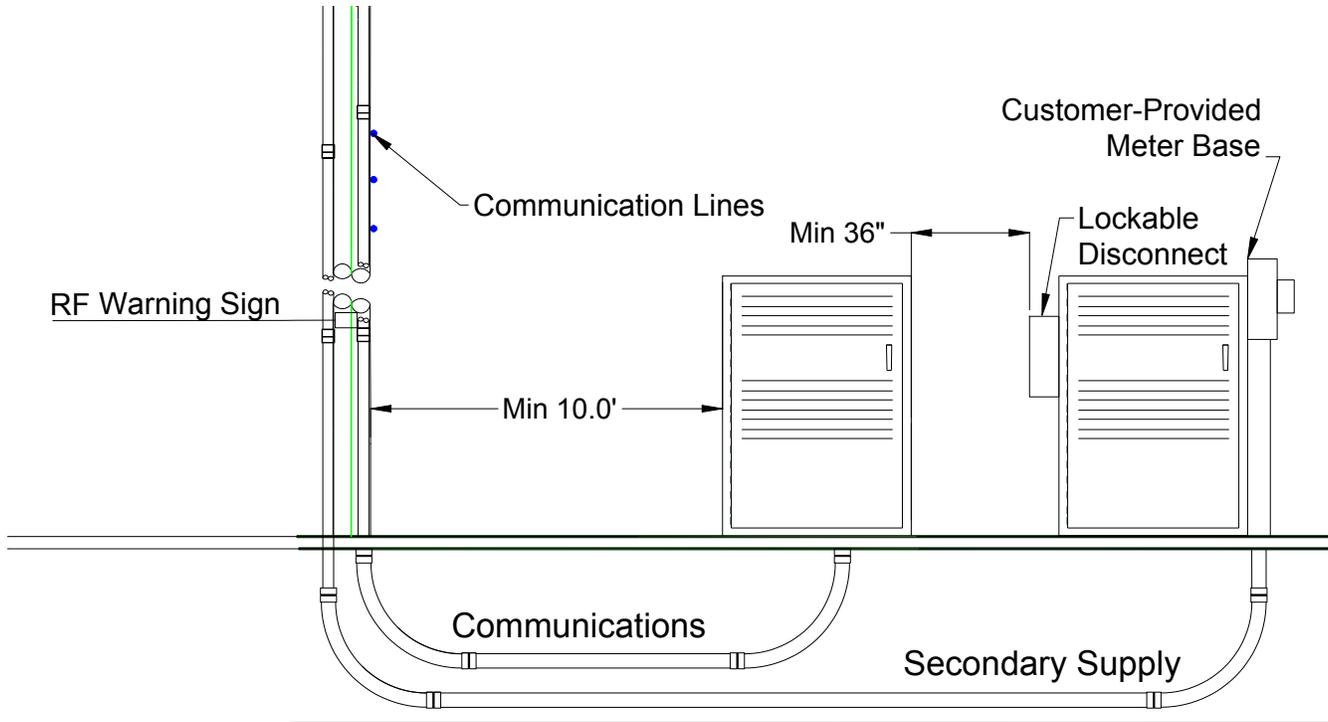
#### Notes:

1. The equipment owner shall educate the electrical workers prior to the start of work in the supply space such that the workers understand the hazards of working around the equipment. The electrical workers shall be knowledgeable of, and trained in methods necessary to monitor and mitigate the hazards associated with the equipment.
2. Antennas that have a maximum permissible exposure that exceeds the FCC limits for General Population/ Uncontrolled Exposure, given in the FCC's rules shall have a disconnect located within the ground space.
3. Under certain conditions wireless equipment will be allowed within the power space. Permission to locate equipment within the power space will be determined on a case by case basis.
4. Conduit not to exceed 2" in diameter without approval.
5. Conduit 1 1/2" in diameter or less may be direct mounted to pole. If more than two 1 1/2" or less diameter conduits are required, they must all be mounted in an approved standoff bracket. Conduits with a diameter greater than 1 1/2" are to be mounted with a standoff bracket that provides 7" clearance from the pole to the conduit.
6. Only one wireless communication attachment shall be allowed per pole.
7. The antenna size, configuration, mounting arrangement, location on the pole and other parameters may be approved on an case-by-case basis.

# 5. Construction Guidelines

## G: Equipment Attachments

### 11. Clearances for pad mounted equipment

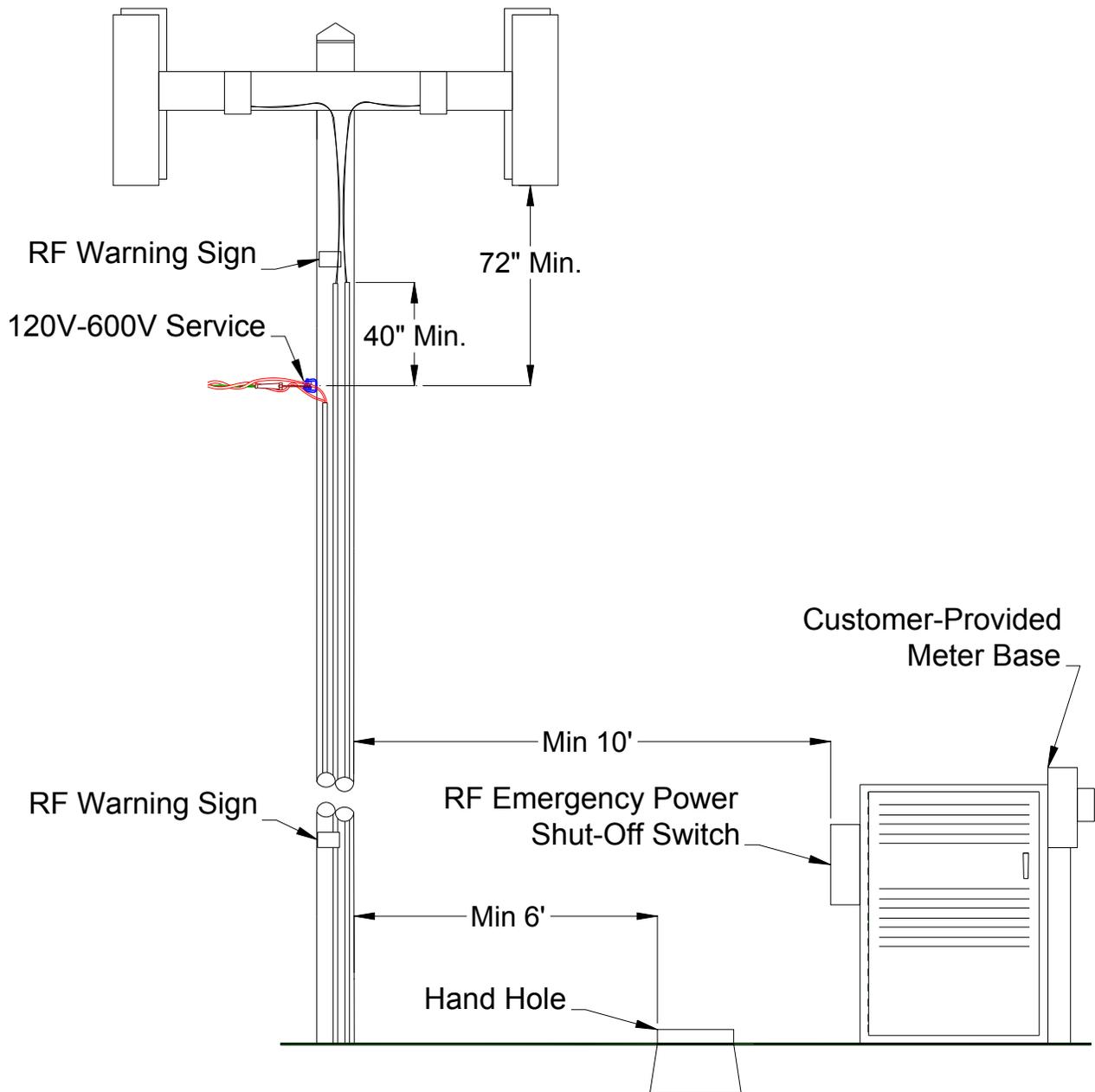


Note: Refer to the NES Electric Service Guidelines for ditch details.

# 5. Construction Guidelines

## G: Equipment Attachments

### 12. Typical Customer-Owned Stub Pole for Communications Provider

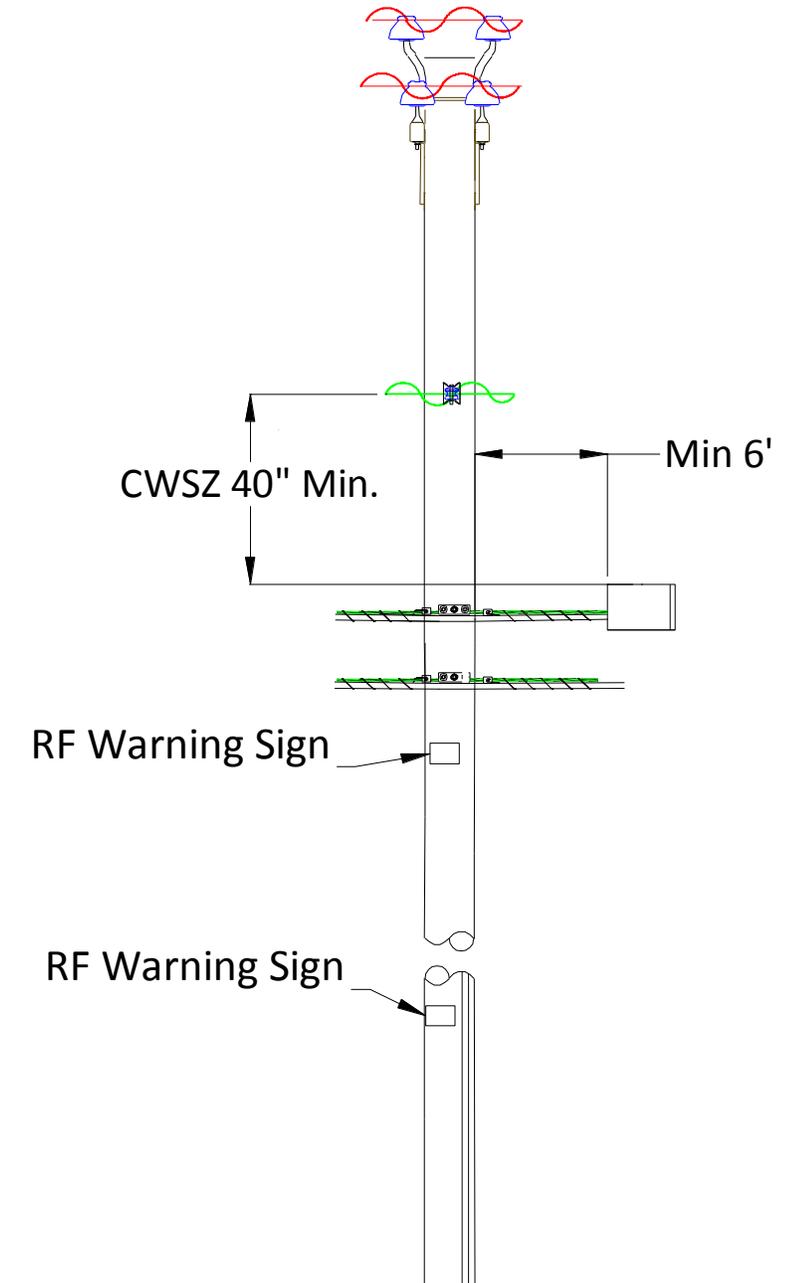


Note: Refer to the NES Electric Service Guidelines for ditch details.

# 5. Construction Guidelines

## G: Equipment Attachments

### 13. Cable/Strand-Mounted Wireless Equipment



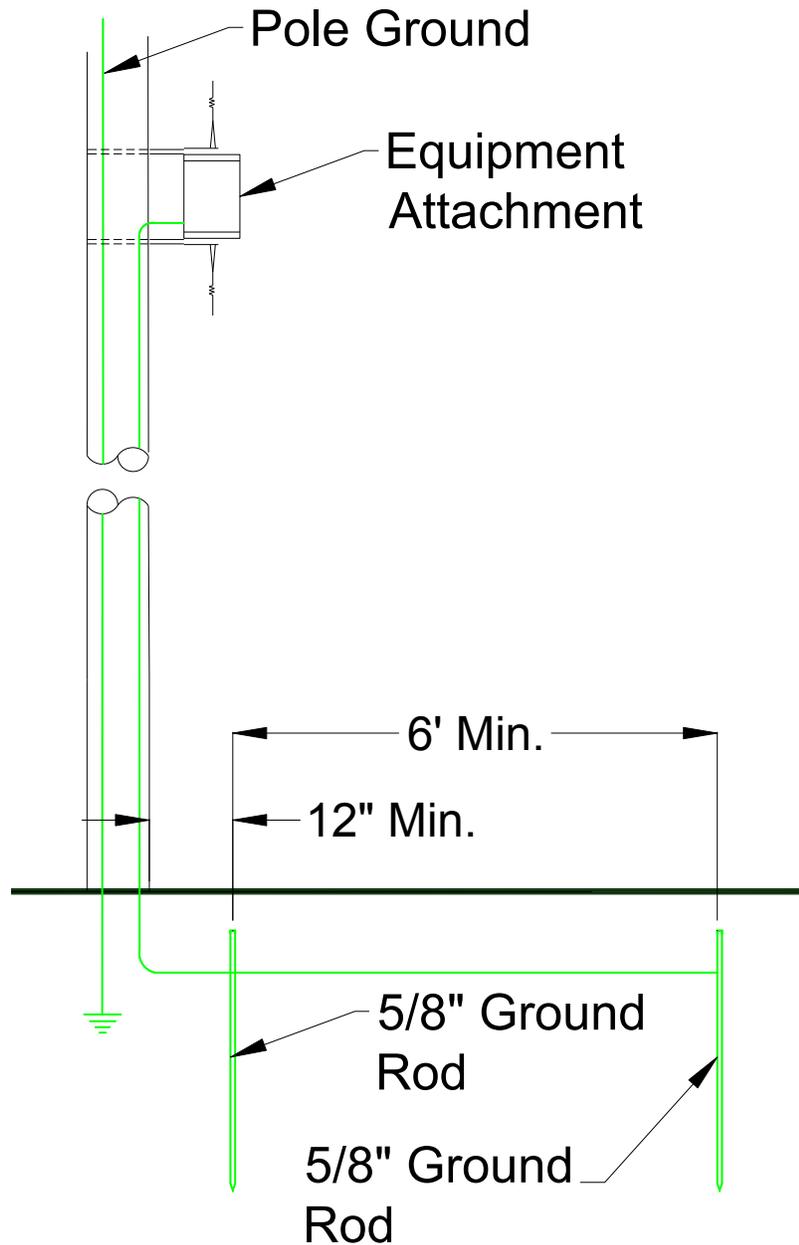
Notes:

1. The weight of the cable/strand-mounted wireless equipment shall not exceed the capacity of the messenger.
2. Only one piece of cable/strand-mounted wireless equipment shall be installed per span.
3. Cable/strand-mounted wireless equipment shall not require power connections.
4. Strand mounted equipment shall maintain 4" midspan clearance to other attachments while the line maintains 12" at pole clearance to other attachments. Additional at-pole clearance will not be allowed to accommodate larger strand mounted equipment.

# 5. Construction Guidelines

## G: Equipment Attachments

### 14. Enclosure and Power Supply Grounding Detail



#### Notes:

1. All enclosures shall be bonded to a separate ground with a minimum current capacity of a #6 copper conductor.
2. All attachments requiring electrical service shall be grounded per NEC 250.

# 5. Construction Guidelines

## H: System Maintenance

Any time work is performed, notification should be given if lashed bundle is under 2" and a new Application submitted if over 2". This applies even for emergency replacements to give NES the opportunity to inspect the work.

Method of Replacing Existing Facilities (depending time to complete)

- < 30 days (<14 days preferred) – delash old, place old in rollers (secure and taunt), lash new, cutover, remove old
- > 30 days but <120 days – place old on temporary 12-14" standoff (provide construction standard and standoff spec), install new in old position, cutover, remove old and standoff
- > 120 days – apply for new position, apply to remove old position



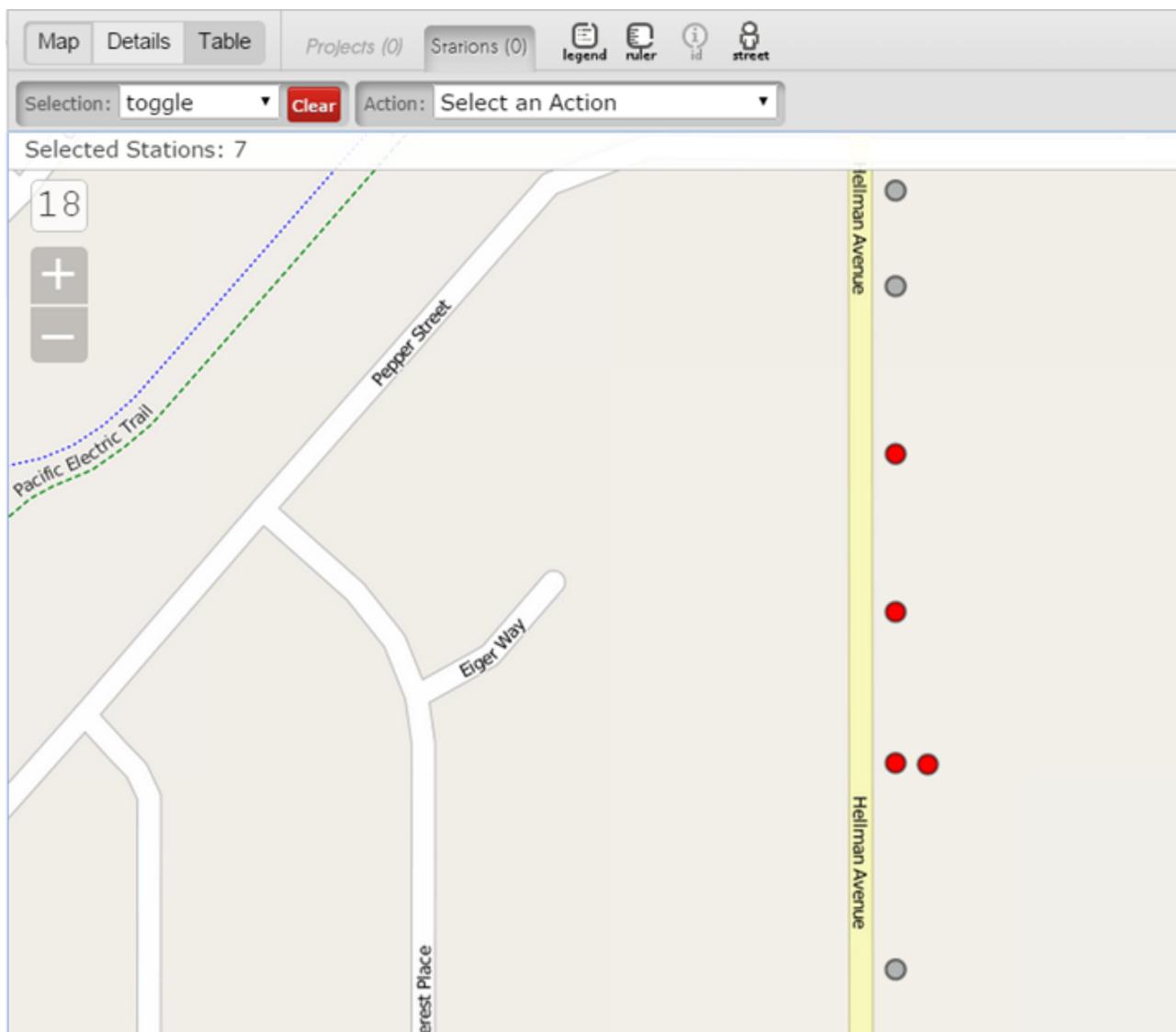
# Appendix A: Pre-Construction Survey Process Supplement

## Compatible Unit Spreadsheet

APPLICATION - NAME											
Date	4/28/2015										
Prepared by	[Operator]										
CPR LOC.	10-Urban Services										
Item	Pole No.	X, Y (State Plane)	MR or MNT	Removal Equipment Type	Removal Equipment	Qty.	Removal Cost	New Equipment Type	New Equipment	Quantity	Install Cost
1	123-45-678		MR	Wood Pole	RO-PW35-45	1		Wood Pole	OPW50-C1	1	
1	123-45-678		MR			1		XARM	OXW10	2	
2	123-45-678		MNT	Steel Pole	RO-PW50-60	1		Steel Pole	OP555-H1	1	
2	123-45-678		MNT			1		XARM	OSX10	1	

### Proposal Submittal-SPIDA®Min:

1. Log into SPIDA®Min.
2. Select desired poles on the map.
3. Select Action, Create Project and choose desired workflow.



# Appendix A: Pre-Construction Survey Process Supplement

## 4. Fill out Pole Attachment Application

Form Template Editor : NES Pole Attachment Application

Preview Edit

PLEASE NOTE!  
APPLICATIONS MAY NOT EXCEED 30 POLES. IF YOU HAVE OVER 30 POLES IN THIS APPLICATION-SELECT THE X IN THE TOP RIGHT CORNER OF THIS BOX AND REMOVE POLES FROM THE PROJECT.

Date Submitted  
March 24 2015

Attaching Company  
Select One

Contact Representative Email Address

Contact Representative Phone Number

Construction/Project Company

Construction/Project Contact

Construction/Project Contact Phone Number

Expedite NES Engineering Review?  
Select One

Select One  
Select One

Type of Attachment (Applications must contain only 1 type)  
Select One

New Position  
Select One

New Cable Diameter

Complete Pre-Construction Survey Provided?  
Select One

Other Equipment Dimensions

Length (Inches)	Height (Inches)
<input type="button" value="Add Row"/>	

Overlash Details If Applicable ("n/a" if not an Overlash Project)

## Appendix A: Pre-Construction Survey Process Supplement

5. After the above form is completed, the project will land in a status and acquire the "Preconstruction Survey Form" seen below. This form lists the items that are required to be uploaded in order for the project to contain a complete preconstruction survey. The operator is to include these items and select Yes in the "All of the above uploaded to the Files section?" field.

Form Template Editor : Pre-Construction Survey

Preview Edit

Note:

Please include all elements that are required for a Pre-Construction Survey:

- Detailed plans for the proposed Attachments
- Field inspection report
- Pole loading analysis by a licensed professional engineer
- Description of any necessary Make Ready to accommodate the Attachments
- Description of any necessary Maintenance to accommodate the Attachments
- Estimated material cost for contractor selected by Operator to complete any necessary Maintenance to accommodate the Attachments
- Estimated labor cost for contractor selected by Operator to complete any necessary Maintenance to accommodate the Attachments
- Complete Pre-Construction Survey package shall be certified by a licensed professional engineer

All of the above uploaded to the Files section?

Select One

Comments:

6. In the Forms section, fill out the "Initial Invoicing" form seen below. The "Application Fee" field will auto-populate with the application fee for the project (based on # of poles in the project), and the Poles table will auto-populate with all of the poles in the application.

Form Template Editor : Initial Invoicing

Preview Edit

Application Fee

Confirm You Wish to Apply and be Invoiced the Application Fee

Select One

Poles

Pole ID

+ Add Row

## Appendix A: Pre-Construction Survey Process Supplement

7. Finally, if Yes was selected in the "Expedite NES Engineering Review?" core form field, the project will pick up the form below. The Estimated Charges fields will auto-populate with the charges (based on # of poles in the project). Select yes or no in the drop down.

Form Template Editor : Expedite Application Engineering Notification

Preview Edit

Date  
March 31 2015

Estimated Charges (If Expedited)

Estimated Charges (Not Expedited)

Note

All labor costs for engineering work will be the sole responsibility of the Applicant. NES will provide the detailed drawing design and material estimates for pole or major equipment replacement. If the Applicant deems the time constraints or costs to be too great the application can be withdrawn/cancelled without further charges.  
NES makes no representation that its existing right-of-ways easements or other property rights (private or public) are or will be sufficient to permit the Applicant's attachments. It is the responsibility of the Applicant to determine if it has the requisite authority to make such attachments.  
Please review the estimated costs to expedite application engineering for this project and return this "Notification Letter" to NES within 14 days. Upon return receipt of this letter NES will proceed with expedited the engineering work on your project. Actual costs will be paid to NES in accordance with the Ingrastructure Use Agreement. Please accept or decline expedited engineering work below and advance the project status to "Submit Application to NES."  
If make-ready and/or maintenance work is required a Notification Letter will be sent detailing estimated schedule and cost obligations. Upon completion of required make-ready and/or maintenance work a revocable license for attachments will be granted for this project.

Choose One  
Select One

8. Once these forms are completed, the project will advance to Submit Application to NES.

## Appendix A: Pre-Construction Survey Process Supplement

### Data Collection

#### Required Data:

Documented items for collection are to be included within the SPIDA®Calc file. Additional items for collection that are not documented may be required.

Item #	Description	Define/Reference
1	Address	Location provided with each pole <i>Ex. 2810 North Dixie Drive, 1 Pole S</i>
2	GPS Points	x,y (state plane coordinates)
3	Anchor Location	Measured from field relative to the pole
4	Anchor/Guy Identification	Attach photo - Guys to Anchors shown in entire photo.
5	Arrestor/Cutout Arm or Mounting Bracket HAG	Measured from field (HAG - Height Above Ground)
6	Bottom of Transformer HAG	Height, size, and angle
7	Conductor/Cable HAG	Wire type, size, and total number
8	Conductor/Cable Identification	Attach photo
9	Conductor/Cable Span lengths of poles "in line"	
10	Conductor/Cable Tap Span or Service "Drop" lengths of poles out of line	
11	Conductor/Cable Tap Span, Service Drop Bearings	Compass Bearings
12	Guy Attachment Height	Measured from field
13	Identify Airbreak Switch	
14	Line Angles	Compass Bearings
15	Mid-Spans HAG	Measured from field
16	Pole Class	Validate
17	Pole Groundline (GL) Circumference	Circumference of pole at GL (only required when no birth-mark is present)
18	Pole Above Ground Level	Measurement to determine pole length
19	Span Length	Measurement between poles known as a span
20	Environments	See Section OH5 of the Design Manual
21	Attachment Heights	
22	Pole Number (I.D.)	
23	Service/Secondary Drip Loops	Lowest sag point
24	Communication Service Drops	Attach heights and mid-spans of communication service drops attached to the pole.
25	Power Service Drops	Attach heights and mid-spans of power service drops attached to the pole.
26	Primary Hardware and Equipment Directions	The correct primary hardware and equipment directions and offsets need to be entered as they are on the pole. The pole in SPIDA®Calc needs to be modeled as it is in the field.

## Appendix A: Pre-Construction Survey Process Supplement

### Data Collection

Required Data: (continued)

27	Insulators	All insulators shall be modeled as they are in the field.
28	Identify owner of Cable and Telephone Attachments	When calling out remedies, use the abbreviated name.
29	Top Bolt of Transformer Mounting Bracket HAG	Measured from field
30	Bottom of Equipment HAG	Measured from field
31	Photos	Digital Camera NES may reject photos of insufficient clarity. Ex: overcast days cause shadows w/ poor quality.
32	UG Cable Termination Bracket HAG	Measured from field
33	UG Riser cover HAG	Measured from field

# Appendix A: Pre-Construction Survey Process Supplement

## Required Pictures Exhibit 1

### Span Next and Previous Photos

- Midspan Tap modeling Check
- Proper tensions are being applied
- There are no obstructions at midspan that would limit the movement (crossing comms, traffic light arms, signs, etc.)
- Conductor/ secondary/ comm sizes
- Power/comm backed properly
- Bearings
- Environment Verification
- Does movement get desired ground clearance over environment.
  - Is that environment correct?
  - Are there proper midspan points, and achieving clearance at midspan points?
- Visually checking feasibility of Resag of secondaries/Comm services
- Missing Data
- Between Clearance visual Check
- Deflection Check

### One close up (Top of the pole to bottom attachment)

- Attachment Height
- Drip Loop Verification
- Equipment Verification
- Overall condition of pole
- Conductor/ secondary/ comm sizes
- Riser Check
- Missing Data

### White Board Photo- Entire Pole

- Pole Tag Check
- Pole Size/ Class Check
- Riser Check
- Missing Data

### Anchors

- Is there sufficient space to extend NES anchor?
  - If unable to extend NES anchor, is it possible to get clearance from comm anchors by decreasing the lead of comm anchors.
  - Close-up provides a visual of the area that a new anchor will be placed.
- Existing Anchor/ Down Guy Overload Check. Visual verification of 15M, 28M anchor or 6M 12M down Guy...etc. Is the model accurate?
- Comm down guys being attached to NES anchor
- Verification that there are no Crossing Down Guys
- Missing Data

### Maintenance Issue close up

- Provides an avenue for the data collector to communicate to the remediator issues that are being identified to ensure that nothing is missed. Some examples are below.
  - Broken Cross arms/insulators
  - Broken Down Guys/ Damaged Anchors
  - Equipment issues
  - Comm service drops hanging at pole

# Appendix A: Pre-Construction Survey Process Supplement

## Pole Tags

1. Verify the pole tag # at each and every pole.
  - 1.1 If the field number and the map number are different, then record both numbers in the pole tag section and identify which number is the map number and which number is the field number.
2. If there is no pole owner tag # on the pole you are inspecting, go to the next pole, and verify that pole # to ensure you are at the correct pole.
3. Properly record any and all other pole tag #'s in the Pole Tags section.
4. On new pole installations, use the GIS number instead of the field number.

## Pole Brand

1. Collect the pole height, pole class and material (concrete, steel or wood?)
2. If there is no visible pole brand, in the comments section type: "No Pole Brand" in the comments.
  - 2.2 When a pole brand is not present estimate in the field the Size and Class based off of the GLC and AGL.

## Pole AGL

1. The height above groundline distance.

## Pole GLC

1. Groundline Circumference shall be taken at the actual ground line. (When there is no birthmark).
  - 1.1 If there is any type of UG riser attached to the pole measure up to either side of the riser and then measure the width of the riser (add both measurements) to get your pole GLC measurement.
  - 1.2 If there is a truss attached at the groundline, measure for pole GLC just as you would with a UG riser.
  - 1.3 If the Pole is encased in Concrete, record the pole GLC as default. Additionally measure the pole GLC. Then in the comments section type: "Pole encased in concrete. Measured GLC- xx inches"

## Line Angles

1. Line Angles for spans Next (ahead) and Previous (back) will be recorded and based on the mainline of the electrical circuit. This is not necessarily the route of the communication attachment.

# Appendix A: Pre-Construction Survey Process Supplement

## Span Length

1. All span, tap, and service lengths are to be recorded.

## Environments

- Railroad
- Highway
- Rural
- Street
- Parallel to Street
- Commercial Driveway
- Residential Driveway
- Parking Lot
- Alley
- Farm
- Water with Sailboats
- Water w/out Sailboats
- Pedestrian
- Obstructed Parallel to Street
- Unlikely Parallel to Street

## Attachment Heights

Attachment height measurements should be taken from the same spot as much as possible.

## Identifying Down Guys and Anchors

1. When identifying the size of anchors and down guys you will need to utilize a caliper.

### 1.1 For Anchors

- 15M =  $\frac{3}{4}$  in. diameter (only 2 eyes)
- 28M = 1 in. diameter (3 eyes)
- 32M =  $1\frac{1}{2}$  in. diameter (3 eyes)

### 1.2 For Down Guys

- 1/4 in =  $\frac{1}{4}$  in. diameter
- 6M =  $\frac{5}{16}$  in. diameter
- 12M =  $\frac{3}{8}$  in. diameter

2. If communication is on an NES anchor, Google will set a new anchor for NES guy at proper specification then assume the connector to the old NES anchor shared with existing communication.

## Primary Hardware and Equipment

1. The correct primary hardware and equipment directions and offsets need to be entered as they are on the pole. The pole in SPIDA@Calc needs to be modeled as it is in the field.

## Insulators

1. All insulators shall be modeled as they are in the field.

Ensure that line extensions are modeled properly.

## Appendix A: Pre-Construction Survey Process Supplement

### Mid-spans

1. Mid-span measurements will be taken at the actual mid-span (or close to it) and the environment where the mid-span is taken will be the environment for the span.
2. If the span crosses multiple environments other than the environment noted for that mid-span location, all other environments will be spatially located by the use of Span Points in SPIDA®Calc. Additional measurements will be taken and entered for that span point.
3. Look for crossing mid-spans that could affect movement on a pole. If you see any crossing wires, street lights, etc. make a note of it, and add a height that this is at if the crossing object is collectable.
4. It is important to note that in some situations you may need to add span points to capture your worst case between clearances. Be mindful of this when data collecting.
5. Collection of mid-span of rail road crossing should be taken on the rail itself.

### Properly Identifying Environments and Span Point

1. If the service span crosses over a front yard and residential driveway, then the environment will be “Residential Driveway”. You will take the mid-span measurement over the lowest most critical part of the Residential Driveway.
2. If the service span crosses over a street and yard then the environment will be “Street”. You will take the mid-span measurement over the lowest most critical part of the Street.
3. If the service span crosses over two different environments with the same required minimum ground clearances (example: \*street and commercial parking lot). Mid-span measurement will be taken at the true mid-span (or close to it) and the environment where the mid-span is taken will be the environment for the span. In addition the other environment will be marked by the use of span points.
4. \*For certain roads, such as state routes and highways, NES may have greater clearance requirements than required by the NESC.
5. For more information on environments, see Pole Attachment and Conduit Usage Guidelines section D: Communication Line Clearance Requirements.

### Equipment on Pole

Model all equipment on Pole

The following equipment may be found attached to a pole and should modeled in SPIDACalc.

1. Cutouts
2. Lightning Arresters
3. Termination Brackets
4. Flood Lights
5. Antennas

### Determination of Replacing a Pole as Maintenance

If there is room for the new attachment but the pole is overloaded, it may be replaced as maintenance. Poles that do not have room for the attachment will not be replaced under maintenance. Poles shall be classified as overloaded if when analyzed the pole is loaded greater than 100%. Overloaded poles must be replaced prior to the installation of additional attachments. New and replacement poles shall be designed to be loaded less than 80%.

# Appendix B: SPIDAMin Procedures

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## OPERATOR GUIDE: NES STANDARD POLE ATTACHMENT

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PREPARED BY SPIDA SOFTWARE

APRIL - 2015

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<https://spidamin.nespower.com/projectmanager/>

# Appendix B: SPIDAMin Procedures

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**SPIDAWEB, LLC**

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# Appendix B: SPIDAMin Procedures

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Trent.Quatman@SPIDASoftware.com.....	<b>Error! Bookmark not defined.</b>

# Appendix B: SPIDAMin Procedures

## NES STANDARD POLE ATTACHMENT

This document outlines the steps required for the Operator to submit and carry out an NES Pole Attachment Application via SPIDAMin.

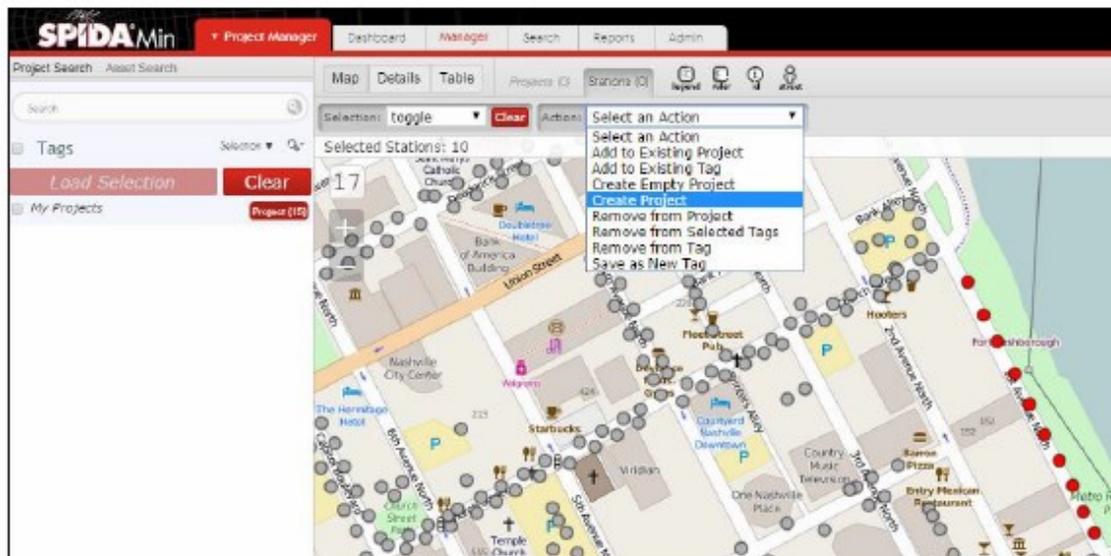
### SUBMITTING AN APPLICATION

Upon logging in, hover over your name in the top right corner of the page and switch your company to NES.

Next, navigate to the Manager tab. Once in the manager tab, locate and select the poles on the map you would like to include in your application.

Once the poles are selected (<31 poles per application), select "Create Project" in the action dropdown as seen below.

Now select NES Standard Pole attachment in the flow drop down and click "Selected Stations."



# Appendix B: SPIDAMin Procedures

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## COMPLETING THE NES POLE ATTACHMENT APPLICATION FORM

---

Once "Selected Stations" is clicked, the Enter Project Details dialogue will appear (see next page). At the top of this box, enter a project name.

After a project name is entered, complete the NES Pole Attachment Application form.

When the form is complete, select "Create Project."

IMPORTANT: the email address entered in the "Contact Representative Email Address" should be in all lowercase.

# Appendix B: SPIDAMin Procedures

Enter Project Details

Name:

Flow: NES Standard Pole Attachment

[Edit NES Pole Attachment Application](#)

PLEASE NOTE!  
APPLICATIONS MAY NOT EXCEED 30 POLES. IF YOU HAVE OVER 30 POLES IN THIS APPLICATION-SELECT THE X IN THE TOP RIGHT CORNER OF THIS BOX AND REMOVE POLES FROM THE PROJECT.

\*  Date Submitted

\*  Attaching Company

\*  Contract Representative Email Address

\*  Contract Representative Phone Number

\*  Construction/Project Company

\*  Construction/Project Contract

\*  Construction/Project Contact Phone Number

\*  Expedite NES Engineering Review?

\*  Select One

\*  Type of Attachment (Applications must contain only 1 type)

\*  New Position

New Cable Diameter

\*  Complete Pre-Construction Survey Provided?

Other Equipment Dimensions

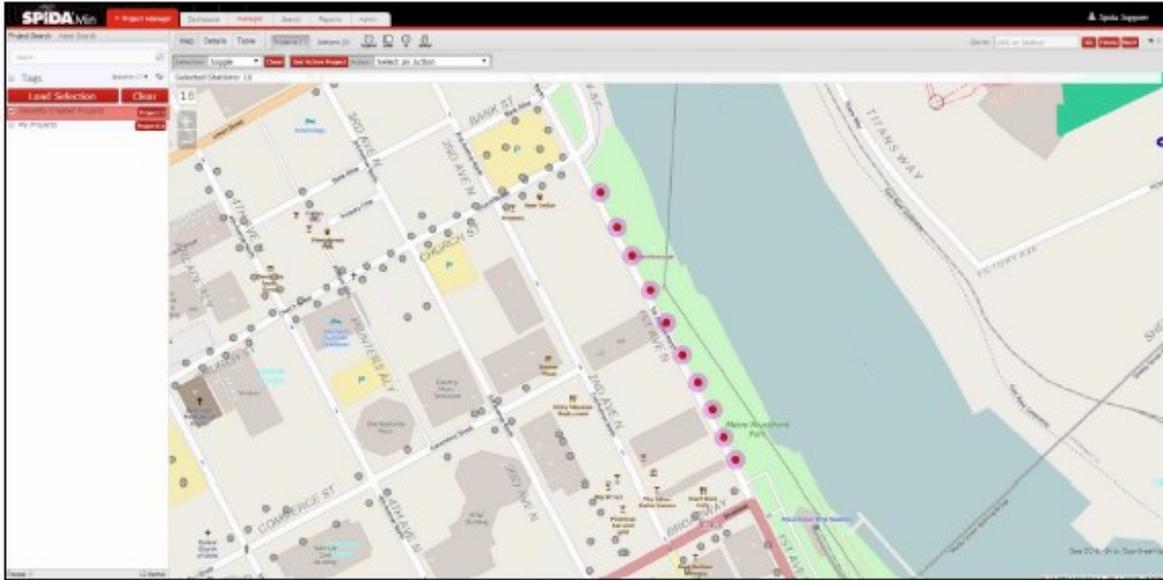
Length (Inches)	Height (Inches)	Width (Inches)	Weight (lbs.)
<input type="button" value="Add Row"/>			

\*  Overlash Details if Applicable (n/a if not an Overlash Project)

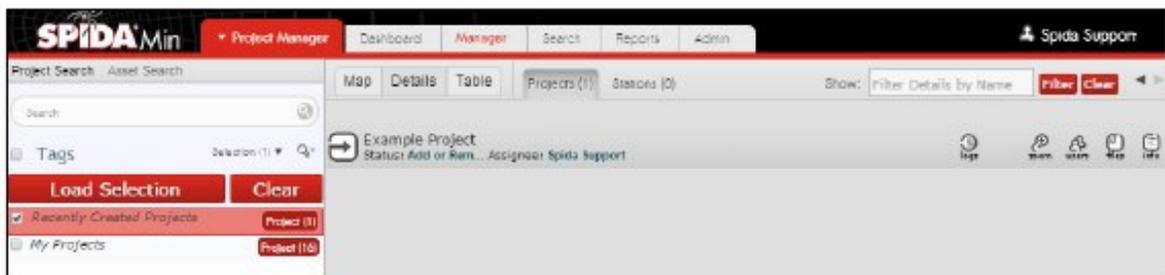
Required fields are marked with an \*  
Incomplete required fields are marked with a \*

# Appendix B: SPIDAMin Procedures

Once the project is created, load the project by checking the "Recently Created Projects" tag and clicking "Load Selection."



Now enter Details view, as seen below.



# Appendix B: SPIDAMin Procedures

The first status of the project is "Add or Remove Poles if Needed." This status will be the final chance the attacher has to add or remove poles until the review before initial construction.

When complete, click the info section to the right of details view, select "Edit" right below the info button, and advance the project to the status "Advance Here to Prep Application."

(Advance project statuses by selecting the desired status in the status drop down and clicking "Save Changes.")

The screenshot displays the SPIDAMin Project Manager interface. The main content area shows the 'Edit Example Project' form. The form includes the following fields and options:

- Flow:** NIS Standard Pole Structure...
- Status:** A dropdown menu currently set to 'Add or Remove Poles if Needed'. A tooltip is visible over this dropdown, listing three options: 'Add or Remove Poles if Needed', 'Possible: Cancel Application', and 'Possible: Advance Here to Prep Application'.
- Address:** A text input field.
- Street:** A text input field.
- City:** A text input field.
- County:** A text input field.
- State:** A text input field.
- Zip Code:** A text input field.
- Remarks:** A large text area with a character count of '128 characters left'.
- Reference Codes:** A table with two columns: 'Type' and 'Value'. The 'Type' column has a dropdown menu set to 'PROJECT'. The 'Value' column contains the text 'Example Project'. An 'Add Code' button is located to the right of the table.

At the bottom of the form, there are three buttons: 'Save Changes', 'More Options', and 'Cancel'.

# Appendix B: SPIDAMin Procedures

When the project is advanced to "Advance Here to Prep Application," it will land in one of several statuses where at least one form needs completed.

The forms that require completion will vary depending on selections made by the Operator in the NES Pole Attachment Application form.

Forms are found at the bottom of the info dropdown, and the red astrisks indicate a required field. Projects with required forms cannot advance until the form is complete d.

The screenshot displays the SPIDAMin web interface for a project named "Example Project". The status is "Prep Appli..." and it is assigned to "Spida Support". The interface includes a navigation bar with "Map", "Details", and "Table" tabs, and a search filter "Filter Details by Name" with "Filter" and "Clear" buttons. The main content area shows a "Summary" section with the following details:

- Flow: NES Standard Pole Attachment
- Status: Prep Application-Pre-Construction Survey Provided
- Status Age: 2,03d seconds
- Address: (none)

Below the summary is a "Reference Codes" table:

Type	Code
PROJECT	Example Project

Tags: My Projects, Recently Created Projects

Forms:

- ID Reference Table
- NES Pole Attachment Application
- Pre-Construction Survey
- Initial Invoicing

# Appendix B: SPIDAMin Procedures

Initial Invoicing form requires that the Operator confirms they wish to be invoiced the application fee.

Forms:

- ID Reference Table
- NES Pole Attachment Application
- Pre-Construction Survey
- Initial Invoicing

**Edit Initial Invoicing**

Application Fee  
\$650.00

\* Confirm You Wish to Apply and be Invoiced the Application Fee  
Confirm

Poles

Pole ID
09602260
09602257
09602261
09602263
09602265
09602264
09602262
09602258
09602259
09602256

Required fields are marked with an \*  
Incomplete required fields are marked with a \*

Save Cancel

If a complete pre-construction survey is being provided, files may need uploaded to the files section.

To upload files to the project, select the "files" button in details view and click "Add Files" and follow the provided directions.



# Appendix B: SPIDAMin Procedures

Example Project  
Status: Prep Appli... Assignee: Spida Support

### Files for Example Project

Upload Files (maximum 6):  
 No file chosen  
\* Attached files will be updated if a new file has the same name as a file already attached.

Share with:

Pending Files:

File Name	Shared With
-----------	-------------

Once all forms are completed and required files are uploaded, advance the project status to "Submit Application to NES."

SPIDAMin Project Manager

Dashboard Manager Search Reports Admin

Project Search Asset Search

Map Details Table Projects (1) Stations (0)

Example Project  
Status: Prep Appli... Assignee: Spida Support

### Edit Example Project

Flow: NES Standard Pole Attachm...

Status:

Address:   
Street:   
City:   
Country:   
State:   
Zip Code:

Remarks:  
  
128 characters left

Check this box to disable adding or removing stations from Example Project  
*Warning: Adding/removing stations can cause unexpected results (uncheck with caution).*

Reference Codes

Type	Value
<input type="text" value="PROJECT"/>	<input type="text" value="Example Project"/>

\* Empty values will be removed

# Appendix B: SPIDAMin Procedures

## INITIAL CONSTRUCTION

The next time the project is returned to the Operator it will be to review the make ready and/or maintenance notification forms. The exception to this is if there is no make ready or maintenance required. In this case, the project status will be "Proceed to Attach."

15L-067, Example Project  
Status: Maintenance... Assignee: Spida Support

**Summary**

Flow: NES Standard Pole Attachment  
Status: Maintenance and Make-Ready Work Required - Review Notification Forms  
Status Age: 8.847 seconds  
Address: (none)

Reference Codes

Type	Code
PROJECT	Example Project
PROJECT	15L-067

Tags: [My Projects](#) [Recently Created Projects](#)

Forms:

- Make-Ready Notification
- Pre-Construction Survey
- Maintenance Notification
- Engineering Assignee
- NES Pole Attachment Application
- Invoice Confirmations
- Attachments
- Initial Invoicing
- Required Work
- Complete Pre-Construction Survey Provided?
- ID Reference Table

# Appendix B: SPIDAMin Procedures

The Operator is to complete the final 2 fields of the Make-Ready Notification form and/or the Maintenance Notification form.

In these fields, the Operator selects which party will be completing the construction. If NES is not selected, the contractor name should be entered in the final field.

**Edit Make-Ready Notification**

Date  
4/9/15 2:00 PM

\* WR Number  
5432

\* MR EST Number  
23513

\* Material Costs  
1432.00

\* Total Cost With Labor  
43243.00

Note  
Make-ready work is necessary; the Applicant will not be authorized to attach until such

\* Contract No.  
1234

\* Estimated lead time for NES to complete MR work:  
2-7 Weeks

\* MR Construction to be completed by  
NES Line Crews

Contractor Name (if applicable):  
\_\_\_\_\_

Required fields are marked with an \*  
Incomplete required fields are marked with a !

Save Cancel

# Appendix B: SPIDAMin Procedures

Once the forms are complete, advance the project status to "Work Accepted - Notification Forms Complete - Return to NES."

Type	Value
PROJECT	Example Project
PROJECT	15L-067

The next time the project returns to the Operator, it will be to advance the project to "Construction Complete" when Make Ready and/or Maintenance is complete (if Operator elected to perform construction).

# Appendix B: SPIDAMin Procedures

If the Operator elects NES to perform work as well as a contractor, both NES and Operator personnel will be assigned to the project. In these cases, a "Construction Complete" form (wording may vary slightly) must be completed by all parties in order for the project status to advance.

The screenshot shows a 'Summary' page for a project. At the top, it displays the flow 'NES Standard Pole Attachment', the status 'NES and Operator Construction Underway', and the status age '3:123 seconds'. Below this, there are 'Reference Codes' and a table with two rows, both labeled 'PROJECT'. There are also tags for 'Search Results', 'Recently Viewed Projects', 'My Projects', and 'Recently Created Projects'. A list of forms is shown below, including 'Make-Ready Notification', 'Construction Form', 'Required Work', 'Attachments', 'Engineering Assignees', 'Maintenance Notification', 'Complete Pre-Construction Survey Provided?', 'ID Reference Table', 'NES Pole Attachment Application', 'Invoice Confirmations', 'Pre-Construction Survey', 'Construction Complete' (which is highlighted with a red circle), and 'Initial Invoicing'.

See the Construction Complete form below. In this case, Operator elected NES and a contractor to perform construction. Instead of advancing the project status, both NES and the Operator must select "Yes" in their respective drop downs in order for the project status to advance.

**Important:** *Operator should only complete their part of this form, and should never select "Yes" for NES.*

The screenshot shows the 'Edit Construction Complete' form. It has two required fields, each marked with a red asterisk: 'NES Construction Complete?' with a dropdown menu showing 'Select O...', and 'Operator Construction Complete?' with a dropdown menu showing 'Yes'. Below these is a 'Comments' text area. At the bottom, there is a red note: 'Required fields are marked with an \*' and 'Incomplete required fields are marked with a \*'. There are 'Save' and 'Cancel' buttons at the bottom.

# Appendix B: SPIDAMin Procedures

## ATTACHMENT

When initial construction is complete and has passed NES field review, the project will reach the status, "Proceed to Attach."

This status indicates that the Operator is free to attach the applied for line. When the attachment is complete, Operator should complete the Attachment Date form and advance the project status to "Attachment Complete."

This will return the project to NES, who will perform a field review, final invoicing, and close the project.

**Edit Attachment Date**

\* Actual Date of Attachment

April 9 2015

Required fields are marked with an \*

Incomplete required fields are marked with a \*

Save Cancel

15L-067, Example Project  
Status: Proceed to... Assignee: Spida Support

**Edit 15L-067, Example Project**

Flow: NES Standard Pole Attachm...

Status: Proceed to Attach

Address: Proceed to Attach  
Possible: Cancel the Project

Street: Possible: Attachment Complete

City

County

State

Zip Code

Remarks:

128 characters left

Check this box to disable adding or removing stations from 15L-

Warning: Adding/removing stations can cause unexpected results (uncheck with ca)

Reference Codes

Type

PROJECT

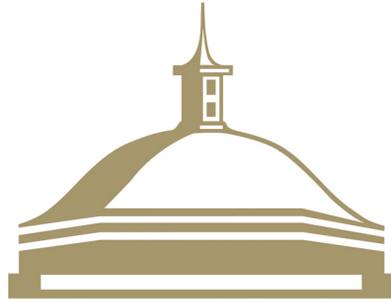
PROJECT

\* Empty values will be removed

Save Changes More Options Cancel

TRENT.QUATMAN@SPIDASOFTWARE.COM

# **Appendix C: Remediation Procedures**



# **NES**

**NES Joint Use Remediation Manual**

# Appendix C: Remediation Procedures

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# Appendix C: Remediation Procedures

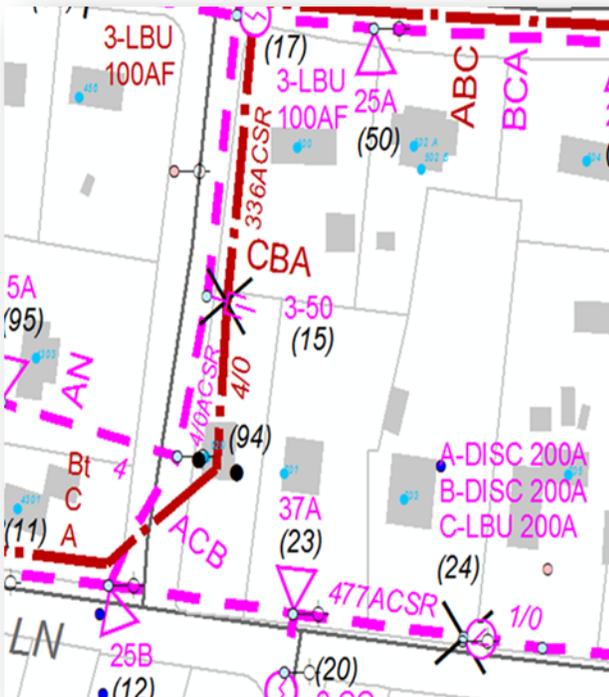
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# Appendix C: Remediation Procedures

## Data Auditing

### Primary:

- The Data Collector audits wire sizes when they assign photos to ensure 100% accuracy.
- The Remediator audits wire sizes when they start the project.
- During Design review, again check to ensure that there are no errors.



NEUTRAL WIRE SIZE TABLE	
NEW INSTALLS	
PRIMARY CONDUCTOR	SYSTEM NEUTRAL CONDUCTOR
2ACSR	2ACSR
1/0ACSR	2ACSR
4/0ACSR	1/0ACSR
336ACSR	4/0ACSR
477ACSR	4/0ACSR
795ACSR	477ACSR
1351.5ACSR	795ACSR
MAINTAINED LINES	
#6BHD	#6CU BHD OR WP
#4CU BHD	#6CU BHD OR WP
#2CU BHD	#4CU BHD OR WP
1/0 CU	#2CU BHD OR WP
4/0CU	#2CU BHD OR WP

# Appendix C: Remediation Procedures

## General Formatting Rules- Remediation

### **Remedy Box Formatting**

- At the start of each remedy line; dash space “- “
- Attachment heights, span lengths, etc. are formatted as; **18’10”**
- Direction is formatted as; **N, S, E, W, NE, NW, SE, SW**
- Pole height and class is formatted as; **40C4, 50H1**
- Capitalize the first letter of a new remedy line

Example remedy box on covermap.

```
05616027
1-20
EJH, EGC-SE

NES:
- MNT: Install new one wire rack for neutral at 26'4"
- Resag 2 AT span N to 16'6" at midspan
TRS:
- MNT: Retension 6M guy supporting traffic signal span SE
- At 18'0" lower 0'8" to 17'4"
- Ensure 18'0" clearance over roadway
Zayo:
- Attach at 20'5"
```

### **Documenting Maintenance and Make Ready**

For pole replacements that are considered maintenance place “MNT:” before the remedy statement. For pole replacements that are considered make ready place “MR:” before the remedy statement.

- MNT: (insert work needed here)
- MR: (insert work needed here)

### **Raising and Lower on pole– Order of Remedy Statements**

When raising, lowering or transferring write the remedy in order of movement.

- NES power listed first
- Proposed listed last \*

\*This is based off the assumption the proposed cable is a new attachment (not an overlash attachment) and was not attached to the pole prior to the field remediation phase of the proposal. If overlash then adjust attachment in order to the overlashed cable being last.

### **Pole Replacements (Comm Down Guys)**

On pole replacements with existing Comm down guys / span guys, it is not necessary to call out a remedy to install these existing Comm guys if they can be transferred.

# Appendix C: Remediation Procedures

## ***Company Nomenclature***

When calling out remedies in the ownership box use the abbreviated name. Have to know the nomenclature and, by default, use whatever it says in SPIDACalc.

Attachment "Owner" Abbreviations & Names
<b>Competitive Access Providers</b>
AFG = Access Fiber Group
COM= Comcast (Intermedia/Hyperion/Adelphia)
TWC = Time Warner Cable (DukeNet)
L3C = Level3 (Telcove)
MUNI= MuniNet
MET = Metro Government
NESC = NES Communications
TCA = Teleport Communications America (ATT Local/TCG)
TRS = Traffic and Signalization
TWT = TW Telecom (ICG)
VAN = Vanderbilt University
WIND= Windstream (NDL/KDL)
XOC = XO Communication (Nextlink)
ZAYO= Zayo (American Fiber Systems/Dolphini)
P = Private
O = Other/Unknown – (NES use only)
GOOG = Google Fiber
<b>Telephone</b>
ATT = AT&T/BST
TDS = TDS Telephone
UTC = United Telephone Company
<b>Power</b>
NES = Nashville Electric Service Power

# Appendix C: Remediation Procedures

## *Resolving Clearance and Loading Issues*

### Clearances

Clearances should be reviewed as a first possible remedy. Resolve clearance issues by moving comms first. This may include at pole attachments and/or pole attachments on adjacent poles. If the issue can't be fully addressed by moving comms, attempt to resolve by moving power.

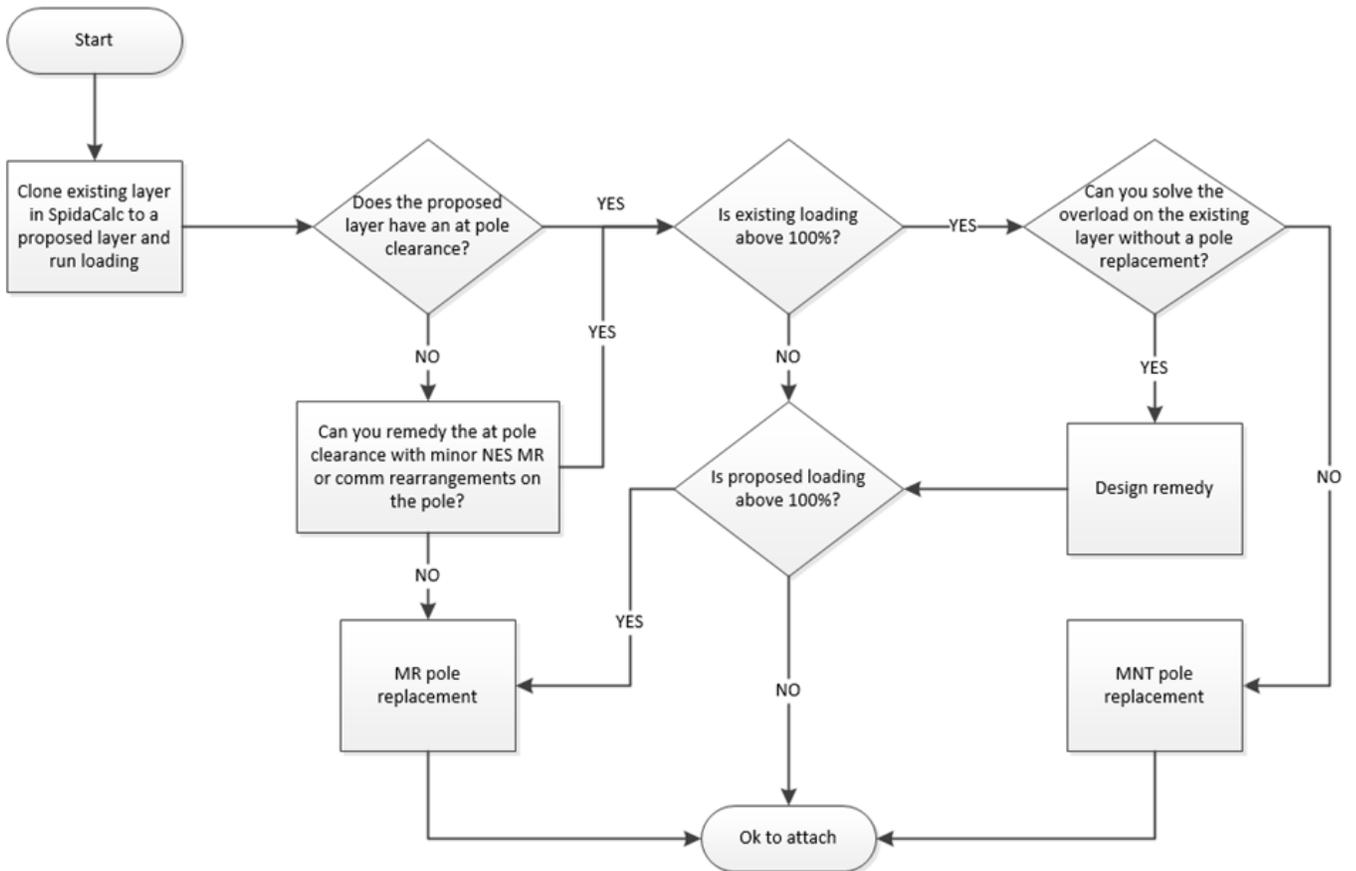
If Clearance issues are identified, then work required to gain proper clearances should be designated as Make Ready. If the pole is not of sufficient height to allow for proper clearances, then the pole should be replaced as Make Ready.

### Loading

After clearances are reviewed, loading should be evaluated. To solve overloads, try installing down guys, anchors, and/or span guys. For poles with existing overloads, ensure all load imbalances are backed up with guys and all data (heights, GLC, angles) which could affect the loading of the pole is accurate.

Exhaust all options before suggesting a Maintenance pole replacement; a pole replacement is the last resort. Classify the work as Maintenance if all the remedy options stated above were considered and the existing pole is still overloaded (greater than 100%). Classify all other work as Make Ready.

# Appendix C: Remediation Procedures



## Solving Overloads

### **TAF (Tension Adjustment Factor)**

- The NES messengers pole to pole can be adjusted with secondary drops. The adjustments are dependent on the amount of secondary drops that are coming off of it.
  - 1 cut-in (1000#)
  - 2-3 cut-ins (1500#)
  - 4+ cut-ins (2000#)
- When TAF is applied for a midspan tap, the remediator should place a comment in the Calc file under the comments section as outlined below.
  - TAF APPLIED "# of cut-ins" "Tension applied"
  - TAF APPLIED 1 cut-in (1000#)

# Appendix C: Remediation Procedures

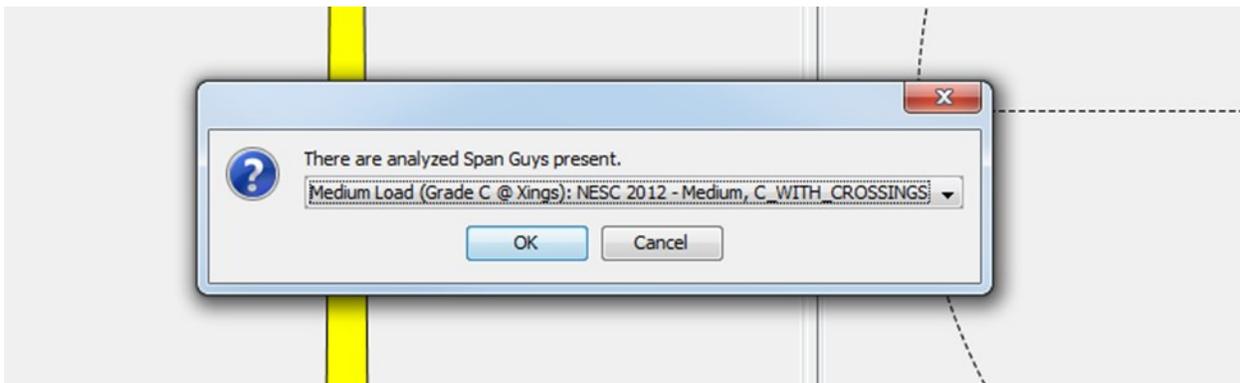
## Point Loads

Span guys that are utilized from the Anchors and Guys tab allow for the tool to assess the actual tension on the span guy by calculating what wires it is supporting. As such, the subsequent pole, if analyzed, will only show a point load equal to the wires that are actually being backed up. This will help greatly in assessing the stresses actually seen on the pole and the analysis will be more in line with the actual field condition.

Point loads can be achieved in 2 ways.

### Method 1: In the Field point load collection:

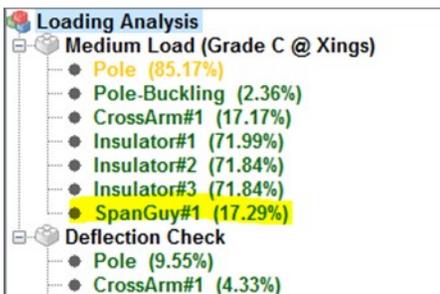
Once collection is complete on the pole where the span guy is coming from, and the height of the attachment point on the other pole is collected, run analysis. You will be able to utilize the From Project, or From Previous buttons to bring the point loads through. Upon doing so, a box will appear to choose which loading case the wires should be brought in as. Select the appropriate Medium Load case.



This will automatically pull in the point load from the span guy. During your office review before submittal, always use method two to check the force numbers to insure accuracy.

### Method 2: In the office point load check:

Point loads will be attained by running analysis on the pole with the span guy affecting the loading on said pole. In the analysis tab, select which span guy you want to apply a point load for.

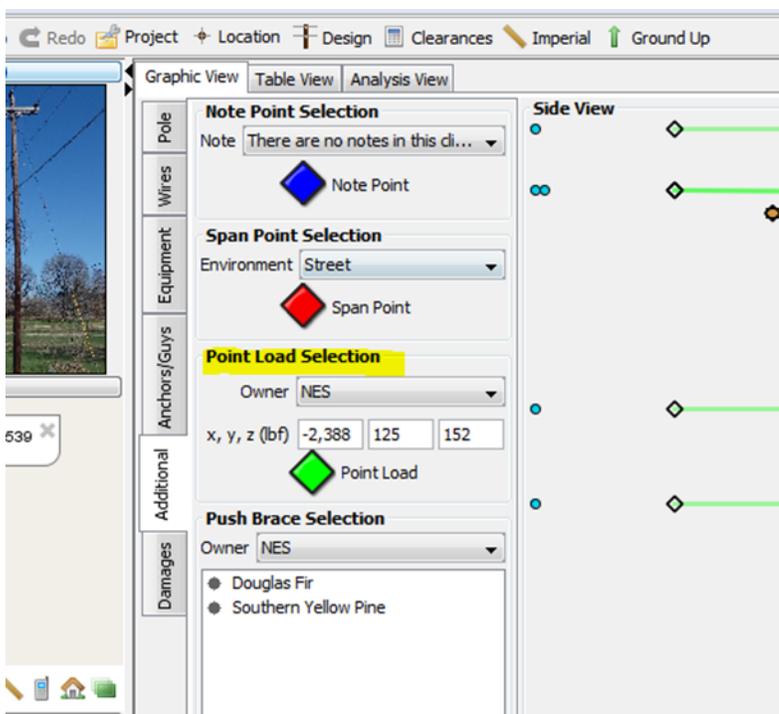


To the right of the loading analysis, Calc will show "Results for Span Guy #X". Scroll to reaction forces on that list, select your span guy, and the force will show the numbers needed for the point load.

# Appendix C: Remediation Procedures

Results for SpanGuy#1	Value	Unit
+	CrossArm#1 acting on Pole	
+	Insulator#1 27kV Pin (Pole Top)	
+	Insulator#1 acting on Pole	
+	Insulator#2 27kV Pin (Cross Arm)	
+	Insulator#2 acting on CrossArm#1	
+	Insulator#3 27kV Pin (Cross Arm)	
+	Insulator#3 acting on CrossArm#1	
+	Wire#10 acting on Pole	
+	Wire#11 acting on Pole	
+	Wire#4 acting on Pole	
+	Wire#5 acting on Pole	
+	Wire#6 acting on Pole	
+	SpanGuy#1 12M (7/0)	
+	SpanGuy#1 acting on Pole	
-	<b>Reaction Forces</b>	
+	Pole Southern Yellow Pine, 45', 3	
-	SpanGuy#1 12M (7/0)	
●	Force	x: 2388, y: -125, z: -152 Total: 2396 lbf

On the pole where the span guy forces need to be applied, go to the additional tab to find the point load selection. The inverse of the force numbers will be applied. NOTICE: in our example that the force reads x:2388 y:-125 z: -152 and what we input is x: -2388 y: 125 z: 152.



From there, drag the green point load diamond to the height desired at pole, and it will appear as a green arrow. The arrow should point to the direction of where it came.

**This will be the way to check every point load to make sure the force numbers are correct**

# Appendix C: Remediation Procedures

## ***Slack Spans & Reduced Tension Spans***

A slack span is defined as approximately ten percent (~10%) normal tension in the NES sag charts. Reduced tension spans are fifty percent (50%) of the design tension.

Slack and reduced tension spans should be limited to the range of spans specified on the selected ruling span sag chart in Design Manual section OH1: Overhead Conductor.

NES and Other Communication cables should be limited to the range of spans specified on the messenger with Fiber Optic Cable slack span sag charts in Design Manual section OH1: Overhead Conductor.

## **General Remediation Statements**

### **Communication Statements**

#### ***Attaching to Pole:***

- Attach at **x'y"**
- Attach span "**N,S,E,W**" at "**x'y**"

Possible Additional statements (use on separate line from attach line):

- Ensure **x'y"** above (**environment**) through span "**N,S,E,W**"
- Ensure **x'y"** from NES conductor through span "**N,S,E,W**"

**Note:** Always use both ensure statements when the proposed cable is the only comm going in that direction

**Note:** Ensure is used for when there is not much room (midspans are going to be tight)

**Note:** Engineer to ensure minimum 0'4" midspan clearance to communication cable(s) span (N,S,E,W)

#### ***Raise or Lower Communication on Pole:***

- At **x'y"** "**raise or lower**" **x'y"** to **x'y"**
- Span "**N,S,E,W**" at **x'y"** "**raise or lower**" **x'y"** to **x'y"**

**Note:** Use when referring to main lines or if multiple lines on pole in different directions

**Note:** Utilize existing bolt holes when possible; if not possible, maintain minimum 4" to existing bolt holes

**Note:** When utilizing existing bolt holes, maintain minimum 8" comm to comm

**Note:** When utilizing existing bolt holes, be aware of the direction of the existing bolt. Ex: dead-end through-bolt vs 3-bolt clamp

#### ***Resag of a Communication Main Line / Cable or Resag and Piece Out:***

- Resag and Piece Out fiber optic cable (**up/down**) **x'y"** to achieve **x'y"** through span(s) "**N,S,E,W**"

**Note:** Always consult your Supervisor prior to using this remedy. This Resag and Piece Out remedy can only be done with Fiber Optic Cable. This can never be done with any solid phone cable (old copper strands / pairs)

#### ***Communication Services:***

Communication service drops only need to be collected and modeled when attached directly to the pole or when the midspan drop is within three feet (3') of the pole; however, non-compliant communication service drop clearances still require remediation (notification to owner).

# Appendix C: Remediation Procedures

**Note:** These attachments do need to be taken into account if rearrangements are taking place at pole, if the communication services are obstructing the proposed cable, or if the communication services have a clearance violation.

## **Raise or Lower Communication Services:**

- Services on J-hook at  $x'y$  "raise or lower"  $x'y$  to  $x'y$ "
- Services on J-hooks "N,S,E,W" attach at  $x'y$ "

**Note:** Any services attached to messengers do not need separate raise or lower instructions

**Note:** Used when one company has multiple J-hooks with no main line on the pole and are lowering to the same height

- Remove service(s) from J-hook(s) and attach to main cable at  $x'y$ "

**Note:** Used when a company has a main cable and are lowering services to attach to main cable

**Note:** Anytime raise or lower J-hooks and there is a main cable present, attach to main cable to clean up pole

## **Resag Communication Services:**

- Engineer service(s) to achieve  $x'y$ " above "environment" through span "N,S,E,W"
- Engineer service(s) to achieve  $x'y$ " from NES conductor through span "N,S,E,W"

**Note:** Utilize when you need to clarify between clearance to the communication company.

## **Offset Strand Attachment:**

Floating attachments (flying dutchmen) are not allowed on NES Poles, and need to be removed and attach properly to the pole

- Remove from offset strand attachment; attach to pole at  $x'y$ "

## **Relash Communication:**

- Relash cable span "N,S,E,W"

## **Transferring Comm for Pole replacement:**

- Attach to new pole at  $x'y$ "

## **Comm Currently Not Attached to Pole:**

- Currently not attached; attach to pole at  $x'y$ "

## **Double Pole Comm Transfers:**

- Remove from double wood pole; attach to new pole at  $x'y$ "

## **Crossing Comms:**

- Coordinate with (owner) to ensure NESC between clearance to crossing communication cable

## **Guying and Anchoring - Communications:**

### **Down/ Span Guying and Anchoring for Communications:**

- Operator should guy all proposed load imbalances, angles, and dead-ends.
- If the Operator identifies another comm providers facilities that are unguyed, Operator should make provisions for and prescribe that the other comm guy their facilities.



# Appendix C: Remediation Procedures

- When other comms facilities are guyed, the operator is not expected to solve the other comms guy overload if one is discovered.
- Installation of the Operators' facilities should not make overloads on existing comm guys worse.

## **Down/ Span Guying and Anchoring:**

- Engineer down guy and anchor to support span "N,S,E,W"
- Engineer down guy and anchor to support on bisector
- Engineer down guy to support "on bisector or for span" "N,S,E,W" and attach to NES anchor with a lead of x'y"  
**Note:** NES will allow a Comm to attach to their anchor in unusual situations. These will be reviewed on a case by case basis. The most common example will likely be when there is some physical/environment conditions that prevent the extension of an existing anchor lead. Another less common, but possible situation may be if a property owner refuses to grant an easement.
- Re-Tension down guy(s) at x'y" "on bisector or for span" "N,S,E,W"
- Engineer span guy to pole "XXXXXX" "N,S,E,W" to support on bisector
- Engineer span guy to pole "XXXXXX" "N,S,E,W" to support span "N,S,E,W"
- Attach span guy at x'y" from pole "XXXXXX" "N,S,E,W"  
**Note:** This statement is used on the pole the new span guy is going to
- Ensure NES clearances for anchor placement  
**Note:** ALWAYS USE THIS REMEDY STATEMENT
  - Coordinate with NES right of way to secure necessary easements for new NES anchor
- Note:** USE WITH NES EXTENSION. This will fall under what company is causing NES to extend

## **Removing from an NES Anchor:**

- Remove down guy from existing NES anchor "on bisector or for span" "N,S,E,W"
- Engineer to install new down guy and anchor to support "on bisector or for span" "N,S,E,W"
- Ensure NES clearances for anchor placement  
**Note:** ALWAYS USE THIS REMEDY STATEMENT

## **NES Statements**

### **Raising Neutral / Secondary / Services:**

Call for splicing of all NES services if you are raising them or replacing a pole with services. Reference NES Framing Criteria and Construction Standards for spacing requirements. When raising Neutral or Secondary with no equipment on pole be aware of spacing on the pole with potential of a transformer being installed. Consult with supervisor.

- "wiretype" at x'y" "raise or lower" x'y" to x'y"
- "wiretype" "services" span "N,S,E,W" at x'y" "raise or lower" x'y" to x'y"
- "wiretype" span "N,S,E,W" at x'y" "raise or lower" x'y" to x'y"
- Splice in additional "wiretype" for span "N,S,E,W"  
**Note:** Span direction statement should only be used for dead-end attachments

### **Resag of NES Conductor:**

- Resag "wiresize" at x'y" [RSXXX-wiresize-tension] (up/down) x'y" to achieve x'y" above (environment) through span "N,S,E,W"



# Appendix C: Remediation Procedures

**Note:** RSXXX-wiresize-tension is the tension of the wire from the sag chart

**Note:** The at x'y" height in the remedy statement is for midspan height; not attachment height at pole

## **Retuck Drip Loop:**

- Retuck Power drip loop at x'y" (up/down) x'y" to x'y"
- Retuck STLT drip loop at x'y" (up/down) x'y" to x'y"

## **Open Wire Secondary:**

The size of the triplex that the copper open wire is being replaced with is dependent on the size of the existing copper, transformer size, and actual load demand. Both poles in an open wire change outs are included since NES work is required.

- Replace "wiresize" open wire for span "N,S,E,W" with a "wiresize"; attach at x'y"
- Remove three (3) wire rack at x'y"
- Install single wire rack and attach "wiresize" at x'y"

## **Street Light:**

**Note:** STLT= Street light

The top or bottom of the STLT bracket shall be no closer than six inches (6") to the Neutral. The STLT shall not be raised or lowered into the secondary wire. If raising or lowering the STLT bracket more than five feet (5'0") from the existing position, submit the following information to begin the photometric review (additional information may be required, including but not limited to a detailed photometric study):

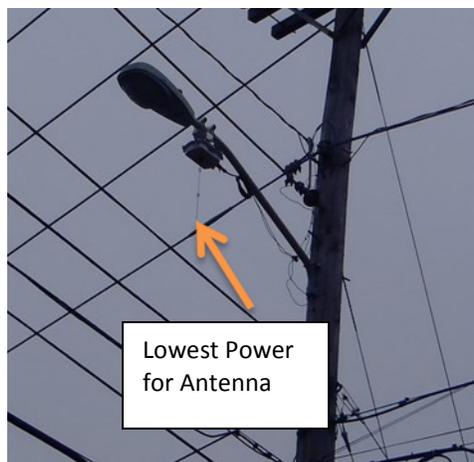
- STLT at x'y" (bottom) "raise or lower" x'y" to x'y"

A proposed cable is allowed to attach to a wood STLT pole but will be denied attachment on decorative poles.

## **Antenna:**

If an antenna is raised, this should be noted in the remedy statements for review by NES. Antenna heights are taken from the bottom of the antenna. An antenna should never be lowered.

- Antenna at x'y" (bottom) raise x'y" to x'y"



# Appendix C: Remediation Procedures

## Guying and Anchoring - NES:

### **Down/ Span Guying and Anchoring for NES:**

- Overloaded NES Guys and Anchors will always need to be solved.
- Review which conductors/cables are guyed at every pole. Make note of where new guys are needed. Installing new guys and anchors or increasing the lead of existing guys may solve an existing overload or prevent a proposed overload. If there are any comms that are not guyed, direct them to guy their facilities in the remedy.
- Buried anchors will be addressed as a part of the Pole Inspection/ Treatment program or pole replacement.
- An NES anchor can be placed outside the existing location and abandoned for a proposed company to attach.
- Crossing down guys need to be solved if proposed company is installing in same direction or NES down guy/anchor is overloaded.
- Maintain minimum anchor clearance to NES Anchors is five feet (5')
- Any new NES down guy installs will be 12M. An exception: 6M may be installed for neutral when attaching 3 down guys to one anchor

### **Down guy Statements:**

- Remove existing "size" down guy at x'y"; abandon existing anchor for "span N,S,E,W / bisector" with a lead of x'y"  
**Note:** Utilized when communication will use NES abandoned anchor
- Remove existing "size" down guy at x'y" and "size" anchor for "span N,S,E,W/bisector" with a lead of x'y"  
**Note:** When removing both down guy and anchor
- Remove existing "size" down guy at x'y" from existing "size" anchor on the bisector with a lead of x'y"  
**Note:** Utilized when NES will continue using their anchor
- Install "size" down guy at x'y" and "size" anchor for span "N,S,E,W" with lead of x'y"
- Install "size" down guy at x'y" and "size" anchor on the bisector with lead of x'y"
- Install "size" down guy at x'y" to existing "size" anchor on the bisector with a lead of x'y"
- Install "size" down guy with (12", 54", 120") FGI and "size" anchor on the bisector with a lead of x'y"  
**Note:** Utilized when guys need to be insulated
- Re-Tension down guy(s) at x'y" "for span N,S,E,W or on bisector"
- Ensure NES clearance for anchor placement  
**Note:** ALWAYS USE THIS REMEDY STATEMENT

# Appendix C: Remediation Procedures

## Span Guy Statements:

- Install "size" span guy "with Johnny ball or (12", 54", 120") FGI" at x'y" to pole "XXXXXX" "N,S,E,W"  
**Note:** Johnny ball used for 4kV  
**Note:** Fiberglass link stick used for 13.8 & 23.9 kV
- Attach "size" span guy at x'y" from pole "XXXXXX" "N,S,E,W"  
**Note:** To be used on the pole the span guy is going to

## Reinstallation of a Broken NES Down Guy or Anchor:

- Install new "size" down guy at x'y" and attach to existing anchor for span "N,S,E,W" with a lead of x'y"  
**Note:** Use when only down guy is broken and anchor still exist
- Install new "size" down guy at x'y" and "size" anchor for span "N,S,E,W" with a lead of x'y"  
**Note:** Use when only anchor is broken/missing
- Install new "size" down guy at x'y" and "size" anchor on the bisector with a lead of x'y"  
**Note:** Use when only anchor is broken/missing

## Remove Abandoned Anchor:

- Remove abandoned anchor for span "N,S,E,W" with a lead of x'y"  
**Note:** Use when existing abandoned anchor

## Undocumented Attachment:

Record undocumented attachment(s) in SPIDACalc summary notes for NES review.

## Pole Replacement:

- All pole replacements shall utilize existing stock size & class poles. Reference the "Standard Pole Sizes" chart in section OH2 of the Design Manual. New poles shall be designed to be loaded to 80% of capacity or less.
- Steel poles:
  - 50' – H1, H3
  - 55' – H1
  - 60' – H3, H5, H8
  - 65' – H3, H5
  - 70' – H3, H5
  - 75' – H3
- When a pole is to be replaced use the Deflection Check in loading.
  - The pole top Deflection shall be no more than 1.66% of the pole height above ground. (EX: 50'C1 installed at standard depth of seven feet (7') is forty three feet (43') above ground.  $0.0166 \times 43' = 0.71'$ .  $0.71' \times 12 = 8.56''$ ).
- Poles should be raked when the deflection is 6" or greater.
- Reference NES Framing Selection Standards for proper Framing.
- Residential Neighborhood:
  - If there is equipment (except transformer or cutouts) on the pole or a primary riser then the replaced pole needs to be Weathering Steel
    - If all of the existing poles are Galvanized steel then change it to Galvanized Steel
    - Do not install Weathering Steel poles in sidewalks.
- Commercial Area:



# Appendix C: Remediation Procedures

- o Pole replacements in commercial areas can be Wood or Galvanized Steel
- Reference “Pole Material Properties” located in the Structures section of the NES Design Manual for more information regarding pole types and replacement guidelines.

## **NES Remedy Statement for Pole Replacement:**

- Replace “**height**” “**CorH**” “**Class size**” with a “**height**” “**CorH**” “**Class size**” (ie: 45C2 with a 50H1)
- Construct to “**Enter all framing construction standards that apply**”
- Attach Neutral no lower than **x’y**”
- Attach Secondary/Services no lower than **x’y**”
- Ensure Power drip loop no lower than **x’y**”
- Install new (**size**) down guy at **x’y**” and (**size**) anchor for span “**N,S,E,W**” with a lead of **x’y**”
- Install STLT at **x’y**” (bottom)

**Note:** The Framing remedy statements should be put in vertical order (top, middle, bottom). Framing should be examined in the framing selection Standards.

**Note:** Pole replacements may require new NES down guys and anchors. Place the new anchor 5’ from the existing anchor to ensure quality of the ground for new anchor

## **Installation of Midspan pole:**

- This is extremely rare
- Follow “Pole Replacement” format on new midspan pole

### On Existing Pole:

- Install “**height**” “**CorH**” “**Class size**” pole xxx’ “**N,S,E,W**”

### At New Midspan Pole Location:

Callout should be the same as a normal pole replacement remedy.

## **Foreign Pole:**

Violations should be attempted to be solved on NES poles but if work on a foreign pole appears to be possible to solve any remaining violations on a NES pole and we don’t make the existing condition worse, we may tell the company to solve remaining violations on foreign pole XXXXXX

- Foreign Poles may be used to install a span guy to. Make sure the pole number is known
  - An issue can be fixed on a foreign pole, we cannot make the situation worse.
- Solve remaining midspan “**between or ground**” clearance span “**N,S,E,W**” on foreign pole “**XXXXXX**”  
**Note:** Can use / add ensure statement if you need a certain clearance

For all new NES span guys added to a foreign pole, the following steps must be completed:

- Collect the foreign pole after remediation if NES attachment will be needed
- Model the foreign pole in the calc file and run the loading (ensure at pole clearances and NES midspan clearances)
- Create remedy statements for the foreign pole
- Add the foreign pole to the CM but do not include in the exhibitA
- Span guy AND down guy/anchor will need to be included on the MNT/MR sketch
- Add CU units in the WO for the NES work to foreign pole

# Appendix C: Remediation Procedures

## **NES Standards:**

Refer to NES Overhead and Underground design standards found on NES Intranet under the Customer Engineering department. These standards are under the “plate book” link.

## **NES Clearances:**

Refer to NES Clearance Standards for specifics.

## **Neutral and Framing Spacing Requirements**

### ***Non-Pole Replacements:***

Existing NES poles may not meet current spacing or framing standards. In certain situations, it may be acceptable to raise the Neutral or Secondary on the pole. See the *Framing Spacing* and *Framing Standards* sections of the *Transmission and Distribution Construction Plate Book* for more details. NES may have the latitude to raise conductors when they fall in these situations:

- Neutral spacing greater than preferred
  - Raising the Neutral is allowed but must maintain preferred spacing.  
**Example:** If existing Neutral spacing on crossarm framing measures 9’-6” it may be raised to 8’-4”.
- Neutral spacing less than preferred but greater than preferred minus 2’.
  - The Neutral may be raised to preferred minus 2’.  
**Example:** If existing Neutral spacing on crossarm framing measures 7’-6” it may be raised to 6’-4”.
- Neutral spacing less than preferred minus 2’.
  - Raising the Neutral is allowed up to the minimum.  
**Example:** If existing Neutral spacing on crossarm framing measures 5’-6” it may be raised to the 4’ minimum.

**Note:** Neutral spacing dimensions in the T&D framing standards sections not labeled minimum are preferred.

**Note:** Reflect any proposed reductions to spacing under the Design Details tab in the SPIDACalc location form.

**Note:** Preferred minus 2’ is not allowed if it results in clearance less than minimum.

**Note:** If a pole has any equipment installed, Neutral must meet preferred spacing for that framing.

### ***Pole Replacements:***

NES requires all Neutral and Framing spacing to meet the criteria outlined below. See the *Framing Spacing* and *Framing Standards* sections in the *Transmission and Distribution Construction Plate Book* for more details.

### ***Framing Spacing***

- Build to the NES construction standards with preferred Neutral spacing.
- Ensure all equipment transferring to the new pole follows proper construction standards.
- Exception:
  - May reduce framing spacing to less than preferred but not less than minimum to avoid an additional 15’ taller pole.

**Note:** Framing spacing dimensions in the T&D framing standards sections not labeled minimum are preferred.

**Note:** Reflect any proposed reductions to spacing under the Design Details tab in the SPIDACalc location form.

### ***Framing Selections:***

The construction standard used for a pole replacement is based on the type of construction (pole top, horizontal, or vertical), size of primary wire(s), span length, and the line angle. When replacing a pole, in almost all cases, replacing with same type of construction will be preferred – assuming it falls within the current framing criteria located in the *Transmission and Distribution Construction Plate Book* for the aforementioned variables. Each replacement is unique so refer to the NES 1P, 2P and 3P framing selections.

## **Appendix D: Summary of Changes for this Revision**

This guideline has undergone extensive modification. The following list of changes are not intended to be inclusive of all changes such as re-wording, clarifications, or corrections.

1. Clarification of 1.1 bullet points. Moved one note to 1.2. Page 12
2. Clarified character height restrictions. Page 16
3. Added NES clarification to Power and Communication Anchor references and added Guying Exceptions. Page 22
4. Added notes and clarified dimensions. Page 27 and 28
5. Clarified and fixed dimensions. Page 29
6. Revised note 1. Page 30
7. Removed Wireless equipment note and fixed number. Page 31
8. Added note 6 for existing risers. Page 32
9. Modified cabinet dimensions, 3.3. Page 33
10. Clarified and added dimensions. Page 35
11. Moved “with street light” example to follow other equipment attachment page. Page 36
12. Revised notes. Page 37
13. Changed antenna riser to secondary clearance to 40” Page 39
14. Removed antenna and wireless note. Page 40
15. Added Rural, Obstructed and Unlikely parallel to street environments. Page 52
16. Revised Environments language and clarified when a pole is replaced under maintenance. Page 53
17. Added Spidamin web address. Page 54
18. Fixed page numbers. Page 71 and 72
19. Changed header. Page 76
20. Added “Engineer to ensure minimum 0’4” midspan clearance...” Page 80
21. Removed raise conductor if transformer exists. Page 82
22. Revised Street Light section. Page 83
23. Revised Neutral clearance definitions and when reduced framing spacing can be used. Page 87

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