2024

LG&E AND KU ENERGY

Specifications for Condition Based

Wood Distribution Pole

Inspection and Remedial Retreatment

Distribution Operations – Asset Management
Updated January 3, 2024

Business Use

Specifications for Wood Distribution Pole Inspection and Remedial Retreatment

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Specifications for Condition Based Wood Distribution Pole
Inspection and Remedial Retreatment

1. GENERAL

1.1. Scope

This specification covers the inspection and supplemental treatment of wood poles on the LG&E AND KU ENERGY distribution system. Not all LG&E AND KU ENERGY poles with distribution facilities are to be inspected under this program. Each pole that is to be inspected will be assigned a basic level of inspection with no mandatory supplemental treatment specified. The base inspection requirement will vary by pole and will be based on specific characteristics of the pole, including the pole's function, age, original treatment, ownership, treatment history, etc. The identification of any damage, defects or decay found during the base Level of Inspection will trigger progressively increasing detailed Levels Of Inspection and, where necessary, pole treatment. The requirements for the basic inspection levels are detailed in Section 7– Levels of Inspection. Inspections are to be completed consistent with Section 8 – Inspection Requirements.

The Levels of Inspection are progressive in the detail of inspection and include all of the requirements of all proceeding Levels of Inspection. Levels of Inspection, in progressive order are:

- Asset Data Inspection
- Visual Inspection
- Sound and Resistance Drill Inspection
- Full Excavation Inspection

1.2. General Requirements For Inspection

1.2.1. Poles Not Inspected

All Transmission and Foreign owned poles with distribution facilities will receive a Visual Inspection unless otherwise specified by the Company. No poles composed of materials other than wood are to be inspected unless otherwise specified by the Company.

1.2.2. Poles 14 Years Old or Less

All Company owned wood Distribution Poles less than14 years old will be Visually Inspected. Visual Inspections include all of the requirements of an Asset Data Inspection where asset data is either verified, if provided, or gathered if not. Each pole shall receive a full Visual Inspection for obvious signs of decay, damage, defects and/or safety hazards. No further work is to be done unless the Visual Inspection provides supportable justification, in the judgment of the Inspector that a more detailed Level of Inspection is warranted. See Section 8.4 – Visual Inspection for the full requirements of this inspection requirement.

1.2.3. Poles 15 Years Old or Greater

All Company owned wood Distribution Poles 15 years old or greater which have not received a supplemental treatment are to receive a Full Excavation Inspection. Full Excavation Inspections include all of the requirements of Asset Data, Visual and Sound and Resistance Drill Inspections.

1.2.4 Poles Requiring Subsequent Treatment

Poles previously treated in the field cannot be retreated under the capital portion of the PITP budget. These poles will be retreated under the O&M portion of the PITP and will have to be approved annually based on O&M dollars available.

Treatment, if any, will be performed only when warranted in the judgment of the Inspector and consistent with this specification and will be based on the actual physical condition of the pole. Treatment requirements are documented in Section 10 – Pole Treatment.

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Specifications for Wood Distribution Pole Inspection and Remedial Retreatment

1.3. Key Definitions

1.3.1. General Definitions

ANSI 05.1	American National Standards Institute Standard (ANSI) 05.1: Wood Poles – Specifications and Dimensions, latest revision.
Company	LG&E AND KU ENERGY owned operating companies including Kentucky Utilities (KU), Louisville Gas and Electric Company (LG&E) and Old Dominion Power (ODP).
Company Pole	A pole owned by the Company regardless of whether there are any Company owned facilities on the pole.
Contractor	Firm awarded a formal contract to perform a condition based wood pole inspection and remedial retreatment program on distribution poles on behalf of LG&E AND KU ENERGY Companies as described in this specification.
Customer/Private Pole	A pole owned by any other party that is not be a member of the joint use agreement between Company and third party.
Foreign Pole	A pole owned by any other party that has a joint use agreement, on which the Company has attached conductors, equipment, or facilities.
Level of Inspection	Baseline inspection requirements for a pole within a given Pole Classification. Work completed may be more or less than the baseline requirement depending on the pole's physical characteristics, its location, condition or past history.
NESC	ANSI/IEEE C2: National Electrical Safety Code, latest revision.
Pole Classification	Classification of the pole determined by pole ownership and the nature of the conductors, equipment and other facilities placed on the pole. See Section 6.2 – Pole Classifications for specific definitions.

1.3.2. Pole Definitions

Priority Pole	A pole that in the judgment of the Contractor needs immediate replacement. In general, includes poles with an average shell of one inch or less OR less than fifty percent (50%) of its original circumference or poles that otherwise present an imminent potential for failure. Pole must have D-Calc of 35% of less. Priority poles will be reported to the Company's representative within 24 hours or immediately if extremely hazardous.
Reject Pole	Any pole designated by the Contractor which, upon inspection, is found deteriorated below a minimum of two-thirds of the ANSI defined strength. Reject Poles will be further classified as a Reject Replacement or as a Restorable Pole based on the actual physical condition of the pole and the actual loading on the pole. All rejects must have a D-Calc entered including rejects due to split tops.
Reject Replacement	A Reject Pole that has been classified as a Reject that is not suitable for restoration.
Report Pole	A pole which is determined by Contractor, in Contractor's reasonable opinion, to be inaccessible.

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Restoration (Reinforceable) Pole	A Rejected Pole that, after inspection, meets the criteria for pole restoration. All poles found to be restorable will be externally groundline treated and internally treated if necessary. Fumigant Treatment will not be applied until after the pole has been restored.
RP1 Pole	This category would be your industry standard reject pole, but depending on the circumstance would need to be replaced during a six-month period, after the inspection has been documented. This pole would probably be on the low end of remaining strength (D-Calc would measure 43% to 36% strength.). This pole could be leaning badly or bowed badly due to hardware (maybe a dead-end pole) or terrain. This pole is close to a priority pole, but still falls into the reject category. This pole may have termites that continue to destroy (eat) the wood at a fast pace – even carpenter ants with visual sawdust at the base of the pole. This pole could have lightning damage or a bad split where the top is in jeopardy, insulators hanging off cross arms, animals living in the top (squirrels, etc.), many large woodpecker holes close together, etc.
RP2 Pole	This category would be your industry standard reject pole. After entering a D-Calc, this pole probably has remaining strength < 55% and > 44% due to many types of decay or mechanical damage. This pole could be rejected for a split top that runs down through the hardware, where you can see through the split. This type of pole should be replaced during a one-year period, after the inspection has been documented. This pole probably does not have any significant (heavy) hardware. This could be a junction pole where the wires help its support.
RP3 Pole	This category would be your industry standard reject that just falls into the reject category. Upon entering a D-Calc, this pole would have a remaining strength in the range of 67% to 56% There are no special circumstances with this pole; otherwise, it would fall into the RP1 or RP2 definitions. This pole would need to be replaced within a two-year period, after the inspection has been documented. This pole could very likely have a problem above; otherwise, it would fall into the Reinforceable category.

1.3.3. Inspection Definitions (in order of increasing inspection requirements)

Asset Inspection	Poles where the only inspection requirements are to verify and/or gather asset data and perform a casual inspection to identify any obvious damage, defects, or safety hazards.
Visual Inspection	Poles that are Asset Inspected and are subjected to a detailed Visual Inspection at and above ground. Includes a visual inspection of equipment, supports, and ancillary equipment such as guys and anchors, push braces, etc. for obvious damage, defects, or safety issues.
Sound And IML Drill Bore Inspection	Poles that are Asset and Visually inspected that are sounded with a hammer from groundline to highest reach and drilled with an IML resistance drill with three or more inspection holes to facilitate the detection and extent of internal decay.
Full Excavation Inspection	Poles that are fully inspected including an Asset, Visual and Sound and resistance drill inspections where the pole is completely excavated to a minimum of 18" below groundline to facilitate a complete assessment of below ground decay and remaining strength. Includes cleaning and chipping decay and gathering physically information on the extent of decay and the pole's physical condition. All Full Excavation poles will be externally treated unless the pole is to be a Reject Replacement or Priority Pole.

1.3.4. Treatment Definitions

External Treatment	A Company approved, Contractor provided EPA registered below ground preservative treatment and wrap applied to the pole's exterior at and below grade when designated by the Company or when groundline decay is detected during inspection. All Full Excavation poles will be Externally Treated as part of the Full Excavation Inspection.

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Fumigant Treatment	Application of a Company approved, Contractor provided EPA registered non-liquid fumigant placed internally in a pole where internal decay is detected during inspection or as otherwise directed by the Company or this specification.
Internal Treatment	Application of Company approved, Contractor provided EPA registered insecticide and preservative solution applied internally to a pole under pressure to any chambers and internal decay voids that constitute a size of 1/2" or larger detected during inspection.
Combination Genics	Application of a Company approved, Contractor provided EPA registered Fungicide, Insecticide, Mouldicide, Wood Preservative applied internally to a pole under pressure to any chambers and internal decay voids that constitute a size of ½" or larger during inspection. This is the preferred method of internal treatment.

1.3.5. Pole Strength Definitions

ANSI Strength	Baseline strength of a pole-by-pole type, height and class as determined from ANSI C05.1 dimensions.
Effective Circumference	Calculated usable circumference based on actual pole circumference as reduced for damage, defects and decay.
Remaining Strength	Percentage of pole strength remaining as a function of the Effective Circumference. Expressed as a percentage of the ANSI C05.1 minimum strength for a given pole type, height and class.
Required Strength	Pole strength required for the actual loads impressed on a pole under the required NESC Loading District and Grade of Construction.

2. CONTRACTOR REQUIREMENTS

2.1. General Requirements

The Contractor shall furnish all supervision, labor, tools, equipment, PPE, report forms, transportation, and material necessary for the inspection and treatment of poles identified by LG&E AND KU ENERGY, hereafter referred to as the Company. Specialty tool required, IML resistance drill and bits. Company will furnish copies of this specification and physical or electronic maps showing locations of poles which are the subjects for inspection and/or treatment under this specification.

2.2. Contractor Documentation

The Contractor is required to demonstrate a minimum acceptable level of experience, as determined by the Company, in the inspection, remedial retreatment and reporting requirements consistent with this specification. Years of service in utility field service work other than pole inspection and/or treatment will not count toward this requirement. The Contractor must have documented policies conforming to EPA, OSHA, DOT along with all Federal and Kentucky State Pesticide & Contract regulations. These policies must include, at a minimum:

- Safety Manual
- Hazard Mitigation Plan
- Pesticide Training Manual and test
- Standards for safe storage of preservatives on vehicles
- Operating policies for Contractor's personnel to handle preservatives and procedures for spill containment and disposing of empty containers used for pole treatment
- OSHA regulations involving personal protective equipment
- MSDS Sheets for all chemicals and preservatives utilized

2.3. Contractor Safety & Ethics

2.3.1. Safety

Safe Work Practices are an absolute condition of this contract and contractors are expected to meet or exceed all Company safety guidelines and requirements. Without limiting the foregoing, Contractor agrees to strictly abide by and observe all standards of the Occupational Safety & Health Administration (OSHA) which

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are applicable to the work being performed. Any unsafe conditions or work practices found by the Contractor during the performance of this Contract will be reported to the Company.

Contractor shall hold Job Briefings daily or when work area changes.

Some areas may require contractor to call BUD (Before You Dig) for location of underground utilities. Contractor will be responsible for call and any expense as of result of underground locating.

Contractor shall be provided with Company's Contractor Safety Policy and Health and Safety Manual (electronically) and all other Company approved policies and rules applicable to the scope of work and shall meet the requirements therein as a minimum standard.

"Prior to any work starting a Hazard Analysis and Hazard Mitigation plan must be submitted and approved by the Company.

Contractor is required to have or develop a written safety program and work rules that equal or exceed the requirements of Company's program and are compliant with applicable laws and regulations. The program plan will include training necessary to prepare or certify Contractor employees coming to work at Company. Additionally, the plan will contain provisions to maintain documentation of training, certifications, etc. required by Contractor employees to perform the work described. This documentation shall be available to Company upon request.

The plan shall include procedures to follow in the event of an injury, incident, or close call involving one of its employees working on Company facilities. Incidents shall be reported immediately to the Company. Incidents and hours of work shall be submitted in the Contractor Data Base monthly. The plan shall be submitted to Company prior to the start of this agreement. Contractor will be expected to participate in Company's Safety Meetings when requested and to share pertinent information when requested.

No employee of the Contractor will be allowed to perform work on behalf of the Company until the employee has been certified in general safety awareness (Passport) program for contractors. All training shall be entered into the Contractor Data Base and employees provided with a "Passport" card by the contractor prior to beginning work. "Passport" is an instructional general safety training session designed to orient new contractors to the Company's safety environment, rules, and culture. Contractor will have someone certified at an available "Train the trainer" session to provide their employees "Passport" training annually or use an approved 3rd party trainer at their expense.

Contractor shall furnish Personal Protective Equipment including but not limited to high voltage rubber gloves and sleeves and Flame Retardant clothing for anyone repairing a pole ground wire.

Contractor's employees will be subject to random safety audits and passport verification.

2.3.2. Ethics

Contractor will be provided with Company's Contractor Code of Conduct and shall meet the requirements therein as a minimum standard. Contractor shall always be solely responsible for complying with all applicable laws and regulations governing the work to be performed or any other rules and regulations that may be issued by the Company during the term of this Contract. Contractor shall abide by all federal, state, and local labor laws.

2.4. Insurance

The Contractor shall maintain throughout the term of this Agreement, in full force and effect, in amounts reasonably satisfactory to Company and otherwise in compliance with applicable law, the following insurance coverages:

- Workers' compensation
- Commercial general liability (including public liability, personal injury, property damage and contractual liability)
- Automobile liability, naming Owner as an additional insured.

Prior to the commencement of the Work, Contractor shall furnish Company with the necessary documentation evidencing said coverages. Notwithstanding any language to the contrary, any insurance coverage provided by Contractor shall not cover the Company for any negligent acts or omissions of the Company, its employees or agents.

3. CONTRACTOR QUALIFICATIONS

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3.1. General Qualifications

All pole inspection and treatment must be performed by professional in-service groundline pole inspection and treatment specialists. Foreman and/or other lead people must demonstrate they have received formal training in inspecting and treatment of in-service wood poles and demonstrate they have a minimum of 3 years' experience as a pole inspector. The acceptability of experience and training will be determined by the Company.

The Company reserves the right to ask for evidence of previous experience and training in the form of training material, letters of reference and test results. Foreman or other lead people must also possess a Kentucky and Virginia State Pesticide License. All personnel are subject to approval by the Company before awarding the contract or at any time thereafter.

Failure to maintain adequately trained inspectors will result in payment being withheld by the Company in the area being inspected. Company will require that at least one employee be on a job site at all times who is able to speak English clearly wherever contact with customers, or the public is possible. Direct contact with Contractor's field Foremen or other lead people by cell phone must be available during normal business hours.

3.2. Vehicles and Personal Attire

All vehicles must have a professional appearance and be clearly marked with the Contractor's identification. Vehicles will also be marked to indicate that crews are Contractors of LG&E AND KU ENERGY companies (LG&E, KU and ODP). Clothing will identify everyone on the work site as employees of the Contractor. Care will be taken to ensure everyone on a job site maintains a suitable appearance during the performance of work.

3.3. Supervision

Supervision of pole inspection and treating shall be performed using full-time supervisors located within the area with at least five (5) years of field experience in in-service pole inspection and treatment. Supervision must be present in the field every other week for a minimum of one-half day for each crew working for the Company. Supervisors will be required to possess a valid Kentucky State Pesticide License and hold the position of Supervisor in the State of Kentucky and/or a Virginia State Pesticide License for work in Virginia.

Personnel not specifically qualified to inspect and treat in-service poles as outlined above shall not be transferred to work as pole inspectors from other contractual work.

4. WORKMANSHIP AND QUALITY CONTROL

4.1. Workmanship

All work shall be performed in a workmanlike manner and shall be in accordance with this specification and all applicable Federal and State regulations. The Contractor shall at all times exercise care to prevent injury to any persons and to prevent damage to Company facilities or to property during performance of the work.

The Company considers work not in accordance with this specification or work not in accordance with State or Federal regulations, or unskilled or careless work to be sufficient reason to order the Contractor to stop work. Work will not be allowed to resume until deficiencies are corrected to the satisfaction of the Company. Further, the Company reserves the right to require the Contractor to replace any worker before work is allowed to continue. If not satisfied, the Company will consider this to be just cause for termination of the Contract.

4.2. Damages

Any damages, real or personal, off the right of way arising directly from the performance of the work specified herein, or any damages on the right of way as a result of negligent operations, shall be settled promptly by the Contractor.

4.3. Quality Inspections

A quality control inspection shall be performed for each time period of not less than one week's work but not to exceed two weeks' previous work. The quality control will be conducted with the Contractor's Supervisor and Company's representative when available. The quality control inspection shall consist of the complete re-inspection of those poles selected by the Company's representative to compare the pole's condition and results shown on the pole report with those existing in the field. The re-inspection shall include, but shall not be limited to, the re-excavation and retreatment and re-wrapping of those poles that were inspected below groundline.

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Contractor's cost of said re-treatments shall be borne by the Contractor. At least 3 poles will be selected for each quality control audit. Poles will be selected at random by the Company's representative. Company shall be issued a copy of the quality control field report.

4.4. Discrepancies and Corrective Action

Any serious errors will be brought to the attention of the Company. Corrective action, satisfactory to the Owner, must be taken by the Contractor to remedy the situation before the next quality control check. The corrective action may include, but not be limited to reworking each pole back to the previous quality control check point at no cost to the Company.

5. REQUIREMENTS FOR PRESERVATIVE APPLICATIONS (When Applicable)

5.1. General Restrictions and Requirements

All preservatives and insecticides must be approved for use by the Company prior to any work being performed. Only preservatives registered by the Environmental Protection Agency (EPA) and the appropriate State Department of Agriculture for the intended use will be considered for approval by the Company.

MSDS sheets for all chemicals, preservatives and insecticides will be provided to the Company before use.

All preservatives shall be handled and applied in a manner that will prevent damage to vegetation and property. No preservatives shall be applied by the Contractor where a pole is readily identifiable as:

- Located on any school, preschool, day care or other childcare facility
- Located in a vegetable garden
- Within ten (10) feet of a stream or standing water body
- Within (50) fifty feet of a private well.
- Located within active livestock or animal pastures or containment area unless additional precautions are taken to prevent access

Any container in which a preservative is stored shall be securely locked or bolted to vehicles on the right of way and kept locked when left unattended. Empty preservative containers shall be removed from the right of way and kept in a locked compartment until disposal. Disposal of preservatives and their containers shall be in accordance with the rules and regulations of all appropriate Federal and State agencies.

5.2. Pesticide Licensing and Reporting Requirements

The Contractor shall be a certified commercial pesticide business for the preservative application set forth under this Contract and shall have each crew supervised by a full time Supervisor who is licensed and certified by the State where the work is performed. The Contractor shall be responsible for the accurate recording and submitting of all pesticide usage forms required by the various pesticide regulatory agencies and for meeting all applicable Federal and State rules and regulations.

The Contractor is required to have in his possession copies of the preservative labels and MSDS sheets for all the preservatives being used. The labels shall list the preservative composition, description, directions for use, precautionary statements, warnings, environmental hazards, practical treatments, storage and disposal instructions and any other relevant information about the preservatives used. Upon request, the MSDS and labels will be shown to anyone desiring this information. Properly completed shipping papers will also be carried on each vehicle which is transporting pesticides.

5.3. Spill Prevention

Incidental releases of preservative shall be immediately cleaned up in a manner consistent with label requirements, Federal and State regulations, and relevant environmental procedures.

The Contractor shall provide each crew with a spill kit containing sufficient materials for cleaning up and neutralizing potential spills of liquid preservatives. The spill kit shall consist of, but shall not be limited to the following materials:

- Absorption material (such as sawdust or oil dry)
- Baking soda or laundry detergent
- Ammonia (undiluted)
- Trash bags for disposal of waste

- Any other item deemed necessary by the Contractor

5.4. Proper Equipment

The Contractor shall provide each crew with the following EPA required equipment:

- Goggles
- Sleeves
- Non permeable gloves and aprons
- Hard hats
- Change of clothing

The Contractor shall provide a truck that has covers and locks adequate to satisfy federal and state DOT regulations in which to store and transport the preservatives. No chemicals or preservatives will be left unattended at any time unless securely locked in a manner to prevent unauthorized access.

5.5. Pesticide Training

Each pole inspector or foreman shall be required to pass a pesticide training program which addresses biology of wood destroying insects and fungi, the proper and safe handling, storage, disposal and transport of pesticides, product labels and material safety data sheets, emergency procedures for pesticide spills, etc. The Contractor's Pesticide Training Program is to be in addition to state requirements for applicator licensing.

5.6. Hazard Communication and Safety Program

The Contractor shall provide to its employees a hazard communication program which addresses the purpose of using pesticides, material safety data sheets and product labels, protective safety equipment and clothing and product information. A safety manual and program is to be provided and utilized by the Contractor and its employees.

6. CLASSIFICATION OF POLES

6.1. General

The base level of inspection specified for wood distribution poles will be dependent on Pole's Classification as modified by factors including pole ownership, age, location, original treatment, previous remedial treatment, etc. Wood poles will be first classified in an order dependent on ownership and the type of facilities supported on or attached to the pole. Standard Classifications are defined below in Section 6.2.

All LG&E AND KU ENERGY poles that meet more than one classification will be classified by the higher classification (top to bottom). For example, a pole that supports both transmission and distribution conductors will be classified as a transmission pole unless it is not a Company owned pole (Foreign Pole). A Company owned Service Pole that has a street light will be classified as a Service Pole.

Foreign poles will only be classified as a Foreign Pole and all Foreign Poles will be treated the same unless otherwise directed by the Company. The Contractor is responsible for becoming familiar with common LG&E AND KU ENERGY transmission and distribution standards and ownership standards in order to differentiate the various Company Pole Classifications as defined below.

6.2. Pole Classifications

6.2.1. Non-LG&E AND KU ENERGY Pole Classifications

Foreign Pole	A pole owned by any other party that has a joint use agreement, on which the Company has attached conductors, equipment, or facilities.
Customer/Private Pole	A pole owned by any other party that is not a member of the Company's joint use pole agreement. (Example: Poles beyond Company's primary/secondary metering points, and points which may include housing authorities, service meter poles in mobile home parks, etc.)

6.2.2. LG&E AND KU ENERGY Pole Classifications

Transmission Pole	A Company owned pole supporting any circuit conductors of 69kV nominal phase

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	to phase or above as determined by common construction standards.
Distribution Pole	A Company owned pole supporting any distribution primary conductors defined as greater than 480V and less than or equal to 34.5kV nominal phase to phase as determined by common construction standards.
Guy Pole (Transmission Or Distribution)	A Company owned pole utilized in whole or in part for guying a Transmission or Distribution Pole.
Secondary Pole	A Company owned pole utilized to support secondary conductors defined as 480V nominal phase to phase or less not classified as a Service Pole or Street Light Pole as determined by common construction standards.
Service Pole	A Company owned pole used exclusively for supporting service drops of 480V nominal phase to phase or less.
Light Pole	A Company owned pole used exclusively for supporting overhead street lighting, including the attachment of secondary conductors used exclusive for providing service for overhead lighting.

7. LEVELS OF INSPECTION

Company owned wood poles are covered under the requirements of this specification, along with foreign poles to which the Company has distribution attachments. Non-wood distribution structures, transmission poles and transmission guy poles are not covered under this inspection requirement. No Customer or private poles are to be inspected. The desired Level of Inspection specified for each pole will be determined by the Pole's Classification as defined in Section 6.

The Inspection Level is the desired level of inspection to be performed. The pole's location, the ability to access, physical impediments around the pole (poles in concrete, etc.), the pole's current condition or past history of decay may result in a higher or lower level of Inspection than directed in the table below.

Table 7-1 Wood Pole Inspection Criteria

Pole Classification	Pole Category	Inspection Level
Customer/Private Poles	All	None
Transmission Poles Transmission Guy Poles Foreign Poles (To determine if reject only)	Without distribution facilities	None
	With distribution facilities	Visual
Distribution Poles Distribution Guy Poles Secondary Poles Service Poles Street Light Poles	14 years old or less	Visual
	15 years and older that have been retreated	Visual Inspection and bore with IML resistance drill
	15 years and older that have not been previously treated	Full Excavation Inspection

8. INSPECTION REQUIREMENTS

8.1. General

Specifications for Wood Distribution Pole Inspection and Remedial Retreatment

The requirements of this specification were developed to provide for a "condition based" inspection program. The basic target Inspection level for any pole is based on the Pole's Classification as defined in Section 7. Based on the results of the initial inspection, the Contractor can, for just cause proceed with progressively higher levels of inspection and potentially Treatment when justified.

8.2. Preparation For All Inspection and Treatment Options

Before any work is started, all precautions shall be taken to insure that the work can be completed safely and no pole failure will occur during the work.

When work is to be done in close proximity to a home or in an enclosed area in the rear of a home, the property owner should be notified that the pole is to be inspected. Brush will be removed from around the pole to the extent necessary to allow for proper inspection and/or excavation. If the property owner denies access for any reason, the denial will be indicated in the inspection data the pole will be considered a "Report Pole".

Contractor will not inspect or perform work on poles inaccessible by acts of God or by any causes beyond the control of the Contractor. Any pole that cannot be inspected safely will not be inspected. Reason for the lack of inspection to be indicated in the inspection data. There will be no charge associated with inaccessible poles.

8.3. Asset Inspection

Every pole designated for inspection shall receive at a minimum, an Asset Inspection before any other work is done. An Asset Inspection includes recording (if missing) or verifying (if provided) pole asset information including (at a minimum):

- Pole ownership
- Pole identification number (if provided or tagged)
- GPS coordinate and/or location
- Pole height and class
- Manufacturer
- Manufacture date
- Pole species
- Original pole treatment
- Date of last remedial treatment (if applicable)
- Identification of single, two or three phase pole
- Embedded or nonembedded

Other data collection or work may be incorporated into Asset Inspections when directed or approved by the Company. Inaccessible poles will be noted as such and will not be visually inspected. Reason for the lack of inspection will be noted in the 'Remarks' column of the pole report. There will be no charge associated with inaccessible poles.

When decay or insect damage is suspected or detected or for other reasons within the Contractor's discretion, Company owned poles designated for only an Asset Inspection will proceed to a full Visual Inspection where warranted.

8.4 Visual Inspection

Visual Inspections include all the requirements of an Asset Inspection.

A Visual Inspection is made from groundline to the top of the pole and includes a visual inspection of all equipment and supports including ancillary equipment such as guys and anchors, push braces, etc. The inspector shall document the condition of the pole and shall record any of the following:

- Structural defects due to top rot, woodpeckers, lightning, compression wood, mechanical damage, excessive checking, bowing or leaning, etc.
- Obvious groundline decay and/or insect damage.
- Broken or damaged equipment
- Obvious clearance violations on the pole such as clearances to communications conductors, etc.
- Obvious clearance violations in any span adjacent to the inspected pole to ground, swimming pools, other structures, trees, buildings, etc.
- Unapproved non-utility attachments (basketball goals, private lighting, etc.).
  Note: Communications attachments, street and traffic signs and controls and banners from public or quasi-public agencies are considered approved attachments for the purpose of this item.

Business Use

Prods, bars or picks shall not be used to determine the extent of external decay. Sounding may be used to further assess the condition of the pole.

If the inspector can determine without further inspection that the pole is not suitable to remain in service, it shall be visually rejected and the Contractor shall bill the Company for a "Visual Inspection". Imminent hazards shall be reported to the Company immediately.

When decay or insect damage is suspected or detected or for other reasons within the Contractor's discretion, Company owned poles designated for only a Visual Inspection will proceed to a Sound and Bore Inspection or Full Excavation Inspection and where appropriate, Treatment.

8.5. Sound and IML Resistance Drill

Resistance Drill Inspections include all the requirements of an Asset Data and Visual Inspection. Depending on the type of pole being inspected, the following IML resistance drill inspection type shall be selected.

Pole Type	Inspection Type
Wood pole under 60 feet that is fully excavatable	4BGL
Wood pole under 60 feet that is fully excavatable, with obstructions preventing 4BGL inspection	2BGL
Wood pole under 60 feet that are embedded, partially embedded, have risers/conduits or other excavation obstructions	4BGLH
Wood pole under 60 feet with significant ground attachment (embedded and C-Trussed)	2BGLH
C-Trussed Pole	Steel Truss Validation Above & Steel Truss Validation Below
Wood pole that has been deemed a NON-PRIORITY FAILURE or PRIORITY FAILURE	Traditional Bore 3/8" bit*
Wood pole that has been deemed a NON-PRIORITY FAILURE or PRIORITY FAILURE	Traditional Bore 3/8" bit*

Reference Appendix A for inspection standards of the varying inspection types. All inspection drill measurements shall be recorded in the inspection record.
*Traditional Bore method to check for Reinforcement eligibility with 3/8'' bit. Refer to Section 9.5.

Sound and Resistance Drill Inspection include all of the requirements of an Asset and Visual Inspection.
Poles shall be sounded with a hammer from the lowest accessible point to as high as an inspector can reach in order to locate exterior decay or interior pockets of decay. Hammer marks should be visible to indicate that the area was sounded. Foreign poles will only be sounded.

When groundline decay, insect damage, internal decay pockets or internal decay is suspected or detected or for other reasons within the Contractor's discretion, Company owned poles designated for only a Sound and Resistance Drill Inspection will proceed to a Full Excavation Inspection and where appropriate, Treatment.

8.6. Full Excavation

Full Excavation inspections include all of the requirements of an Asset, Visual Inspection and a Sound and Resistance Drill Inspection. All Full Excavation Poles with be externally groundline treated.

8.6.1. Excavation

All poles that have not been rejected on the basis of the above ground Visual and Sound and Resistance Drill Inspection shall be excavated to a depth of 18" below groundline. Exceptions include poles:

- In pavement or concrete or densely rooted areas
- In vegetable gardens
- With underground power risers (unless approved by the Company)

Business Use

Where excavation is not possible the reason will be noted in the report and the Contractor will bill the pole as a “Sound and Drill” Inspection.

The excavation will be approximately 10" from the pole at ground level and taper to 4" from the pole at the 18" depth. For excavation in lawns, sod grass areas or gardens, care will be taken to keep surrounding area as clean as possible. The sod around pole shall be carefully cut and neatly stacked. Poles installed on slopes shall be excavated to a minimum depth of 18" on the down slope side and 18" on the high side. Tarpaulins or ground cloths shall be used whenever possible to minimize the possibility of any property damage and to aide in the tracking of excavated holes. (Exceptions should be rare and would include situations where the slope is too steep or the ground surface to uneven to allow for effective use).

8.6.2. Chipping

Significant loose and decayed wood is to be removed from 18" below groundline to 6" above groundline. A quality chipping tool will be used for this procedure to obtain a smooth, clean removal of wood. External decay pockets will be shaved or chipped to remove decay from pole. It is essential that exterior decay be removed from the hole and surrounding ground and disposed of properly. Care should be taken not to remove good wood as this will increase the potential for decay and will reduce the strength of the pole. The pole will be scraped using a check scraper to remove dirt from the treatment zone.

8.6.3. Damaged Ground Wires

Contractor shall use extra care to avoid damaging or cutting pole grounds. Ground wires broken by the Contractor shall be repaired by the Contractor at no charge to the Company. The Contractor shall repair broken ground wires using proper PPE and workers qualified to safely reconnect the ground in a method acceptable to the Company.

8.7. Digital Collection for Rejected Poles

All rejected poles shall have one photo taken with an image of the top of the pole where all material/equipment would be captured in the image.

8.8. Pole Identification Number

If an inspected pole does not have an identification number, contractor shall attach pole number.

9. EVALUATION

9.1 Obvious Rejects

Poles obviously unsuitable to remain in service will be classified as a Reject Replacement Pole or a Priority Pole. If excavation was performed, soil will be carefully returned to the hole and lightly tamped. No further work will be done. The pole will be properly tagged as a Reject Replacement Pole or a Priority Pole in accordance with Section 12 – Pole Marking. Priority Poles will be reported to the Company’s designated utility contact within 24 hours and details on the pole’s condition and reasons for classifying the pole as a Priority Pole will be provided at that time.

9.2 Effective Circumference

A qualified Inspector will measure the actual minimum circumference at or below groundline wherever the least sound wood is present. An Effective Circumference will be determined in the field by adjusting the actual circumference to account for external decay pockets and internal decay by the use of Company approved tables, calculators or handheld software.

9.3 Remaining Strength

The Effective Circumference in conjunction with Company approved tables, calculators or handheld software will be used to determine the effective Remaining Strength as a percentage of specified ANSI Strength (ANSI 05.1, current revision) for the pole type, height and class. Remaining Strength will be calculated as a percentage of ANSI 05.1 strength and the percentage recorded.

Poles with Remaining Strength greater than or equal to 67% will be treated in accordance with Section 10 - Pole Treatment.

Business Use

9.4. Reject Poles

Poles below minimum Required Strength and poles unsuitable to remain in service in their present condition shall be classified as a Reject Pole, and so marked in the field and reported. Poles classified as a Reject Pole will be further classified as either a Reject Replacement or as a Reinforceable Pole based on the criteria below. The pole will be tagged with the appropriate tag in accordance with Section 12 – Pole Marking.

9.4.1. Reinforcement Candidates

Poles with a minimum shell equal to or greater than 2 inches will be considered a Candidate for Reinforcement and evaluated under Section 9.5.

9.4.2. Reject Replacement

The following poles will be classified as Reject Replacements. No treatment will be applied and any excavation will be carefully filled and lightly tamped back in place. Pole will be recorded as a Reject Replacement or Priority Pole.

- Poles with a shell thickness less than 2” will be rejected.
- Poles with a minimum shell of 1 inch or 50% of original circumference or less will be designated a "Priority Pole". Priority Poles will be reported to the Company’s designated utility contact within 24 hours and details on the pole’s condition and reasons for classifying the pole as a Priority Pole provided at that time.

9.5. Reinforceable Candidates

When the initial inspection results in the rejection of a pole, the pole shall be marked for replacement or reinforcement.

The following inspections shall be performed to determine if the pole is a viable candidate for reinforcement.

The pole shall be sounded thoroughly concentrating on the zone fifteen inches (15”) to 5 feet above groundline.

To be considered a Candidate for Reinforcement, the pole must meet <u>both</u> of the following requirements.

1. A minimum of two 3/8-inch diameter borings shall be made at 5 feet above groundline, to determine the average shell thickness at this level. The first boring shall be made perpendicular to the line of lead. A second boring shall be made opposite (180 degrees) the first boring, whenever possible. Additional borings should be made, as necessary, to determine the average shell thickness. If the average is less than the required four inches, the pole should be checked at 6 feet to determine if the required shell thickness exists at 6 feet. If the average shell thickness at either 5 feet or 6 feet above the groundline is four inches the pole is a candidate for reinforcement provided all other requirements are met.

2. A minimum of two 3/8-inch diameter borings shall be made at 15 inches above groundline, to determine the average shell thickness at this level. The first boring shall be made perpendicular to the line of lead. A second boring shall be made opposite (180 degrees) the first boring, whenever possible. Additional borings shall be made, as necessary. If the average shell thickness, at 15 inches, is two inches or greater, the pole is a candidate for reinforcement. Poles with less than two inches of average shell, at 15 inches above groundline, can be reinforced if they have an average shell thickness of two inches or greater at 26 inches and the requirements and all other requirements are met.

If the pole fails to meet either of these requirements, the pole will be classified as a Reject Replacement. The pole will be marked with a reject tag and any excavation will be carefully filled in.

If the pole meets both minimum shell thickness requirements, the pole will be treated under the requirements of Section 10- Pole treatment. If it was necessary to go to 26 inches or 6 feet to obtain the required shell thickness, a notation will be made in the pole record.

All inspection holes shall be plugged with 7/16” diameter treated wood dowels.

10. **POLE TREATMENT**

10.1. Treatment Schedule

Business Use

Specifications for Wood Distribution Pole Inspection and Remedial Retreatment

Poles will be treated according to the following schedule.

10.1.1. Poles With Internal Decay Pockets of 1/2" Or Greater

The following poles will be Internally Treated:

All poles with internal decay pockets will be treated with an Internal Treatment, a Fumigant Treatment or a combination treatment Genics (preferred). Also, an External Treatment where possible unless the pole is to be a Reject Replacement. This includes all poles classified as Reinforcement Candidates.

10.1.2. Poles With Internal Decay

The following poles will be Fumigated/Genics (Preferred):

- All poles with internal decay but no decay pockets will be Fumigated and Externally Treated where possible unless the pole is to be a Reject Replacement.

  Note: Poles which are to be classified as Reinforcement Candidates will not be fumigated until after the pole is reinforced.

- All poles which are designated or progress to the Full Excavation requirements but can't be fully excavated due to risers or obstructions (such as poles in concrete) will be treated with a Fumigant Treatment even when no internal decay is detected.

- All poles which are designated or progress to the Full Excavation requirements that cannot be excavated (Except Section 5.1, in concrete, etc.)

10.1.3. Groundline Decay

The following poles will be Externally Treated:

- All fully excavated poles shall be treated in accordance with External Treatment regardless of the presence of decay unless the pole is to be a Reject Replacement.

10.1.4. Previously Treated Poles

Poles designated for any level of inspection that have been inspected and treated within the last 5 years will receive only a visual inspection.

All other poles that have been previously treated will receive a full excavate and treat inspection consistent with the requirements of Section 8 – Inspection Requirements. If Kraft paper is removed to facilitate inspection, then it should be reapplied when the inspection is complete. Where external or internal decay is detected or has been reestablished, treatment will be performed consistent with the requirements of Section 10 - Pole Treatment with the following exception:

Any pole previously treated with Internal or Fumigant treatment will be retreated with what is deemed necessary from Contractors or with guidance from the LKE management. Preferred retreatment with Genics.

Reinforced poles are subject to internal retreatment. (The Company will consider this an O&M expense.)

10.2. Application of External Groundline Treatment

All poles which are excavated and serviceable or Reinforcable are to be groundline treated. Only a Company approved, EPA registered External Treatment will be used.

10.2.1. Application

Preservative paste shall be applied to the pole a minimum of 1/16" thick or to the minimum requirements specified by the manufacturer. Treatment will extend from 18" below groundline to 2" above groundline unless otherwise directed by the Company. Unapproved materials will not be accepted by Company. All restorable candidates will be externally treated.

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All exposed pockets and checks will be liberally treated using a brush or trowel. Where obstructions occur such as fences, curbs, and walls, the preservative shall be applied in excessive amounts next to the obstruction to insure complete coverage.

10.2.2. Wrapping of External Treatment

A poly backed Kraft paper is to be applied over the wood preservative. The moisture barrier shall cover the preservative at 18" depth and extend 2" above the top of the treatment zone, for a total of 22" wide. It shall be of sufficient length to go around the pole with a minimum overlap of approximately 4" and shall be stapled to the pole at the top and side seams of the barrier. The mil thickness of the moisture barrier shall not be less than 4 mils thick.

Cattle wrap shall also be used in areas of livestock; it will be stapled to top of the moisture barrier to act as an additional protective barrier.

10.3. Application of Genics Treatment

Genics shall be applied as specified under Section 10.1. Only a Company approved, non-liquid (vial based or granular) EPA registered Fumigant will be used.

10.3.1. Application (When not using Genics)

Poles will be bored with 7/8" slanting downward holes to a minimum of 10" depth according to the following schedule. Proper protective equipment will be utilized to apply the fumigant. Following treatment all holes will be plugged using a tight fitting 15/16 x 3" treated wood dowel or composite plastic plug.

Pole Circumference	Number of Holes Drilled
30" to 35"	3 holes spaced 120 degrees apart and 6" to 8" higher than the previously bored hole.
36" to 49"	4 holes spaced 90 degrees apart and 6" to 8" higher than the previously bored hole.
50" to 59"	5 holes spaced 72 degrees apart and 6" to 8" higher than the previously bored hole.
60" & larger	6 holes spaced 60 degrees apart and 6" to 8" higher than the previously bored hole.

The number of treatment holes will be recorded in the pole record.

10.4. Application of Internal Treatment

Internal Treatment shall be applied as specified under Section 10.1. Only a Company approved, EPA registered Internal Treatment will be used.

10.4.1. Application (When not using Genics)

Poles containing decay pockets of 1/2" or larger shall be treated by pumping the preservative into the cavity under pressure through a series of 3/8" diameter holes. The solution will be applied at a minimum pressure of 40 psi or per manufacturer's recommendations. Beginning with the lowest hole, pump the preservative into the cavity until the material flows out of the next highest hole. This hole is then plugged and additional preservative is pumped into the cavity until the cavity is filled or a maximum of one gallon is used. Sufficient holes will be bored and preservative used to assure coverage of decayed area. All holes will be plugged with 7/16" treated wood dowels If wood destroying insects are encountered in the pole, sound the pole to locate top of the insect gallery and drill enough holes to thoroughly treat wood and flood the galleries.

11. SITE RESTORATION

11.1. Damaged Ground Wires

Ground wires and risers will be carefully inspected after work is complete and before backfilling. Ground wires broken by the Contractor shall be repaired by the Contractor at no charge to the Company. The Contractor shall repair broken ground wires using workers qualified to safely reconnect the ground in a method acceptable to the Company.

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11.2. Backfilling

After excavation and/or treatment, all poles will be solidly back-filled. The first half of excavation will be back-filled and tamped completely around the pole; the second half back-filled and tamped completely around the pole. The excess earth should be banked up to a maximum of 3" above normal ground level to allow for settlement. In grass areas the sod shall be carefully placed around the pole. Rocks or stones should not be laid against the pole except where they serve to key the pole or where no other fill is available. Extreme care should be taken not to tear the moisture barrier while back-filling.

11.3. Clean-up

No debris, loose dirt, wood shavings, etc., shall be left in the pole area. Private property turf, including that between curb and sidewalk, bushes, and plants, and shrubbery are to be replaced with care. If any preservative is spilled on the ground, it shall be cleaned up immediately. All containers shall be disposed of according to approved environmental practices.

12. POLE MARKING

12.1. Tagging (See Attachment 1)

All tagging will be approved or specified by the Company before use. All pole tags to be installed at or above 7 feet from the ground line.

All rejected poles are to have one reject tag placed on them at approximately 7 feet from groundline. In addition to the reject tag, red flagging, to be furnished by the Contractor if directed by the Company, will be applied to help in the identification of priority or rejected poles.

Poles rejected but capable of being restored are to be properly marked with an appropriate reject tag.

The Contractor's inspector will make a notation on the pole inspection and treating report as to whether the pole can or cannot be restored. If the pole has other damage of any kind, it will be noted in the ‘Remarks’ column.

Priority poles are to have two reject tags, with two separate wraps of red flagging, installed at approximately 7' from groundline.

13. Data Requirements

Company desires to conduct a comprehensive pole inspection and maintenance program. The data to be collected will include pole attributes, pole condition and treatment and may include additional information if requested or specified by the Company. Data will be submitted electronically in a format suitable for viewing, searching and reporting. On-line or proprietary data formats must be exportable to other formats acceptable to the Company Access, Excel, etc. and suitable to be migrated into other Company asset information systems.

The Contractor will be required to demonstrate a successful history in completing similar inspection and treatment projects in electronic format. The Contractor will include, as part of the prices set forth in the Contract, all required hardware, software, setup services, field services, data processing, project management, data deliverables and customer support necessary to fulfill the outlined project requirements.

The Company will work with the Contractor to provide pole facility data and attributes in a mutually agreeable format to facilitate the completion of the inspection work. The Company will provide, where available, geospatial and attribute data prior to beginning inspection work. Omissions and errors in Company provided attribute data will be gathered and/or corrected by the Contractor as part of the inspection work.

13.1. Data Deliverables

Attribute inspection and treatment data, including digital photos of pole rejects, shall be provided to the Company electronically in a timely basis. The data must provide information that can be used to reconcile billings as well as to allow timely decisions on pole repair, replacement or maintenance activities. The method of delivering electronic data (email, CD, online) will be approved by the Company.

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13.2. Archiving

Contractor will archive the pole condition and attribute data for 12 months after the year in which the inspection is performed.

14. INVOICING

14.1. Billing

Contractor shall furnish Company with required deliverables in electronic format in no more than two-week work increments. Billings will be itemized for all charges and submitted either electronically or through the mail, from pole inspection reports. Contractors will be responsible for identifying which portion of the bill is Capital or O&M. The company will supply contractor with information on which poles have been previously retreated. Contractor shall refer to the tags on the distribution poles to confirm provided information. Poles that are being treated for the first time will be considered a Capital charge. If a pole that has been previously treated and a second treatment is required, determined by contractor or the company, will be an O&M charge.

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Specifications for Wood Distribution Pole Inspection and Remedial Retreatment

15. **Appendix**

Attachment 1- INSPECTION AND TREATMENT TAGS

Electric System
Codes & Standards

TYPICAL WOOD POLE INSPECTION TAGS

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Rev. C

CONTRACTOR/TREATMENT TAGS

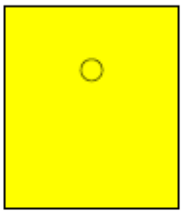
This tag is an example of a contractor's tag. This oval tag is to be used whenever any inspection involves more than the requirements of an Asset Inspection but less than a Full Excavate (and Treatment) Inspection. This will include "Visual Inspection", "Sound and Bore" or "Partial Excavate Inspections. The tag should incorporate the contractors name and the year the work is performed.

This tag is an example of a contractor's tag used when a Full Excavate Inspection has been done. This round tag represents an inspection via a full 18" dig and treatment with an approved preservative paste. The tag should incorporate the contractors name and year the work is performed.

The fumigant tag is used whenever a fumigant is applied to a pole. This tag will be used in conjunction with one of the above tags depending on the type of inspection performed. The tag will identify the type of fumigant used.

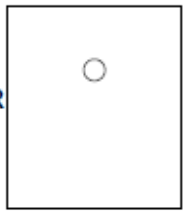
The Internal Treat tag is used whenever Internal Treatment is injected into the pole. This tag will be used in conjunction with one or more of the above tags depending on the type of inspection performed.

POLE INTEGRITY TAGS

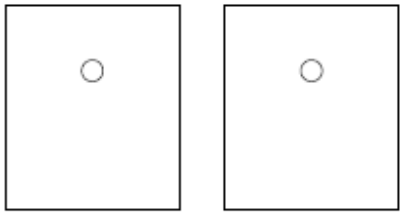


One yellow reject tag is used to denote that the pole is a Reinforceable Reject.

OR



One white or Red With Crossed Out Arrow tag is used to denote a Replacement Pole (non-Reinforceable Reject). The direction of the arrow is to be aligned to indicate the general location of any major defect.



Two White Square tags are used to denote a Danger or Priority Pole that is a Priority Replacement Pole (non-Reinforceable).

LG&E KU

Electric Design And
Construction Standards

Replaces
LGE 040101B
KU NONE

By: Hethcox/Powell
03/28/2018
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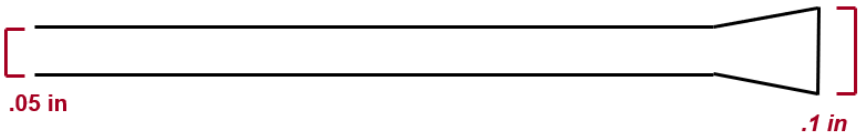
Business Use

Specifications for Wood Distribution Pole Inspection and Remedial Retreatment

A. Resistance Drill Inspection Standards

The IML resistance drill shall have the latest version of the software installed, WoodInspector. Every modification in the software of the drill, the CONTRACTOR shall notify the OWNER.
The IML WoodInspector software has the question “Shell Rot detected” as part of the drilling inspection process. LGE/KU allows the inspector to select “Yes or No” if the inspector identified the shell rot area. If the inspector does not identify the shell rot area, the inspector must conduct a re-inspection.
The resistance dill uses a drilling needle which is 1/10th of an inch thin. The full extension of the needle is approximately 19.7 inches.



A.1 Drilling Process

A.1.1 Visual Inspection and Drill Location

Once on site, a visual inspection should be made around the pole. Verify if the pole has attachments/equipment or not. Then proceed to identify the areas where you want to drill.

A.1.2. ID – Number Remark

Turn on the resistance drill holding the silver button 3 seconds and enter the Pole ID (Grid number) into the device.

Note: Verify the pole Grid (ID) number was inputted correctly.

A.1.3. Needle in position

Verify if the drill needle is correctly positioned. If needle is positioned correctly, no warnings or indications on tool will be observed.

A.1.4. Inspection Type Selection

The equipment has eight (8) different modes (or types) of inspections. Reference Section 8.5 – Resistance Drill for

Business Use

correct selection of inspection type.
Pole Type of Inspections:

- 4BGL (4 Below Ground Level): 1x Diameter Measurement, 4x -30° Measurements with needle exit
- 2BGL (2 Below Ground Level): 1x Diameter Measurement, 2x -30° Measurements with needle exit
- 4BGLH (4 Below Ground Level Halfway): 1x Diameter Measurement, 4x -30° Measurements below groundline level area
- 2BGLH (2 Below Ground Level Halfway): 1x Diameter Measurement, 2x -30° Measurements below groundline level area
- Steel Truss below: 1x Diameter Measurement, 3x 0° Measurement at above steel banding location
- Steel Truss above: 1x Diameter Measurement, 3x 0° Measurement at below steel banding location
- Truss Validation above: 1x Diameter Measurement, 2x 0° Measurement at above steel banding location
- Truss Validation below: 1x Diameter Measurement, 2x 0° Measurement at below steel banding location

A.1.5. Drilling
Use the equipment with both hands or use one hand and a support part of our body (recommend waist) to hold the equipment in the drill location. The reference diameter measurement shall be achieved by setting the drill at approximately 3 feet above the groundline level area.
Note: To be able to drill with the equipment, the safety switch must be pressed with the pole all the time.
Select the Inspection Type as mentioned in A.1.4. section.
Push the red button to start drilling. Only for the Diameter Measurement the inspector has to push the red (or black) button again to make the needle withdraw. Take other measurements (below or above groundline) depending on which type of inspection was selected.
The Overall result ("PASS" or "FAIL") is shown in the display after the last measurement.

A.1.6. Results
The display will notify you of the diameter measurement (Value Correct? Yes or No). Then, it will show you the overall results, depending on the type of inspection selected. Final step, it will appear a digital graph in the display showing the measurement data and click OK to return to home screen.
In the event that the measurement is not correct based in the inspector's judgement or the drill did not capture a good measurement, the inspector can erase the last measurement and the CONTRACTOR shall reinspect the pole.
LGE KU expects to receive all inspection data with IML resistance drill, including the overall results and individual results for each drilling in the pole.
To erase the last measurement or all the measurements press the Trash Icon to select an option. Then, retake the measurement or start over.

A.1.7. Maintenance and Change Features
A.1.7.1. Automatic Needle Exchange
A needle change feature will prompt the inspector indicating when the resistance drill needle should be replaced.

Business Use

Specifications for Wood Distribution Pole Inspection and Remedial Retreatment

This includes cases of broken needles, needles stuck in the pole, and other needle issues. Needle exchanges are expected every 200-300 drills. Below are guidelines of how to replace the resistance drill needle with the Automatic Needle Exchange feature.

1. Select the drilling needle icon.
2. Press OK with the silver button.
3. Select the icon with letter A (automatic)
4. Hold the needle (pliers recommended) and press OK to eject needle. If no needle in the device, press OK.
5. Insert and press on new needle. Hold drilling needle with combination pliers on cutting edge. Press OK to lock.
6. Check Needle. Confirm OK.

A.1.7.2. Presets and Switch between Drilling Speed and Feed Speed

1. Manually: press the black button and select the drilling speed and feed speed.
2. Automatically: select the system preference symbol. Scroll to needle speed or feed speed. For needle speed, select the mode (normal or advance in r/min). For feed speed, select the stage (cm/min).

A.1.7.3. Presets Drill Depth Activation of Tilt Compensation

1. Press the red button
2. Switch on the status
3. Select drill depth
4. Rotation of navigation button (silver button) changes drill depth
5. Active tilt compensation
6. Click OK and tilt compensation is activated.

A.2 Resistance Drill "4BGL" Inspection Type

As defined in Section 8.5 – Resistance Drill, "4BGL" Inspection Type shall be used for wood poles under 60 feet in height that are fully excavatable. For this type of inspection, the following inspection standard shall be followed:

1. The CONTRACTOR must take one (1) measurement at 0-degrees 3 feet above ground level. This will become the reference diameter for all future measurements.
2. Four (4) additional measurements are to be taken at ground level at a 30-degree angle in the downward direction, with the first measurement taken in cable line and subsequent measurements shifted 90 degrees.
    a. If four (4) measurements at the 30-degree angle shifted 90 degrees apart cannot safely be completed, then take four (4) measurements as close to 90 degrees apart as possible.
3. Additional drillings at groundline are optional.
4. The CONTRACTOR will note the type of inspection in the data record.
5. The CONTRACTOR shall provide the percent remaining strength and any other appropriate information as defined by the COMPANY.

A.3. Resistance Drill "2BGL" Inspection Type

As defined in Section 8.5 – Resistance Drill, "2BGL" Inspection Type shall be used for wood poles under 60 feet in height that are fully excavatable but with obstructions preventing 4BGL inspection. For this type of inspection, the following inspection standard shall be followed:

6. The CONTRACTOR must take one (1) measurement at 0-degrees 3 feet above ground level. This will become the reference diameter for all future measurements.
7. Two (2) additional measurements are to be taken at ground level at a 30-degree angle in the downward direction, with the first measurement taken in cable line and the second measurement shifted 90 degrees.
8. Additional drillings at groundline are optional.
9. The CONTRACTOR will note the type of inspection in the data record.
10. The CONTRACTOR shall provide the percent remaining strength and any other appropriate information as defined by the COMPANY.

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A.4. Resistance Drill "4BGLH" Inspection Type

As defined in Section 8.5 – Resistance Drill, "4BGLH" Inspection Type shall be used for wood poles under 60 feet in height that are embedded, partially embedded, have risers/conduits or other excavation obstructions. For this type of inspection, the following inspection standard shall be followed:

1. The CONTRACTOR must take one (1) measurement at 0-degrees 3 feet above ground level. This will become the reference diameter for all future measurements.
2. Four (4) half additional measurements are to be taken at ground level at a 30-degree angle in the downward direction, with each subsequent measurement taken 90 degrees apart. Note: measurements will be based on partial bit penetration.
3. Additional drillings at groundline are optional.
4. The CONTRACTOR will note the type of inspection in the data record.
5. The CONTRACTOR shall provide the percent remaining strength and any other appropriate information as defined by the COMPANY.

A.5. Resistance Drill "2BGLH" Inspection Type

As defined in Section 8.5 – Resistance Drill, "2BGLH" Inspection Type shall be used for wood poles under 60 feet in height that are embedded, partially embedded, have risers/conduits or other excavation obstructions. For this type of inspection, the following inspection standard shall be followed:

1. The CONTRACTOR must take one (1) measurement at 0-degrees 3 feet above ground level. This will become the reference diameter for all future measurements.
2. Two (2) half additional measurements are to be taken at ground level at a 30-degree angle in the downward direction, with each subsequent measurement taken 90 degrees apart. Note: measurements will be based on partial bit penetration.
3. Additional drillings at groundline are optional.
4. The CONTRACTOR will note the type of inspection in the data record.
5. The CONTRACTOR shall provide the percent remaining strength and any other appropriate information as defined by the COMPANY.

A.6. Resistance Drill "Steel Truss Validation Below / Above" Inspection Type

As defined in Section 8.5 – Resistance Drill, "Steel Truss Validation" Inspection Type shall be used for wood poles under 60 feet in height that have been identified as a Reject Pole. For this type of inspection, the following inspection standard shall be followed:

1. The CONTRACTOR must take one (1) measurement at 0-degrees 3 feet above ground level. This will become the reference diameter for all future measurements.
2. Two (2) full additional measurements are to be taken at below steel banding location at a 0-degree angle, with each subsequent measurement taken 90 degrees apart. Note: measurements will be based on partial bit penetration.
    a. If the average decay-free shell thickness at below steel banding location is < 2 inches.
    b. If the average decay-free shell thickness at below steel banding location is ≥ 2 inches, pole shall be classified as a Restorable Reject unless otherwise noted in Appendix C.3.
3. Two (2) full additional measurements are to be taken at above steel banding location at a 0-degree angle, with each subsequent measurement taken 90 degrees apart. Note: measurements will be based on partial bit penetration.
    a. If the average decay-free shell thickness at above steel banding location is < 4 inches.
    b. If the average decay-free shell thickness at above steel banding location is ≥ 4 inches, pole shall be classified as a Restorable Reject unless otherwise noted in Appendix C.3.
4. The CONTRACTOR will note the type of inspection in the data record.
5. The CONTRACTOR shall provide the average shell thickness for each measurement and any other appropriate information as defined by the COMPANY.

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A.7. Resistance Drill "Steel Truss Below / Steel Truss Above" Inspection Type

As defined in Section 8.5 – Resistance Drill, "Steel Truss Below" & "Steel Truss Above" Inspection Types shall be used for wood poles under 60 feet in height that are C-Trussed and poles that expected to be reinforced. For this type of inspection, the following inspection standard shall be followed:

1. The CONTRACTOR shall select "Steel Truss Below" and must take one (1) diameter measurement at 0-degrees 3 feet above ground level. This will become the reference diameter for all future measurements.
2. Three (3) half additional measurements are to be taken at below steel banding location (depending on the location of the truss banding) at a 0-degree angle, with each subsequent measurement taken 90 degrees apart. Note: measurements will be based on partial bit penetration.
    a. If the average decay-free shell thickness at below steel banding location is < 2 inches, the pole shall be identified as a Non-Restorable Reject and shall be replaced.
    b. If the average decay-free shell thickness at below steel banding location is ≥ 2 inches, the pole has passed the inspection.
3. The CONTRACTOR shall select "Steel Truss Above" and must take one (1) diameter measurement at 0-degrees 3 feet above ground level. This will become the reference diameter for all future measurements.
4. Three (3) half additional measurements are to be taken at above steel banding location at 0-degree angle, with each subsequent measurement taken 90 degrees apart. Note: measurements will be based on partial bit penetration.
    a. If the average decay-free shell thickness at above steel banding location is < 4 inches, the pole shall be identified as a Non-Restorable Reject and shall be replaced.
    b. If the average decay-free shell thickness at above steel banding location is ≥ 4 inches, the pole has passed the inspection.
5. The CONTRACTOR will note the type of inspection in the data record.
6. The CONTRACTOR shall provide the average shell thickness for each measurement and any other appropriate information as defined by the COMPANY.

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