

nationalgrid	<b>ELECTRIC OPERATING PROCEDURE</b>	Doc. # <b>NG-EOP T007.01</b>
	<b>TRANSMISSION and Sub TRANSMISSION</b>	Page 1 of 40
	<b>GROUND LEVEL VISUAL INSPECTION</b>	Version 1.0 –06/01/15

## **INTRODUCTION**

This document applies to all National Grid Transmission and Sub-Transmission assets as defined by NG-EOP T007.00. It also applies to anyone performing inspection and maintenance activities on these assets. This procedure shall be executed by qualified personnel as determined by training specific to the task.

## **PURPOSE**

This procedure defines the requirements for the ground level visual inspection of Transmission and Sub-Transmission assets.

## **ACCOUNTABILITY**

- 1 T&D Work Methods
  - A Update procedure as necessary
- 2 Project Management & Complex Construction / Electric Operations
  - A Ensure that this procedure is understood and implemented
  - B Ensure that all personal are trained in this procedure
  - C Repair problems found during inspections according to follow-up prioritization criteria
- 3 T&D Maintenance / Electric Operations / Inspections
  - A Schedule and coordinate inspections for transmission and sub-transmission assets
  - B Ensure inspections as outlined in the fiscal year work plan are safely and properly executed
  - C Ensure worker understanding and comprehension of the requirements of this EOP
- 4 Employee
  - A Demonstrate the understanding of this procedure
  - B Comply with the requirements of this procedure

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## **COORDINATION**

Specific planned inspections performed under this procedure will be coordinated by the following work groups via a work plan document to be released prior to the start of each fiscal year.

National Grid Project Management & Complex Construction  
T&D Maintenance  
Electric Operations  
Inspections

## **REFERENCES**

National Grid Employee Safety Handbook  
NG-EOP G016 Elevated Equipment Voltage Testing  
NG-EOP T007.00 Line Inspections and Maintenance Activities  
NG-EOP T007.02 Aerial Visual Inspection  
NG-EOP T007.04 Steel Structure Foundation/Footer Inspection and Repair  
NG-EOP T007.05 Wood Pole Inspection and Treatment  
NY PSC Order 04-M-0159  
NY PSC Order Adopting Changes to Electric Safety Standard, December 2008  
MA General Law #220 CMR 125 Section 20

## **DEFINITIONS**

**Ground Level Visual Inspection:** Inspection performed from a ground position, movement between inspection points may be by vehicle or foot

**Hand Held Computer:** A data recording device that is used in the field to create a record of conditions found for the purposes of communicating this data to a maintenance management system

**Inspection:** A careful viewing of assets to find defects and other problems that require maintenance or monitoring

**Inspection and Maintenance Program:** Planned program for inspecting and maintaining transmission and sub-transmission lines

**Inspector:** Qualified personnel who identify defects via a specific type of inspection

**Maintenance:** Work to correct defects or other problems, often generated through the inspection process

**Maintenance Management System (MMS):** A computer application that schedules and tracks inspections and/or maintenance work

**National Grid Representative:** National Grid personnel designated as the point of contact for a contracted inspector

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**Pocket:** A void in a pole resulting from damage, weathering or decay which may lower the strength of the pole

**Qualified Personnel:** Personnel trained to safely perform a specific inspection

**Work Plan:** A document published each fiscal year listing all inspection and maintenance scheduled for the year

## **TRAINING**

Provided by L&D upon request by user department

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## **1.0 GENERAL**

- 1.1 All assets shall be physically visited and inspected
  - 1.1.1 All potential defects can be identified
  - 1.1.2 Inspected from ground level
    - a. Use binoculars or scopes as needed
  - 1.1.3 Exceptions must have approval from the appropriate department manager and be documented in the MMS
  - 1.1.4 Inspect structures in the order they exist
    - a. Use appropriate inspection procedure for the asset
- 1.2 Inspections recorded in Computapole
  - 1.2.1 This procedure arranged in same order as Computapole priority codes
  - 1.2.2 Some Computapole codes do not apply to this procedure
  - 1.2.3 Refer to Appendix J for a complete list of Computapole codes
    - a. Including valid levels and STORMS qualifiers

## **2.0 INSPECT STEEL CONDITION**

- 2.1 Grading Reference:
  - 2.1.1 Appendix B ‘Steel Evaluation Ratings’ (1-6)
    - a. Assign a Rating as appropriate

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2.2 Inspect the following:

2.2.1 Steel condition

2.2.2 Weathering steel for excessive corrosion of joints

- a. Report any excessive corrosion of weathering steel joints to Transmission Maintenance

2.3 Inspection Note:

2.3.1 Grade all steel collectively

- a. The overall rating shall be the worst 5% of

1. Members on a tower
2. Discrete area on a steel pole

- b. Or the rating of the worst critical members

1. Tower legs
2. Insulator attachment points

2.3.2 Rating of 4 and higher requires additional review

- a. Additional photos and notes shall be taken to assist the review

2.3.3 Rating of 6:

- a. Used at the discretion of the Inspector

1. Due to special circumstances
2. The reason shall be noted on the report

### **3.0 INSPECT STEEL GRILLAGE FOUNDATION**

3.1 Grading Reference:

3.1.1 Appendix B – ‘Steel Evaluation Ratings’ (1-6)

- a. Assign a Rating as appropriate

3.2 Inspect the following:

3.2.1 Steel condition above grade

### **4.0 INSPECT CONCRETE FOUNDATION**

4.1 Grading Reference:

4.1.1 Appendix C – ‘Concrete Evaluation Rating / Matrix’ (1-5)

- a. Assign a Rating as appropriate

4.2 Inspect for the following:

4.2.1 Poor workmanship, including honeycombing

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- 4.2.2 Cracking, including pattern or solitary cracks
- 4.2.3 Disintegration and deterioration of concrete
- 4.2.4 Distortion/movement resulting in change in alignment of structure components
- 4.2.5 Seepage – movement of water/fluids through pores
- 4.2.6 Spalling – development of fragments
- 4.2.7 Delamination
- 4.2.8 Degradation of steel/concrete interface
- 4.2.9 Excessive corrosion of reinforcement
- 4.2.10 Condition of anchor bolts
  - a. All hardware present and tight
- 4.3 Rating of 5:
  - 4.3.1 Used at the discretion of the Inspector
    - a. Due to special circumstances
    - b. The reason shall be noted on the report

## **5.0 INSPECT WOOD POLE AND STRUCTURE - OVERALL**

- 5.1 Grading Reference:
  - 5.1.1 Appendix D – ‘Wood Structure Evaluation’ (Priority 1-4)
    - a. Use the indicated code
      - 1. Assign a Priority to each item
- 5.2 Inspect for the following:
  - 5.2.1 Code 510 – Broken
  - 5.2.2 Code 511 – Visual rotting/hollow sounding
    - a. Level 4 shall be assigned and
      - 1. Scheduled for Wood Pole inspection
    - b. Unless deemed an immediate failure risk
  - 5.2.3 Code 512 – Leaning
  - 5.2.4 Code 513 – Replace single arm
  - 5.2.5 Code 514 – Replace double arm
  - 5.2.6 Code 515 – Repair brace
  - 5.2.7 Code 516 – Replace brace
  - 5.2.8 Code 517 – Replace anchor

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- 5.2.9 Code 518 – Install anchor
- 5.2.10 Code 519 – Repair/replace guy wire
- 5.2.11 Code 521 – Tighten guy wire
- 5.2.12 Code 522 – Replace guy shield
- 5.2.13 Code 524 – Guy bonding
- 5.2.14 Code 525 – Lightning damage
- 5.2.15 Code 526 – Woodpecker damage
- 5.2.16 Code 527 – Insects
- 5.2.17 Code 528 – Aerial number missing

## **6.0 INSPECT WOOD POLE – INDIVIDUAL**

- 6.1 Grading Reference:
  - 6.1.1 Appendix E - 'Individual Wood Pole Evaluation' (Priority 1-4)
    - a. Use the indicated code
      - 1. Assign a Priority to each item
- 6.2 C-Truss
  - 6.2.1 Is considered a permanent repair
  - 6.2.2 Significant deterioration of pole shall be graded as if no C-Truss was installed
- 6.3 Identify pole inspection / repair
  - 6.3.1 Document tag left after Wood Pole Inspection and Treatment
    - a. EOP T007.05
  - 6.3.2 Level 4 only
- 6.4 Inspect for the following:
  - 6.4.1 Code 901 – Identified priority pole
  - 6.4.2 Code 902 – Identified reject pole
  - 6.4.3 Code 903 – Excessive checking
  - 6.4.4 Code 904 – Climbing inspection required
  - 6.4.5 Code 905 – No inspection tag

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## **7.0 INSPECT STEEL POLE AND STRUCTURE**

### 7.1 Grading Reference:

#### 7.1.1 Appendix F – ‘Steel Pole and Structure Evaluation’ (Priority 1-4)

##### a. Use the indicated code

##### 1. Assign a Priority to each item

### 7.2 Inspect for the following:

7.2.1 Code 531 - Broken legs

7.2.2 Code 532 - Aerial number missing

7.2.3 Code 534 - Loose or missing bolts/hardware

7.2.4 Code 535 - Anti climb equipment damaged/missing

7.2.5 Code 536 - Vegetation on tower

7.2.6 Code 537 - Structure damage

7.2.7 Code 538 - Tower needs straightening

7.2.8 Code 539 - Arms damaged

## **8.0 INSPECT CONDUCTOR**

### 8.1 Grading Reference:

#### 8.1.1 Appendix G – ‘Conductor and Line Hardware Evaluation’ (Priority 1- 4)

##### a. Use the indicated code

##### 1. Assign a Priority to each item

### 8.2 Inspect for the following:

8.2.1 Code 541 - Conductor condition overall

8.2.2 Code 542 - Static wire condition overall

8.2.3 Code 543 - Ground wire condition overall

8.2.4 Code 544 - Sleeve/splice/connector condition

8.2.5 Code 546 - Clearance issues

### 8.3 Transmission Maintenance may revise Priority for conductor damage

8.3.1 Based on mechanical and electrical loading

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## **9.0 INSPECT INSULATORS/HARDWARE**

9.1 Grading Reference:

9.1.1 Appendix G – ‘Conductor and Line Hardware Evaluation’ (Priority 1- 4)

a. Use the indicated code

1. Assign a Priority to each item

9.2 Multiple insulator strings shall be evaluated individually

9.3 Inspect for the following:

9.3.1 Code 551 – Insulator damage

9.3.2 Code 552 – Insulators out of plumb

9.3.3 Code 553 - Hardware loose or damaged

9.3.4 Code 555 - Lightning arrestor issues

## **10.0 INSPECT FOUNDATION:**

10.1 Grading Reference:

10.1.1 Appendix H – ‘Foundation Evaluation’ (Priority 1-4)

a. Use the indicated code

1. Assign a Priority to each item

10.2 Inspect for the following:

10.2.1 Code 563 – Erosion

## **11.0 INSPECT RIGHT OF WAY:**

11.1 Grading Reference:

11.1.1 Appendix I – ‘ROW / Misc. / Switch / GIS Evaluation’ (Priority 1-4 or F)

a. Use the indicated code

1. Assign a Priority to each item

11.1.2 All Code 574 – Danger Trees rated as an “F”

11.2 Inspect for the following:

11.2.1 Code 571 – Erosion

11.2.2 Code 572 – Encroachments

11.2.3 Code 573 – Debris

11.2.4 Code 574 - Danger trees

a. Priority F

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11.2.5 Code 575 - Broken gates

11.2.6 Code 576 - Oil/Gas/Hazmat situation

## **12.0 INSPECT MISCELLANEOUS:**

12.1 Grading Reference:

12.1.1 Appendix I – ‘ROW / Misc. / Switch / GIS Evaluation’ (Priority 1-4 or P)

a. Use the indicated code

1. Assign a Priority to each item

12.2 Visually inspect for the following:

12.2.1 Code 581 - Structure not marked – ground level

12.2.2 Code 582 - Switch damaged (see Section 13)

12.2.3 Code 583 - Switch grounding damaged (see Section 13)

12.2.4 Code 584 - Install warning sign

12.2.5 Code 585 - Replace warning sign

12.2.6 Code 586 - Remove steps

12.2.7 Code 587 - Add dirt and tamp

12.2.8 Code 589 - Bird Nest

12.2.9 Code 590 - Excessive bird perching

## **13.0 INSPECT SWITCH:**

13.1 Grading Reference:

13.1.1 Appendix I – ‘ROW / Misc. / Switch / GIS Evaluation’ (Priority 1-4)

a. Use the indicated code

1. Assign a Priority to each item

13.1.2 With the switch in service

a. Refer to EOP T006 for further information

13.1.3 Single code is used for most of this inspection

a. Record problem details

13.2 Inspect for the following:

13.2.1 Code 582 Noise

a. Arcing or other abnormal noise

1. Leave the area immediately

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2. Contact the appropriate control center
- 13.2.2 Code 582 Insulators
    - a. Surface contamination
    - b. Tracking
    - c. Damaged porcelain
  - 13.2.3 Code 582 Primary Connections
    - a. Overheating
      1. Discoloration of or heat rising from connections
    - b. Cracks
    - c. Loose connections
  - 13.2.4 Code 582 Live Parts
    - a. Blades properly turned into jaws
    - b. Damaged, misaligned or missing arcing horns
    - c. Damaged, misaligned or missing parts
  - 13.2.5 Code 582 Load Break Interrupters
    - a. Damage
    - b. Deterioration
  - 13.2.6 Code 582 Operating Mechanism
    - a. Properly locked
    - b. Operating pipe / Interphase linkage
      1. Broken
      2. Bent
    - c. Manual operating mechanism for
      1. Damage
      2. Deterioration
      3. Missing parts
  - 13.2.7 Code 583 Operating Mechanism Ground
    - a. Broken
    - b. Loose
    - c. Missing

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## **14.0 DOCUMENT GIS DATA ISSUES**

### 14.1 Grading Reference:

#### 14.1.1 Appendix I – ‘ROW / Misc. / Switch / GIS Evaluation’ (Priority 4 Only)

- a. Use the indicated code
- b. Include a note describing the problem / correction required

### 14.2 Document all mismatches between the GIS and the field:

- 14.2.1 Code 760 - GIS map mismatch
- 14.2.2 Code 761 - GIS – equipment stencil mismatch
- 14.2.3 Code 762 - GIS – equipment/hardware missing
- 14.2.4 Code 763 - GIS – equipment removed in field
- 14.2.5 Code 769 - GIS – other GPS/GIS errors

## **15.0 ENGINEERING-SPECIFIC INSPECTION**

### 15.1 Additional guidelines for Inspections related to engineering activities

#### 15.1.1 Not to be included in the regular Ground Level Visual Inspection

### 15.2 Guidelines below shall be used by engineers

- 15.2.1 To complete and interpret field Inspection data
- 15.2.2 As part of preliminary engineering as specified in SP.06.01.101 “Transmission Engineering and Design Services”

### 15.3 Guidance provided in Sections 15.4 and 15.5 shall be used in completing engineering analysis of lines

### 15.4 Priority Descriptions

- 15.4.1 Priority 1 – Reserved for immediate and substantial threats to public safety and/or system reliability. These should generally be very rare.
- 15.4.2 Priority 2 – Items which require repair due to a near term risk of failure, the repairs should not wait for the normal two-year project life cycle
- 15.4.3 Priority 3 – Repairs are required, but a more deliberate approach can be taken over a two-year period
- 15.4.4 Priority 4 – Repairs should be completed if the work is incidental to another project, but the item can wait for the next Inspection cycle for further assessment

### 15.5 The following information shall be determined and documented:

#### 15.5.1 Asset Information

- a. Structure Number
- b. Circuit

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- c. Tower/Pole ID#
  - 1. Include circuit according to National Grid nomenclature
- d. Structure Location Latitude and Longitude
- e. Structure Ground line elevation
- f. Structure City or Town and State

#### 15.5.2 Inspection

- a. Year Installed
- b. Tower/Pole Size / Class
- c. Structure Height (above grade)
- d. Structure Type
- e. Structure surface finish:
  - 1. Painted
  - 2. Galvanized
  - 3. Weathered
  - 4. Foundation type
- f. Structure condition and overall rating
- g. Steel distress or deterioration
- h. Concrete foundation condition and overall rating
- i. Concrete foundation distress or deterioration
- j. Concrete foundation surface mapping diagram
- k. Mechanical or fire damage
- l. Broken hardware
  - 1. Insulators
  - 2. Adversely impacted structural components
- m. Document adjacent roads, railroads, parks, etc
- n. Frequently accessible by the general public
- o. Unusual conditions or safety hazards
- p. Digital photographs
- q. Field sketches of foundation condition

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## **16.0 TEMPORARY REPAIRS**

- 16.1 Some defects may have been repaired temporarily
  - 16.1.1 Temporary repairs shall be inspected monthly by Transmission Inspections
  - 16.1.2 Until repairs made permanent
- 16.2 If an Inspector encounters a temporary repair
  - 16.2.1 Defect shall be reported with a note indicating a temporary repair

## **17.0 REVISION HISTORY**

<b><u>Version</u></b>	<b><u>Date</u></b>	<b><u>Description of Revision</u></b>
1.0	06/01/15	Supersedes Transmission Line Maintenance Specification PR 06.01.601.001 dated 4/18/11. Re-number as part of EOP T007. Complete revision to put in EOP format; update department names; move appendices to back of document; change to outline format.

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## APPENDIX A – TRANSMISSION FIELD SURVEY WORKSHEET

TRANSMISSION FIELD SURVEY WORKSHEET									
Patrolled Circuit/No.	Unique ID		Pole/Tower No.		Voltage		District		
Additional Circuit/No.	Unique ID								
Area	Between _____ Rd. And _____ Rd.		Date		Employee ID				
TYPE	<input type="checkbox"/> A) Single <input type="checkbox"/> B) H. Frame <input type="checkbox"/> C) 3 Pole <input type="checkbox"/> D) 4 Pole <input type="checkbox"/> E) 5 Pole <input type="checkbox"/> F) 6 Pole <input type="checkbox"/> G) Flex-Tower <input type="checkbox"/> H) Square-Tower <input type="checkbox"/> I) Hairpin <input type="checkbox"/> J) Other								
MATERIAL	<input type="checkbox"/> A) Wood (fill in information for each pole, i.e., 2 pole, 3 pole, 4 pole, etc.) Height _____ Class _____ Year Set _____ Manufacturer _____ Year Last Treated _____ Treatment <input type="checkbox"/> A) External <input type="checkbox"/> B) Internal <input type="checkbox"/> C) Both <input type="checkbox"/> D) Other <input type="checkbox"/> E) Unknown <input type="checkbox"/> F) None <input type="checkbox"/> B) Steel <input type="checkbox"/> C) Lattice								
CONFIGURATION	<input type="checkbox"/> Deadend <input type="checkbox"/> Tangent <input type="checkbox"/> Switch Structure <input type="checkbox"/> Davit Arm <input type="checkbox"/> Stand Off <input type="checkbox"/> Other								
STEEL/LATTICE CONDITION	(Circle One) 1 2 3 4 5 6		FOUNDATION: STEEL CONCRETE			(Circle One) 1 2 3 4 5 6			
POLE *		Sub. No.	Priority Qty	CONDUCTOR **		Circuit No.	Priority Qty		
*Enter Sub No. if a Multiple Structure				**Enter Circuit No. if More Than Circuit on Pole					
510 1, 2 (R) <input type="checkbox"/> Broken		/	/	541 1, 2, 3 (R) <input type="checkbox"/> Conductor		/	/		
511 1, 4 (RP) <input type="checkbox"/> Visual Rotting		/	/	542 1, 2, 3 (R) <input type="checkbox"/> Static		/	/		
512 1, 2, 3, 4 (R) <input type="checkbox"/> Leaning		/	/	543 1, 2, 3 (R) <input type="checkbox"/> Ground Wire		/	/		
513 1, 2, 3 (R) <input type="checkbox"/> Replace Single Arms		/	/	544 1, 2, 3 (R) <input type="checkbox"/> Sleeve/Conn.		/	/		
514 1, 2, 3 (R) <input type="checkbox"/> Replace Double Arm		/	/	546 1, 4 (NR) <input type="checkbox"/> Under 25 Ft.		/	/		
515 1, 2, 3 (R) <input type="checkbox"/> Repair Braces		/	/	LINE HARDWARE					
516 1, 2, 3 (R) <input type="checkbox"/> Replace Braces		/	/	551 1, 2, 3, 4 (R) <input type="checkbox"/> Insulators/Dam		/	/		
517 1, 2 (R) <input type="checkbox"/> Replace Anchor		/	/	552 4 (R) <input type="checkbox"/> Insulator Plumb		/	/		
518 1, 2, 3, 4 (R) <input type="checkbox"/> Install Anchor		/	/	553 1, 2, 3, 4 (R) <input type="checkbox"/> Hardware Dam		/	/		
519 1, 2, 3 (R) <input type="checkbox"/> Repair/Replace Guy Wire		/	/	555 2 (R) <input type="checkbox"/> Lightning Arrestor		/	/		
521 2, 3 (R) <input type="checkbox"/> Tighten Guy Wire		/	/	FOUNDATION – GENERAL					
522 P (NR) <input type="checkbox"/> Replace/Install Guy Shield		/	/	563 1, 2, 3, 4 (R) <input type="checkbox"/> Erosion		/	/		
524 4 (R) <input type="checkbox"/> Guy Not Bonded		/	/			/	/		
525 1, 2, 3, 4 (RP) <input type="checkbox"/> Lightning Damage		/	/			/	/		
526 2, 3, 4 (RP) <input type="checkbox"/> Woodpecker Damage		/	/	RIGHT OF WAY					
527 2, 4 (RP) <input type="checkbox"/> Insects		/	/	571 1, 2, 4 (NR) <input type="checkbox"/> Erosion		/	/		
528 4 (NR) <input type="checkbox"/> Aerial Number Missing		/	/	572 4 (NR) <input type="checkbox"/> Encroachments		/	/		
TOWER				573 4 (NR) <input type="checkbox"/> Debris		/	/		
531 1, 2 (R) <input type="checkbox"/> Tower Legs Broken		/	/	574 F (R) <input type="checkbox"/> Danger Tree		/	/		
532 4 (NR) <input type="checkbox"/> Aerial Numbers Missing		/	/	575 4 (NR) <input type="checkbox"/> Gate Broke		/	/		
534 1, 2, 3 (R) <input type="checkbox"/> Loose Bolts/Hard		/	/	576 4 (NR) <input type="checkbox"/> Oil/Gas Leak		/	/		
535 4 (NR) <input type="checkbox"/> Repair Anti-Climb		/	/			/	/		
536 F (R) <input type="checkbox"/> Vegetation On Tower		/	/	MISCELLANEOUS					
537 1, 2, 3 (R) <input type="checkbox"/> Structure Damage		/	/	581 4, P (NR) <input type="checkbox"/> Stencil/Line/ Struct No. Ground level		/	/		
538 1, 2, 3, 4 (R) <input type="checkbox"/> Straighten Tower		/	/	582 1, 2, 3, 4 (R) <input type="checkbox"/> Switch Damaged		/	/		
539 1, 2, 3, 4 (R) <input type="checkbox"/> Arms Damaged		/	/	583 2 (R) <input type="checkbox"/> Damaged Ground		/	/		
POLE INSPECTION				584 4, P (NR) <input type="checkbox"/> Install/Replace Warning Sign		/	/		
901 4 (RP) <input type="checkbox"/> Identified Priority Pole		/	/	586 4 (NR) <input type="checkbox"/> Remove Steps		/	/		
902 4 (RP) <input type="checkbox"/> Identified Reject Pole		/	/	587 3, 4 (R) <input type="checkbox"/> Add Dirt & Tamp		/	/		
903 4 (RP) <input type="checkbox"/> Excess Checking		/	/	589 1, 3, 4 (R) <input type="checkbox"/> Bird Nest		/	/		
904 4 (RP) <input type="checkbox"/> Climbing Inspection Req'd		/	/	590 4 (R) <input type="checkbox"/> Bird Perching		/	/		
905 4 (RP) <input type="checkbox"/> No Inspection Tag		/	/	GIS					
NR–Maint. Code may not directly affect reliab. R–Maint. Code may affect reliability. RP – Maintenance Code may affect and has specific program in place to address.				760 4 (NR) <input type="checkbox"/> GIS Map Doesn't Match Field		/	/		
				761 4 (NR) <input type="checkbox"/> GIS Equip. Stenciling In Error		/	/		
				762 4 (NR) <input type="checkbox"/> GIS Equip/Hardware Missing		/	/		
				763 4 (NR) <input type="checkbox"/> GIS Equip. Removed In Field Remove from GIS		/	/		
				769 4 (NR) <input type="checkbox"/> GIS Other GPS/GIS Errors		/	/		
Comments on rear of sheet NG0237 (12/09)									



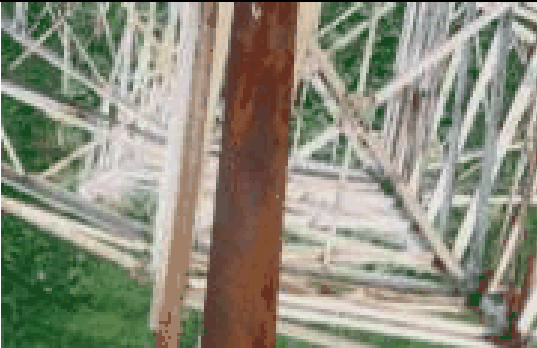

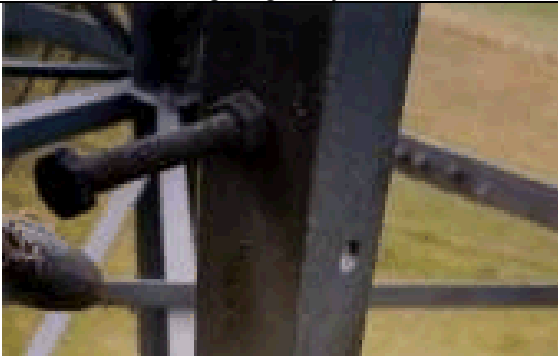
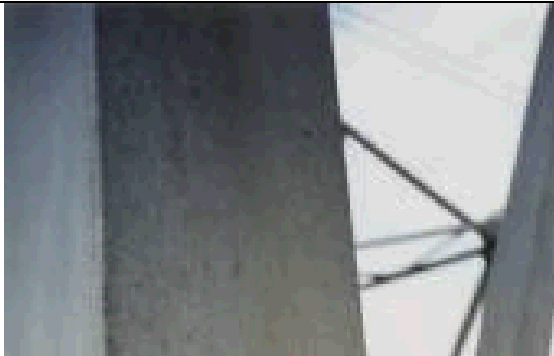
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## **APPENDIX B – STEEL EVALUATION RATINGS**


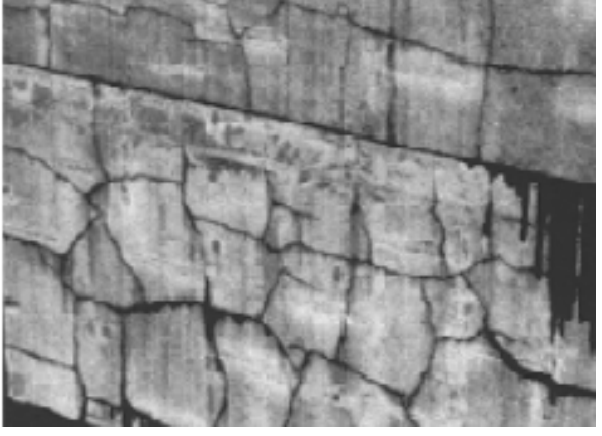




	
Rating 6 – “Very Severe Deterioration” Perforated Element – severe physical damage	Rating 5 – “Significant Pitting” Significant pitting – loss of section clearly visible, edges feathered/thinned
	
Rating 4 – “Light Pitting” Some very light edge roughening. Loss of greater majority of coating and zinc layers. Corroded surface would dominate surface preparation – remedial action using wire brush, scraper and brushed paint not sufficient to give greatly increase life	Rating 3 – “Light Corrosion” Very light surface corrosion, majority of coating intact
	
Rating 2 – “Intact” Paint coating over all surface – overcoat may not be intact and some very small areas (<1%) of light corrosion may be present. Galvanizing intact except for some very small areas (<1%) of light corrosion	Rating 1 – “Serviceable” Fully painted – overcoat and undercoat intact Fully galvanized – coating intact

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## **APPENDIX C – CONCRETE EVALUATION RATINGS & MATRIX**

	
Honeycombing Construction faults, poor workmanship	Pattern Cracking
	
Disintegration Deterioration of concrete into small fragments	Erosion/Abrasion
	
Seepage Movement of water or other fluids through pores	Spalling Development of fragments
Distortion or Movement Change in alignment of the components of a structure	Delamination Degradation of steel/concrete interface

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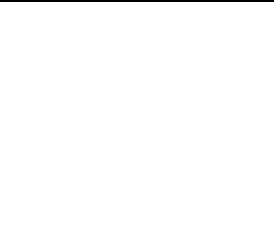
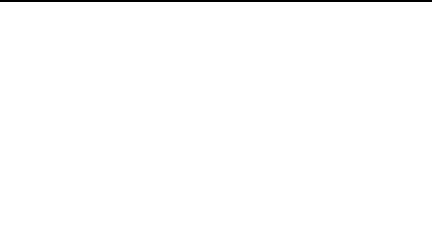
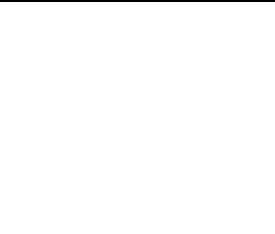
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		Overall Foundation Rating				
		Very Severe Deterioration 5	Severe Deterioration 4	Medium Deterioration 3	Light Deterioration 2	Serviceable 1
Concrete Foundation Condition Categories	Cracking	Wide cracks (over 0.08" width)	Medium Cracks (between 0.04" and 0.08" width)	Fine Cracks (0.04" width)	Negligible	Negligible
	Disintegration	Very Severe Disintegration (loss of mortar and coarse aggregate at a depth greater than 0.8")	Severe Disintegration (loss of mortar between 0.4" and 0.8" around coarse aggregate)	Medium Disintegration (loss of surface mortar between 0.2" and 0.4" and exposure of coarse aggregate)	Light Disintegration (no exposure of coarse aggregate)	Negligible
	Spalling	Large spall (greater than 0.8" in depth and greater than 6" in any dimension)	Small spall (not greater than 0.8" in depth or greater than 6" in any dimension)	Negligible	Negligible	Negligible

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## **APPENDIX D – WOOD STRUCTURE EVALUATION**


<b>Typical Pole Defects</b>		
<b>Bark Inclusion</b>	<b>Checking (Solitary)</b>	<b>Checking (Around Periphery of Pole)</b>
		
The growth of the main stem around a dead branch	The separation of fibers parallel to the grain and extending towards the center of the pole	Multiple checks around entire pole circumference
<b>Cross Break</b>	<b>Mechanical Damage</b>	<b>Split</b>
		
The separation of fibers perpendicular or at an angle to the grain	Transportation and erection damage due to machinery such as chainsaws or cranes	The cracking of a pole due to mechanical connections or the intersection of checks
<b>Dead Streak</b>	<b>Decay</b>	<b>Decay Knot</b>
		
The growth of the main stem around the dead wood	The softening of the pole due to fungal growth	Knots which have decayed and can extend towards the center of the pole
<b>Pocket</b>		
A Solitary Check, a series of checks at one location, or area of decay at the surface of the wood pole		

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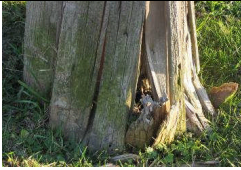

### 510 Pole – Broken

- Used when pole is broken due to impact, stress etc.

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
			
Damage poses significant risk of imminent failure	Damage is not an immediate threat to the integrity of the network or to public safety	N/A	N/A


### 511 Pole – Visual Rotting

Used for physical damage which compromises the strength and/or integrity of the pole (checking, dead streak, bark inclusion, cross break, decay, burning, hollow sounding pole)

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
			
Damage poses significant risk of imminent failure	N/A	N/A	All Others

### 512 Pole – Leaning

Used when pole/structure is out of plumb(excludes raked angle structures which are intentionally out of plumb due to line angle)

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
			
Leaning pole which in Inspector's judgment poses immediate and substantial threat to public safety and/or system reliability	Pole top deflection in Inspector's judgment poses a near-term risk to structure integrity	Slope > 2" per 10' pole height	All other leaning poles

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### 513 Pole – Replace Single Arm

- Used for damaged single arms. Arm refers to any horizontal member extending out from the main structure generally to support the conductor.

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
Arm damage poses immediate and substantial threat to public safety and/or system reliability	Substantial damage to cross section of arm causing the arm to deflect – failure may occur under non-extreme loading	Appreciable damage – failure may occur under extreme loading	N/A

### 514 Pole – Replace Double Arm

- Used for damaged double arms.

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
Arm damage poses immediate and substantial threat to public safety and/or system reliability	Substantial damage to cross section of arm causing the arm to deflect – failure may occur under non-extreme loading	Appreciable damage – failure may occur under extreme loading	N/A

### 515 Pole – Repair Braces

- Used for damage to braces. Braces refer to intermediate members that connect parts of the structure.

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
Brace damage poses immediate and substantial threat to public safety and/or system reliability	Substantial damage to cross section of brace causing the arm to deflect – failure may occur under non-extreme loading	Appreciable damage – failure may occur under extreme loading	N/A

### 516 Pole – Replace Braces

- Used for damage to braces or missing braces. Braces refer to intermediate members that connect parts of the structure.

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
Brace damage or lack of brace poses immediate and substantial threat to public safety and/or system reliability	Substantial damage to cross section of brace or lack of brace causing the arm to deflect – failure may occur under non-extreme loading	Appreciable damage – failure may occur under extreme loading	N/A

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### 517 Pole – Replace Anchor

- Used for damage to anchor rod or head or pull out of the anchor

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
Guy failure poses immediate and substantial threat to public safety and/or system reliability	Anchor rod has corroded substantially or is broken, or anchor has pulled out and is no longer functioning as a structural member, or a guy should be present but is not	Appreciable damage – failure may occur under extreme loading	Superficial damage – but will not fail in 5 years

### 518 Pole – Install Anchor

- Used when necessary anchor is missing

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
Damage poses immediate and substantial threat to public safety and/or system reliability	Damage is not an immediate threat to the integrity of the network or to public safety	N/A	N/A


### 519 Pole – Repair/Replace Guy Wire

- Used when a guy wire or its associated hardware, included fiberglass or wood rods, are in need of repair or replacement

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
Guy failure poses immediate and substantial threat to public safety and/or system reliability	Guy is broken or seriously compromised (e.g. broken strands)	Guy is currently structurally sound, but has been compromised by corrosion, damage, etc.	N/A

### 521 Pole – Tighten Guy Wire

- Used when a guy wire has gone slack, as from anchor pull out, structure movement, etc.

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
			
N/A	Slack guy is causing excessive structure deflection or overstress of other guys	Slack guy is not causing excessive structure deflection or overstress of other guys or the structure	N/A

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### 522 Pole – Replace Guy Shield

- Used when guy shield is damaged. Inspector should install a new one.

All Priority Level "P" Perform


### 524 Pole – Guy Not Bonded

- Used when guy bond is inadequate or missing

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
N/A	N/A	N/A	Guy not bonded

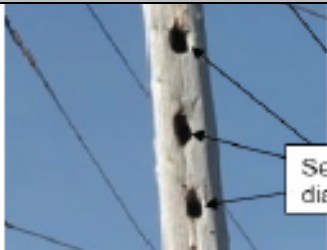
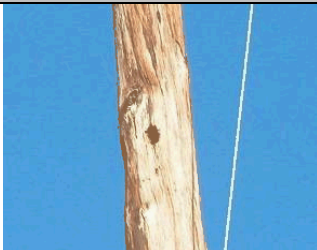

### 525 Pole – Lightning Damage

- Used when pole is damaged due to lightning.

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
			
Damage in Inspector's judgment poses immediate and substantial threat to public safety and/or system reliability	Non-serviceable Damage	Serviceable Damage	Superficial Damage

### 526 Pole – Woodpecker Damage

- Used when pole is damaged by woodpeckers creating nests in pole

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
			
N/A	Several Large (>5") Diameter Holes	Single Large (>5") Diameter Holes	Several Small (<5") Diameter Holes

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#### 527 Pole – Insects

- Used when pole is damaged by insects

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
Damage poses significant risk of imminent failure	N/A	N/A	All other noticeable damage

#### 528 Pole – Aerial Number Missing

- Used when aerial numbers are not installed where required

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
N/A	N/A	N/A	Aerial numbers are required at all road crossing, all structures ending in zero, and the first and last structures of a line.

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## **APPENDIX E – INDIVIDUAL WOOD POLE EVALUATION**

<b>901 Osmose – Identified Priority Pole</b>			
- Used to document pole identified as a priority reject on Wood Pole Groundline Inspection			
<b>Priority Level 1</b>	<b>Priority Level 2</b>	<b>Priority Level 3</b>	<b>Priority Level 4</b>
N/A	N/A	N/A	All
<b>902 Osmose – Identified Reject Pole</b>			
- Used to document pole identified as a reject on Wood Pole Groundline Inspection			
<b>Priority Level 1</b>	<b>Priority Level 2</b>	<b>Priority Level 3</b>	<b>Priority Level 4</b>
N/A	N/A	N/A	All
<b>903 Osmose – Inspect Excessive Check (not reject)</b>			
- Used to document pole identified as having excessive checking on Wood Pole Ground Line Inspection			
<b>Priority Level 1</b>	<b>Priority Level 2</b>	<b>Priority Level 3</b>	<b>Priority Level 4</b>
N/A	N/A	N/A	All
<b>904 Osmose – Climbing Inspection Required (not reject)</b>			
- Used to document pole identified as needing a climbing inspection on Wood Pole Ground Line Inspection			
<b>Priority Level 1</b>	<b>Priority Level 2</b>	<b>Priority Level 3</b>	<b>Priority Level 4</b>
N/A	N/A	N/A	All
<b>905 Osmose – No Inspection Tag</b>			
- Used to document pole that has no evidence of prior Wood Pole Inspections. Not required for poles under 10 years old.			
<b>Priority Level 1</b>	<b>Priority Level 2</b>	<b>Priority Level 3</b>	<b>Priority Level 4</b>
N/A	N/A	N/A	All

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## **APPENDIX F – STEEL POLE AND STRUCTURE EVALUATION**

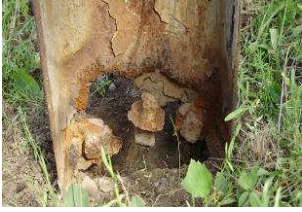


<b>531 Tower – Tower Legs Broken- Used when tower legs are broken</b>			
<b>Priority Level 1</b>	<b>Priority Level 2</b>	<b>Priority Level 3</b>	<b>Priority Level 4</b>
Leg damage which in Inspector's judgment poses immediate and substantial threat to public safety and/or system reliability	Leg damage which in Inspector's judgment poses a near-term risk to structure integrity	N/A	N/A
<b>532 Tower – Aerial Number Missing- Used when aerial numbers are not installed where required</b>			
<b>Priority Level 1</b>	<b>Priority Level 2</b>	<b>Priority Level 3</b>	<b>Priority Level 4</b>
N/A	N/A	N/A	Aerial numbers are required at all road crossing, all structures ending in zero, and the first and last structures of a line
<b>534 Tower – Loose Bolts/Hardware- Used loose or missing connections on hardware</b>			
<b>Priority Level 1</b>	<b>Priority Level 2</b>	<b>Priority Level 3</b>	<b>Priority Level 4</b>
			
Missing connections on members in judgment of Inspector pose an immediate and substantial threat to public safety and/or system reliability	Missing connections	Loose Connections	N/A
<b>535 Tower – Repair Anti-Climb- Used to repair anti-climb device</b>			
<b>Priority Level 1</b>	<b>Priority Level 2</b>	<b>Priority Level 3</b>	<b>Priority Level 4</b>
N/A	N/A	N/A	Anti-climbing device needs repair
<b>536 Tower – Vegetation on Tower</b>			
-Used when vegetation needs to be cleared from tower			
<b>Priority Level 1</b>	<b>Priority Level 2</b>	<b>Priority Level 3</b>	<b>Priority Level 4</b>
<b>All Priority Level "F" - Forestry</b>			

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### 537 Tower – Structure Damage

- Used for broken, bent or missing members on tower

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
			
Damage in judgment of Inspector poses and immediate and substantial threat to public safety and/or system reliability	Broken or nearly broken members	Damage/Excessive bending on minor members	N/A

### 538 Tower – Straighten Tower

- Used when tower is out of alignment

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
Leaning tower in judgment of Inspector poses immediate and substantial threat to public safety and/or system reliability	Substantial deflection, near-term risk to structural stability	Appreciable deflection, ability of tower to sustain extreme loading conditions may be compromised	Aesthetic only

### 539 Tower – Arms Damaged

- Used when the arms on a tower are damaged

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
Damaged arms in Inspector's judgment pose an immediate and substantial threat to public safety and/or system reliability	Arm damage poses a risk of failure under routine loading e.g. a near term risk of failure	Arm damage poses a risk of failure under heavy loading	Superficial damage only





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## Appendix G – Conductor and Line Hardware Evaluation

<b>541 Conductor – Bird Caging (Add comment – Bird Caging)</b>			
<b>- Used to rate conductor bird caging.</b>			
Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
N/A	N/A	N/A	 Bird Caging
<b>541 Conductor – Broken (Add comment – Broken Conductor)</b>			
<b>- Used to rate conductor damage.</b>			
<b>Note: TransLOME may revise priority levels based on an engineering evaluation of factors such as mechanical and electrical loading.</b>			
<b>230kV and Above</b>			
Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
 Any broken conductors	N/A	N/A	N/A
<b>115kV and Below</b>			
Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
 Significant percentage of broken strands	 Small percentage of broken strands	N/A	N/A

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#### 543 Conductor – Ground Wire

- Used for any damage to the ground leads on the structure

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
Ground wire damage in judgment of Inspector poses an immediate and substantial threat to public safety and/or system reliability; this includes a loose ground wire near the top of the pole which may be a risk to contact the conductor	Ground wire missing or disconnected/broken on 3 or more adjacent structures	Ground wire missing or disconnected/broken on isolated structures only, or ground wire is loose near the base of the pole where there is no risk of contacting the conductor	N/A

#### 544 Conductor – Sleeve/Connector

- Used for damage to splices or connectors on the shield/static wire or conductors

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
Failure in judgment of Inspector poses an immediate and substantial threat to public safety and/or system reliability	Visible physical damage to connector/splice/conductor	Visible corrosion at splice/connector	N/A

#### 546 Conductor – Under 25 Feet

- Used for substandard clearances and conductors with excessive sag.

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
Conductor poses significant risk of danger to the public	N/A	N/A	General Guidelines by Voltage: • 69kV – 115kV 25 ft • 230kV – 345kV 30 ft Clearances must meet requirements of latest National Electric Safety Code, as well as local requirements (e.g. MA CMR)

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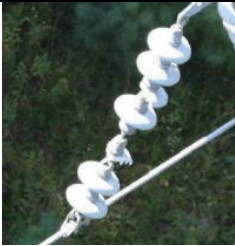


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### 551 Line Hardware – Insulator Damage

- Used for chipped or broken insulators

Insulators that are physically separated are Level 1

- NOTE: A chipped or cracked insulator (porcelain damage does not reach more than ½ way to the center of the insulator) is not be counted as a damaged insulator if damage is not severe. This is up to the inspector's discretion.

Number of Insulators in String	Number of Damaged Insulators of per String			
	Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
Any	Any Separation	N/A	N/A	N/A
5	2 or more	1	N/A	N/A
6	2 or more	1	N/A	N/A
7	3 or more	2	1	N/A
8	3 or more	2	1	N/A
9	3 or more	2	1	N/A
10	4 or more	3	2	1
11	4 or more	3	2	1
12	4 or more	3	2	1
13	4 or more	3	2	1
14	5 or more	3 or 4	2	1
15	5 or more	4	2 or 3	1
16	5 or more	4	2 or 3	1
17	6 or more	4 or 5	2 or 3	1
18	6 or more	4 or 5	2 or 3	1
19	6 or more	4 or 5	3	2 or less
20	6 or more	5	3 or 4	2 or less
21	7 or more	5 or 6	3 or 4	2 or less
Broken Insulators			Separated Insulators	
				

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### 552 Line Hardware – Insulator Plumb

- Used for insulators unintentionally out of plumb

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
			
N/A	N/A	N/A	Usually a sign of high amplitude conductor movement, galloping.

### 553 Line Hardware – Hardware Damage

Used for any damage to other line hardware

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
Hardware damage in Inspector's judgment poses and immediate and substantial risk to public safety and/or system reliability	Structural Hardware damage which poses a near-term risk to structural integrity	Structural Hardware damage, e.g. damaged connections	Cosmetic Damage

### 555 Line Hardware – Lightning Arrestor

Used when a lightning arrestor is damaged or has failed

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
N/A	Arrestor has failed. Lightning arrestors fail by disconnecting and falling away from the conductor	N/A	N/A

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## **APPENDIX H – FOUNDATION EVALUATION**


<b>563 Foundation – Erosion</b> <b>Used for any erosion around foundations</b>			
<b>Priority Level 1</b>	<b>Priority Level 2</b>	<b>Priority Level 3</b>	<b>Priority Level 4</b>
Erosion in Inspector's judgment poses and immediate and substantial risk to public safety and/or system reliability	Erosion is compromising structural integrity	Structure not yet at risk, but erosion appears to be progressing at a significant rate	Small erosion, may eventually become significant

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## **APPENDIX I – ROW / MISC. / SWITCH / GIS EVALUATION**

571 Right of Way – Erosion			
Used for any overall erosion in ROW			
Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
Erosion exposes counterpoise and presents a significant danger to public and/or vehicular traffic	Erosion exposes counterpoise and presents a danger to public	N/A	Any other ROW erosion, i.e. washed out road or culverts
572 Right of Way - Encroachments			
Used for any unapproved use of ROW or things too close to lines			
Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
N/A	N/A	N/A	 Any encroachments
573 Right of Way – Debris			
Used for any debris in ROW			
Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
N/A	N/A	N/A	Any debris in ROW blocking access
574 Right of Way – Danger Tree			
Used for any danger trees adjacent to lines			
REPORT ALL TO TRANSMISSION FORESTRY			
Voltage	Vertical or Lateral Clearance	All Priority Level “F” - Forestry	
23 – 46 kV			
69 kV			
115 kV			
230 kV			
345 kV			
575 Right of Way – Gate Broken			
Used for broken ROW gates			
Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
N/A	N/A	N/A	Broken Gate

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#### 576 Right of Way – Oil/Gas Leak

-Used for any oil, gas leaks or other foreign substances in ROW. Notify System Delivery immediately

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
			Oil/Gas found in ROW

#### 581 Misc – Stencil Line/Structure Number at Ground

- Used when line/structure number is missing. Inspector to stencil structure

Priority Level 1	Priority Level 2	Priority Level P	Priority Level 4
N/A	N/A	Inspector stencils number	Inspector cannot stencil number

#### 582 Misc – Switch Damaged

Used when switch is damaged

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
Visible arcing is present or condition could result in immediate failure.	Switch may fail, burning and other evidence of arcing	Switch may not be able to be operated, but likely won't fail and put the line out of service	Insignificant damage

#### 583 Misc – Damaged Switch Ground

Used for damaged switch grounds

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
N/A	Ground grid is exposed or lead is damaged	N/A	N/A

#### 584 Misc – Install/Replace Warning Sign

Used for damaged or missing warning signs. Warning signs required on both sides of all structures (2 signs total).

Priority Level 1	Priority Level 2	Priority Level P	Priority Level 4
N/A	Install warning signs at all structures that are adjacent to roads, regularly traveled pedestrian thoroughfares, or places where persons frequently gather (such as schools or public playgrounds)	Sign installed/replaced by Inspector	Install/replace signs at a low risk location where public interaction is not likely.

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#### 585 Misc – Replace Signs

Used for missing aerial structure signs. Aerial circuit and structure ID is required on all structures at road crossings, the first and last structures of a line, and all structures ending in zero.

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
N/A	N/A	N/A	Install/replace signs

#### 586 Misc – Remove Steps

Steps must be removed at least 10' from the ground line

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
N/A	N/A	N/A	Remove steps



#### 587 Misc – Add Dirt and Tamp

Used on poles when fill dirt is insufficient

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4

#### 589 Misc – Bird Nest

Used when bird nests are found on line

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
 <p>Bird nest in Inspector's judgment poses and immediate and substantial risk to public safety and/or system reliability</p>	N/A	 <p>Limited risk of bird contact but nest should be removed</p>	No risk of contact such as very small nests or those at bottom of structure.

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#### 589 Misc – Bird Perching

Used when bird perching could lead to problems

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
N/A	N/A	N/A	 <p>Birds perching on line or evidence of bird perching on line.</p>

#### 760 GIS – Map Does Not Match Field

Used when GIS map does not match field

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
N/A	N/A	N/A	Note error

#### 761 GIS – Equipment Stenciling in Error in GIS

Used when equipment labels do not match GIS

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
N/A	N/A	N/A	Note error

#### 762 GIS – Equipment/Hardware Missing in GIS

Used when equipment is missing in GIS

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
N/A	N/A	N/A	Note error

#### 763 GIS – Equipment Removed in field, Remove from GIS

Used when equipment has been removed from the field but not in GIS

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
N/A	N/A	N/A	Note error

#### 769 GIS – Other GPS/GIS Errors

Used for all other GIS errors

Priority Level 1	Priority Level 2	Priority Level 3	Priority Level 4
N/A	N/A	N/A	Note error

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### **Appendix J – COMPUTAPOLE CODES / PRIORITY LEVEL**

<b>Code</b>	<b>Description</b>	<b>Funding Notes: 6 &amp; 7</b>	<b>Default Level Notes: 1 thru 5</b>	<b>Valid Levels Notes: 1 thru 5</b>
501	Osmose – identified priority pole	C	3	2
502	Osmose – identified reject pole	C	3	3
503	Osmose – Insp excessive check (not reject)	C	4	4
504	Osmose – Climbing Insp req'd (not reject)	C	4	4
901	Osmose – identified priority pole	E	4	4
902	Osmose – identified reject pole	E	4	4
903	Osmose – Insp excessive check (not reject)	E	4	4
904	Osmose – Climbing Insp req'd (not reject)	E	4	4
510	Pole – Broken	C	2	1 2
511	Pole – Visual Rotting	C	3	1 4
512	Pole – Leaning	E	4	1 2 3 4
513	Pole – Replace Single Arm	C	3	1 2 3
514	Pole – Replace Double Arms	C	3	1 2 3
515	Pole – Repair Braces	E	3	1 2 3
516	Pole – Replace Braces	E	3	1 2 3
517	Pole - Replace Anchor	E	2	1 2
518	Pole – Install Anchor	C	3	1 2 3 4
519	Pole – Repair/Replace Guy Wire	E	3	1 2 3
521	Pole – Tighten Guy Wire	E	3	2 3
522	Pole – Replace/Install Guy Wire	E	P	P
524	Pole – Guy Not Bonded	E	4	4
525	Pole – Lightning Damage	C	3	1 2 3 4
526	Pole – Woodpecker Damage	E	3	2 3 4
527	Pole – Insects	E	3	1 4
528	Pole – Aerial Number Missing	E	4	4
531	Tower – Tower Legs Broken	E	2	1 2
532	Tower – Aerial Number Missing	E	4	4

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<b>Code</b>	<b>Description</b>	<b>Funding Notes: 6 &amp; 7</b>	<b>Default Level Notes: 1 thru 5</b>	<b>Valid Levels Notes: 1 thru 5</b>
534	Tower – Loose Bolts/Hardware	E	3	1 2 3
535	Tower – Repair Anti-Climb	E	4	4
536	Tower – Vegetation on Tower	E	F	F
537	Tower – Structure Damage	E	3	1 2 3
538	Tower – Straighten Tower	E	3	1 2 3 4
539	Tower – Arms Damaged	E	3	1 2 3 4
540	Conductor – Infrared Problem	E	3	1 2 3
541	Conductor – Conductor	E	3	1 2 3
542	Conductor – Static	E	3	1 2 3
543	Conductor – Ground Wire	E	3	1 2 3
544	Conductor – Sleeve/Connector	E	3	1 2 3
546	Conductor – Under 25 ft.	E	4	1 4
547	Infrared Problem Identified	E	2	1 2 4
551	Line HDW – Insulator Damaged	E	3	1 2 3 4
552	Line HDW – Insulator Plumb	E	4	4
553	Line HDW – Hardware Damaged	E	3	1 2 3 4
555	Line HDW – Lightning Arrestor	C	2	2
556	Line HDW – Infrared Problem	C	3	1 2 3
563	Foundation – Erosion	E	3	1 2 3 4
571	Right of Way – Erosion	E	4	1 2 4
572	Right of Way – Encroachments	E	4	4
573	Right of Way – Debris	E	4	4
574	Right of Way – Danger Tree	E	F	F
575	Right of Way – Gate Broke	E	4	4
576	Right of Way – Oil/Gas Leak	E	4	4
581	Misc – Stencil Line/Structure Number at Ground	E	P	4 P
582	Misc – Switch Damaged	E	3	1 2 3 4
583	Misc – Damaged Switch Ground	E	2	2

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<b>Code</b>	<b>Description</b>	<b>Funding Notes: 6 &amp; 7</b>	<b>Default Level Notes: 1 thru 5</b>	<b>Valid Levels Notes: 1 thru 5</b>
584	Misc – Install/Replace Warning Sign	E	4	4 P
585	Misc – Replace Signs	E	4	4
586	Misc – Remove Steps	E	4	4
587	Misc – Add Dirt and Tamp	E	3	3 4
588	Switch – Infrared Problem	E	3	1 2 3
589	Misc – Bird Nest	E	3	1 3 4
590	Misc – Bird Perching	E	4	4
760	GIS – Map Doesn't Match Field	E	4	4
761	GIS – Equip. Stenciling In Error	E	4	4
762	GIS – Equip/Hardware Missing	E	4	4
763	GIS – Equip. Removed in Field	E	4	4
764	Remove from GIS	E	4	4
769	GIS- Other GPS/GIS Errors	E	4	4

#### Notes

1. Level 1 code:
  - Do not enter STORMS
  - The defect shall be reported immediately
  - The work shall be completed within a week
  - A confirming work order shall be used to track costs
2. Level 2 and 3 codes:
  - Pass through STORMS and Design
3. Level 4 code:
  - Are for notation only
  - Do not enter STORMS
4. Level P code:
  - Defect corrected by the inspector
5. Level F code:
  - Go to Forestry

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6. E is Expense

7. C is Capex

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