6 SPUN CONCRETE POLE

6.1 Definitions

Spun concrete poles are high mast prestressed precast concrete poles used to support ITS infrastructure such as cameras and radar detectors. They do not have standard concrete foundations and are embedded in soil and sometimes with the addition of a cast in place concrete skirt.

Other common terms which may be used when discussing a spun concrete pole include:

- **Arm:** A cantilevered support, either horizontal or sloped.
- **Tenon:** A pole adapter projecting from top of the pole and used for fitting accessories such as cameras or lighting units.

6.1.1 INVENTORY ITEMS

The inspector shall confirm the height of the vertical structure measuring from the base of the structure and identify the number of cameras and other appurtenances attached to the pole. The inspector shall note if a camera lowering device is attached. Also, connectors used to attach appurtenances to the pole should be identified.

Take photos of the required inventory items listed in Section 6.2.2.

A complete list of inventory items is provided in the Ancillary Structures Data Dictionary.

6.1.2 ELEMENTS

Spun Concrete Poles have one component: Vertical Structure.

The Vertical Structure is divided into elements: Pole and Foundation, Vertical Structure Connections, and Camera and Camera Arm.

Elements are assigned a condition state described in Section 6.7 based on the distresses identified in each element.

The following guidelines for consistent location notation provide the framework for rating a sign element in accordance with the condition rating tables.

- **Vertical Structure Locations** – Distress locations along the vertical support are referenced by using offsets measured from top of foundation (if exposed) or grade as measured in feet or inches from prominent features (e.g., vertical structure connections).

Table 6-1: Spun Concrete Pole Components and Elements

Component	Element	Element Code	Unit of Measure
Vertical Structure	Pole and Foundation	16101	Length, feet
Vertical Structure	Vertical Structure Connections	16102	Each
Vertical Structure	Camera and Camera Arm	16103	Each

6.1.3 COMPONENTS

Spun Concrete Poles have one component: Vertical Structure.

Component rating for spun concrete pole is based on:

- ***Vertical Structure*** – Consider if the vertical structure may have damage that compromises the structural capacity such as cracking, spalls, abrasion, or lack of foundation support.

A representation of the rating structure for spun concrete poles is provided in Figure 6-1. A graphic indicating the components and elements is shown in Figure 6-2.

Figure 6-1: Rating structure for Spun Concrete Poles

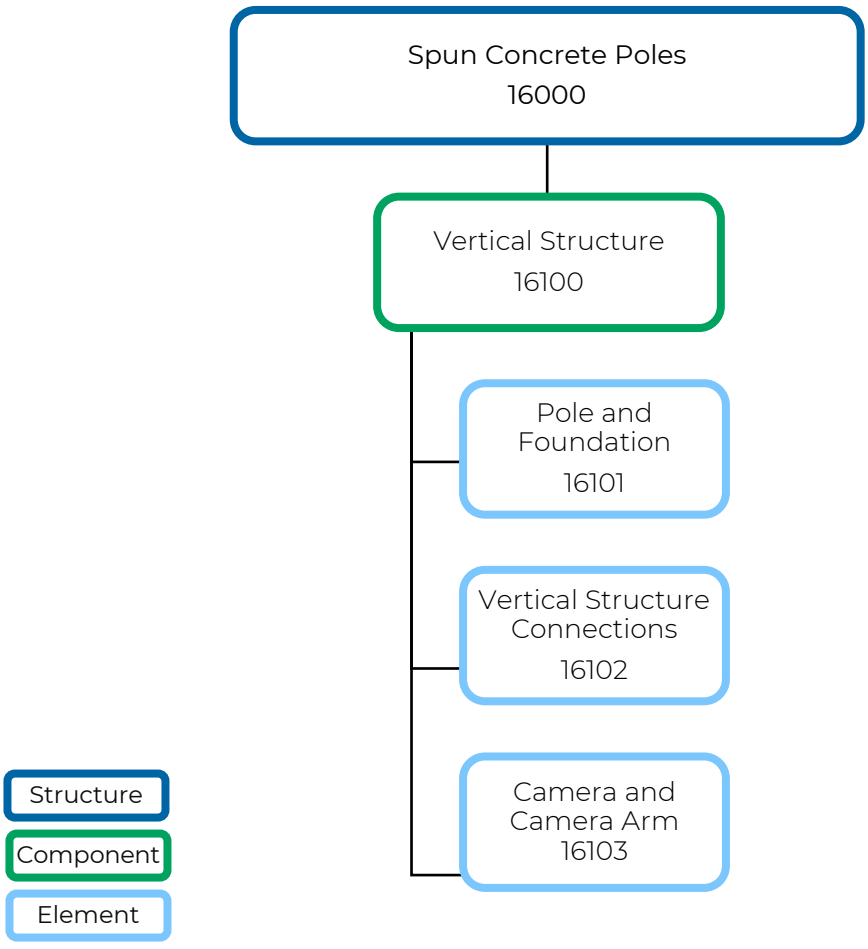
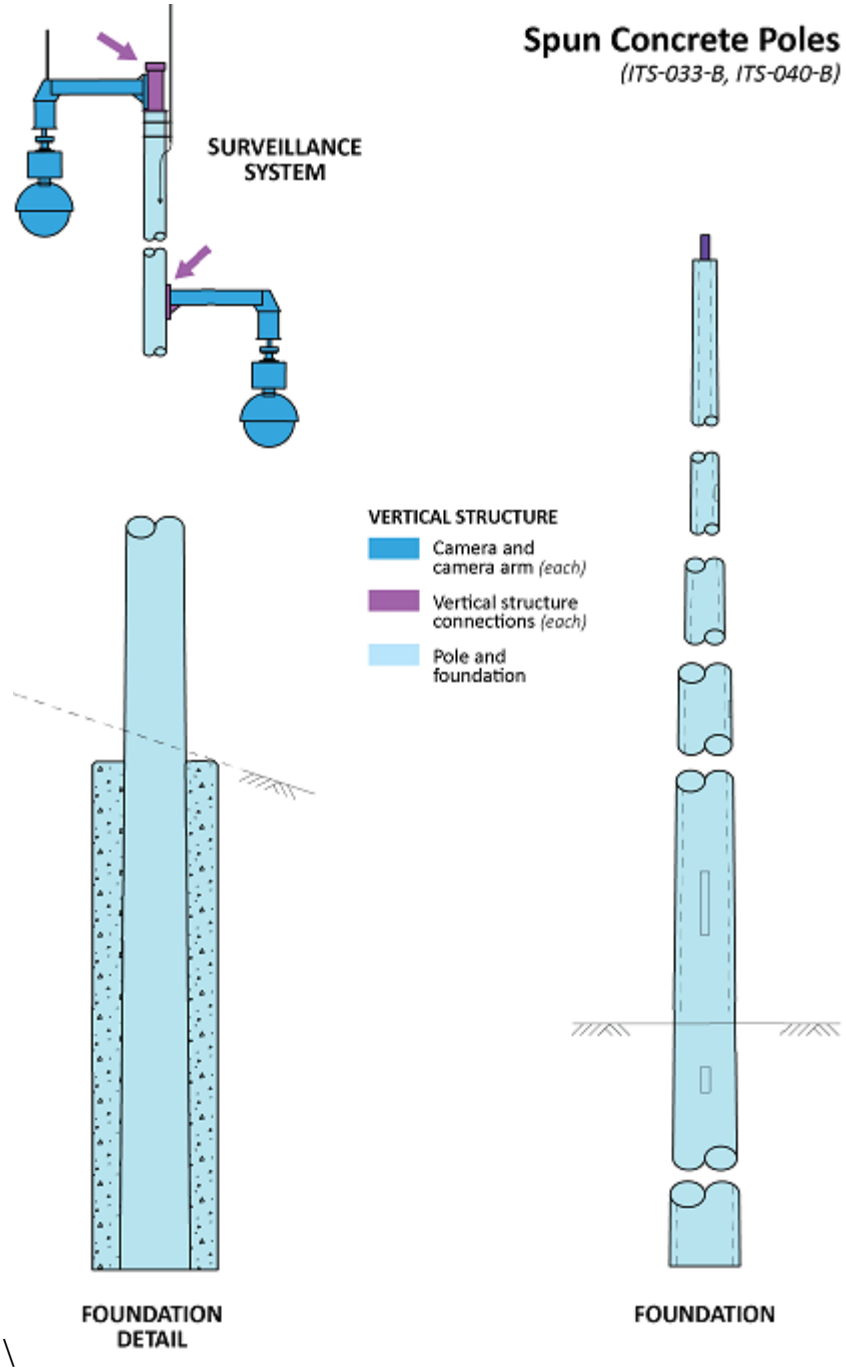


Figure 6-2: Elements and component for Spun Concrete Poles (adapted from MDOT Standard ITS-033-B, ITS-040-B)



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6.2 Inventory Record Photographs

Inventory photos are captured during a routine inspection, saved as part of the inventory database, and follow the naming convention in *Table 6-2*.

Spun Concrete Poles Required Photos:

- General view of the entire pole

- Each foundation (if applicable)
- General view of guy wires (if applicable)
- Structure number stenciled on support
- Manufacturer plate (if applicable)

Table 6-2: Spun Concrete Pole Photograph Naming Convention

*The # in photo naming convention should reflect the sequential number ranging from 1-x. One image is acceptable if all connections can be captured in a single image that provides enough detail to determine connection type and bolts/nuts. If this level of detail cannot be obtained in a single image, multiple photos are necessary to provide required level of visibility.

Photo Name	Description
SCPole_Entire	Entire spun concrete pole
SCPole_V#*_Connection	Vertical connection
SCPole_Foundation	Foundation
SCPole_Att	Camera and camera arm
SCPole_ID	Old ID and New ID
SCPole_Mfr_Plate	Manufacturer Plate

6.3 Inspector Minimum Technical Qualifications

At least one member of the field inspection crew shall possess the following certifications and training:

- Ancillary structures inspection procedures training.
- Working knowledge of inspection tools, their use, application, and limitations for the structure type being inspected.
- Inspection experience with anticipated material types such as concrete or steel. Internal training will address inspection procedures for all anticipated material types.
- Inspection and activities for prestressed structures will require minimum experience of ten structures combined concrete inspection, steel inspection, or design experience (bridge inspection qualifies). At least three of the ten inspected structures shall be concrete structures.

6.4 Routine Inspection

Spun concrete poles are used to support cameras and radar detectors. Damage or deterioration of the structures may impact safety of road users and function of the structure and appurtenances being supported. Similar to embedded poles, they are embedded directly in the soil. The interaction between the pole structure and adjacent soil plays a key role in assessing the overall condition of the asset.

Spun concrete pole standard inspection frequency is once every 4 years, unless otherwise identified for more frequent inspection.

The acceptable tolerance for intervals of less than 24 months for the next inspection is up to two (2) months after the month in which the inspection was due. The acceptable tolerance for intervals of 24 months or greater for the next inspection is up to three (3) months after the month in which the inspection was due. Exceptions to the inspection interval tolerance due to rare and unusual circumstances should be approved by MDOT's Ancillary Structures Program Manager in advance of the inspection due date plus the above tolerances.

It is recognized that severe weather, inspector safety, inspection quality, resource optimization, technological difficulties, or other unique situations may be a reason to adjust the scheduled inspection date. In these situations, the adjusted inspection date should not extend more than two (2) months after the month the inspection was due for any inspection interval less than 24 months and not extend more than three (3) months after the month the inspection was due for any inspection interval 24 months or greater. Inspection interval tolerances are intended to provide some flexibility. When tolerances are applied, the longest time period prescribed between inspections is the applicable interval plus the prescribed tolerance. For example, a routine inspection on a 12-month interval could be performed during the 14th month if the tolerance is applied. Repeatedly applying the tolerance to the next inspection will create inspection date creep and may impact an owner's ability to perform future inspections in a timely manner due to other limitations (e.g. available resources, inspection workload, schedule, seasonal weather conditions, technological difficulties, etc.). Exceptions to inspection interval tolerances due to rare and unusual circumstances should be approved by MDOT's Ancillary Structures Program Manager in advance of the inspection due date, plus the tolerance. For example, if an inspection with an interval of 24 months is due on June 17, an exception request should be approved by MDOT's Ancillary Structures Program Manager before the end of the 3-month tolerance (i.e. September 30). However, a request for exception should be made when the potential for not meeting the tolerance becomes known to provide MDOT's Ancillary Structures Program Manager with adequate time for review and approval.

Figure 6-3: Spun Concrete Pole

The uprights support the camera and camera arm, or other attachments. The routine inspection assesses the vertical structure's ability to safely support the attachments and transfer all loads to the foundation. The routine inspection is performed on a regularly scheduled basis, with frequency determined by the structure inspection needs, and includes the vertical structure component rating as determined by the pole and foundation, vertical structure connections, and camera and camera arm element condition ratings. It consists of observations and measurements needed to determine the physical and functional condition of the vertical structure and connections, to identify any changes from initial or previously recorded conditions, and to ensure that the vertical structure and connections continue to satisfy present service requirements. All elements of the component shall be visually inspected at a distance that is close enough to determine the overall condition and to detect deficiencies. Binoculars are used as a visual aid if closer access with equipment or climbing is not available.

A sample routine inspection of the vertical structure would consist of:

- Inspect the general site conditions and assess the global stability of the structure and its operational function.
- Check around the base of the pole for erosion or soil displacement. Check for grading issues that could result in drainage toward the pole. If the pole is embedded in concrete inspect the concrete for deficiencies such as cracks and spalls, and for any voids between concrete and soil.
- Inspect the weep holes to ensure that they are clear of debris that could prevent the pole from draining.
- If sidewalk or other material covers the embedment material check for signs of separation, settlement, or cracking at the surface.

- Check the inventory label affixed to the pole facing approaching traffic for legibility. Install a new inventory number label if no label exists or the label is in poor condition.
- Inspect the vertical alignment of the pole with a 4 ft level or similar. Note that some poles may be tapered and checking at several points around the perimeter at the same elevation may be necessary to obtain the complete picture of any misalignment.
- Check for cracks, spalls, or any other deterioration, noting the size of deficiencies.
- Check for signs of vehicle damage, noting that impact in one location may affect the structure in other locations as well.
- Inspect the connection to the pole of the horizontal structure – span wires and arms. This includes band clamps, brackets, and other bolted assemblies. Check for connections that are loose, missing, deteriorated or otherwise deficient.
- Provide photographs for all Poor or Severe condition state defects and submit the applicable Work Recs or RFAs.

Table 6-3 provides guidance for inspecting reinforced and prestressed concrete cracking.

Table 6-3: Standard Cracking Widths

Description	Reinforced Concrete	Prestressed Concrete
Hairline (HL)	<1/16” (0.0625”)	< (0.004”)
Narrow (N)	1/16” to 1/8” (0.0625” to 0.125”)	(0” to 0.009”)
Medium (M)	1/8” to 3/16” (0.125” to 0.1875”)	(0.010” to 0.030”)
Wide (W)	>3/16” > (0.1875”)	> (0.03”)

Source: FHWA Bridge Inspector’s Reference Manual (Publication No. FHWA NHI 03-001, October 2002)

6.4.1 VERTICAL STRUCTURE COMPONENT RATING

The component rating for the vertical structure depends on the condition of the pole and foundation, vertical structure connections, and the camera and camera arm connection. Assessing these factors with respect to the overall ability of the vertical structure to safely support all attachments and transfer loads to the foundation provides the appropriate component rating.

Table 6-4: Component Rating Guidelines for Spun Concrete Pole Vertical Structure

Component Rating	Condition	Material	Description
9	NEW	All	No deficiencies in any of the structural components that will affect long term performance.
8	VERY GOOD	All	All structural components are sound and functioning as designed. There may be superficial cracking or weathering of protective components and/or dirt contamination of structural components.
7	GOOD	Concrete	Insignificant cracks or moderate cracks that are sealed.
		Soil	Insignificant displacement or erosion of soil.
		Steel	Protective coating failure in very small and scattered locations.
6	SATISFACTORY	All	All components retain full section properties and function as designed.
		Concrete	Unsealed moderate-width or map cracks. Minor delamination or spalling.
		Soil	Minor displacement or erosion of soil.
		Steel	Protective coating failures is limited to less than 10% of the surface area with no loss of section.
5	FAIR	All	Minor deterioration affecting structural components. Minor misalignment.
		Concrete	Moderate delamination or spalling.
		Soil	Moderate displacement or erosion of soil. Minor gaps may be present between pole and embedment material.
		Steel	Minor loss of section. Loose fasteners may be present, but the connection is in place and functioning as intended.
		All	Moderate deterioration affecting structural components including minor settlement, or impact damage. Moderate misalignment. All members continue to function as designed.
4	POOR	Concrete	Considerable cracking and spalling.
		Soil	Considerable displacement or erosion of soil.
		Steel	Protective coating failure and less than 25% loss of section. Cracks may be present. Fasteners may be considerably deteriorated. Considerable impact damage.

Component Rating	Condition	Material	Description
3	SERIOUS	All	Considerable deterioration or misalignment affecting structural members. Structural review may be warranted.
		Concrete	Extensive cracking and spalling.
		Soil	Extensive displacement or erosion of soil. Large gaps may be present between pole and embedment material.
		Steel	Measurable loss of section in excess of 25%. Missing or broken fasteners or extensive cracking in pole.
		All	Considerable deterioration or damage affecting structural members. Structural evaluation, is necessary to determine if the structure can continue to function without repairs.
2	CRITICAL	All	Deterioration has progressed to the point where the structure will not support design loads and emergency repairs, or removal is required.
1	IMMINENT FAILURE	All	Road is closed to traffic due to imminent failure, but corrective action may put it back in service.
0	FAILED	All	Road is closed due to condition. Notify Region and the Bureau of Bridges and Structures.

6.4.1.1 Pole and Foundation Element Condition States

Verify that the structure number label is affixed on the front of the pole (facing approaching traffic) and is still legible. If necessary, create and install a new inventory label on the pole. Note any cracking, spalling or other defect on the pole and the degree if any. Inspect the handhole for missing or loosely fastened cover, cracks in the welds or base materials, and for excess moisture and debris. Unless a mechanical lift or climbing or other means of working at heights (i.e., UAS) are utilized, binoculars are used as a visual aid to inspect the tops of pole. If any type of impact damage is present (gouges, dents) clean the area and visually inspect for any cracks. Using a 4-ft level, check the plumbness of the pole in every direction and note any lean in the structure (e.g., 1/4” in 4ft away from traffic, towards traffic, with or against traffic). Inspect the condition of the soil foundation, noting any gap between pole and soil, erosion, settlement, grading issues, or other defect around the foundation/footing. Check the weep holes to ensure that they are clear of debris that could prevent the pole from draining.

Figure 6-4: Sound patch area

Figure 6-5: Crack with rusted rebar water leakage

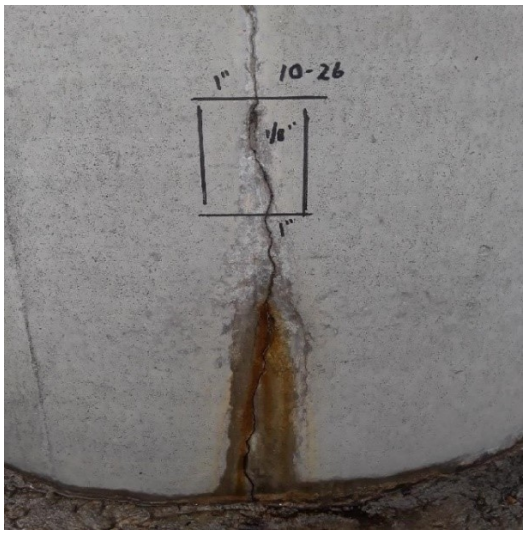

Figure 6-6: Spalls (left), major cracking and spalls (right)

Table 6-5: Spun Concrete Pole, Pole and Foundation Element Distresses

Unit of Measure: Length, feet along member which apply to each condition state

Element Number	Element	Description	Associated Distresses
16101	Pole and Foundation	Concrete pole in soil foundation	Misalignment or out of plumbness
			Erosion or settlement
			Concrete cracking, delamination, spalling or abrasion
			Handhole Defects
			Impact damage

Details on the condition state rating schema are in Section 6.7, linked below:

Spun Concrete Pole Condition State Tables

6.4.1.2 Vertical Structure Connections Element Condition States

Most connections are either made using tenons, band clamps, or bolts. Tenons are mostly used for camera arm attachments. Visually inspect the attachment and identify any corrosion or section loss. Note tenon misalignment and check for loose, missing, or broken tenon or tenon cap. Band clamps are used to support metal enclosures and other appurtenances.

Visually inspect any band clamp connection and identify any loose, cracked, or broken band clamp. Check clamping long bolt, washer, and nut for breaks, misalignment, looseness, or gap. Also identify any corrosion or section loss on band clamp or the clamping bolt and nut. For bolted connections, visually inspect the arm connection to the vertical support. Identify any missing flat washers. Look for fully compressed lock washers, when

present, and note any that are not. Check for misalignment of the bolts. Identify and measure any gaps between the nut or the head of the bolt and the washer. Note any gaps between the bolted flanges, loose, or missing hardware, missing caps, and cracks at the ends of gusset plates. Using a 16- to 24-oz hammer, hit the nuts on the flat portion, in multiple directions if possible, listening for a dull sound or a sharp ringing sound. A dull sound may indicate that the nuts are not properly tightened or that the bolt is cracked or broken. While sounding, look for any shift of the bolt within the bolt hole or movement of the nut. Note any signs of corrosion.

Figure 6-7: Band clamp connection to metal enclosure

Table 6-6: Spun Concrete Pole Vertical Structure Connections Element Distresses

Unit of Measure: Each connection quantity within the condition state

Element Number	Element	Description	Associated Distresses
16102	Vertical Structure Connections	Bracket assemblies, tenon mounts, pole band clamps, stainless steel straps, through bolts, or other connections to poles	Weld defects or cracks
			Corrosion or coating damage
			Loose, missing, or failing hardware

Details on the condition state rating schema are in Section 6.7, linked below:

Spun Concrete Pole Condition State Tables

6.4.1.3 Spun Concrete Pole Camera and Camera Arm Element Condition States

Visually inspect the camera and camera arm for any loose, missing, cracked, ruptured or broken arm or camera head. Check for loose or missing end cap and identify any danger of falling camera. Check for corrosion and peeling. Note any galvanizing damage and the degree, if any, of corrosion on the base metal. If nothing of note was found, spray “cold galvanizing” compound or zinc-rich paint on any area where galvanizing was removed.

Binoculars are used as a visual aid to inspect arms or truss members when closer access with equipment or climbing is not possible.

Table 6-7: Spun Concrete Pole Camera and Camera Arm Element Distresses

Unit of Measure: Each camera and camera arm within the condition state

Element Number	Element	Description	Associated Distresses
16103	Camera and Camera Arm	Camera, fixtures and assemblies, and camera arms	Broken camera, arm, or assembly
			Damaged or cracked housing, cover
			Corrosion or section loss
			Weld cracks/defects
			Deteriorated gasket/seal

Details on the condition state rating schema are in Section 6.7, linked below:

Spun Concrete Pole Condition State Tables

REFERENCES

MDOT Traffic and Safety Standards and Special Details

ITS-033-series Spun Concrete Pole

6.5 Work Recommendation Guidance

Spun concrete pole Work Recs are recorded to initiate preventive maintenance actions. Preventive maintenance needs are determined for each ancillary structure and the corresponding actions are identified on the Work Recs documentation.

Work Recs include maintenance such as patching delamination or spalls, repairing or monitoring foundation and erosion, repairing, or replacing the handhole cover, epoxy crack injection, tightening loose bolts, and replacing pole band. Other Work Recs may not affect the stability of the structure such as repairing protecting guardrail or removing graffiti.

The Work Recs are not meant to be all-inclusive and other Work Recs may be added to supplement those noted.

Photographs should include sufficient information to determine the relationship of the defect to the element or component or entire structure. Close -up photos of each defect with connection deficiencies marked on the photo should be provided.

Table 6-8: Spun Concrete Pole Work Recommendations

Code	Description of Work Recommendation	Material involved	Quantity/Unit of Measure
1	Repair guardrail (protecting pole)	Galvanized Steel	Linear Feet
2	Repair/monitor foundation	Concrete	Cubic Feet
3	Correct erosion or grading	Stone/Soil	Cubic Feet
4	Repair/replace handhole cover	Galvanized Steel	Each Cover
5	Epoxy crack injection	Epoxy	Lineal Foot
6	Patch delamination or spalls	Concrete	Square foot
7	Address loose connections	N/A	Each Connection
8	Remove graffiti	N/A	Square Foot
9	Replace pole band	Stainless Steel	Each Band
10	Replace misc. attachment	Various	Each
11	Clear out weep holes	N/A	N/A
12	Remove debris from inside of pole	N/A	N/A
13	Remove non-MDOT or unauthorized attachments to structures	Various	Each item

6.6 Request for Action Guidance

Examples of applicable priority level items include, but are not limited to:

Priority 1 Level Items

a. Major cracking/spalling/delamination of the pole embedment concrete, which impacts the capacity or short-term resiliency of the structure

b. Major soil erosion or undermining of the pole evidenced by lateral displacement and/or out of plumbness

c. Major vertical misalignment and/or sweep of the pole

d. Major concrete cracking/spalling/delamination present in the pole wall, which impacts the capacity or short-term resiliency of the structure

e. Exposed prestressing strand(s) with major corrosion and section loss

f. Major foundation deterioration including concrete cracking/spalling/delamination, thread damage, steel reinforcement corrosion, anchor bolt corrosion, ultrasonic test failure, failure of anchor bolts, and significant section loss of steel reinforcement or anchor bolts

Priority 2 Level Items

a. Significant cracking/spalling/delamination of the pole embedment concrete causing significant impact to capacity or durability

b. Significant soil erosion or undermining of the pole and embedment

c. Pole is significantly out of vertical alignment or has significant sweep

d. Significant concrete cracking/spalling/delamination present in the pole wall causing significant impact to capacity or durability

e. Isolated exposed prestressing strand with significant corrosion and section loss

Priority 3 Level Items

a. Moderate cracking/spalling/delamination of the pole embedment concrete causing moderate impact to capacity or durability

b. Moderate soil erosion or undermining of the pole and embedment

c. Pole is moderately out of vertical alignment or has moderate sweep

d. Moderate concrete cracking/spalling/delamination present in the pole wall causing moderate impact to capacity or durability

e. Isolated exposed prestressing strand(s) with surface corrosion

f. Major soil erosion or undermining of the foundation element evidenced by lateral displacement or vertical out of plumbness

g. Major corrosion, section loss or failure of high strength bolts where load-path redundancy is minimal

h. Major base plate distortion or section loss around anchor bolts

i. Multiple loose or missing bolts in a high strength bolted connection, anchor bolt connection, or sign connection

j. Multiple loose or missing bolts where connections do not have load-path redundancy and bolt tensioning is not possible

k. Standoff distance more than twice the bolt diameter, where bending of anchor bolts is evident

l. Major cracks present in the base metal or weld(s) on the base plate to column connection or for single column supports or the column to cantilever arm connection

m. Cracking in single column supports at gusset plate welds where the cracking is major, or when minor cracking at gusset plate welds is present at two or more gusset plates in a connection

n. Major section loss due to corrosion of a main element which impacts the capacity or short-term resiliency of the element or structure

6.7 Element Condition States

Element Number	Element	Condition States Defects Note	Link to Discussion in Section 6
16101	Pole Embedment	Use the appropriate condition state table	Pole and Foundation Element Condition States
16102	Vertical Structure Connections	Use the appropriate condition state table. Use UT testing result to assist in the condition assessment	Vertical Structure Connections Element Condition States
16103	Camera and Camera Arm	Use the appropriate condition state table	Spun Concrete Pole Camera and Camera Arm Element Condition States

Element 16101 – Pole and Foundation

Description	This element is defined as the concrete pole above the soil and embedded below the soil surface			
Quantity Calculation	The quantity is collected in length in feet along member.			
	Condition State Descriptions			
Defect Type	**Good**	**Fair**	**Poor**	**Severe**
Pole Embedment	Embedment material is compact, well graded, and provides adequate pole support.	Minor erosion of the embedment soil may be present at the groundline. Minor cracks and spalls may be present in the embedment concrete.	Moderate embedment erosion is present, or embedment soil is loose. Moderate cracks and/or spalls may be present in the embedment concrete. The conditions do not significantly affect serviceability and/or function.	Major embedment erosion is present. Major spalling, cracking, deterioration of the embedment concrete. The element conditions have majorly affected the serviceability or integrity of the structure.
Misalignment and Plumbness	Pole is plumb, no evidence of misalignment.	Pole may be slightly out of plumb, but serviceability and function are unaffected.	Pole may be moderately out of plumb. The condition does not significantly affect serviceability and/or function.	Pole is majorly out of plumb. The condition has affected the serviceability or integrity of the structure.
Concrete Cracking	Insignificant cracks or moderate-width cracks that have been sealed. No exposed steel reinforcing or prestressing strand.	Unsealed moderate-width cracks or unsealed moderate pattern (map) cracking. Steel reinforcement may be exposed without measurable section loss present.	Wide cracks or heavy pattern (map) cracking. Steel reinforcement is exposed with section loss present. Prestressing strand may be exposed.	Major deterioration due to extensive cracking. Major corrosion of exposed reinforcing and/or prestressing strand.
Concrete Spalling, Delamination, Patching	No evidence of concrete spalling, delamination, or patching.	Minor delamination is present. Patched areas are sound.	Moderate delamination is present. Patches partially functioning or showing distress.	Major deterioration due to spalling, or delamination. Failed patches.

Description	This element is defined as the concrete pole above the soil and embedded below the soil surface			
Quantity Calculation	The quantity is collected in length in feet along member.			
	Condition State Descriptions			
Defect Type	**Good**	**Fair**	**Poor**	**Severe**
Concrete Abrasion/Wear	No evidence of concrete abrasion or wear.	Abrasion or wearing has exposed coarse aggregate.	Abrasion or wearing has caused coarse aggregate to be loose and/or lost from the concrete matrix.	Major deterioration of concrete due to abrasion or wear.
Other Concrete Defects	Other concrete defects are present and do not exhibit deterioration or distress.	Minor deterioration or distress of other concrete defects.	Moderate deterioration or distress of other concrete defects.	Major deterioration or distress of other concrete defects.
Impact Damage	No damage caused by vehicular impact.	The element has minor damage caused by vehicular impact.	The element has moderate damage caused by vehicular impact.	Impact damage is major and affects the integrity of the structure.
Handhole Defects	Handhole cover and attachment to pole is securely fastened. The inside of the pole is free of excess moisture, and debris.	Handhole cover is in place but loosely fastened or minimally damaged. Handhole attachment to pole may have minor deficiencies. The inside of the pole may contain minor moisture and debris.	Handhole cover is moderately damaged or missing fasteners. Handhole attachment to pole may have moderate deficiencies. Moderate amounts of moisture and debris may be present inside the pole	Handhole cover is missing or majorly damaged. Handhole attachment to pole is failing. Major amounts of moisture and debris are present inside the pole.

Element 16102 – Vertical Structure Connections

Description	This element consists of the connections along the spun concrete pole for various attachments. Connections may include bracket assemblies, tenon mounts, pole band clamps, stainless steel straps, through bolts, or other connections to poles.			
Quantity Calculation	The quantity to be collected includes each connection location.			
	Condition State Descriptions			
Defect Type	**Good**	**Fair**	**Poor**	**Severe**
Vertical Structure Connection Defects	Connection hardware is functioning as intended with no evidence of wear or corrosion.	Minor surface corrosion, wear, or superficial damage may be present. Connection hardware is functioning as intended.	Moderate corrosion/ section loss or wear is present. Hardware may be loose, but the conditions do not significantly affect serviceability and/or function.	Major corrosion/section loss is present. Protective coatings are significantly failing. Members may have cracks/defects or major wear. Hardware is loose or missing. Element is not functioning as intended.

Element 16103 – Camera and Camera Arm

Description	This element is defined as the camera, fixtures and assemblies, and camera arms			
Quantity Calculation	Quantity is collected as each camera arm and its associated devices.			
	Condition State Descriptions			
Defect Type	**Good**	**Fair**	**Poor**	**Severe**
Camera and Camera Arm Defects	Camera and camera arm, or mounting device do not have evident wear or corrosion and are functioning as intended.	Minor wear or corrosion of the elements may be present. The elements are functioning as intended.	Element may have moderate deterioration, cracks, or corrosion. End cap may be loose and camera head may be loosely connected to the arm but not in danger of falling.	Element has major deterioration, corrosion, or cracks. Camera head or arm is ruptured or broken. Hardware is loose or missing. Camera head may be in danger of falling.