# IDAHO MANUAL FOR INSPECTION OF STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, HIGH MAST LUMINAIRES AND TRAFFIC SIGNALS

## 4th EDITION 2020

**IDAHO MANUAL FOR INSPECTION OF STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, HIGH MAST LUMINAIRES AND TRAFFIC SIGNALS**

**SECTION 1:**

# INTRODUCTION

## 1.1—PURPOSE

This manual should provide inspectors with a basic understanding of structural support types and their components, inspection requirements, and reporting procedures. This manual is intended to augment the FHWA *Guidelines for the Installation, Inspection, Maintenance and Repair of Structural Supports for Highway Signs, Luminaires, and Traffic Signals* (2005) with State specific requirements. This manual governs in cases where requirements differ.

## 1.2—STRUCTURAL SUPPORT DEFINITION

The Idaho Transportation Department structural support inspection program encompasses structures located on State maintained roadways as well as on spurs and connectors to the State highway system as well as structures located within State maintained Port of Entries and rest areas. Unless specifically excluded, any structure capable of supporting signs over the traveled way (including shoulders) that is within the jurisdiction of the Department requires inspection. Inspection of railroad owned crossing structures is not required.

For intersections where multiple structures share a support or base include the inspection information, photos, and quantities for each structure. This will require double counting quantities and defects and including the same photographs for multiple structures. A separate inspection report is required for each direction of travel for those structures spanning across multiple directions and having a median post.

## 1.3—STRUCTURAL SUPPORT TYPES

Structural Supports include five main groups:

Sign bridges
Cantilevers
Signal mast arms
Structure-mounted signs
High mast luminaires

### 1.3.1—Sign Bridges

The sign bridge group includes multiple-post structures such as overhead steel bridges, dynamic (variable) message signs and signal spans.

### 1.3.2—Cantilevers

The cantilever group includes single-post structures such as simple span and butterfly span cantilevers and dynamic (variable) message signs. Butterfly span cantilevers are typically installed at a median location with two spans, each serving opposing directions of travel. Cantilevers located behind guard rail and having spans directed away from the traveled way do not require inspection.

### 1.3.3—Signal Mast Arms

Signal mast arms include single post installations that may or may not have luminaires.

### 1.3.4—Structure-Mounted Signs

Structure-mounted sign installations are located on bridges or grade separators. Grade separators may be an underpass

or overpass structure, including railroad trestles, having signs bolted directly to a girder or parapet or other structural member or having the framework for attaching such a sign(s) over the traveled way (i.e. the bridge acts as the structural support). In the case where a sign bridge, cantilever, signal mast arm, or high mast luminaire is attached to a bridge and goes over the bridge roadway that structural support is assigned by its type and noted that the base attaches to a bridge. No inspection is required of structures without overhead sign support framework or overhead signs bolted directly to the structure over the traveled way.

**1.3.5—High Mast Luminaires**

High Mast Luminaires are lighting attached to a truss-type or pole-type tower that provides lighting at heights greater than 55 feet. Poles are typically segmental and luminaires are capable of being lowered for maintenance.

**SECTION 2:**

# INSPECTION PERSONNEL

## 2.1—INSPECTOR QUALIFICATIONS

The Inspector is responsible for the examination, identification and reporting of any deterioration, malfunctions or potential hazard associated with the structures inspected. Inspections are performed by a qualified team leader meeting one of the following qualifications:

1) Licensed Professional Engineer.
2) Qualified for registration as a Professional Engineer under Idaho law.
3) NBIS qualified bridge inspector.
4) Approved by the BAME

## 2.2—INSPECTOR RESPONSIBILITIES

The Inspector shall proficiently perform computer data input procedures in a field environment.

The primary responsibilities of the Inspector are to:

- Schedule and prepare each inspection project including safety procedures and briefings.
- Perform field inspections in a professional and safe manner.
- Document all findings and report any critical deficiencies immediately to the appropriate District office and coordinate action on critical structural deficiencies with Consultant and District.
- Record all required structural data, actions and recommendations into the provided database.
- Obtain and provide electronic diagrams and photographs as necessary.

## 2.3—DATABASE ADMINISTRATORS RESPONSIBILITIES

The primary responsibilities of the Data Administrator are to:

- Coordinate software training with the Consultant.
- Coordinate technical support of the structural support software with the software vendor.
- Provide Functional class and ADT for all roadways for all structures
- Review inspection reports and maintain inspection database.

**SECTION 3:**

# INSPECTION SAFETY & EQUIPMENT

## 3.1—ACCESS REQUIREMENTS

Structures are categorized as climbable, partly-climbable or non-climbable.

Climbable: tri-chord and four-chord simple-span sign structures and tri-chord and four-chord cantilever sign structures.

Partly Climbable: two-chord simple-span and cantilever.

Non-Climbable: one-chord simple-span and cantilevers and any other types of structures deemed un-climbable by the inspection Team Leader.

## 3.2—INSPECTION EQUIPMENT

Typical for an inspector should include, but is not limited to, the following items:

- Shovel
- Folding ruler and/or pocket retractable tape
- 100-foot tape
- 4-Foot level
- Wire brush
- Inspection mirror with an extension and swivel head
- White chalk and/or dark-colored keel
- Hammer
- Ice pick or awl
- Wrenches with extensions and sockets
- Screwdrivers
- GPS
- Two-way radios
- Flashlight
- Digital camera
- Electronic distance meter (EDM)
- Ladder
- D-meter
- UT Gage
- Slugger Wrenches

## 3.3—SAFETY

The safety of inspectors and road users is the highest priority. The following safety guidelines are recommended for all inspection personnel:

- All team members shall where appropriate Personal Protection Equipment (PPE) at all times
- Traffic control set up is the first action and removal is the last action at the inspection site.
- Place all equipment and personnel as far away from road users as possible.
- All inspectors must receive proper training which covers the inspection process, climbing techniques, safety and use of all equipment.
- Do not inspect in hazardous weather or emergency road conditions.
- Use a bucket lift to inspect areas that are difficult to reach by climbing.
- Properly secure all lifting equipment, ladders, and scaffolding to the ground with brakes, blocks, outriggers,

etc., prior to leaving the ground.

- Clean oil and grease from boots, ladders, bucket lifts, and scaffolding.
- Always leave one lanyard connected to the structure at all times.
- Visually check and physically test the lanyards, knots, clips and carabineers often.
- Minimize the number of tools carried overhead. Always secure tools in use with chords or clips to avoid dropping them onto traffic.
- Do not put full body weight onto any structural member that appears structurally unsound.

**3.4—TRAFFIC CONTROL**

Perform traffic control in accordance with the FHWA *Manual on Uniform Traffic Control Devices* (MUTCD), latest edition, as adopted by the State, the Department's *Traffic Manual*, and the Department's *Standard Specifications for Highway Construction*.

The Consultant shall obtain approved traffic control plans, if necessary, from the appropriate District Traffic Engineer and/or local agency prior to beginning the inspection. When required, only District approved traffic control plans are permitted for use. The Consultant shall contact the District Traffic Engineer regarding any changes to a site specific traffic control plan.

All traffic control devices shall conform to the MUTCD and the Department's approved products list. Traffic control devices shall consist of warning signs and cones as a minimum requirement. ITD recommends using impact attenuators behind equipment exposed to potential traffic impacts.

Equipment is not permitted on any portion of the highway right of way nor will any inspection occur until traffic control is in place. Consultant equipment and operations should utilize shoulders, medians and islands whenever possible to reduce the restriction to travel lanes.

Inspection schedules shall minimize traffic flow disruptions as much as possible, or as directed by the District Traffic Engineer or his designee. The District may restrict inspection access to non-peak hours to minimize disruption to traffic.

Consultants shall conform to Section 108.05 (Limitations of Operations) of the Department's *Standard Specifications for Highway Construction* for all inspection work.

**SECTION 4:**

# INSPECTION PROCEDURES

## 4.1—GENERAL PROCEDURES

The Inspector shall verify the list and location of structures scheduled for inspection with the Data Administrator. The Data Administrator will provide the Consultant with an electronic database of those structures for inspection and inspection data entry.

The Inspector shall contact the appropriate District Traffic Engineer and the appropriate railroad representative (if applicable) with a schedule of the locations and dates of each inspection. Inspectors shall provide the appropriate District Traffic Engineer a minimum of a fourteen (14) day notice prior to starting work. Approved methods of contact are by letter, e-mail, phone, or in person.

At the time of contact, the Consultant shall discuss and obtain approved traffic control plans and operational requirements from the District. Operational requirements may include restrictions to inspection schedule, location, and/or the method of inspection

General Structural Inspection Process. The following general sequence is followed:
Set up traffic control at the inspection site
Locate structure i**n** database
Complete structure identification in database
Take GPS readings from a central point below the entire structure
Take photos of the base and front of structure.
Set up inspection team at site
Perform inspection
Inspect ground-level elements first
Take photos or create diagrams of any significant structural defects
Enter inspection notes into database, including photos and diagrams
Remove inspection team from site
Remove traffic control from site

The required activities to perform the hands-on inspection will vary by structure type. Unless specifically excluded, visually inspect all foundations, vertical support components, horizontal support components, and attachments (signs, sign illumination, signal heads, luminaires and other electronic components) throughout the structure.

If inspection of a member is not possible because of debris, vegetation, etc., cleaning is required if the effort involved is not excessive. Excessive effort is that which would require more than 30 minutes for the inspection team to perform. Include a photograph of debris in the inspection file.

If a structural support member is not inspected, the Inspector shall contact the Agreement Administrator or BAME. The final Inspection report shall contain details documenting the reason why inspection did not occur and which member was not inspected.

If by field observation, the Inspector detects any structural deficiency that is sufficiently critical to warrant immediate repair and/or substantial traffic restrictions, the appropriate District Maintenance Engineer and the Agreement Administrator or BAME (if applicable) require immediate notification. The inspector will provide a written notification within forty-eight (48) hours of any verbal notification, which will serve as confirmation of the verbal notification.

Visually inspect all components for surface condition and dissimilar materials (ie on splice bolts or other hardware).

Clean foundations and bases of debris, water, and vegetation, if time required to do so is not excessive. Note any undermined or exposed foundations. Removal of debris and vegetation may be required to properly examine the

foundation or base. Sound the concrete with a hammer and note any hollow sounds. Note any spalling, corrosion, exposed reinforcement or open cracks. If grout is present, rate its condition based on thickness, deterioration and the presence of corrosion.

Visually inspect all of the anchoring components for surface condition and damage. Note the following:

If the baseplate thickness is less than the anchor rod diameter
If the shortest distance from the edge of the anchor rod hole to the edge of the baseplate is less than the anchor rod diameter
If the distance between the bottom of the leveling nut to the top of the foundation is greater than 1 anchor rod diameter
If the anchor rods are misaligned greater than 1:40

Inspect all anchor bolts for corrosion, oversized holes, and misalignment or bending to fit into the base plate hole. Using a hammer, inspect for broken anchor bolts. Verify the presence and adequate size of top nuts and washers or leveling nuts and washers (if no grout pad). Inspect bolts for thread damage, corrosion and gouges. Verify that all nuts are properly seated and snug tight.

Visually inspect all posts or end frames for surface condition, dents or gouges, corrosion and cracks. Verify that drain holes are functioning and that water and debris is not accumulating on or in the post. Inspect the plumbness of the post using a level and record the direction and amount of tilt, if significantly misaligned. Inspect the post or end frame to base plate connection, and look for cracks and corrosion. Inspect all welded and non-welded seams, flange plates and connections for cracks and corrosion. Verify the presence and connection of end caps. Inspect all splices for oversized holes and the presence and proper size of bolts and nuts. Inspect bolts for thread damage, corrosion and gouges. Verify that all nuts are properly seated.

Visually inspect mast arm and, if present, luminaire arm connections to posts, and look for cracks and corrosion. Visually inspect bolts for thread damage and gouges, and verify that all nuts are properly seated. Inspect pedestrian controls and electrical access plates for corrosion, damage and proper attachment.

Visually inspect all horizontal truss components on sign bridges and cantilevers. Inspect all welded and bolted connections for fatigue cracks and corrosion. Visually inspect bolts for thread damage and gouges, and verify that all bolts and nuts are properly sized, and properly seated. Note any sagging or misalignment of the horizontal support or any bent, broken, buckled, water-filled, split or missing elements. Inspect walkway and lighting components for damage. Note any uneven or missing grating, cracked support brackets, missing or corroded U-bolts or connection bolts, handrails, luminaire mounting arms, damaged or exposed wiring, etc.

Visually inspect all sign support framework components attached to girders and parapets of grade separators. Inspect all welded and bolted connections for fatigue cracks and corrosion. Visually inspect bolts for thread damage and gouges, and verify that all bolts and nuts are properly sized, and seated. Note any sagging or misalignment of the horizontal support or any bent, broken, buckled, water-filled, split or missing elements. Inspect walkway and lighting components for damage. Note any uneven or missing grating, cracked support brackets, missing or corroded U-bolts or connection bolts, handrails, luminaire mounting arms, damaged or exposed wiring, etc.

Visually inspect the U-bolt, frames and other devices used to connect any attachments (signs, sign illumination, electrical fixtures) to sign bridges, cantilevers and support framework attached to bridges (grade separators). Report any missing, damaged or loose hardware, including hand holes or caps at the ends of chords. Inspect signs and their attachments that are fastened directly to concrete girders and/or parapets. Inspect the concrete structure (girder and/or parapet) where signs or sign support framework attaches for damage, cracks, spalling, improper connection, corrosion, etc.

## 4.2—SIGN BRIDGES AND CANTILEVER STRUCTURES

The sign bridge group includes dual-post structures such as sign bridges, dynamic (variable) message signs, and signal spans.

The cantilever group includes single-post structures such as simple and butterfly cantilevers and dynamic (variable) message signs. Cantilevers located behind the guard rail with spans directed away from the traveled way do not require

inspection.

Some conservatively designed low risk horizontal sign structure members over traffic may be visually inspected from the ground or roadway surface without climbing or access equipment with the approval of the BAME. For these instances, vertical pole supports and horizontal support connections will require hands on inspection.

For all sign bridge and cantilever structures, the following components require inspection and assignment of an element rating as applicable:

Base/Foundation
Erosion and undermining
Foundation
Grout pad(s)
Base plate(s)
Anchor bolts
Anchor nuts and washers
Bolt/nut protection
Support Pole/End Frames
Base plate(s)
Column(s)
Column plumbness
Column bracing
Column splice(s)
Column welds
Column protection
Chords
Walkway
Support chord connections
Bracket(s) to vertical support
Top chord(s)
Bottom chord(s)
Splice flange(s)/bolts
Camber
Verticals
Diagonals
Horizontals
Welds
Surface protection
Additional Components
Sign connections
Sign illumination
Sign illumination connection(s)
Signal head connection(s)
Luminaire connection
Electrical access plate

**4.3—SIGNAL MAST ARM STRUCTURES**

Signal mast arms include single post installations that may or may not have luminaires. Signal mast arms located within ports of entry do not require inspection unless they are located on ramps leading into an adjacent rest area.

The following components require inspection and assignment of an element rating as applicable:

Base/Foundation
Erosion and undermining
Foundation

Grout pad
Base Plate
Anchor bolts
Anchor nuts and washers
Bolt/nut protection
Support Pole
Base plate
Pole plumbness
Splice plates/bolts
Electrical access plate
Pedestrian control(s)
Surface protection
Signal Arm
Arm connection
Surface protection
Luminaire Arm
Arm connection
Surface protection

## 4.4 STRUCTURE-MOUNTED SIGN INSTALLATIONS

Structure-mounted sign installations are located on bridges or grade separators. Grade separators may be an underpass or overpass structures, including railroad trestles, having signs bolted directly to a girder, parapet or other structural member, or having the framework for attaching such a sign(s) over the traveled way.

The following components require inspection and assignment of an element rating as applicable:

Framework connection to girder/parapet
Condition of girder and/or parapet
Framework
Horizontals
Verticals
Diagonals
Welds
Connections
Surface protection
Sign connections
Illumination
Light(s)
Connections

## 4.5 HIGH MAST LUMINAIRES

High Mast Luminaires are lighting attached to a truss-type or pole-type tower that provides lighting at heights greater than 55 feet. Poles are typically segmental and luminaires are capable of being lowered. Lowering of luminaires is not required for inspection. Visual inspections of the pole and luminaires should include equipment, such as a bucket truck or other aerial equipment. When collapse of a portion of the pole could affect traffic including pedestrian traffic (Figure 1) the inspector's should get as close as practical to inspect pole seams for potential cracks or damage. Where collapse of a high mast structure would result in only the top of the structure or no portion of the structure reaching the road or side walk, a visual inspection of the pole and normal base inspection is acceptable (Figure 2).

**Figure 1**

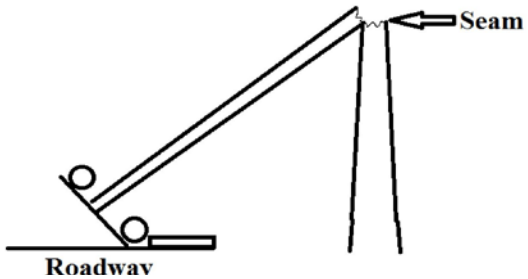
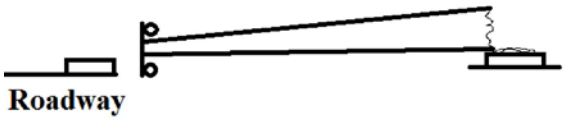



**Figure 2**




The following components require inspection and assignment of an element rating as applicable:

Base/Foundation
Erosion and undermining
Foundation
Grout pad(s)
Base plate(s)
Anchor bolts
Anchor nuts and washers
Bolt/nut protection
Support Pole/End Frames
Base plate(s)
Column(s)
Column plumbness
Column bracing
Column splice(s)
Column welds
Column protection
Luminaire connection
Electrical access plate
Miscellaneous component connections

**SECTION 5:**

# Inspection Reporting Procedures

## 5.1—OVERHEAD SIGN STRUCTURE SOFTWARE

Structural supports have similar components, even though they may have different configurations. All data is reported and maintained in the AASHTO BrM software. The Department Data Administrator will provide to the Consultant an electronic database of the structures to be inspected and technical support for the BrM software and inspection reporting.

Inspection data will consist of either selection from a drop-down menu or manual data entry. Don't use symbols % " ( ) ' or commas.

After entry of the information for the structure is complete and the pictures have been linked in Inspection Reports a .pdf of the inspection report should be created, signed and stored in the district Inspection reports folder and linked in BrM. Final pdf with the electronic signature shall use the following naming convention: StructureKey_InspReport_MOYR.pdf (example S1000001_InspReport_0316)

## 5.2—INVENTORY ITEMS

The inventory items that are collected and recorded for each structural support are found in Appendix A.

The substructure field in BrM is used to describe the overall condition of the Structural Support using the descriptive codes in the following table:

| Code | Description |
|---|---|
| N | NOT APPLICABLE |
| 9 | EXCELLENT CONDITION – No defects. |
| 8 | VERY GOOD CONDITION – No problems noted, but with some insignificant defects. |
| 7 | GOOD CONDITION – Isolated minor defects. |
| 6 | SATISFACTORY CONDITION – Extensive minor defects. |
| 5 | FAIR CONDITION – Isolated advanced defects. All members are structurally sound. |
| 4 | POOR CONDITION – Extensive advanced defects with or without isolated major defects. More frequent monitoring or corrective actions, such as repairs or restricting loads, are typically needed to address major defects. |
| 3 | SERIOUS CONDITION – Major defects that typically require more frequent monitoring or corrective actions such as repairs or restricting loads. |
| 2 | CRITICAL CONDITION – Major defects that typically require more frequent monitoring until corrective actions are completed. |
| 1 | "IMMINENT" FAILURE CONDITION – Major defects. The road is closed until corrective actions are completed. |
| 0 | FAILED CONDITION – Road is closed due to structure condition. Condition is beyond repair and replacement is needed to restore service. |

In the NOTES section of BrM should include the following titles: SITE NOTES, GENERAL NOTES, and WORK ACCOMPLISHED .

SITE NOTES: are notes to describe site conditions such as erosion around a foundation, damage to an adjacent guardrail, etc. If no site notes are needed write "None" in this section.

GENERAL NOTES are notes to ITD or any other general note that doesn't have a place anywhere else. If no notes are

needed write "None" in this section.

WORK ACCOMPLISHED is used to describe any work done to the structure or site since previous inspections. If no work accomplished write "None" in this section.

**5.3—ELEMENTS**

An element rating system was developed to provide an evaluation of each structural element see Appendix B for element descriptions.

Elements are rated individually or as a group. Group elements are rated based on the lowest rating of an individual component within the group. As a general rule, for rating purposes the inspector should consider whether the structural integrity has been reduced, whether the deficiency is located on a failure-critical element, or whether the deficiency creates an imminent safety hazard to road users. Elements that are not visible such as buried base plates and anchor rods are not included in the elements; they are noted in the SITE NOTES.

If impact damage element 7000 is used then you need to use a defect element associated with the impact damage. Example: 7000 Impact damage 1 foot to 706 steel end support column, defect element 9720 Dent 1 foot. Impact damage 7000 is the only element that allows you to double up on quantities but doesn't apply it against the parent element 706. It may look like 2 feet but it's only 1 foot. You would have 1 foot in condition state 2 for element 706, 1 foot for element 7000 in state 2 and 1 foot for element 9720 dent in state 2.

Coatings do not need elements or quantities. The coating type is noted in the description note field on the Inventory/Design tab. Elements 740-746 are not considered part of a safety inspection and are not included.

**5.4—PHOTOGRAPHS**

Inspection reports for each sign structure location shall include photographs. Digital format is required for all photographs. The minimum size for a photo is 1536 x 1024 pixels with a 72 dpi resolution. The photo size should not be reduced. A minimum of two (2) photographs are required of the entire structure taken at each inspection. Pictures shall include the front view of the structure, and the base of the structure. Photos or diagrams of any significant structural defects are required at the time of inspection. Attach all photos and diagrams to each sign structure inspection report.

The required file naming convention for photos is: StructureKey_DATE_# (example S1000001_0316_01) and stored in the appropriate district folder. In BrM to add "Bridge Photos":

1) Go to Inspection/multimedia tab.
2) At the top of the box select the Context drop down box and change from Inspection to Bridge.
3) Link a photo.
4) Select Inspection Photo from the drop down and also click the report flag.
5) Do not add any text or notes.

**5.5—INSPECTION FREQUENCY**

The inspection frequency is based on the overall condition as detailed in the table below unless the Inspection Team Leader recommends a different frequency and the Bridge Asset Management Engineer concurs. Changes to inspection frequency are documented in the GENERAL NOTES section including reason and modified inspection frequency.

| OHS Inspection Frequencies | | |
|---|---|---|
| **Frequency** | **Signals, Sign Bridge** | **Cantilever, HML** |
| **72 months** | 6 or higher | 7 or higher |
| **36 months** | 5 or 4 | 6-4 |
| **12 months** | 2 or 3 | 2 or 3 |

Inspections are completed within the calendar year scheduled unless approved by the Bridge Asset Management

Engineer and documented in the GENERAL NOTES section.

The OHS inspections shall include all applicable data attributes as follows:

| Name | Type | Field Length |
|---|---|---|
| Bridge Key | Identifier: starts with S, followed by District Number & sequential number | 8 |
| Agency Bridge ID | Same as Bridge Key | |
| NBI Structure No. | Same as Bridge Key | |
| NBI Bridge ID(if applicable) | NBI Bridge Key | 5 |
| NBI Structure(112) | Always code Too Short | Dropdown |
| FIPS State(001A) | Always code 16 Idaho | Dropdown |
| FHWA Region(001b) | Always code Region 10-Portland | Dropdown |
| District(002) | | Dropdown |
| County(003) | | Dropdown |
| Facility(007) | Route | 18 |
| Location(009) | General location of OHS (right now some locations are stored in Traffic Control Information due to length constraints, this data needs to be condensed and fit into this field and DELETED from the Traffic Control Information field) | 25 |
| Year Built(027) | | 4 |
| Latitude(016) | Degrees minutes seconds | 6 |
| Longitude(017) | Degrees minutes seconds | 7 |
| Number of Main Spans(045) | | 3 |
| Main Spans Material(043A) | | Dropdown |
| Main Spans Design(043B) | Use OHS designated designs | Dropdown |
| Maximum Span Length(048) | Code 00.00 for HML | 7 |
| Structure Length | Code 00.00 for HML | 8 |
| Vertical Reference Clearance | Will always be H Hwy beneath | Dropdown |
| Min Vertical Under Clearance | Minimum Vertical Clearance under OHS, code 99.9 for HML | 5,3 |
| Minimum Lateral Clearance Right (55B) | Distance from face of column to edge of travel way[1] | 3 |
| Minimum Lateral Clearance Left (56) | Distance from face of column to edge of travel way[1] (if applicable) | 3 |
| Structure Units | S Ancillary Structure | Dropdown |
| Traffic Control Information | | 2000 |
| Overall Condition(059) | | Dropdown |
| Inspector | | Dropdown |
| Inspection Date(090) | | Date |
| Inspection Frequency(091) | As defined by table in Section 5.5 | 2 |
| Next Inspection | | Date |
| Primary Type | OHS | Dropdown |
| Types of Inspections Performed | NBI and Element | Check box |
| Next Inspector | | Dropdown |
| Bridge Group | OHS | Dropdown |
| Elements | | |

| | | |
|---|---|---|
| Inspection Notes | General inspection notes | 2000 |
| Roadway/Position/Prefix(005A) | Will always be One Route Under | Dropdown |
| Road/Route Name | Route | 30 |
| Kind Hwy(Rt Prefix)(005B) | | Dropdown |
| Design Level of Service(005C) | | Dropdown |
| Route Number(005D) | State Route with leading zeroes | 5 |
| Directional Suffix(005E) | Use cardinal direction | Dropdown |
| Functional Classification(026) | | Dropdown |
| Milepost(011) | Milepost out to thousandth | 7 |
| Lanes(28A) | Lanes directly under OHS | 2 |
| Total ADT(029) | | 8 |
| Percent Trucks(109) | | 2 |
| ADT Year(030) | | 4 |
| Under Record Milepost | Same as Milepost(011) | 7 |
| Segment Code | ITD LRS code | 6 |
| Work Candidate ID | Assigned by program | |
| Work Candidate Structure Unit | Ancillary Structures/Type S | Dropdown |
| Work Candidate Action | | Dropdown |
| Work Candidate Priority | | Dropdown |
| Work Candidate Date | Leave as inspection date | Date |
| Work Candidate Date Completed | | Date |
| Work Candidate Target Year | Leave as default | 4 |
| Work Candidate Work | State Forces | Dropdown |
| Work Candidate Status | | Dropdown |
| Work Candidate Notes | General Work Candidates Notes | 2000 |
| Equipment Required | | Dropdown |
| Administrative Jurisdiction | Owner of OHS | Dropdown |
| Drawing # | | 5 |
| Project Key # | | 6 |

[1] Travel Way is defined as the most constrictive normal boundary for traffic, typically the inside edge of the fog line. If no fog line is present it should be the inside edge of curb, or guardrail. If none of these things are present use the edge of pavement. Leave blank if not applicable.

# Appendix B:

# ELEMENT DESCRIPTIONS

Table of Contents:

Element 701 – Reinforced Concrete Foundation
Element 702 – Steel Anchor Rods
Element 703 – Aluminum Anchor Rods
Element 704 – Steel Base Plate
Element 705 – Aluminum Base Plate
Element 706 – Steel End Support Column
Element 707 – Aluminum End Support Column
Element 708 – Concrete End Support Column
Element 709 – Timber End Support Column
Element 710 – Steel End Support Frame
Element 711 – Aluminum End Support Frame
Element 712 – Steel High Mast Light or Luminaire Support Column
Element 713 – Aluminum High Mast Light or Luminaire Support Column
Element 714 – Concrete High Mast Light or Luminaire Support Column
Element 715 – Fiberglass High Mast Light or Luminaire Support Column
Element 716 – Welded or Slip Joint Splice Connection for Steel End Support or HML
Element 717 – Bolted, Welded or Slip Joint Splice Connection for Aluminum End Support or HML
Element 718 – End Support-to-Chord Connection
Element 719 – Steel Single Chord Span
Element 720 – Aluminum Single Chord Span
Element 721 – Steel Truss Span
Element 722 – Aluminum Truss Span
Element 723 – Span Wire Assembly
Element 726 – Bolted, Welded or Slip Joint Splice Connection for Steel Span
Element 727 – Bolted, Welded or Slip Joint Splice Connection for Aluminum Span

Note: Element numbers are based on an AASHTO Draft manual (2014). Defects are mostly borrowed from bridge, we cannot change element descriptions in BrM so the descriptions here may vary to provide more detail for OHS inspection.

# Ancillary Structures Element Coding Guide

**Element:** 701
**Name:** Reinforced Concrete Foundation
**Unit:** Each

**Description:**
Element defines all reinforced concrete foundations. Grout pads are not included.

| Defect | Condition State 1 | Condition State 2 | Condition State 3 | Condition State 4 |
|---|---|---|---|---|
| Delamination/Spall/Patched Area (1080) | None. | Delaminated. Spall 1 in. or less deep or 6 in. or less in diameter. Patched area that is sound. | Spall greater than 1 in. deep or greater than 6 in. diameter. Patched area that is unsound or showing distress. Does not warrant structural review. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 4 under the appropriate material defect entry. |
| Exposed Rebar (1090) | None. | Present without measurable section loss. | Present with measurable section loss, but does not warrant structural review. | |
| Efflorescence/Rust Staining (1120) | None. | Surface white without build-up or leaching without rust staining. | Heavy build-up with rust staining. | The condition warrants a structural review to determine the effect on strength or serviceability of the element or structure; OR a structural review has been completed and the defects impact strength or serviceability of the element or structure. |
| Cracking (RC and Other) (1130) | None or insignificant cracking. | Moderate cracking | Severe cracking not requiring a structural review. | |
| Abrasion(PSC/RC) (1190) | No abrasion or wearing. | Abrasion or wearing has exposed coarse aggregate but the aggregate remains secure in the concrete. | Coarse aggregate is loose or has popped out of the concrete matrix due to abrasion or wear. | |
| Settlement (4000) | None. | Exists within tolerable limits of has been arrested with no observed structural distress. | Exceeds tolerable limits but does not warrant a structural review. | |
| Scour (6000) | None. | Exists within tolerable limits of has been arrested with effective countermeasures. | Exceeds tolerable limits but is less than the critical limits determined by a scour evaluation and does not warrant a structural review. | |
| Damage (7000) | Not applicable. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 2 under the appropriate material defect entry. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 3 under the appropriate material defect entry. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 4 under the appropriate material defect entry. |

**Commentary:**
None.

# Ancillary Structures Element Coding Guide

**Element:** 702
**Name:** Steel Anchor Rods
**Unit:** Each

**Description:**
Element defines all steel anchor rods extending from foundation, and includes washers and nuts. Inclusive of weathering steel.

| Defect | Condition State 1 | Condition State 2 | Condition State 3 | Condition State 4 |
|---|---|---|---|---|
| Corrosion (1000) | None. | Freckled Rust. Corrosion of the steel has initiated. | Section loss is evident or pack rust is present but does not warrant structural review. | The condition warrants a structural review to determine the effect on strength or serviceability of the element or structure; OR a structural review has been completed and the defects impact strength or serviceability of the element or structure. |
| Cracking (1010) | None. | Crack that has self-arrested or has been arrested with effective arrest holes, doubling plates, or similar. | Identified crack exists that is not arrested but does not warrant structural review. | |
| Connection (1020) | Connection is in place and functioning as intended. | Loose fasteners or pack rust without distortion is present but the connection is in place and functioning as intended. | Missing bolts, rivets, broken welds, fasteners or pack rust with distortion but does not warrant a structural review. | |

**Commentary:**
None.

# Ancillary Structures Element Coding Guide

**Element:** 703
**Name:** Aluminum Anchor Rods
**Unit:** Each

**Description:**
Element defines all aluminum anchor rods extending from foundation, and includes washers and nuts.

| Defect | Condition State 1 | Condition State 2 | Condition State 3 | Condition State 4 |
|---|---|---|---|---|
| Corrosion (1000) | None. | Freckled Rust. Corrosion of the aluminum has initiated. | Section loss is evident or pack rust is present but does not warrant structural review. | The condition warrants a structural review to determine the effect on strength or serviceability of the element or structure; OR a structural review has been completed and the defects impact strength or serviceability of the element or structure. |
| Cracking (1010) | None. | Crack that has self-arrested or has been arrested with effective arrest holes, doubling plates, or similar. | Identified crack exists that is not arrested but does not warrant structural review. | |
| Connection (1020) | Connection is in place and functioning as intended. | Loose fasteners or pack rust without distortion is present but the connection is in place and functioning as intended. | Missing bolts, rivets, broken welds, fasteners or pack rust with distortion but does not warrant a structural review. | |

**Commentary:**
None.

# Ancillary Structures Element Coding Guide

**Element:** 704
**Name:** Steel Base Plate
**Unit:** Each

**Description:**
Element defines all steel base plates connecting the columns to the anchor rods, includes all gusset plates, their welds, and the weld from the column to the base plate. Inclusive of weathering steel.

| Defect | Condition State 1 | Condition State 2 | Condition State 3 | Condition State 4 |
|---|---|---|---|---|
| Corrosion (1000) | None. | Freckled Rust. Corrosion of the steel has initiated. | Section loss is evident or pack rust is present but does not warrant structural review. | The condition warrants a structural review to determine the effect on strength or serviceability of the element or structure; OR a structural review has been completed and the defects impact strength or serviceability of the element or structure. |
| Cracking (1010) | None. | Crack that has self-arrested or has been arrested with effective arrest holes, doubling plates, or similar. | Identified crack exists that is not arrested but does not warrant structural review. | |
| Connection (1020) | Connection is in place and functioning as intended. | Loose fasteners or pack rust without distortion is present but the connection is in place and functioning as intended. | Missing bolts, rivets, broken welds, fasteners or pack rust with distortion but does not warrant a structural review. | |
| Loss of Bearing Area (2240) | None. | Less than 10% | 10% or more but does not warrant structural review. | |
| Debris Impaction (2350) | No debris or loose debris not effecting the structure. | Debris caught in assembly causing minor corrosion or loss of galvanization. | Debis caught effecting stability of structure or causing widespread corrosion and section loss. | |

**Commentary:**
None.

# Ancillary Structures Element Coding Guide

**Element:** 705
**Name:** Aluminum Base Plate
**Unit:** Each

**Description:**
Element defines all aluminum base plates connecting the columns to the anchor rods, includes all gusset plates, their welds, and the weld from the column to the base plate.

| Defect | Condition State 1 | Condition State 2 | Condition State 3 | Condition State 4 |
|---|---|---|---|---|
| Corrosion (1000) | None. | Freckled Rust. Corrosion of the aluminum has initiated. | Section loss is evident or pack rust is present but does not warrant structural review. | The condition warrants a structural review to determine the effect on strength or serviceability of the element or structure; OR a structural review has been completed and the defects impact strength or serviceability of the element or structure. |
| Cracking (1010) | None. | Crack that has self-arrested or has been arrested with effective arrest holes, doubling plates, or similar. | Identified crack exists that is not arrested but does not warrant structural review. | |
| Connection (1020) | Connection is in place and functioning as intended. | Loose fasteners or pack rust without distortion is present but the connection is in place and functioning as intended. | Missing bolts, rivets, broken welds, fasteners or pack rust with distortion but does not warrant a structural review. | |
| Loss of Bearing Area (2240) | None. | Less than 10% | 10% or more but does not warrant structural review. | |
| Debris Impaction (2350) | No debris or loose debris not effecting the structure. | Debris caught in assembly causing minor corrosion or loss of galvanization. | Debis caught effecting stability of structure or causing widespread corrosion and section loss. | |

**Commentary:**
None.

# Ancillary Structures Element Coding Guide

**Element:** 706
**Name:** Steel End Support Column
**Unit:** Feet

**Description:**
Element defines all steel end support columns. Inclusive of weathering steel.

| Defect | Condition State 1 | Condition State 2 | Condition State 3 | Condition State 4 |
|---|---|---|---|---|
| Corrosion (1000) | None. | Freckled Rust. Corrosion of the steel has initiated. | Section loss is evident or pack rust is present but does not warrant structural review. | The condition warrants a structural review to determine the effect on strength or serviceability of the element or structure; OR a structural review has been completed and the defects impact strength or serviceability of the element or structure. |
| Cracking (1010) | None. | Crack that has self-arrested or has been arrested with effective arrest holes, doubling plates, or similar. | Identified crack exists that is not arrested but does not warrant structural review. | |
| Connection (1020) | Connection is in place and functioning as intended. | Loose fasteners or pack rust without distortion is present but the connection is in place and functioning as intended. | Missing bolts, rivets, broken welds, fasteners or pack rust with distortion but does not warrant a structural review. | |
| Distortion (1900) | None. | Distortion not requiring mitigation or mitigated distortion. | Distortion that requires mitigation that has not been addressed but does not warrant structural review. | |
| Damage (7000) | Not applicable. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 2 under the appropriate material defect entry. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 3 under the appropriate material defect entry. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 4 under the appropriate material defect entry. |
| Lean (9700) | None. | Horizontal Measurement / Vertical Measurement < 1% | 1% <= Horizontal Measurement / Vertical Measurement < 2% | Horizontal Measurement / Vertical Measurement > 2% |
| Dent (9720) | Not applicable. | Horizontal / Circumference < 5% | 5% <= Horizontal / Circumference < 10% | Horizontal / Circumference >= 10% |

**Commentary:**
None.

# Ancillary Structures Element Coding Guide

| **Element:** 707<br>**Name:** Aluminum End Support Column<br>**Unit:** Feet | **Description:**<br>Element defines all alluminum end support columns | | | |
|---|---|---|---|---|
| **Defect** | **Condition State 1** | **Condition State 2** | **Condition State 3** | **Condition State 4** |
| Corrosion (1000) | None. | Freckled Rust. Corrosion of the aluminum has initiated. | Section loss is evident or pack rust is present but does not warrant structural review. | The condition warrants a structural review to determine the effect on strength or serviceability of the element or structure; OR a structural review has been completed and the defects impact strength or serviceability of the element or structure. |
| Cracking (1010) | None. | Crack that has self-arrested or has been arrested with effective arrest holes, doubling plates, or similar. | Identified crack exists that is not arrested but does not warrant structural review. | |
| Connection (1020) | Connection is in place and functioning as intended. | Loose fasteners or pack rust without distortion is present but the connection is in place and functioning as intended. | Missing bolts, rivets, broken welds, fasteners or pack rust with distortion but does not warrant a structural review. | |
| Distortion (1900) | None. | Distortion not requiring mitigation or mitigated distortion. | Distortion that requires mitigation that has not been addressed but does not warrant structural review. | |
| Damage (7000) | Not applicable. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 2 under the appropriate material defect entry. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 3 under the appropriate material defect entry. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 4 under the appropriate material defect entry. |
| Lean (9700) | None. | Horizontal Measurement / Vertical Measurement < 1% | 1% <= Horizontal Measurement / Vertical Measurement < 2% | Horizontal Measurement / Vertical Measurement > 2% |
| Dent (9720) | Not applicable. | Horizontal / Circumference < 5% | 5% <= Horizontal / Circumference < 10% | Horizontal / Circumference >= 10% |

**Commentary:**
None

# Ancillary Structures Element Coding Guide

**Element:** 708
**Name:** Concrete End Support Column
**Unit:** Feet

**Description:**
Element defines all concrete end support columns

| Defect | Condition State 1 | Condition State 2 | Condition State 3 | Condition State 4 |
|---|---|---|---|---|
| Delamination/Spall/Patched Area (1080) | None. | Delaminated. Spall 1 in. or less deep or 6 in. or less in diameter. Patched area that is sound. | Spall greater than 1 in. deep or greater than 6 in. diameter. Patched area that is unsound or showing distress. Does not warrant structural review. | The condition warrants a structural review to determine the effect on strength or serviceability of the element or structure; OR a structural review has been completed and the defects impact strength or serviceability of the element or structure. |
| Exposed Rebar (1090) | None. | Present without measurable section loss. | Present with measurable section loss, but does not warrant structural review. | |
| Efflorescence/Rust Staining (1120) | None. | Surface white without build-up or leaching without rust staining. | Heavy build-up with rust staining. | |
| Cracking (RC and Other) (1130) | Width less than 0.012 in. or spacing greater than 3.0 ft. | Width 0.012–0.05 in. or spacing of 1.0–3.0 ft. | Width greater than 0.05 in. or spacing of less than 1 ft. | |
| Abrasion(PSC/RC) (1190) | No abrasion or wearing. | Abrasion or wearing has exposed coarse aggregate but the aggregate remains secure in the concrete. | Coarse aggregate is loose or has popped out of the concrete matrix due to abrasion or wear. | |
| Damage (7000) | Not applicable. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 2 under the appropriate material defect entry. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 3 under the appropriate material defect entry. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 4 under the appropriate material defect entry. |
| Lean (9700) | None. | Horizontal Measurement / Vertical Measurement < 1% | 1% <= Horizontal Measurement / Vertical Measurement < 2% | Horizontal Measurement / Vertical Measurement > 2% |

**Commentary:**
None

# Ancillary Structures Element Coding Guide

**Element:** 709
**Name:** Timber End Support Column
**Unit:** Feet

**Description:**
Element defines all timber end support columns

| Defect | Condition State 1 | Condition State 2 | Condition State 3 | Condition State 4 |
|---|---|---|---|---|
| Cracking (RC and Other) (1130) | Width less than 0.012 in. or spacing greater than 3.0 ft. | Width 0.012–0.05 in. or spacing of 1.0–3.0 ft. | Width greater than 0.05 in. or spacing of less than 1 ft. | The condition warrants a structural review to determine the effect on strength or serviceability of the element or structure; OR a structural review has been completed and the defects impact strength or serviceability of the element or structure. |
| Decay/Section Loss (1140) | None. | Affects less than 10% of the member section. | Affects 10% or more of the member but does not warrant structural review. | |
| Check/Shake (1150) | Surface penetration less than 5% of the member thickness regardless of location. | Penetrates 5% - 50% of the thickness of the member and not in a tension zone. | Penetrates more than 50% of the thickness of the member or more than 5% of the member thickness in a tension zone. Does not warrant structural review. | |
| Crack (Timber) (1160) | None. | Crack that has been arrested through effective measures. | Identified crack exists that is not arrested, but does not require structural review. | |
| Split/Delamination (Timber) (1170) | None. | Length less than the member depth or arrested with effective actions taken to mitigate. | Length equal to or greater than the member depth, but does not require structural review. | |
| Abrasion (1180) | None or no measurable section loss. | Section loss less than 10% of the member thickness. | Section loss 10% or more of the member thickness but does not warrant structural review. | |
| Damage (7000) | Not applicable. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 2 under the appropriate material defect entry. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 3 under the appropriate material defect entry. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 4 under the appropriate material defect entry. |
| Lean (9700) | None. | Horizontal Measurement / Vertical Measurement < 1% | 1% <= Horizontal Measurement / Vertical Measurement < 2% | Horizontal Measurement / Vertical Measurement > 2% |
| Dent (9720) | Not applicable. | Horizontal / Circumference < 5% | 5% <= Horizontal / Circumference < 10% | Horizontal / Circumference >= 10% |

**Commentary:**
None

# Ancillary Structures Element Coding Guide

**Element:** 710
**Name:** Steel End Support Frame
**Unit:** Feet

**Description:**
Element defines all steel end support frames, including the uprights, horizontals and diagnals. Inclusive of weathering steel.

| Defect | Condition State 1 | Condition State 2 | Condition State 3 | Condition State 4 |
|---|---|---|---|---|
| Corrosion (1000) | None. | Freckled Rust. Corrosion of the steel has initiated. | Section loss is evident or pack rust is present but does not warrant structural review. | The condition warrants a structural review to determine the effect on strength or serviceability of the element or structure; OR a structural review has been completed and the defects impact strength or serviceability of the element or structure. |
| Cracking (1010) | None. | Crack that has self-arrested or has been arrested with effective arrest holes, doubling plates, or similar. | Identified crack exists that is not arrested but does not warrant structural review. | |
| Connection (1020) | Connection is in place and functioning as intended. | Loose fasteners or pack rust without distortion is present but the connection is in place and functioning as intended. | Missing bolts, rivets, broken welds, fasteners or pack rust with distortion but does not warrant a structural review. | |
| Distortion (1900) | None. | Distortion not requiring mitigation or mitigated distortion. | Distortion that requires mitigation that has not been addressed but does not warrant structural review. | |
| Damage (7000) | Not applicable. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 2 under the appropriate material defect entry. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 3 under the appropriate material defect entry. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 4 under the appropriate material defect entry. |
| Lean (9700) | None. | Horizontal Measurement / Vertical Measurement < 1% | 1% <= Horizontal Measurement / Vertical Measurement < 2% | Horizontal Measurement / Vertical Measurement > 2% |
| Dent (9720) | Not applicable. | Horizontal / Circumference < 5% | 5% <= Horizontal / Circumference < 10% | Horizontal / Circumference >= 10% |

**Commentary:**
None.

# Ancillary Structures Element Coding Guide

**Element:** 711
**Name:** Aluminum End Support Frame
**Unit:** Feet

**Description:**
Element defines all aluminum end support frames, including the uprights, horizontals and diagnals.

| Defect | Condition State 1 | Condition State 2 | Condition State 3 | Condition State 4 |
|---|---|---|---|---|
| Corrosion (1000) | None. | Freckled Rust. Corrosion of the aluminum has initiated. | Section loss is evident or pack rust is present but does not warrant structural review. | The condition warrants a structural review to determine the effect on strength or serviceability of the element or structure; OR a structural review has been completed and the defects impact strength or serviceability of the element or structure. |
| Cracking (1010) | None. | Crack that has self-arrested or has been arrested with effective arrest holes, doubling plates, or similar. | Identified crack exists that is not arrested but does not warrant structural review. | |
| Connection (1020) | Connection is in place and functioning as intended. | Loose fasteners or pack rust without distortion is present but the connection is in place and functioning as intended. | Missing bolts, rivets, broken welds, fasteners or pack rust with distortion but does not warrant a structural review. | |
| Distortion (1900) | None. | Distortion not requiring mitigation or mitigated distortion. | Distortion that requires mitigation that has not been addressed but does not warrant structural review. | |
| Damage (7000) | Not applicable. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 2 under the appropriate material defect entry. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 3 under the appropriate material defect entry. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 4 under the appropriate material defect entry. |
| Lean (9700) | None. | Horizontal Measurement / Vertical Measurement < 1% | 1% <= Horizontal Measurement / Vertical Measurement < 2% | Horizontal Measurement / Vertical Measurement > 2% |
| Dent (9720) | Not applicable. | Horizontal / Circumference < 5% | 5% <= Horizontal / Circumference < 10% | Horizontal / Circumference >= 10% |

**Commentary:**
None.

# Ancillary Structures Element Coding Guide

| **Element:** 712<br>**Name:** Steel High Mast Light or Luminaire Support Column<br>**Unit:** Feet | **Description:**<br>Element defines all steel high mast light or luminaire support columns. Inclusive of weathering steel. | | | |
|---|---|---|---|---|
| **Defect** | **Condition State 1** | **Condition State 2** | **Condition State 3** | **Condition State 4** |
| Corrosion (1000) | None. | Freckled Rust. Corrosion of the steel has initiated. | Section loss is evident or pack rust is present but does not warrant structural review. | The condition warrants a structural review to determine the effect on strength or serviceability of the element or structure; OR a structural review has been completed and the defects impact strength or serviceability of the element or structure. |
| Cracking (1010) | None. | Crack that has self-arrested or has been arrested with effective arrest holes, doubling plates, or similar. | Identified crack exists that is not arrested but does not warrant structural review. | |
| Connection (1020) | Connection is in place and functioning as intended. | Loose fasteners or pack rust without distortion is present but the connection is in place and functioning as intended. | Missing bolts, rivets, broken welds, fasteners or pack rust with distortion but does not warrant a structural review. | |
| Distortion (1900) | None. | Distortion not requiring mitigation or mitigated distortion. | Distortion that requires mitigation that has not been addressed but does not warrant structural review. | |
| Damage (7000) | Not applicable. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 2 under the appropriate material defect entry. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 3 under the appropriate material defect entry. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 4 under the appropriate material defect entry. |
| Lean (9700) | None. | Horizontal Measurement / Vertical Measurement < 1% | 1% <= Horizontal Measurement / Vertical Measurement < 2% | Horizontal Measurement / Vertical Measurement > 2% |
| Dent (9720) | Not applicable. | Horizontal / Circumference < 5% | 5% <= Horizontal / Circumference < 10% | Horizontal / Circumference >= 10% |

**Commentary:**
None.

# Ancillary Structures Element Coding Guide

**Element:** 713
**Name:** Aluminum High Mast Light or Luminaire Support Column
**Unit:** Feet

**Description:**
Element defines all aluminum high mast light or luminaire support columns.

| Defect | Condition State 1 | Condition State 2 | Condition State 3 | Condition State 4 |
|---|---|---|---|---|
| Corrosion (1000) | None. | Freckled Rust. Corrosion of the aluminum has initiated. | Section loss is evident or pack rust is present but does not warrant structural review. | The condition warrants a structural review to determine the effect on strength or serviceability of the element or structure; OR a structural review has been completed and the defects impact strength or serviceability of the element or structure. |
| Cracking (1010) | None. | Crack that has self-arrested or has been arrested with effective arrest holes, doubling plates, or similar. | Identified crack exists that is not arrested but does not warrant structural review. | |
| Connection (1020) | Connection is in place and functioning as intended. | Loose fasteners or pack rust without distortion is present but the connection is in place and functioning as intended. | Missing bolts, rivets, broken welds, fasteners or pack rust with distortion but does not warrant a structural review. | |
| Distortion (1900) | None. | Distortion not requiring mitigation or mitigated distortion. | Distortion that requires mitigation that has not been addressed but does not warrant structural review. | |
| Damage (7000) | Not applicable. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 2 under the appropriate material defect entry. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 3 under the appropriate material defect entry. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 4 under the appropriate material defect entry. |
| Lean (9700) | None. | Horizontal Measurement / Vertical Measurement < 1% | 1% <= Horizontal Measurement / Vertical Measurement < 2% | Horizontal Measurement / Vertical Measurement > 2% |
| Dent (9720) | Not applicable. | Horizontal / Circumference < 5% | 5% <= Horizontal / Circumference < 10% | Horizontal / Circumference >= 10% |

**Commentary:**
None.

# Ancillary Structures Element Coding Guide

**Element:** 714
**Name:** Concrete High Mast Light or Luminaire Support Column
**Unit:** Feet

**Description:**
Element defines all concrete high mast light or luminaire support columns

| Defect | Condition State 1 | Condition State 2 | Condition State 3 | Condition State 4 |
|---|---|---|---|---|
| Delamination/Spall/ Patched Area (1080) | None. | Delaminated. Spall 1 in. or less deep or 6 in. or less in diameter. Patched area that is sound. | Spall greater than 1 in. deep or greater than 6 in. diameter. Patched area that is unsound or showing distress. Does not warrant structural review. | The condition warrants a structural review to determine the effect on strength or serviceability of the element or structure; OR a structural review has been completed and the defects impact strength or serviceability of the element or structure. |
| Exposed Rebar (1090) | None. | Present without measurable section loss. | Present with measurable section loss, but does not warrant structural review. | |
| Efflorescence/Rust Staining (1120) | None. | Surface white without build-up or leaching without rust staining. | Heavy build-up with rust staining. | |
| Cracking (RC and Other) (1130) | Width less than 0.012 in. or spacing greater than 3.0 ft. | Width 0.012–0.05 in. or spacing of 1.0–3.0 ft. | Width greater than 0.05 in. or spacing of less than 1 ft. | |
| Abrasion(PSC/RC) (1190) | No abrasion or wearing. | Abrasion or wearing has exposed coarse aggregate but the aggregate remains secure in the concrete. | Coarse aggregate is loose or has popped out of the concrete matrix due to abrasion or wear. | |
| Damage (7000) | Not applicable. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 2 under the appropriate material defect entry. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 3 under the appropriate material defect entry. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 4 under the appropriate material defect entry. |
| Lean (9700) | None. | Horizontal Measurement / Vertical Measurement < 1% | 1% <= Horizontal Measurement / Vertical Measurement < 2% | Horizontal Measurement / Vertical Measurement > 2% |
| Dent (9720) | Not applicable. | Horizontal / Circumference < 5% | 5% <= Horizontal / Circumference < 10% | Horizontal / Circumference >= 10% |

**Commentary:**
None

# Ancillary Structures Element Coding Guide

**Element:** 715
**Name:** Fiberglass High Mast Light or Luminaire Support Column
**Unit:** Feet

**Description:**
Element defines all fiberglass high mast light or luminaire support columns

| Defect | Condition State 1 | Condition State 2 | Condition State 3 | Condition State 4 |
|---|---|---|---|---|
| Cracking (1010) | None. | Crack that has self-arrested or has been arrested with effective arrest holes, doubling plates, or similar. | Identified crack exists that is not arrested but does not warrant structural review. | The condition warrants a structural review to determine the effect on strength or serviceability of the element or structure; OR a structural review has been completed and the defects impact strength or serviceability of the element or structure. |
| Deterioration (Other) (1220) | None. | Initiated breakdown or deterioration. | Significant deterioration or breakdown, but does not warrant structural review. | |
| Damage (7000) | Not applicable. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 2 under the appropriate material defect entry. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 3 under the appropriate material defect entry. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 4 under the appropriate material defect entry. |
| Lean (9700) | None. | Horizontal Measurement / Vertical Measurement < 1% | 1% <= Horizontal Measurement / Vertical Measurement < 2% | Horizontal Measurement / Vertical Measurement > 2% |
| Delaminations (Fiberglass) (9720) | None. | Surface of the fiberglass may have some small blisters and/or minor deformations. Sounding of the surface does not reveal any voids. | The surface of the fiberglass has missing resin but the fabric material is intact. The fiberglass is not peeling in sheets. Sounding of the surface does not reveal any voids. There are no cracks in the surface where resin is missing. | The surface of the fiberglass has missing resin, missing fabric and the section loss will reduce the structural capacity of the element. The sounding of the surface reveals that there are voids and adhesion has been lost and/or cracks are present in the areas where the fiberglass is peeling in sheets. |
| Chalking (Fiberglass) (9740) | None. | Surface dulling | Loss of pigment. | Loss of section. |

**Commentary:**
None

# Ancillary Structures Element Coding Guide

**Element:** 716
**Name:** Welded or Slip Joint Splice Connection for Steel End Support or HML
**Unit:** Each

**Description:**
Element defines all steel splice plates (and bolts), welded, slip fit or bolted connections for splices located in steel end supports (or frames) or high mast light or luminaire supports. Inclusive of weathering steel.

| Defect | Condition State 1 | Condition State 2 | Condition State 3 | Condition State 4 |
|---|---|---|---|---|
| Corrosion (1000) | None. | Freckled Rust. Corrosion of the steel has initiated. | Section loss is evident or pack rust is present but does not warrant structural review. | The condition warrants a structural review to determine the effect on strength or serviceability of the element or structure; OR a structural review has been completed and the defects impact strength or serviceability of the element or structure. |
| Cracking (1010) | None. | Crack that has self-arrested or has been arrested with effective arrest holes, doubling plates, or similar. | Identified crack exists that is not arrested but does not warrant structural review. | |
| Connection (1020) | Connection is in place and functioning as intended. | Loose fasteners or pack rust without distortion is present but the connection is in place and functioning as intended. | Missing bolts, rivets, broken welds, fasteners or pack rust with distortion but does not warrant a structural review. | |
| Distortion (1900) | None. | Distortion not requiring mitigation or mitigated distortion. | Distortion that requires mitigation that has not been addressed but does not warrant structural review. | |
| Alignment (connections) (9710) | None. | Less than 40:1 | Greater than 40:1 but not failed, | Connection failed. |

**Commentary:**
Describe what type of connection in element notes. One connection includes all chords on truss, for example if a trichord truss has 2 splices on each chord the quantity should be 2, not 6.

# Ancillary Structures Element Coding Guide

| | |
|---|---|
| **Element:** 717<br>**Name:** Welded or Slip Joint Splice Connection for Aluminum End Support or HML<br>**Unit:** Each | **Description:**<br>Element defines all aluminum splice plates (and bolts), welded, slip fit or bolted connections for splices located in steel end supports (or frames) or high mast light or luminaire supports. |

| Defect | Condition State 1 | Condition State 2 | Condition State 3 | Condition State 4 |
|---|---|---|---|---|
| Corrosion (1000) | None. | Freckled Rust. Corrosion of the steel has initiated. | Section loss is evident or pack rust is present but does not warrant structural review. | The condition warrants a structural review to determine the effect on strength or serviceability of the element or structure; OR a structural review has been completed and the defects impact strength or serviceability of the element or structure. |
| Cracking (1010) | None. | Crack that has self-arrested or has been arrested with effective arrest holes, doubling plates, or similar. | Identified crack exists that is not arrested but does not warrant structural review. | |
| Connection (1020) | Connection is in place and functioning as intended. | Loose fasteners or pack rust without distortion is present but the connection is in place and functioning as intended. | Missing bolts, rivets, broken welds, fasteners or pack rust with distortion but does not warrant a structural review. | |
| Distortion (1900) | None. | Distortion not requiring mitigation or mitigated distortion. | Distortion that requires mitigation that has not been addressed but does not warrant structural review. | |
| Alignment (connections) (9710) | None. | Less than 40:1 | Greater than 40:1 but not failed, | Connection failed. |

**Commentary:**
Describe what type of connection in element notes. One connection includes all chords on truss, for example if a trichord truss has 2 splices on each chord the quantity should be 2, not 6.

# Ancillary Structures Element Coding Guide

| **Element:** 718<br>**Name:** End Support-to-Chord Connection<br>**Unit:** Each | **Description:**<br>Element defines all plates, bolts and welds connecting support columns to chords. Inclusive of weathering steel. | | | |
|---|---|---|---|---|
| **Defect** | **Condition State 1** | **Condition State 2** | **Condition State 3** | **Condition State 4** |
| Corrosion (1000) | None. | Freckled Rust. Corrosion of the steel has initiated. | Section loss is evident or pack rust is present but does not warrant structural review. | The condition warrants a structural review to determine the effect on strength or serviceability of the element or structure; OR a structural review has been completed and the defects impact strength or serviceability of the element or structure. |
| Cracking (1010) | None. | Crack that has self-arrested or has been arrested with effective arrest holes, doubling plates, or similar. | Identified crack exists that is not arrested but does not warrant structural review. | |
| Connection (1020) | Connection is in place and functioning as intended. | Loose fasteners or pack rust without distortion is present but the connection is in place and functioning as intended. | Missing bolts, rivets, broken welds, fasteners or pack rust with distortion but does not warrant a structural review. | |
| Alignment (connections) (9710) | None. | Less than 40:1 | Greater than 40:1 but not failed, | Connection failed. |

**Commentary:**
One connection includes all chords on truss, for example if a trichord truss has 2 splices on each chord the quantity should be 2, not 6.

# Ancillary Structures Element Coding Guide

**Element:** 719
**Name:** Steel Single Chord Span
**Unit:** Feet

**Description:**
Element defines all steel spans comprised of single chords (mast arm). Inclusive of weathering steel.

| Defect | Condition State 1 | Condition State 2 | Condition State 3 | Condition State 4 |
|---|---|---|---|---|
| Corrosion (1000) | None. | Freckled Rust. Corrosion of the steel has initiated. | Section loss is evident or pack rust is present but does not warrant structural review. | The condition warrants a structural review to determine the effect on strength or serviceability of the element or structure; OR a structural review has been completed and the defects impact strength or serviceability of the element or structure. |
| Cracking (1010) | None. | Crack that has self-arrested or has been arrested with effective arrest holes, doubling plates, or similar. | Identified crack exists that is not arrested but does not warrant structural review. | |
| Connection (1020) | Connection is in place and functioning as intended. | Loose fasteners or pack rust without distortion is present but the connection is in place and functioning as intended. | Missing bolts, rivets, broken welds, fasteners or pack rust with distortion but does not warrant a structural review. | |
| Distortion (1900) | None. | Distortion not requiring mitigation or mitigated distortion. | Distortion that requires mitigation that has not been addressed but does not warrant structural review. | |
| Damage (7000) | Not applicable. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 2 under the appropriate material defect entry. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 3 under the appropriate material defect entry. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 4 under the appropriate material defect entry. |
| Lean (9700) | None. | Horizontal Measurement / Vertical Measurement < 1% | 1% <= Horizontal Measurement / Vertical Measurement < 2% | Horizontal Measurement / Vertical Measurement > 2% |
| Dent (9720) | Not applicable. | Horizontal / Circumference < 5% | 5% <= Horizontal / Circumference < 10% | Horizontal / Circumference >= 10% |

**Commentary:**
The quantity shall be horizontal arm span. For chords (or braced cantilevers) that have a vertical component (curved arm), the measured quantity shall be horizontal, not along the curved arm.

# Ancillary Structures Element Coding Guide

**Element:** 720
**Name:** Aluminum Single Chord Span
**Unit:** Feet

**Description:**
Element defines all aluminum spans comprised of single chords (mast arm) or braced cantilever (trombone-type) luminaire or signal support arms

| Defect | Condition State 1 | Condition State 2 | Condition State 3 | Condition State 4 |
|---|---|---|---|---|
| Corrosion (1000) | None. | Freckled Rust. Corrosion of the aluminum has initiated. | Section loss is evident or pack rust is present but does not warrant structural review. | The condition warrants a structural review to determine the effect on strength or serviceability of the element or structure; OR a structural review has been completed and the defects impact strength or serviceability of the element or structure. |
| Cracking (1010) | None. | Crack that has self-arrested or has been arrested with effective arrest holes, doubling plates, or similar. | Identified crack exists that is not arrested but does not warrant structural review. | |
| Connection (1020) | Connection is in place and functioning as intended. | Loose fasteners or pack rust without distortion is present but the connection is in place and functioning as intended. | Missing bolts, rivets, broken welds, fasteners or pack rust with distortion but does not warrant a structural review. | |
| Distortion (1900) | None. | Distortion not requiring mitigation or mitigated distortion. | Distortion that requires mitigation that has not been addressed but does not warrant structural review. | |
| Damage (7000) | Not applicable. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 2 under the appropriate material defect entry. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 3 under the appropriate material defect entry. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 4 under the appropriate material defect entry. |
| Lean (9700) | None. | Horizontal Measurement / Vertical Measurement < 1% | 1% <= Horizontal Measurement / Vertical Measurement < 2% | Horizontal Measurement / Vertical Measurement > 2% |
| Dent (9720) | Not applicable. | Horizontal / Circumference < 5% | 5% <= Horizontal / Circumference < 10% | Horizontal / Circumference >= 10% |

**Commentary:**
The quantity shall be horizontal arm span. For chords (or braced cantilevers) that have a vertical component (curved arm), the measured quantity shall be horizontal, not along the curved arm.

# Ancillary Structures Element Coding Guide

**Element:** 721
**Name:** Steel Truss Span
**Unit:** Feet

**Description:**
Element defines all steel spans comprised of multiple chords with or without trussing. Inclusive of weathering steel.

| Defect | Condition State 1 | Condition State 2 | Condition State 3 | Condition State 4 |
|---|---|---|---|---|
| Corrosion (1000) | None. | Freckled Rust. Corrosion of the steel has initiated. | Section loss is evident or pack rust is present but does not warrant structural review. | The condition warrants a structural review to determine the effect on strength or serviceability of the element or structure; OR a structural review has been completed and the defects impact strength or serviceability of the element or structure. |
| Cracking (1010) | None. | Crack that has self-arrested or has been arrested with effective arrest holes, doubling plates, or similar. | Identified crack exists that is not arrested but does not warrant structural review. | |
| Connection (1020) | Connection is in place and functioning as intended. | Loose fasteners or pack rust without distortion is present but the connection is in place and functioning as intended. | Missing bolts, rivets, broken welds, fasteners or pack rust with distortion but does not warrant a structural review. | |
| Distortion (1900) | None. | Distortion not requiring mitigation or mitigated distortion. | Distortion that requires mitigation that has not been addressed but does not warrant structural review. | |
| Damage (7000) | Not applicable. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 2 under the appropriate material defect entry. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 3 under the appropriate material defect entry. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 4 under the appropriate material defect entry. |
| Lean (9700) | None. | Horizontal Measurement / Vertical Measurement < 1% | 1% <= Horizontal Measurement / Vertical Measurement < 2% | Horizontal Measurement / Vertical Measurement > 2% |
| Dent (9720) | Not applicable. | Horizontal / Circumference < 5% | 5% <= Horizontal / Circumference < 10% | Horizontal / Circumference >= 10% |

**Commentary:**
Element shall not include braced cantilevers (trombone-type) that are common for luminaire support spans.

# Ancillary Structures Element Coding Guide

**Element:** 722
**Name:** Aluminum Truss Span
**Unit:** Feet

**Description:**
Element defines all aluminum spans comprised of multiple chords with or without trussing.

| Defect | Condition State 1 | Condition State 2 | Condition State 3 | Condition State 4 |
|---|---|---|---|---|
| Corrosion (1000) | None. | Freckled Rust. Corrosion of the aluminum has initiated. | Section loss is evident or pack rust is present but does not warrant structural review. | The condition warrants a structural review to determine the effect on strength or serviceability of the element or structure; OR a structural review has been completed and the defects impact strength or serviceability of the element or structure. |
| Cracking (1010) | None. | Crack that has self-arrested or has been arrested with effective arrest holes, doubling plates, or similar. | Identified crack exists that is not arrested but does not warrant structural review. | |
| Connection (1020) | Connection is in place and functioning as intended. | Loose fasteners or pack rust without distortion is present but the connection is in place and functioning as intended. | Missing bolts, rivets, broken welds, fasteners or pack rust with distortion but does not warrant a structural review. | |
| Distortion (1900) | None. | Distortion not requiring mitigation or mitigated distortion. | Distortion that requires mitigation that has not been addressed but does not warrant structural review. | |
| Damage (7000) | Not applicable. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 2 under the appropriate material defect entry. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 3 under the appropriate material defect entry. | The element has impact damage. The specific damage caused by the impact has been captured in condition state 4 under the appropriate material defect entry. |
| Lean (9700) | None. | Horizontal Measurement / Vertical Measurement < 1% | 1% <= Horizontal Measurement / Vertical Measurement < 2% | Horizontal Measurement / Vertical Measurement > 2% |
| Dent (9720) | Not applicable. | Horizontal / Circumference < 5% | 5% <= Horizontal / Circumference < 10% | Horizontal / Circumference >= 10% |

**Commentary:**
This element shall not include braced cantilevers (trombone-type) that are common for luminaire support spans.

# Ancillary Structures Element Coding Guide

**Element:** 723
**Name:** Span Wire Assembly
**Unit:** Feet

**Description:**
Element defines all aluminum spans comprised of multiple chords with or without trussing.

| Defect | Condition State 1 | Condition State 2 | Condition State 3 | Condition State 4 |
|---|---|---|---|---|
| Corrosion (1000) | None. | Freckled Rust. Corrosion of the steel has initiated. | Section loss is evident or pack rust is present but does not warrant structural review. | The condition warrants a structural review to determine the effect on strength or serviceability of the element or structure; OR a structural review has been completed and the defects impact strength or serviceability of the element or structure. |
| Cracking (1010) | None. | Crack that has self-arrested or has been arrested with effective arrest holes, doubling plates, or similar. | Identified crack exists that is not arrested but does not warrant structural review. | |
| Connection (1020) | Connection is in place and functioning as intended. | Loose fasteners or pack rust without distortion is present but the connection is in place and functioning as intended. | Missing bolts, rivets, broken welds, fasteners or pack rust with distortion but does not warrant a structural review. | |
| Sag (9730) | None. | Minor. | Moderate. | Excessive. |

**Commentary:**
This element shall not include support columns, signs, or signal attachments.

# Ancillary Structures Element Coding Guide

**Element:** 726
**Name:** Bolted, Welded, or Slip Joint Splice Connection for Steel Span
**Unit:** Each

**Description:**
Element defines all steel splice plates (and bolts), welds, or slip-fit connections for splices located in steel spans or luminaire arms. Inclusive of weathering steel

| Defect | Condition State 1 | Condition State 2 | Condition State 3 | Condition State 4 |
|---|---|---|---|---|
| Corrosion (1000) | None. | Freckled Rust. Corrosion of the steel has initiated. | Section loss is evident or pack rust is present but does not warrant structural review. | The condition warrants a structural review to determine the effect on strength or serviceability of the element or bridge; OR a structural review has been completed and the defects impact strength or serviceability of the element or bridge. |
| Cracking (1010) | None. | Crack that has self-arrested or has been arrested with effective arrest holes, doubling plates, or similar. | Identified crack exists that is not arrested but does not warrant structural review. | |
| Connection (1020) | Connection is in place and functioning as intended. | Loose fasteners or pack rust without distortion is present but the connection is in place and functioning as intended. | Missing bolts, rivets, broken welds, fasteners or pack rust with distortion but does not warrant a structural review. | |
| Alignment (connections) (9710) | None. | Less than 40:1 | Greater than 40:1 but not failed, | Connection failed. |

**Commentary:**
One connection includes all chords on a truss, for example, if a trichord truss has 2 splices on each chord the quantity should be 2 not 6. Describe what type of connection in element notes (Bolted, Slip Joint, etc).

# Ancillary Structures Element Coding Guide

| **Element:** 727<br>**Name:** Bolted, Welded, or Slip Joint Splice Connection for aluminum Span<br>**Unit:** Each | **Description:**<br>Element defines all aluminum splice plates (and bolts), welds, or slip-fit connections for splices located in aluminum spans or luminaire arms. | | | |
|---|---|---|---|---|
| **Defect** | **Condition State 1** | **Condition State 2** | **Condition State 3** | **Condition State 4** |
| Corrosion (1000) | None. | Freckled Rust. Corrosion of the aluminum has initiated. | Section loss is evident or pack rust is present but does not warrant structural review. | The condition warrants a structural review to determine the effect on strength or serviceability of the element or bridge; OR a structural review has been completed and the defects impact strength or serviceability of the element or bridge. |
| Cracking (1010) | None. | Crack that has self-arrested or has been arrested with effective arrest holes, doubling plates, or similar. | Identified crack exists that is not arrested but does not warrant structural review. | |
| Connection (1020) | Connection is in place and functioning as intended. | Loose fasteners or pack rust without distortion is present but the connection is in place and functioning as intended. | Missing bolts, rivets, broken welds, fasteners or pack rust with distortion but does not warrant a structural review. | |
| Alignment (connections) (9710) | None. | Less than 40:1 | Greater than 40:1 but not failed, | Connection failed. |

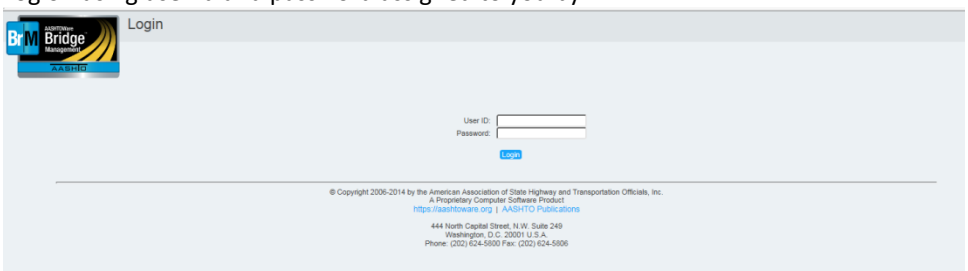
**Commentary:**
One connection includes all chords on a truss, for example, if a trichord truss has 2 splices on each chord the quantity should be 2 not 6. Describe what type of connection in element notes (Bolted, Slip Joint, etc).

# BrM™ 5.2.3/OVERHEAD STRUCTURE USER GUIDE

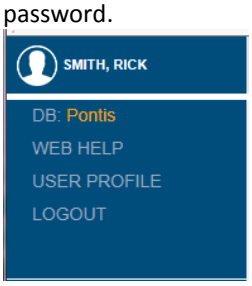
This is a user guide for **BrM™**; refer to the Idaho Manual for Inspection of Structural Supports for Highway Signs, High Mast Luminaires and Traffic Signals (IMISSHSMLTS) for inspection procedures.

## Log On/Log Off

Log on using user id and password assigned to you by ITD.




To Log Off, click on your name in the upper left and a drop down will appear. Choose LOGOUT.
You can also choose WEB HELP from here, it will take you to the Online Help System. User information and password can be changed under USER PROFILE; we ask that you DO NOT change any of these fields including your password.

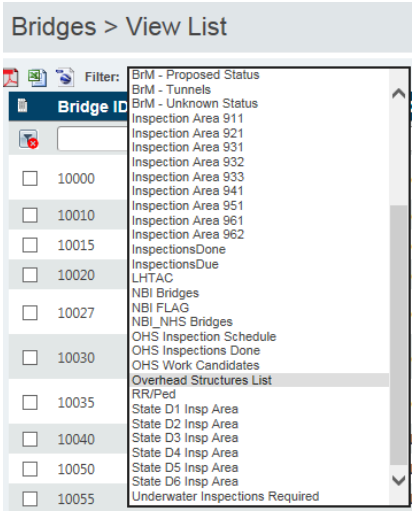



## General Information

You should familiarize yourself with the tabs and where the different fields are located within the tabs. In BrM 5.2.3 all menu tabs are on the left side of the window. The top shows you the path of the screen you're on, i.e. Bridges> View List.

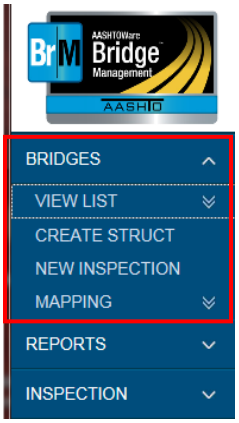
Bridge groups have been set up in BrM. You will see only overhead structures.

There are two filters you can use; BrM-None or Overhead Structures List

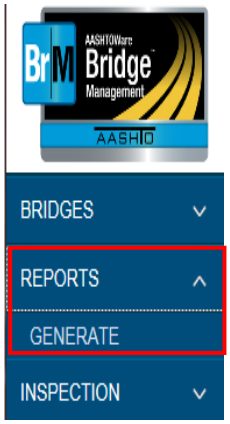


## Navigation Tabs

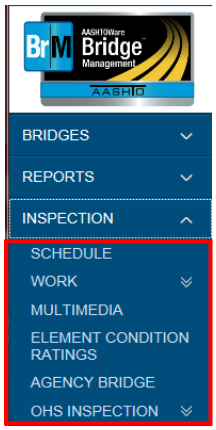
BRIDGES



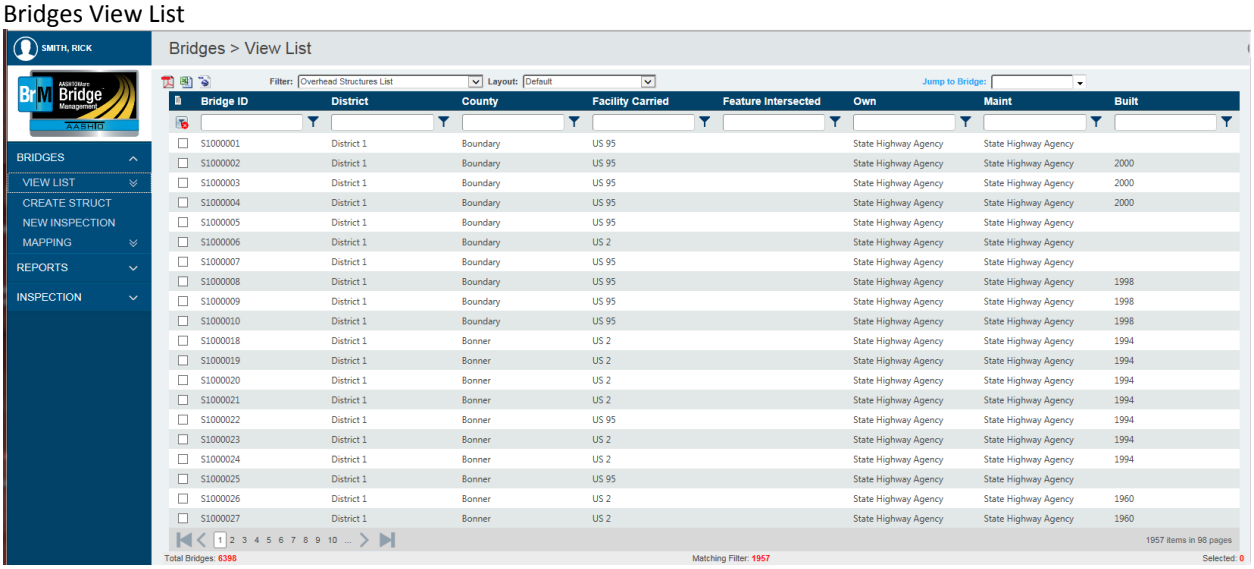

REPORTS




INSPECTION

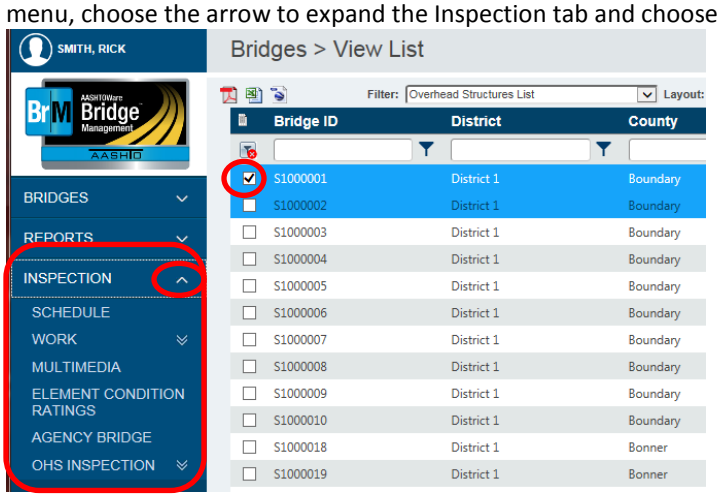



Bridges View List



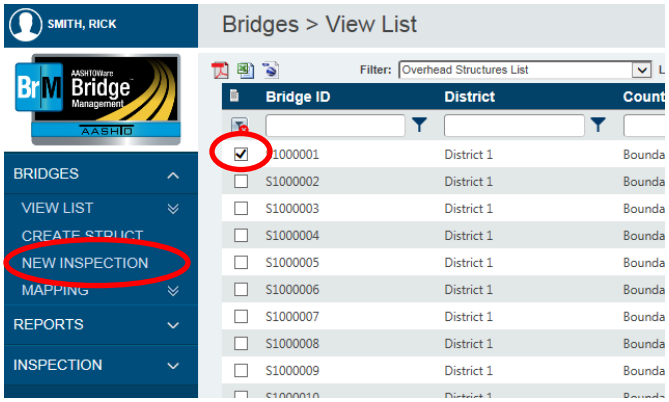

**The OHS 'Bridge' ID will begin with a S, followed by one character that denotes the district 1-6, followed by a six character sequential number padded with zeros.**

To go into the inspection data you'll check a bridge on the view list and then go to the Inspection tab on the side menu, choose the arrow to expand the Inspection tab and choose which tab you need.

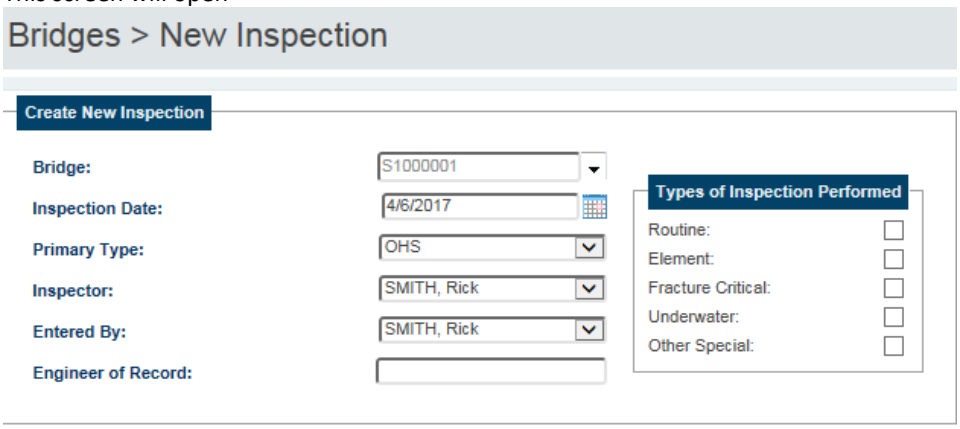


## Creating a New Inspection for an Existing OHS

On the Bridges List View Page, select an OHS by checking the box on the left of the Bridge ID, the choose New Inspection from menu on left.




This screen will open




**Inspection Date** - The *Inspection Date* field defaults to the current date. To change the date, enter a new date in the MM/DD/YYYY format or click the symbol and select a date.

**Primary Type** - The *Primary Type* dropdown lists the primary type of inspection that will be performed. It should already show OHS, it not change it to OHS.

**Inspector** - The *Inspector* dropdown will default to the current user. This can be changed, however the users available in the dropdown will depend on user roles and permissions.

**Entered By** - The *Entered By* dropdown will default to the current user. This can be changed, however the users available in the dropdown will depend on user roles and permissions.

**Engineer of Record** – We will not be using this field at this time.

**Types of Inspection Performed** - The user should check the boxes of the inspections that were performed on the bridge on the selected inspection date. The selected inspections will be assigned the selected inspection date on the *Inspection > Schedule* tab. If necessary, his information can be edited later on the *Inspection > Schedule* tab. For OHS you will choose Routine and Element.

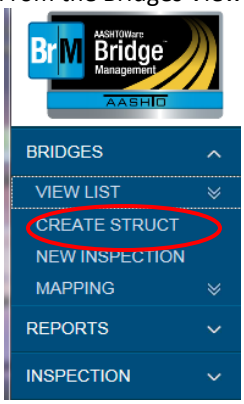
**New Inspection Page Controls – at bottom of screen**

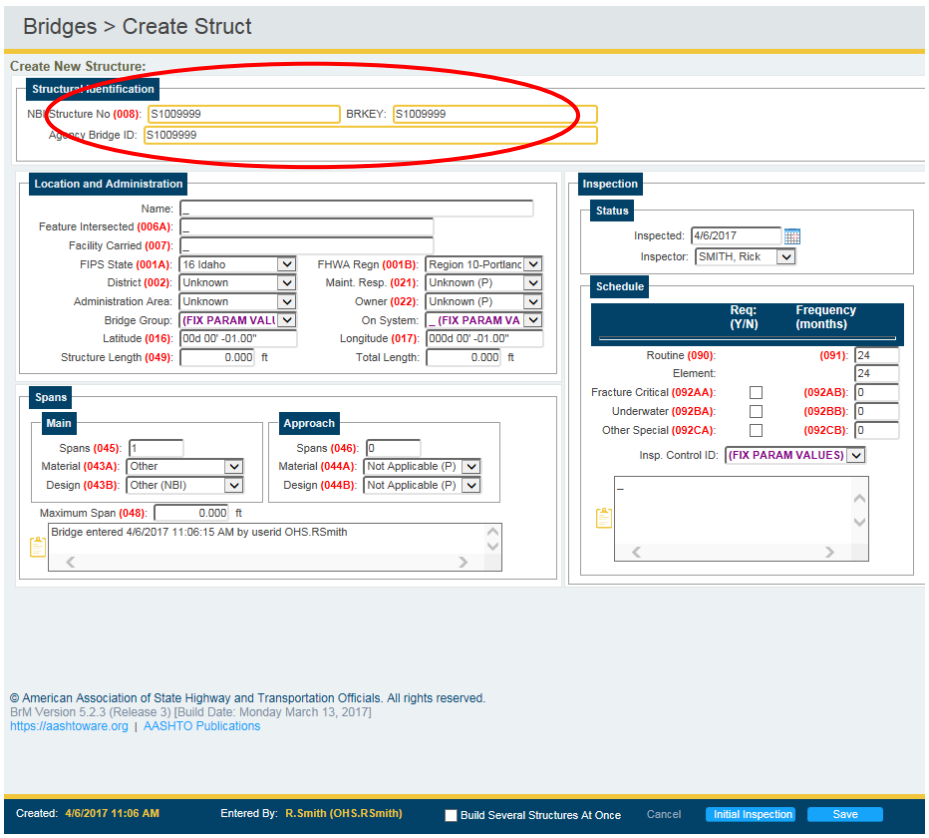
Click the *Create* button to create the new inspection and automatically be taken to the *Inspection > Schedule* tab to continue filling out the inspection information.

Click the *Cancel* button to cancel the new inspection and return to the *Bridges > View List* tab.

## Creating Initial Inspections for New OHS

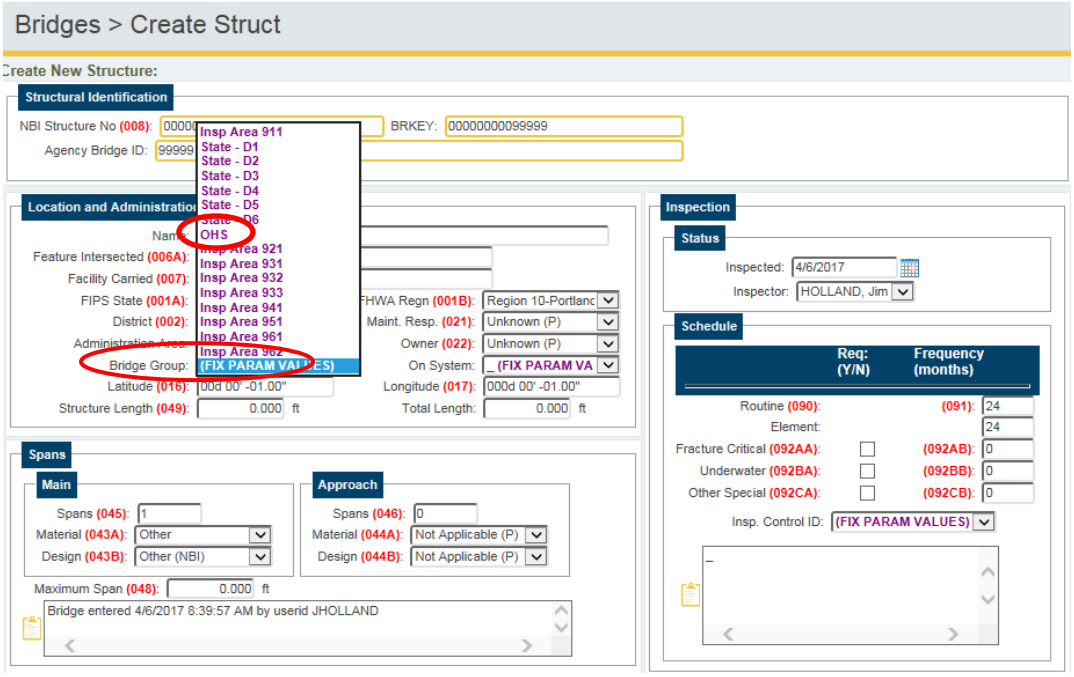
From the Bridges View List select Create Struct from the menu on the left.




The OHS 'Bridge' ID will begin with an S, followed by one character that denotes the district 1-6, followed by a six character sequential number padded with zeros.

When you create a new structure, you will have to put your bridge group in the initial create screen. If you forget to do this, the bridge will **not** show up on your bridge list. You'll have to call the ITD database manager to fix it before you'll be able to see the bridge again. You can't try to re-create it, because it already exists in the database, you just can't see it if it's not in your group. For OHS inspections choose OHS from the list.




You will completely fill in all the fields. *NOTE: Use the tab key not the enter key when going through the fields, enter will take you out to the inspection desktop. (If you hit the enter key by mistake you can just go ahead and continue on from the inspection desktop, your bridge has been created. The only problem will be if you hadn't selected your Bridge Group yet.)

Leave Admin. Area and Inspection Control ID as the default, we do not use these fields.

If you are adding more than one bridge you can check the 'Build Several Structures At Once' box. Otherwise Click on the Initial Inspection box and you will end up at the Bridges > View List screen with the new bridge checked. You will now go through the Inspection tabs and enter all the OHS data.

## FOLLOWING ARE SCREEN SHOTS OF THE DIFFERENT INSPECTION TABS, UNLESS NOTED THEY ARE SELF EXPLANTORY.

**All Inspection tabs have Page Controls at bottom of screen -**

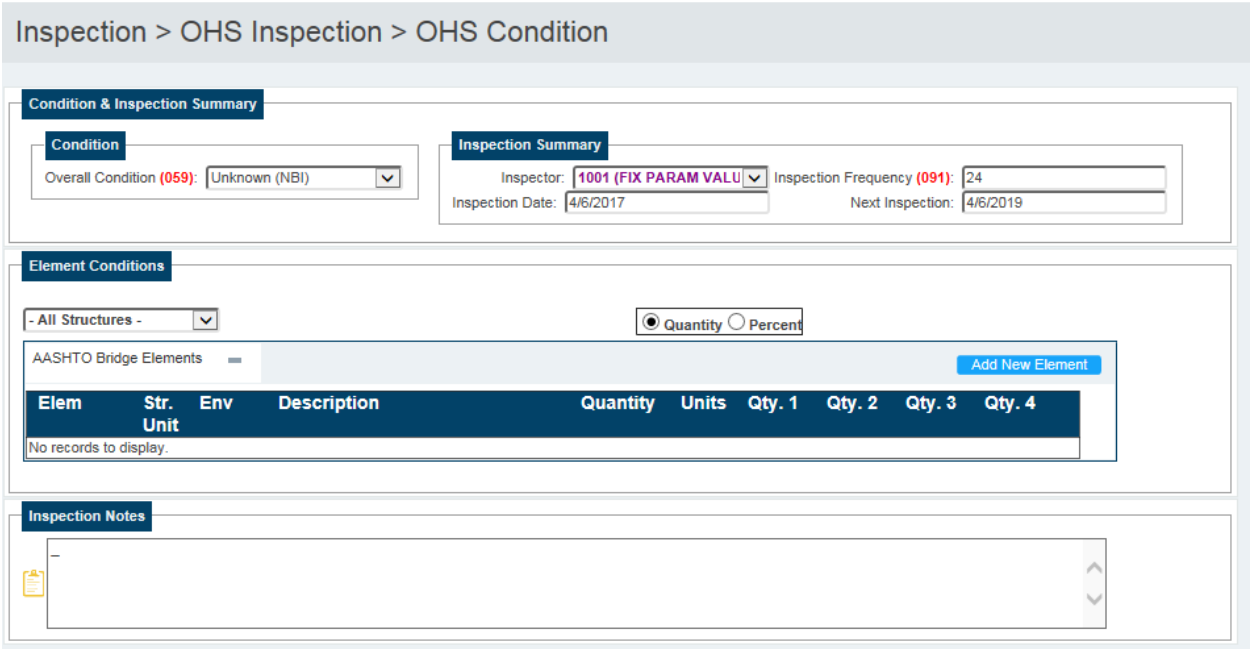
The ***Save*** button saves the changes made to the tab.

The ***Save & Close*** button saves the changes made to the tab and returns the user to the *Bridges > View List* tab.

The ***Cancel*** button cancels the changes made to the tab and returns the user to the *Bridges > View List* tab.

The ***Delete Inspection*** button deletes the current inspection for the selected bridge. **Be careful using this control.** It is possible for you to delete previous inspections!

## Inspection > OHS Inspection > OHS Condition Tab




**Condition & Inspection Summary**
**Condition** – Give an overall rating for the structure; refer to the IMISSHSMLTS.

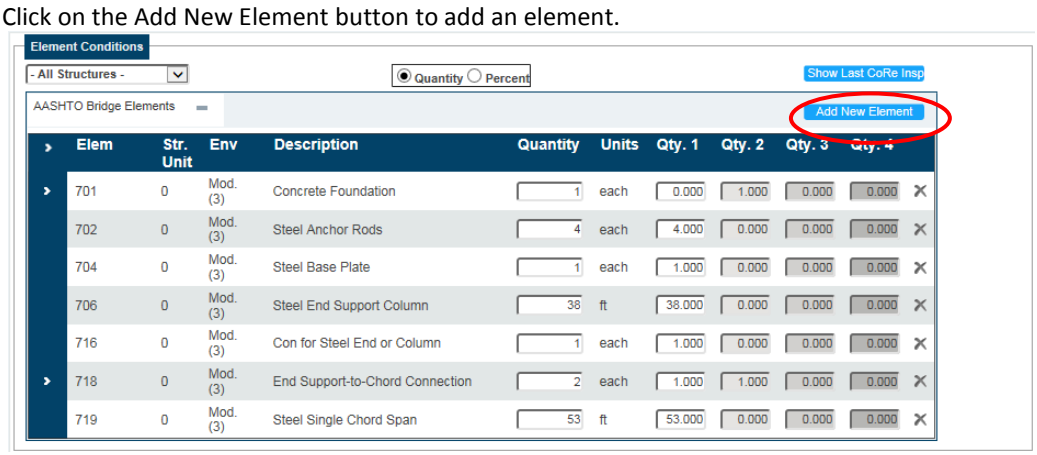
**Inspection Summary** - It is advisable to update the Inspection Summary fields under the Schedule Tab and not here.

**Element Conditions**
Refer to the IMISSHSMLTS for a complete list of elements and defects. Element numbers used for OHS are 700-799. All elements can be shown in Quantity or Percent, ITD uses Quantity.

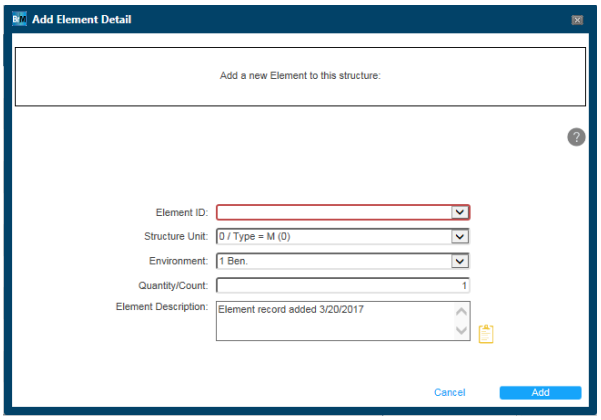
**Inspection Notes**
Inspection notes are general inspection notes.

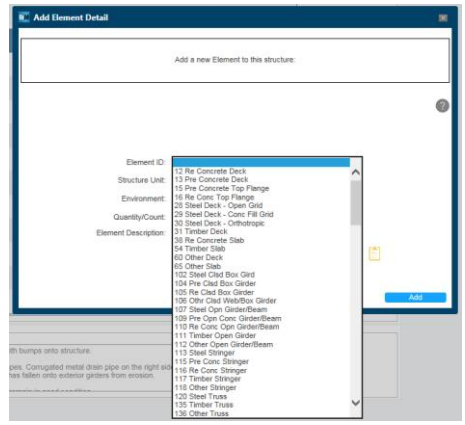
## Adding/Editing Elements

Click on the Add New Element button to add an element.

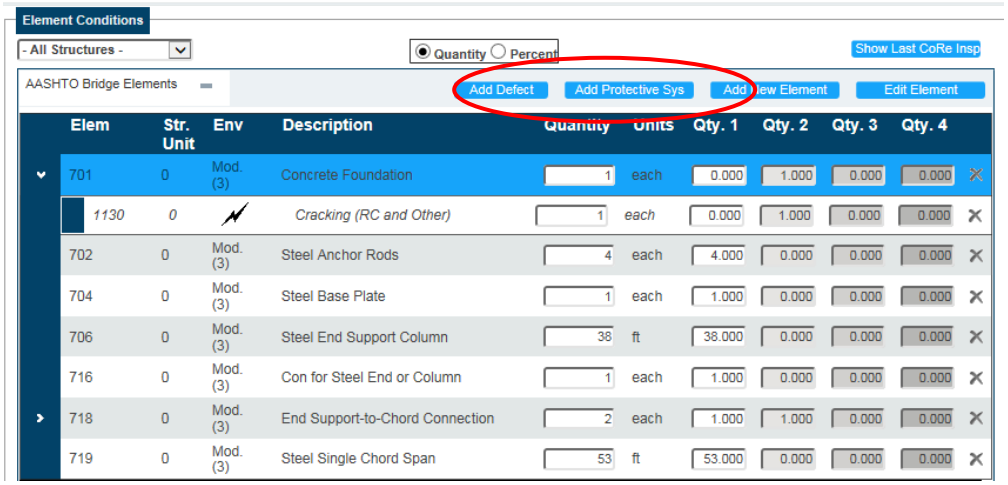


You'll get this box; choose an element from the dropdown list. Leave Structure Unit to what it defaults to. Choose Environment (ITD does not use 1-Benign) and choose Quantity/Count depending on element. Do nothing with element description box. Choose Add.



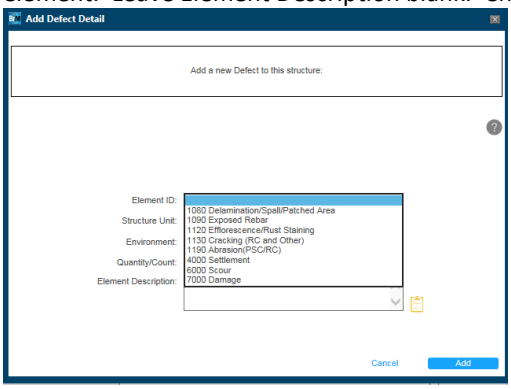



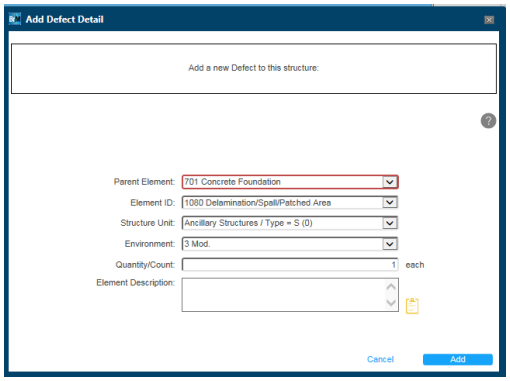

To add a protective system or defect you must have the parent element highlighted. Once you've highlighted an element the Add Defect and Add Protective Sys buttons will show up.



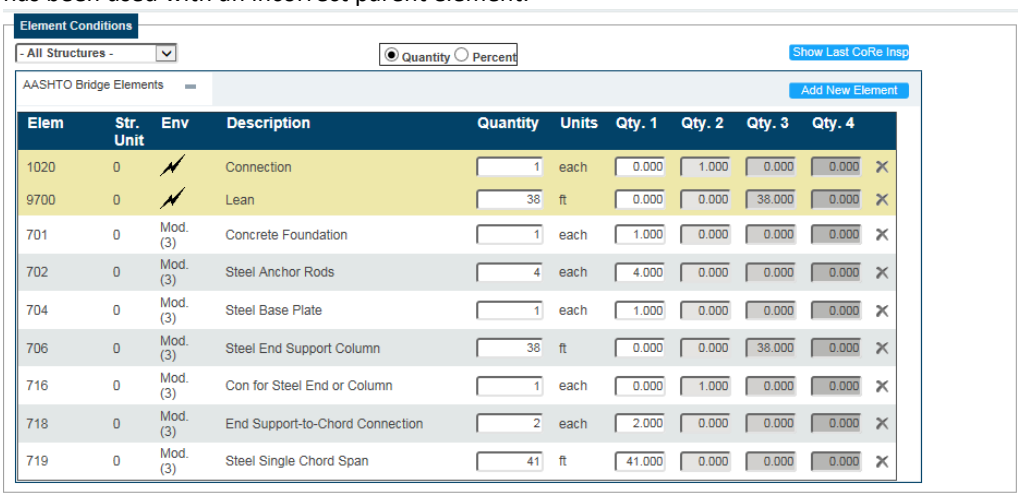

In BrM 5.2.3 only the defects and protective systems that are related to the parent element will show up in the dropdown. For example in the first screenshot below these are the only defects that can be used with 701 Concrete Foundation.

Once you choose the defect the Parent Element will also show up in the selection box. Leave the Structure Unit to the default. The Environment unit will default to whatever the parent element is, **DO NOT** change this. The environment of a defect must match that of the parent element. Choose Quantity/Count depending on the element. Leave Element Description blank. Choose Add.

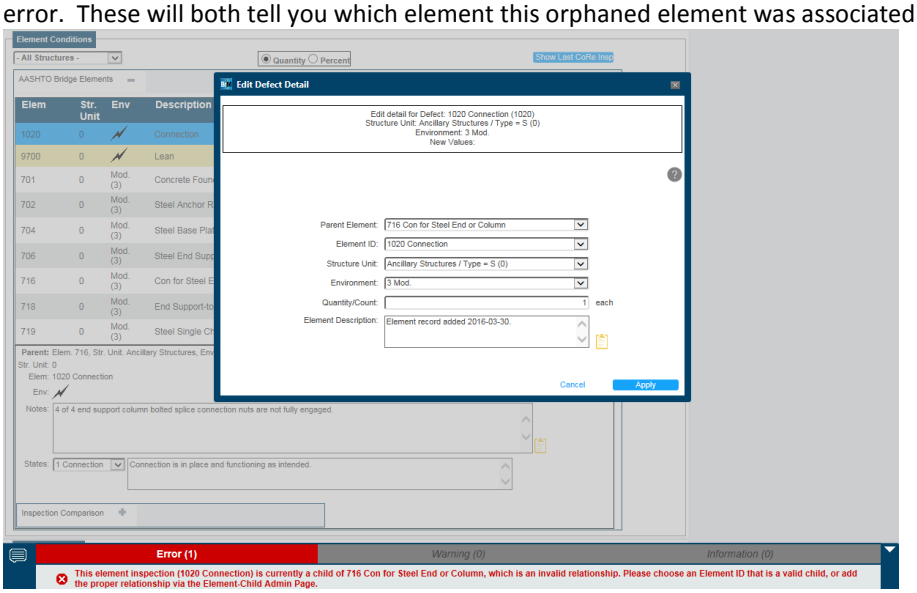


In the past versions of BrM it was possible to select a defect that did not belong to the parent element. If you come across any defects that are highlighted in yellow(see below), these are called orphaned elements. A defect has been used with an incorrect parent element.

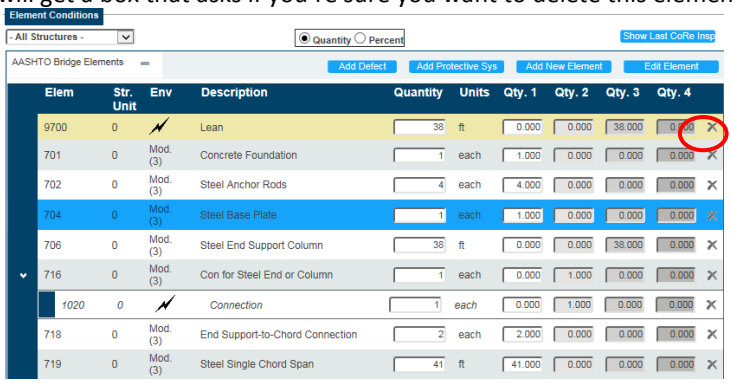



If you have an orphaned element, you can select it and choose Edit Element and it will come up with a box and an error. These will both tell you which element this orphaned element was associated with.




From the Edit Defect Detail box you can correct the orphaned element by choosing another element.

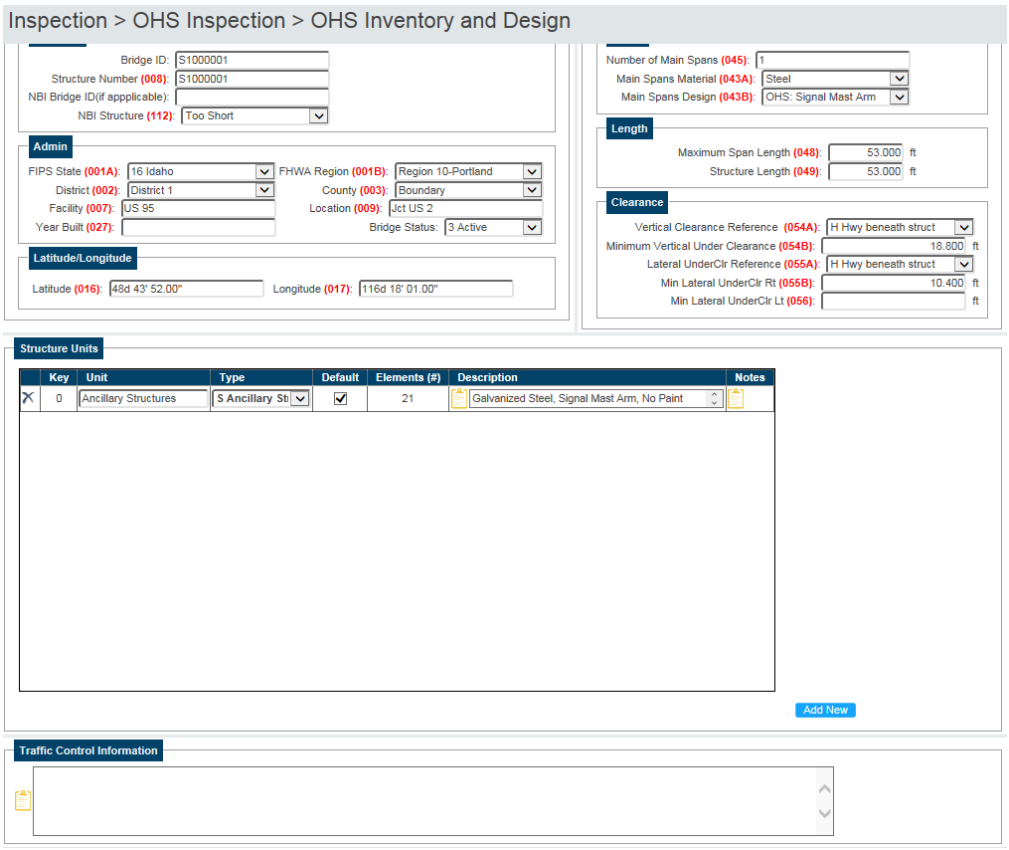
You must correct the orphaned element or delete it. To delete it, choose the X at the end of the element line. You will get a box that asks if you're sure you want to delete this element.



**You will need to review your quantities.** We do want whole numbers associated with the element quantities and the quantities need to add up.

BrM does allow you to save if the total quanities of the child element condition states are less than the total quantities of the parent condition state. This isn't something that we want you to do. If the parent has quanities in CS2, CS3 or CS4 the child elements should add up to the parent quanities in the same condition state

## Inspection > OHS Inspection > OHS Inventory and Design



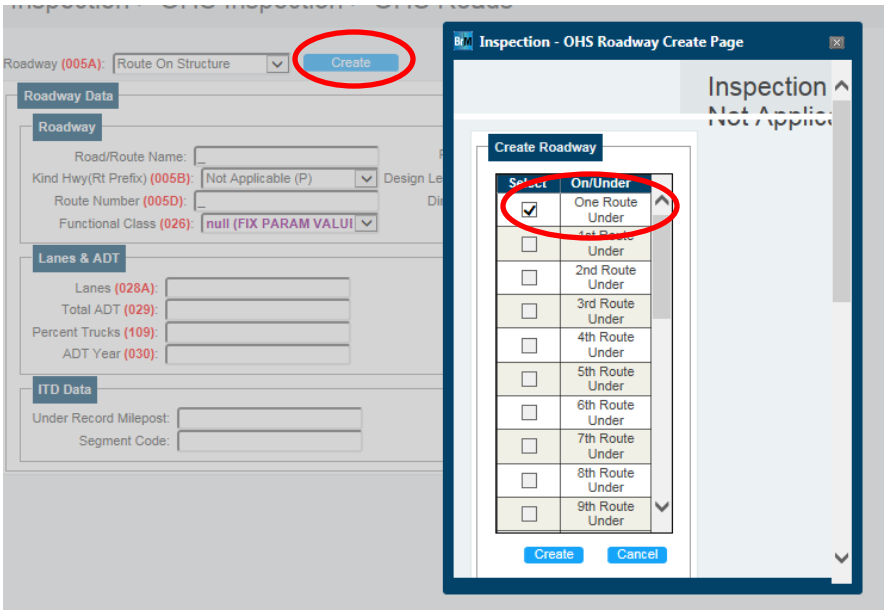

For the first go around on inspections of OHS, you might find the Location under Traffic Control Information. That's because the previous locations were too long to fit in the Location field so they were put in this notes field temporarily. Please remove these notes and condense enough to get in the Location field and use this for traffic control information, i.e. lanes that need to be closed for access, traffic control needed, etc.

NBI Bridge ID is used for Sign Bridges only that have an NBI number associated with them.

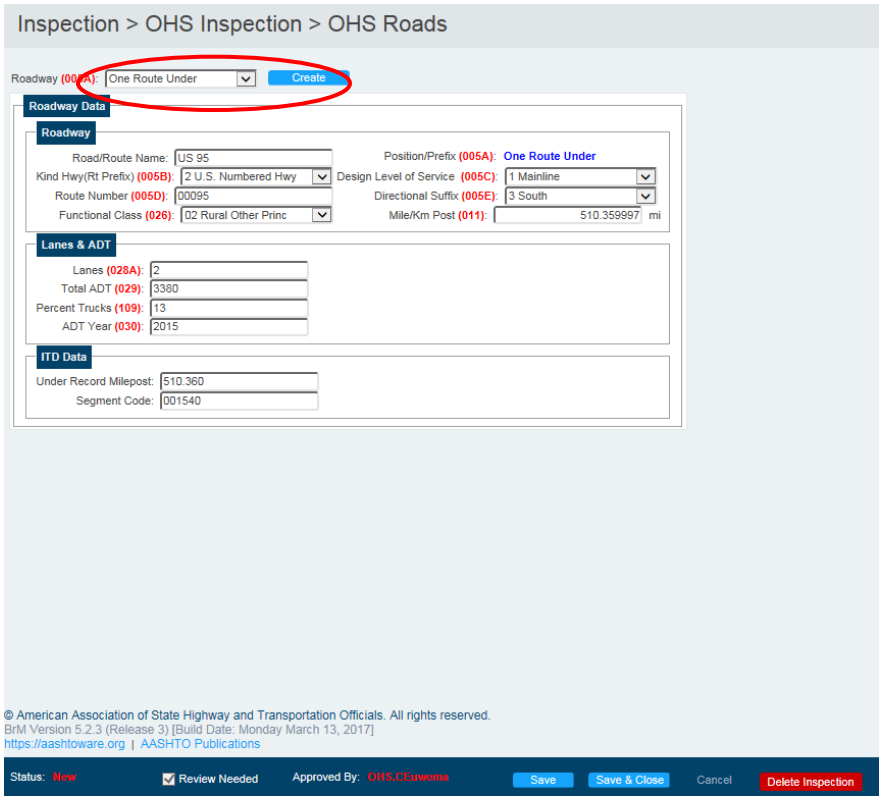
NBI Structure(112) is always Too Short.

Under Structure Units, Unit is Ancillary Structures, Type is S Ancillary Str. and you will complete the Description, see the IMISSHSMLTS.

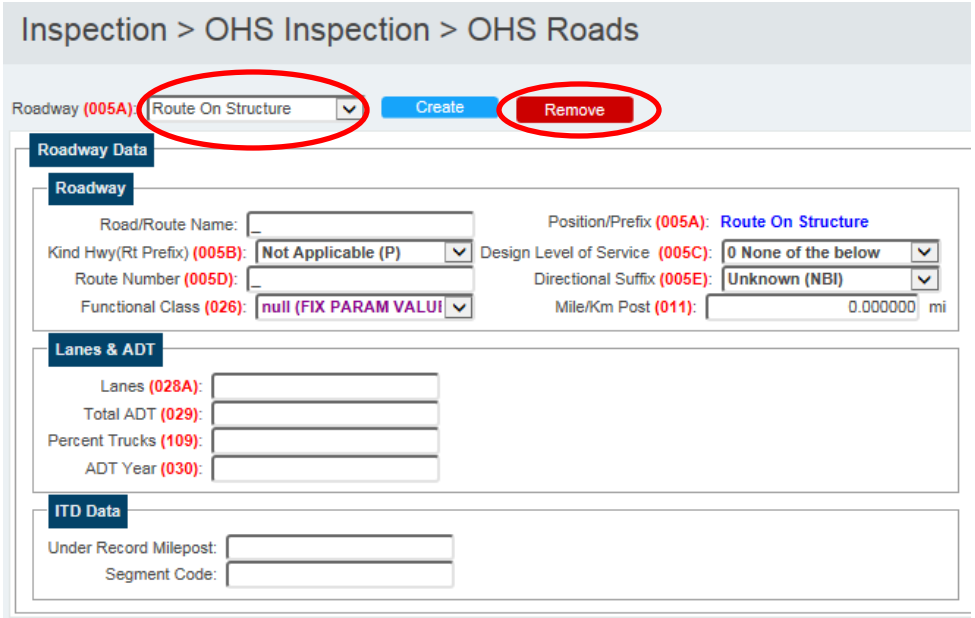
## Inspection > OHS Inspection > OHS Roads



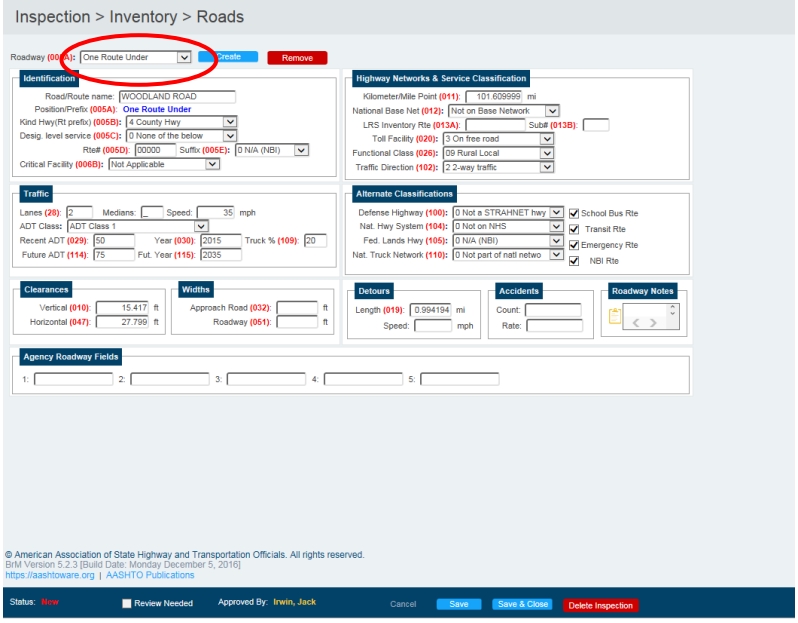

On the OHS Roads tab select create on Roadway and choose One Route Under.




You'll not have a One Route Under in Roadway, complete all applicable items.




Now you need to **DELETE** the Route On Structure – Make sure the Roadway is on Route On Structure and hit Remove. And Save.

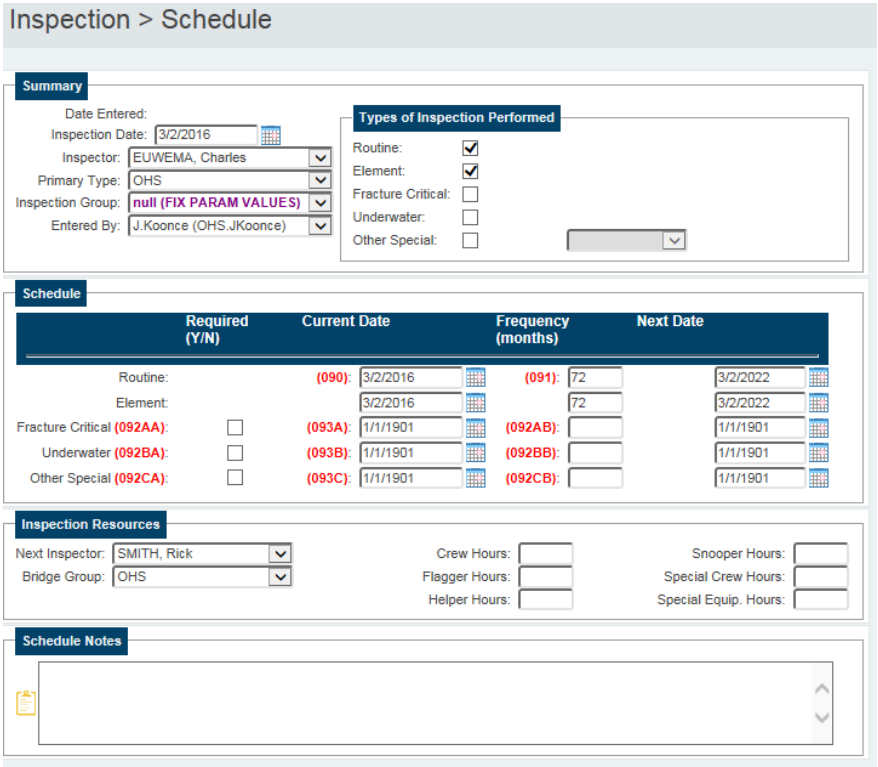



Now you'll just have One Route Under.

Roadway(005A) will always be One Route Under

Horizontal Clearance is used for the horizontal clearance of roadway between spans.

## Inspection > Schedule Tab




**Summary**
Summary/Date Entered – Date record was entered.
Summary/Inspection Date – Date of inspection.
Summary/Inspector – This is the user that performed the inspection.
Summary/Primary Type – Type of inspection performed.
Summary/Inspection Group - Do not worry about the Inspection Group field; leave this as whatever it defaults to, we don't use this field at this time.
Summary/Entered By – This is the user that entered the data into the system. This applies only if both users are 'inspectors' in the system.
Summary/Types of Inspections Performed – Routine and Element should be checked.

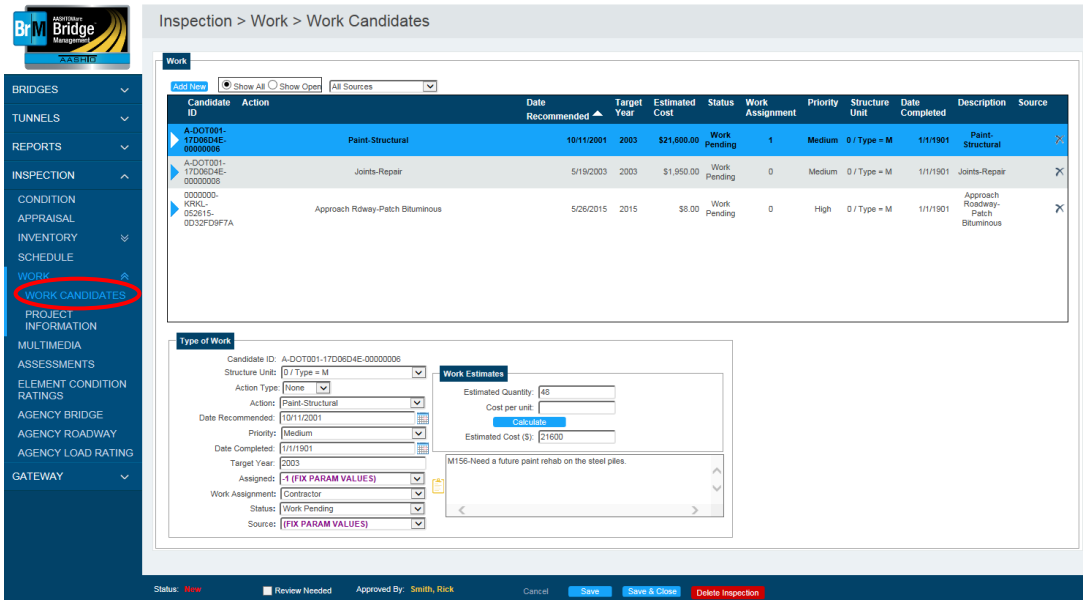
**Schedule**
The schedule portion allows for the schedule of upcoming inspections for the selected bridge.
***Note:** The Inspection > Schedule tab has changed from previous versions of BrM. In the past, the ***Current Date*** textboxes displayed the previous inspection date, not the date of the inspection that was just performed/is being performed. In BrM 5.2.3, the ***Current Date*** textboxes display the inspection that was just performed/is being performed, therefore making it easier to utilize the ***Current Date*** and ***Frequency*** textboxes to calculate the ***Next Date*** inspection.
Schedule/Required – None of these will checked for Overhead structures.
Schedule/Current Date - The current date textbox displays the date of the most recent inspection for the selected bridge based on type of inspection. The date can be entered manually or the icon can be used to select a date. Inspection types that have not been performed on the selected bridge will default to 01/01/1901.
*Note: As stated earlier, BrM 5.2.3's Current Date textboxes display the inspection that was just performed/is being performed. If the inspection that was just performed/is being performed does not include all of the inspection types, those inspection types' Current Date textboxes will populate with their most recent inspection, if applicable.

Schedule/Frequency - The frequency textbox is used to determine the number of months between inspections based on type of inspection. If inspection type is not required, frequency should be null.
Schedule/Next Date - The next date textbox displays the calculated next inspection date based on the Current Date and Frequency information. If the calculated date is not the desired date, the date can be entered manually or the icon can be used to select a date.

**Inspection Resources**
Inspection Resources/Next Inspector – Make sure next inspector is selected and correct.
Inspection Resources/Bridge Group – Make sure bridge group is selected and correct.

## Inspection > Work Tab

### Work Candidates




This is where inspector work candidates will be entered.
a) Candidate ID is automatically populated.
b) Structure Unit will be 0/Type =M.
c) If the Action types show up as -1-Converted Work Candidates, these will need to be updated as we go through inspections. Choose the appropriate action type from the drop down list.
d) Priority will be determined by using the following codes:

- Low Priority - Schedule activity as time & manpower permit
- Medium Priority - Do within next year
- High Priority - Do within the next 60 days
- Emergency - Immediate action required (requires Critical Finding procedure)

e) Date Recommended will be date of inspection that work candidate was entered. Leave this as the default.
f) Date Completed will be date work candidate was completed.
g) Assigned is used to indicate whether this work candidate has been assigned to a work list or project. We won't be using this for now, leave blank.
h) Work Assignment is used to assign the work, select whether the work will likely be done by:

- Railroad
- Contractor
- Local Agency
- State Forces

i) Status is the status of the work candidate, select from the following:

- Work Pending – default, use with any pending work candidate.

Work Completed – use this for any work candidates where you know the work has been done.
Work Underway – use if work is underway at time of inspection.
Unknown – Do not use.

j) Estimated Quantity – figure estimated quantity of element that requires work (for state inspections only).
k) Estimated Cost – figure estimated cost (for state inspections only).
l) In the notes field, you will put basic information for the maintenance that you are recommending. *Every* work candidate should have a comment in this field. **This needs to be kept short and to the point but make sure you include enough information that if someone was just looking at a work candidate list they would know what you are talking about. Do not repeat all the information you have already said in the inspection & element notes.**

**NOTE: If you REMOVE an existing work candidate for any reason – you will have to let ITD know. Put a sticky note on the inspection report or something to let me know that a work candidate has been removed. Even though you remove a work candidate from your database it still remains in our production database. It will need to be removed from the production database also.**

## Inspection > Multimedia

This is where different types of media, i.e. inspection reports and photos associated with the OHS inspection will be linked and viewed.

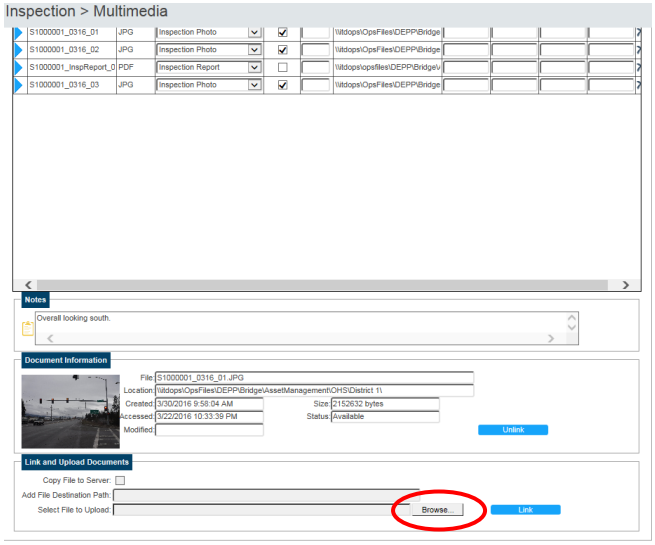
Naming convention for inspection report will be – bridgekey _InspReport_moyr, example S109999_InspReport_0117.pdf.

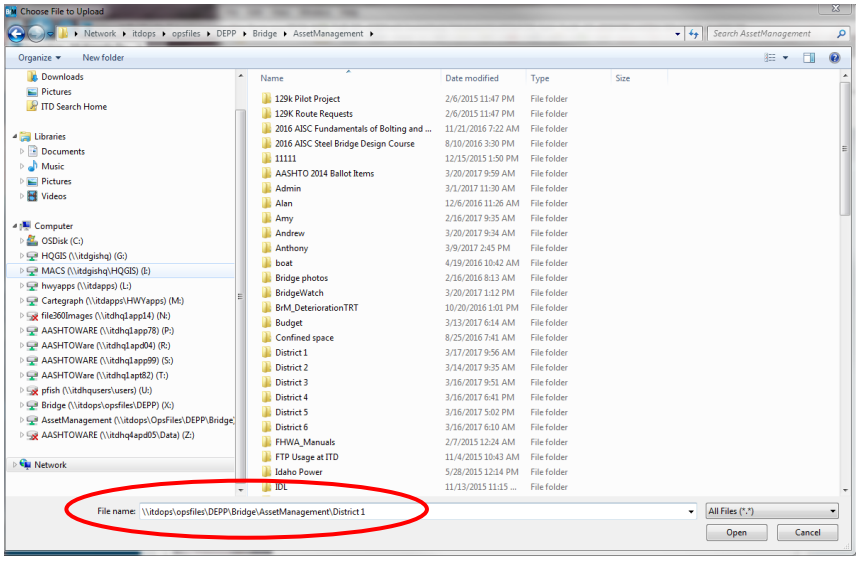
Naming convention for photos will be - bridgekey_moyr_number in sequence of picture and needs to in jpg format, for example; S109999_0217_1.jpg, S109999_0217_2.jpg, etc.

Naming convention for any other miscellaneous documents would be brkey_MMYY_X, X being replaced with whatever the document might be.

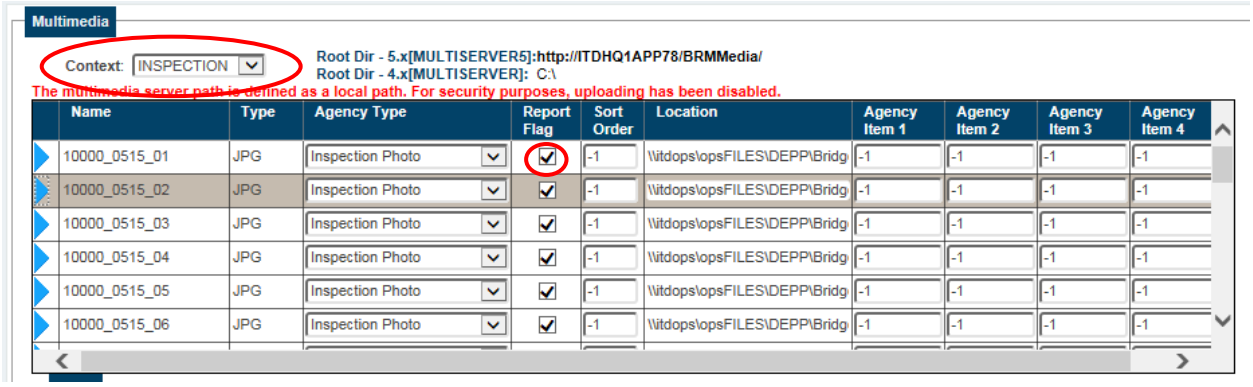
After the photos/documents are named correctly and stored in the appropriate district folder you will 'Link' them to the bridge inspection.

Go to Browse. When linking any document for the first time every session, you will have to type in the entire path; \\itdops\opsfiles\DEPP\Bridge\AssetManagement\OHS\District X, (X being the appropriate district number), you can't browse for the folder or let it auto fill. As long as you don't go to another folder in Windows Explorer you don't have to type the path again. It will not link correctly if you do not type in the full path (1st time per session).






Browse to the server file and choose multimedia object and hit Open it will take you back to the multimedia screen, choose Link.

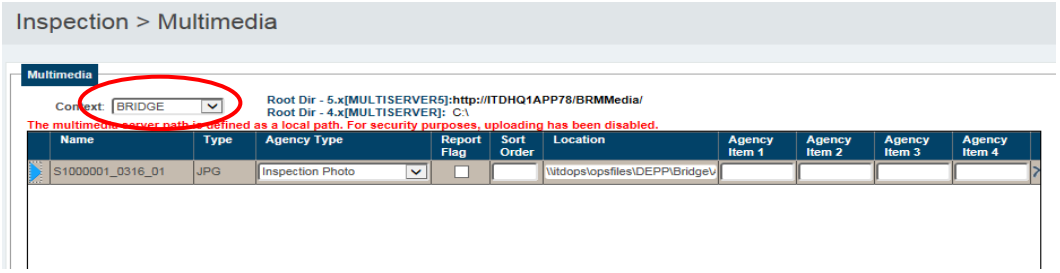



For Photos under Context choose Inspection, under Agency Type choose Inspection Photo. Name, Type, Location, Created By, etc. is all entered by default. **Check the Report Flag box for each photo**. Under Notes put comments regarding the photo, for example – Overall view looking north, Base looking west, or any problems and locations that the photo shows. Hit Save. Do this for each photo on the bridge. In BrM you can select only one photo/document at a time to link.

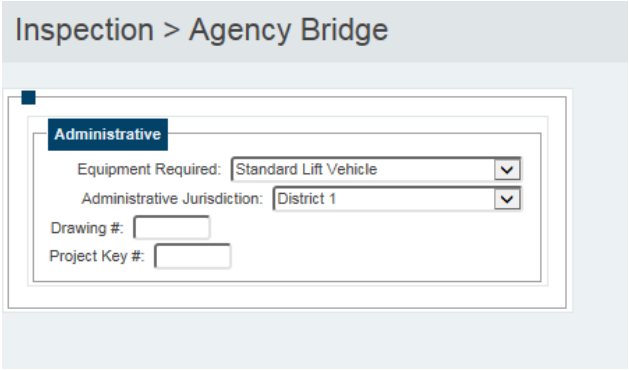
For the inspection report under Agency Type choose Inspection Report, everything else is entered by default. Do not check the Report Flag box for these documents.

For any miscellaneous documents choose Other Documents under Agency Type.

For the Bridge Context photo (this is the photo that will appear on the Bridges View page), you will choose Bridge instead of Inspection for the Context. This photo will be the overall photo of the overhead structure. Remember these only need to be done once for a structure so if it's already there, do not add it again. See below for Bridge Context.



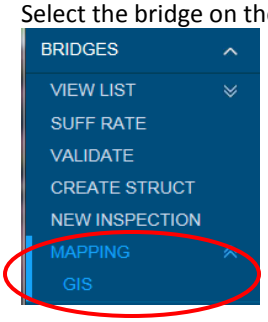

## Inspection > Agency Bridge



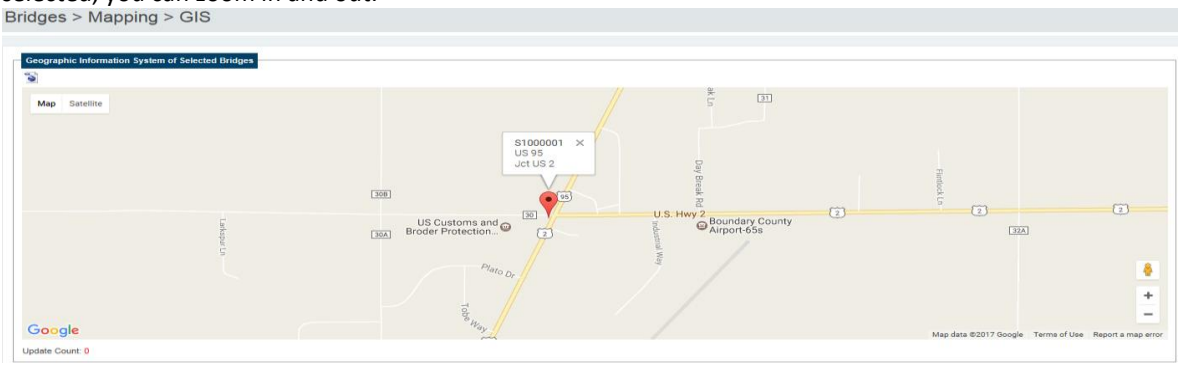

## Mapping

This is a handy tool, to show you where the structures are located. This isn't going to give you lats/longs but you can tell if the lats/longs that are entered are way off the mark.

Select the bridge on the Bridges > View List and go to Mapping.

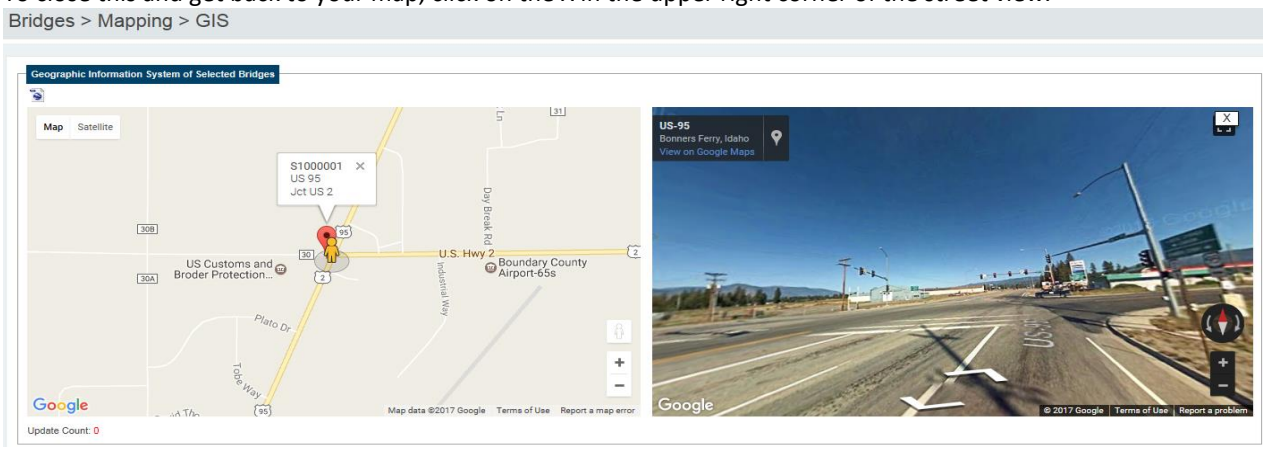



It will open a map showing your bridge locations. The map will be a size to include all bridges that you have selected, you can zoom in and out.



If you select a pin it will open up a dialog box with Brkey, Route and Location and open a street view from Google. To close this and get back to your map, click on the X in the upper right corner of the street view.

Bridges > Mapping > GIS




**DO NOT move the pins and then hit save. This does not correct the lat/long in BrM, but it does cause issues in the database.**

## Inspection > Element Condition Rating

This lists the condition history of the structure. It will show the condition ratings and element condition states from the first inspection recorded to most current inspection. Definitely more a management tool than an inspection tool, but you might find it interesting.

Inspection > Element Condition Ratings

NBI RATING HISTORY

| Inspection Date | Inspection Type | Inspections Performed | Deck (58) | Super (59) | Sub (60) | Channel (61) | Culvert Rating (62) |
|---|---|---|---|---|---|---|---|
| 3/2/2016 | OHS | NBI ELEM | | 6 | | | |
| 5/11/2004 | OHS | NBI ELEM | | 5 | | | |

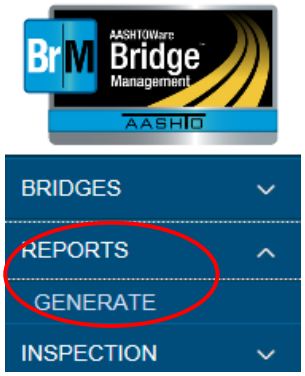
ELEMENT CONDITION HISTORY

| Elem | Str. Unit | Env | Description | Inspection | Quantity | Units | Qty. 1 | Qty. 2 | Qty. 3 | Qty. 4 |
|---|---|---|---|---|---|---|---|---|---|---|
| 701 | Ancillary Structures | Mod. | Concrete Foundation | 3/2/2016 | 1 | each | 0 | 1 | 0 | 0 |
| | Ancillary Structures | Mod. | | 5/11/2004 | 1 | each | 0 | 1 | 0 | 0 |
| 702 | Ancillary Structures | Mod. | Steel Anchor Rods | 3/2/2016 | 4 | each | 4 | 0 | 0 | 0 |
| | Ancillary Structures | Mod. | | 5/11/2004 | 4 | each | 0 | 4 | 0 | 0 |
| 704 | Ancillary Structures | Mod. | Steel Base Plate | 3/2/2016 | 1 | each | 1 | 0 | 0 | 0 |
| | Ancillary Structures | Mod. | | 5/11/2004 | 1 | each | 1 | 0 | 0 | 0 |
| 706 | Ancillary Structures | Mod. | Steel End Support Column | 3/2/2016 | 38 | feet | 38 | 0 | 0 | 0 |
| | Ancillary Structures | Mod. | | 5/11/2004 | 16.3 | feet | 11.3 | 5 | 0 | 0 |
| 716 | Ancillary Structures | Mod. | Con for Steel End or Column | 3/2/2016 | 1 | each | 1 | 0 | 0 | 0 |
| | Ancillary Structures | Mod. | | 5/11/2004 | 1 | each | 1 | 0 | 0 | 0 |

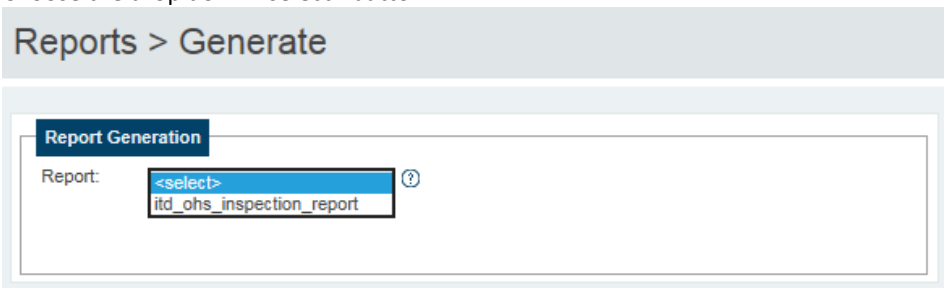
1 2 Page size: 10 15 items in 2 pages

## Generating and Printing OHS Reports

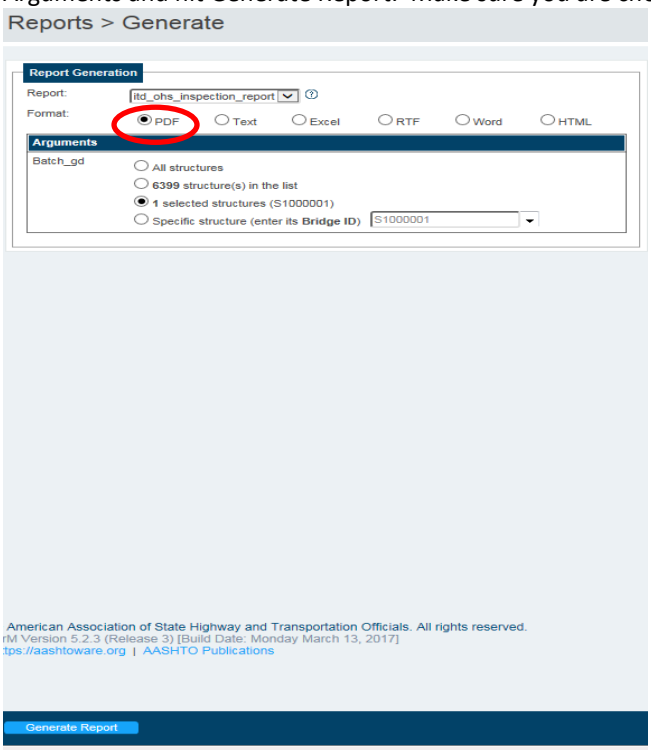
Choose Reports > Generate on the menu on the left. You can choose a bridge(s) on the bridge view screen or you have other choices once you get into reports.




Choose the drop down <select> button.

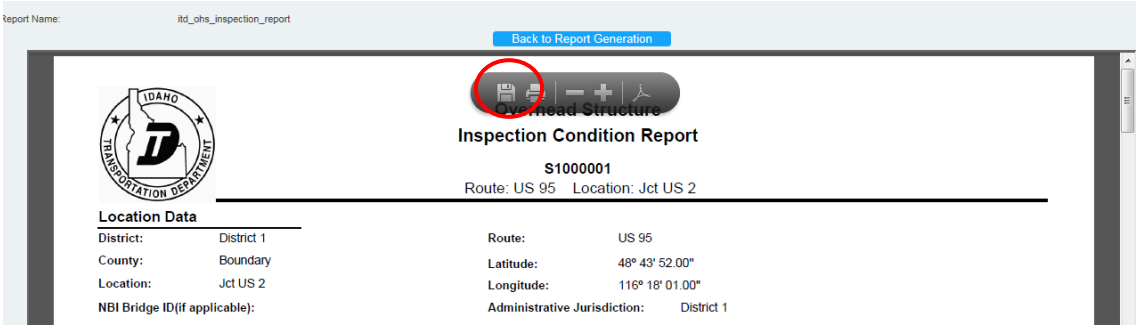



Select the itd_ohs_inspection_report and the Report Generation box will expand. Choose an option under Arguments and hit Generate Report. Make sure you are choosing PDF for the format.



The reports will then be created and will be open on the screen.
FYI - Most of you will not be able to print to your printer when you're logged on to the VPN. When you are in the ITD Domain you cannot access anything that is not on your local machine, most printers are accessed through a server. If your printer is local you should be able to print from BrM™. You will have to print your reports to a file and then print them after you log off the VPN.

To print report choose the Save icon, you can now save this report where ever you want to. It might be easier to set up a separate folder that you will put all your reports in and then move them to the server when they are complete. Or you can save them to the server folder and finish them from there.




Inspection reports will be saved under the appropriate district folder itdops\opsfiles\DEPP\Bridge\Asset Management\OHS\District X; with X being the district. The reports will be named bridgekey _InspReport_moyr, example S109999_InspReport_0117.pdf.

Electronically sign and stamp the report. Then you will link the report under the Multimedia tab in BrM™. Under Agency Type choose Inspection Report.

## Deliverables to ITD

All data entry and inspection reports are to be completed by the 10th of the subsequent month in which inspections are completed. A list of structures completed and a list of any structures that have been removed/replaced are due to ITD by the 10th.