

Bridge Management Office
AASHTOWare BrM
Quick Guide

Edition 1.1 – January 2024





EDITION & REVISIONS PAGE

The purpose of this document, the BrM Quick Guide (BQG) is to provide guidance and direction with regards to the use of AASHTOWare Bridge Management (BrM) for the inspection, rating, and management of bridges by the South Carolina Department of Transportation (SCDOT). Any modifications to this document require approval of the SCDOT Bridge Management Office (BMO). This document will be reviewed and updated as needed by the Assistant State Bridge Maintenance Engineer (ASBME) or designated representative. However, SCDOT reserves the right to make interim updates to the procedures to address lessons learned, evolving approaches, updates to federal, state, and local laws, regulations, and policies.

Release Date	Version	Sections Revised
September 2023	1.0	Initial Release (Draft)
January 2024	1.1	Updated Chapter 12 and Appendix B

HELP DESK

If you require help or assistance with BrM or the BIGD, please use the Help Desk that we have set up. In addition to the help desk, several tutorials are available on SCDOT’s ProjectWise, [link here](#).

If you receive a BrM error (red screen or red text), please take a screen shot and include the error in your message to us. This will expedite a response. You can take a screen shot by pressing Press Ctrl + PrtScn keys on your keyboard.

- Option 1 (**Preferred**), you can complete the [Help Desk Form](#). Please bookmark this webpage to save for future use.
- Option 2, you can [email](#) the Help Desk.

The screenshot shows the 'BrM and BIGD Help Request Form' with the following sections:

- Basic Information:** Fields for First Name, Last Name, District/Consultant (dropdown), and Email Address.
- Details:** A green header section containing:
 - Summary:** A text input field.
 - Description:** A rich text editor with a toolbar including options for Source, Styles, Format, Font, and Size.
 - Upload Screenshots / Files:** A red-bordered area with a dashed line and a 'Drag & drop files here' instruction. A blue arrow points to this area with the text 'Upload File or Screenshot Here'.
 - Component / BrM Error Page:** A dropdown menu.
 - BrM Installation Type:** A dropdown menu.
 - Internet Browser Used (BrM):** A dropdown menu.
- Submit Form:** A green button at the bottom.

Figure 0.1. Screen capture of BrM and BIGD Help Request Form



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ACRONYMS, DEFINITIONS, & RELEVANT DOCUMENTS

The following abbreviations and definitions are used within this document:

AASHTO - American Association of State Highway and Transportation Officials

BFP - Bridge File Policy

BIGD - SCDOT *Bridge Inspection Guidance Document*

BMO - SCDOT Bridge Management Office

BQG - AASHTOWare BrM Quick Guide (this document)

Bridge File - Refers to the SCDOT ProjectWise storage system holding all files.

CSB - Critical Security Bridges

ED - Engineering Directive

FHWA - Federal Highway Administration

LRGD - SCDOT *Load Rating Guidance Document*

NBIS - National Bridge Inspection Standards

QA - Quality Assurance

QC - Quality Control

SCDOT - South Carolina Department of Transportation

1 Overview





1 OVERVIEW

BrM updates the DOT's database live meaning that changes made on inspection screens are made in the database in real time when a user presses "Save" on the Task they are working on. This is particularly important when requesting inspections on the Submit Task and completing the Request Group Box. Note that SCDOT data is not completed until QC/QA is finished, if performed for that inspection event type. Data from December inspections must be finalized prior to the March NBI data submittal to FHWA.

2 User Profile





2 USER PROFILE

Your user profile contains information about you as is critical to perform bridge management activities.

2.1 My Account Information

Enter your information after you log-in to BrM for the first time. Information may be incorrect from original entry by others. Important account information is discussed below.

User ID – If your name was provided as a BrM user, you should be automatically signed into the application. If you have issues signing in, you can submit a Help Desk ticket. BrM uses Microsoft Single Sign-On functionality. If you're having log in problems, your Microsoft account may be different than the User ID listed.

Agency – SCDOT Staff should have their Agency set to SCDOT. Consultants should have their company name. Other users should have their organization listed such as Federal Highway or City of Columbia.

Email – Email is required. BrM will send automated email to users. Please make sure an accurate and viewed email address is provided.

2.2 Landing Page

Set the page that appears when you first open BrM.

2.3 My License Information

Ignore for now, not used by SCDOT.

2.4 Qualifications, Years of Experience and Certifications

A user's qualifications are automatically determined based on the years of experience and certifications. Users will be unable to perform certain duties without qualifications.

2.4.1 Years of Experience

Add all types of experience that you may have. Certain years of experience is required for certain certifications. If you're still performing that duty, use the "Ongoing" checkbox. If you're no longer active, provide an end month and year. "Ended" Experience cannot be revised. Submit a Help Desk is you need to revise this. If a type of experience should be added, submit a Help Desk ticket. **Users are unable to edit experience once entered, please use care in correctly inputting years of experience and verify before hitting submit.**

2.4.2 Certification

Under the Category "SCDOT" all available certifications are listed. Depending on the certification you select, a file may or may not be required to be uploaded to BrM from your computer. Files that are uploaded to BrM cannot contain a period (".") in the file name before the file suffix; make sure you name your files accordingly.

3 My Dashboard



3 MY DASHBOARD

Notifications

0 In-progress Inspection Reviews

1197 Unassigned Inspections Due within 12 Months

0 Inspections Pending Review Sent Back

0 Critical Finding tasks assigned to you

View Critical Findings dashboard

16 User Certifications pending review

0 Denied User Certifications

0 Expiring User Certifications

“My Dashboard” provides users with a quick snapshot of personal notifications for activities needing their attention. Some notifications won’t appear to all users based on permission level.

In-Progress Inspection Reviews – If you have initiated a QC or a QA Review and you need to return to the review page, click here. This count the number of inspection events where inspection review is in progress and currently logged in user is currently assigned reviewer.

Unassigned Inspections Due within 12 Months – Only viewable to BMO users. Counts the number of inspections meeting conditions to be displayed in 'Unassigned Inspections Due in Next 12 Months' table of 'Manage Inspection Assignments' page.

Inspections Pending Review Sent Back – If you’re a team leader or load rater and you’re expecting review comments, this is where to look. This counts inspection events where review is in progress and currently logged in user is selected as user the report has been sent back to.

Critical Finding Tasks Assigned to you – Displays the number of tasks from the Critical Finding Page if the task assignee is currently logged in user and the task’s ‘Complete Date’ is empty. Does not display Critical Finding review pending tasks or tasks for reviewed Critical Findings.

View Critical Finding Dashboard – Only viewable to DOT users. No count displayed. This is a quick link to the Critical Finding Dashboard.

User Certifications Pending Review – Only viewable to BMO users. Counts the number of Certifications for the whole agency where the status of the Certifications is pending.

Denied User Certifications – Counts the number Certifications for currently logged in user where the status is 'Denied'.

Expiring User Certifications – Counts the number Certifications for currently logged in user where Certification has the latest 'Completed Date' for any 'approved' Certifications for that user of that Certification Name, Certification 'Notify of Expiration' is not empty for that Certification Name AND number of days for current date - 'Expiration Date' is less than or equal to 'Notify of Expiration' number of days AND 'Expiration Date' is not past date.

4 Bridges



4 BRIDGES

The “Bridges” Tab provides bridge information at a user’s fingertips. **Note: Access is restricted by the district or by consultant district assignment. If you require access to a bridge outside of your access filter, please contact the Help Desk.**

Use the “?” function () in the upper lefthand corner for specific topic assistance.

5 New Inspection



5 NEW INSPECTION

While most bridges receive scheduled inspections, occasionally there is a need to perform an unscheduled inspection event. In this instance, a new inspection event may be initiated from “New Inspection” Task under the “Bridges” Tab.

***** WARNING *****

BrM updates data live in the DOT’s database and allows multiple inspection events at the same time on bridges. To manage the database, users only have ONE (1) opportunity to select the inspection types being performed during an inspection event. The inspection types being performed MUST selected before pressing “Create”. If a user fails to do this, the inspection record must be deleted and restarted to make the correction.

For a scheduled inspection (generated from “My Assignments”), a user shall add other inspection types performed to an inspection type that has already been assigned. An example of this would be a Routine and Non-Redundant Steel Tension Member (NSTM) Inspection occurring at the same time. The adding of inspection types occurs at the “Create Inspection” Screen after a user presses the “Play” Button (X) on their assignment table.

For an unscheduled inspection (generated from “New Inspection” under the Bridges Tab), a user shall add all inspection types being performed before pressing “Create”.

Table 5: Available New Inspections			
Inspection Type	FHWA Roll Up Inspection	Required User Qualifications	Notes
Initial	Routine	Bridge Inspection Team Leader	
Initial Complex	Routine	Complex Bridge Inspection TL	
Damage	N/A	Bridge Inspection Team Leader	
Data Update	N/A	Bridge Inspection Team Leader	
Urgent Load Rating	N/A	Bridge Design Engineer	Load Rating involved in a Critical Finding
Safety	N/A	N/A	Unable to update NBI Condition Ratings

When starting an inspection, a user must enter the inspection date, name of the inspector and name of the report author. SCDOT is currently not completing the field for “Engineer of Record”. Editing the parking location and parking notes with an advised inspection staging location is optional and not required.

6 Inspection Prep



6 INSPECTION PREP

6.1 My Assignments

The BMO or designee manages the inspection assignments given to user groups. One group is created for each district and one group is created for each inspection prime consultant. Other groups are given assignments as well such as consultant load raters, other DOT staff, etc.

User groups set up for assignments can have multiple points of contact. The groups' point of contact has additional responsibility as outlined in this section. Additional reporting will be developed to alert points of contact regarding changes in their inspection assignments but until reports are developed, **points of contact shall review inspection assignments regularly.**

Incomplete group assignments are displayed by default, users can show complete group assignments by clicking the checkbox. Group assignments are exportable to Excel and searchable by assignment name. Click the View button () to review a specific assignment.

YYYY-MM D# - DISTRICT # or CONSULTANT

Figure 6.1.1 Standard Inspection Group Assignment Naming Convention

Inspection assignment progress is tracked with both a progress bar and a color-coded map according to the colors below.

● Not Started
 ● Entered in BrM
 ● In Review
 ● Review Complete

Figure 6.2.2 Standard Color Codes for Group Assignment

The quantity of equipment and inspection procedures applicable to that bridge AND that inspection type are displayed. Click the View button () to review.

The available actions for each inspection is to start or reassign (). Bridge inspectors may start an inspection if they are qualified to do so. Users not qualified to perform that inspection type will be unable to start an inspection. Points of contact may request their inspection assignment be reassigned to another group. A comment in the popup **SHALL** be provided for the request for BMO review.

The image shows a 'Request Reassignment' popup window. It contains a close button (x) in the top right corner. Below the title bar, there is a message: 'This will remove the selected inspection from the current assignment and send back for reassignment.' Underneath this message is a 'Comment:' label followed by a text input field with a blue 'Send' button to its right. At the bottom of the popup, there are two buttons: 'Request Reassignment' (with a plus icon) and 'Cancel' (with a close icon).

Figure 6.3.3 Request Reassignment Popup

Inspection > Inspection Prep > My Assignments

Assignment Status ☰

Tracker Bar

● Not Started
 ● Entered in BrM
 ● In Review
 ● Review Complete

Assignment Name: Assigned Group:
 All Inspections Performed By: All Reviews Completed By:

Status	Inspection Type	Bridge ID	District	County	Facility Carried	Feature Intersected	Owner	Maint	Equipment Needed	Inspection Procedures
Entered in BrM	Routine	06183	District 1	(40) Richland	S-40-960	BLACK LAKE	State Highway Agency	01 SCDOT	0	0
Entered in BrM	Routine	04205	District 1	(40) Richland	S-40-1307	TOMS CREEK	State Highway Agency	01 SCDOT	0	2
Entered in BrM	Routine	05375	District 1	(40) Richland	S-40-985	TRIB TO FOREST LAKE	State Highway Agency	01 SCDOT	0	0
Entered in BrM	Routine	04649	District 1	(40) Richland	US 21	UNNAMED STREAM	State Highway Agency	01 SCDOT	0	0
Not Started	Routine	04643		(40) Richland	I-20	U.S. 1 & RR CSXT			0	0
Entered in BrM	Routine	07611	District 1	(40) Richland	I-77 SB	GILLS CREEK	State Highway Agency	01 SCDOT	0	0
Not Started	Routine	04641		(40) Richland	I-20	SC 555,SOU RR,FRTG RD			0	0

Search for Bridges/Inspections Here

Review Status of Inspections Here

Tracker Map

Take Action Here

Figure 6.4.4 My Assignment Example

When starting an inspection, a user must enter the inspection date, name of the inspector and name of the report author. SCDOT is currently not completing the field for “Engineer of Record”.

***** WARNING *****

BrM updates data live in the DOT’s database and allows multiple inspection events at the same time on bridges. To manage the database, users only have ONE (1) opportunity to select the inspection types being performed during an inspection event. The inspection types being performed MUST selected before pressing “Create”. If a user fails to do this, the inspection record must be deleted and restarted to make the correction.

For a scheduled inspection (generated from “My Assignments”), a user shall add other inspection types performed to an inspection type that has already been assigned. An example of this would be a Routine and Non-Redundant Steel Tension Member (NSTM) Inspection occurring at the same time. The adding of inspection types occurs at the “Create Inspection” Screen after a user presses the “Play” Button (X) on their assignment table.

For an unscheduled inspection (generated from “New Inspection” under the Bridges Tab), a user shall add all inspection types being performed before pressing “Create”.

6.2 Logistics

Editing the parking location and parking notes with an advised inspection staging location is optional and not required.

6.2.1 Procedures

Applicable inspection procedures to the bridge and to the inspection type are displayed on the Logistics Page and can be viewed prior to and during an inspection. Users cannot edit inspection procedures on the Logistics Page. To complete an inspection and “Submit for Review” (see Section 8), one of the two following conditions MUST be met:

1. All inspection procedures were completed by the inspection team and the BITL has marked all procedures as complete.
2. At least one inspection procedure was not completed and the BITL has added a reason why the procedure was not completed to Procedure Notes.

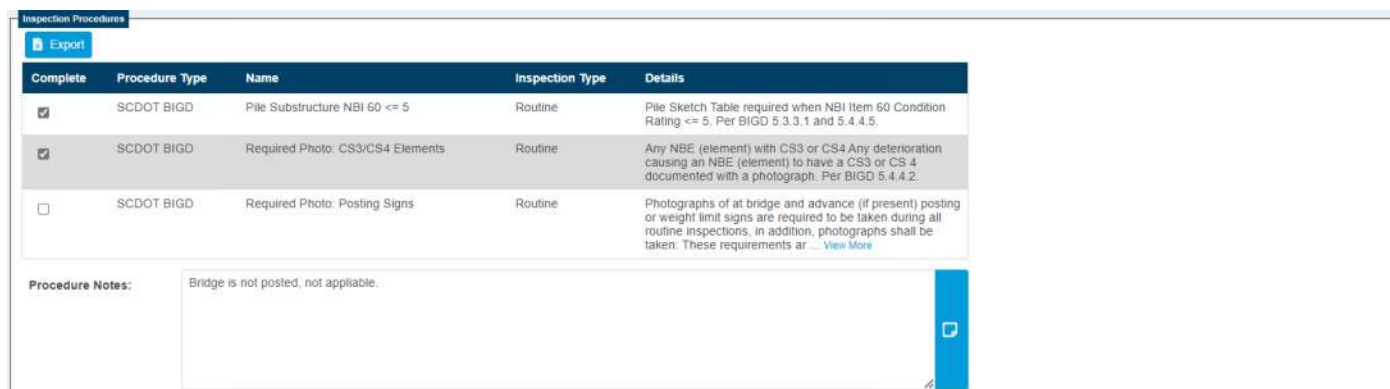


Figure 6.2.1 Inspection Procedure Group Box

If at least one procedure checkbox is unchecked and Procedure Notes is blank, the inspector will receive an error when attempting to submit.

For DOT inspectors, if a procedure needs to be added, revised, or removed, an Inspection Procedure inspection shall be requested on the Submit page. See Section 8.

For consultant inspectors, if a procedure needs to be added, revised, or removed, the process outlined in Section 6.3 shall be followed.

6.2.2 Equipment

Equipment used during the inspection shall be selected for any equipment listed. To revise equipment, click “Manage Equipment”. SCDOT is not currently using the “Hours” and “Costs” columns on the equipment table. Available equipment is listed in Appendix A. Users should suggest other equipment options via the Help Desk.

All available equipment is listed to select for the inspection. Press and hold “Ctrl” to select more than one piece of equipment at once. There is also a search function. The alphanumeric code associated with equipment is the code provided by FHWA in the Specifications for the National Bridge Inventory (SNBI). Use the left and right arrows to move equipment from available to selected. Equipment under the selected heading is the equipment used during the inspection.

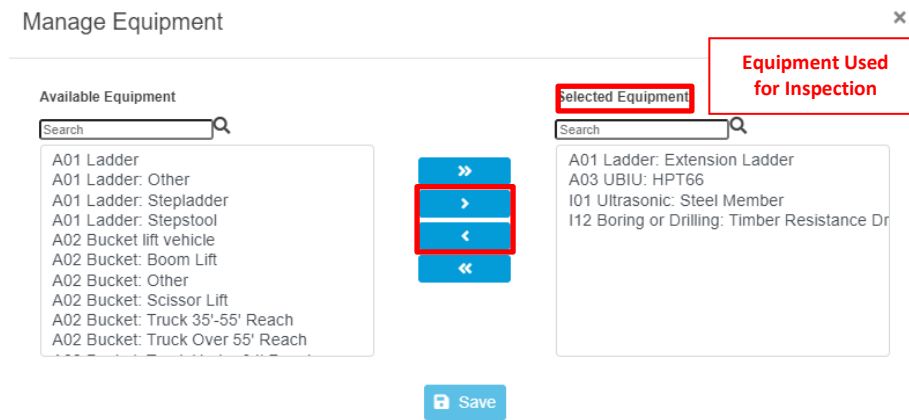
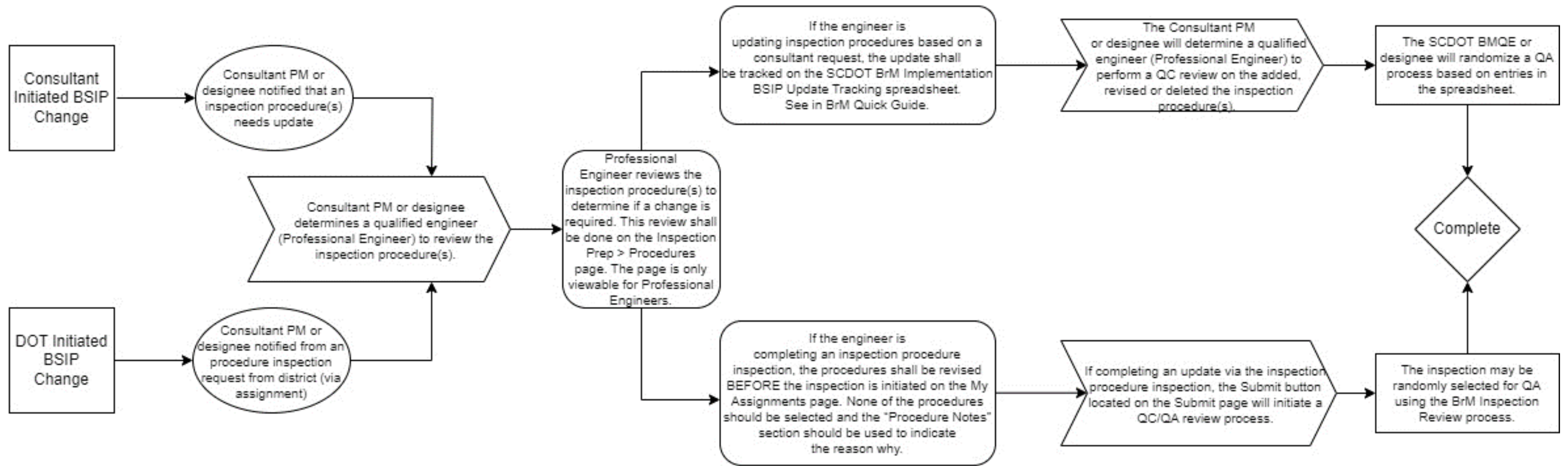


Figure 6.2.2 Inspection Equipment Popup

6.3 Procedures

During the BrM Implementation Process, standard inspection procedures for routine inspections, UW inspections, NSTM inspections and inspections of complex bridges were automatically ported into BrM. However, many bridges have specific procedures that need to be captured in BrM per FHWA. As an extension of the implementation process, the following process shall be followed to update the inspections procedures applicable to an inspection type on a bridge.



There is a folder on SCDOT’s ProjectWise for each consultant. See link: [BSIP](#)

7 Inspection



7 INSPECTION

At the start of BrM implementation, SCDOT is introducing new State Bridge Inventory (SBI) data fields beyond the fields collected in BIO and included in the *Recording and Coding Guide*.

Data Values	Notes
NBI Items (001 to 116)	Structure Inventory and Appraisal Values
SBI Items (400 Series Numbers)	Fields in RIMS (may be RIMS or BrM controlled)
SBI Items (500 Series Numbers)	BMO Only Fields (not included in RIMS)
SBI Items (600 Series Numbers)	Fields related to New SNBI Fields
SBI Items (800 Series Numbers)	BMO Load Rating Fields (not included in RIMS)

7.1 Inventory, Condition, Appraisal

For assistant with coding new SNBI fields, see the [SNBI](#) on FWHA’s website. Use the “?” function (?) in the upper lefthand corner for specific topic assistance.

7.1.1 Element Conditions

BrM performs element-based inspections and element notes replace BIO textual fields. At the start of BrM implementation, BIO textual fields have been ported into applicable elements, but text may be ported to several elements such as bent cap and piles. Inspectors shall review and revise as needed. Inspection notes shall follow this standard format for noting defects.

<p>Brief Description of Element (Sizes Optional).</p> <p>Location > Defect. (Condition State, Quantity, Photo (if applicable)).</p> <p>7.5” Thick Reinforced Concrete Cast-In-Place Deck.</p> <p>Span 1 and 3, (2) longitudinal hairline cracks up to 15’L with efflorescence. (CS2, Q60, Photo 4)</p>

Figure 7.1.1 Inspection note format and example.

If a user runs out of text page in element notes. They shall use defect notes then introduce structure units. If structure units are introduced for one element, they shall be used for all elements. If a user needs more space, contact the Help Desk for overflow instructions.

The checkmark at the left side of the Element Condition table indicates what elements are inspected during the subject inspection and which ones are not. The checkmarks shall be used for all inspections.

**** TIP: When needing to lower the total quantity, the auto calculated CS1 total will not update on its own. Click and enter a value in another condition state total, when you press enter, the CS1 total will correct. ****

7.1.2 Condition and Appraisal

For bridges over waterways, NBI Item 061, SBI Item 601 and SBI Item 631 shall be coded by bridge inspectors. NBI Item 071 and NBI Item 113 shall be coded by the Hydraulic Design Support Office (HDSO). See Section 8 on how to submit a request for HDSO to review these items.

7.1.3 Bridge Data

Note that latitude and longitude are fields editable by bridge inspectors. Requests no longer need to be submitted to Road Data Services (RDS).

7.1.4 Non-Element Inspection Notes

These text boxes should NOT be used to provide data that is placed in other data fields or element notes. For example, inspection date, weather and inspector name shall NOT be placed in the Miscellaneous Notes section. SBI 623 (Summary of Previously Performed Maintenance Work) shall be completed as text only per the commentary in the SNBI.

7.1.5 Streambed Data

Information in the Scour Condition, POA and Vulnerability is edited by the HDSO expect the inspector should note if they are following any of the inspection actions included in the POA and complete field SBI 442A.

7.1.6 Posting Sign Values

The values on the posting signs shall appear in the fields for SBI 443 to 448 for the legal and EV signs. If the bridge is not posted, the fields should appear blank. If the bridge has a 40T combination mobility posting, use the dropdown for SBI 889.

7.1.7 Curb Reveal

Complete the curb reveal measurements at all four corners of the bridge and record in this group box.

7.1.8 Culvert Fill Measurements

Inspectors do not need to record fill measurements in all five boxes. If the culvert has uniform fill under the roadway, the “max fill” field can be the only field completed.

7.2 Complex, UW, NSTM

This page is only editable to consultant inspectors. DOT inspectors have read-only access to this page.

If an underwater inspection is being performed, the inspector shall complete the fields included on this page.

Inspection risk factors for the inspection (including a NSTM or UW inspection) should be included on this page. The risk factors were previously developed and included in Attachment A5.28 of the BIGD but risk factors should be migrated to BrM as inspections are completed.

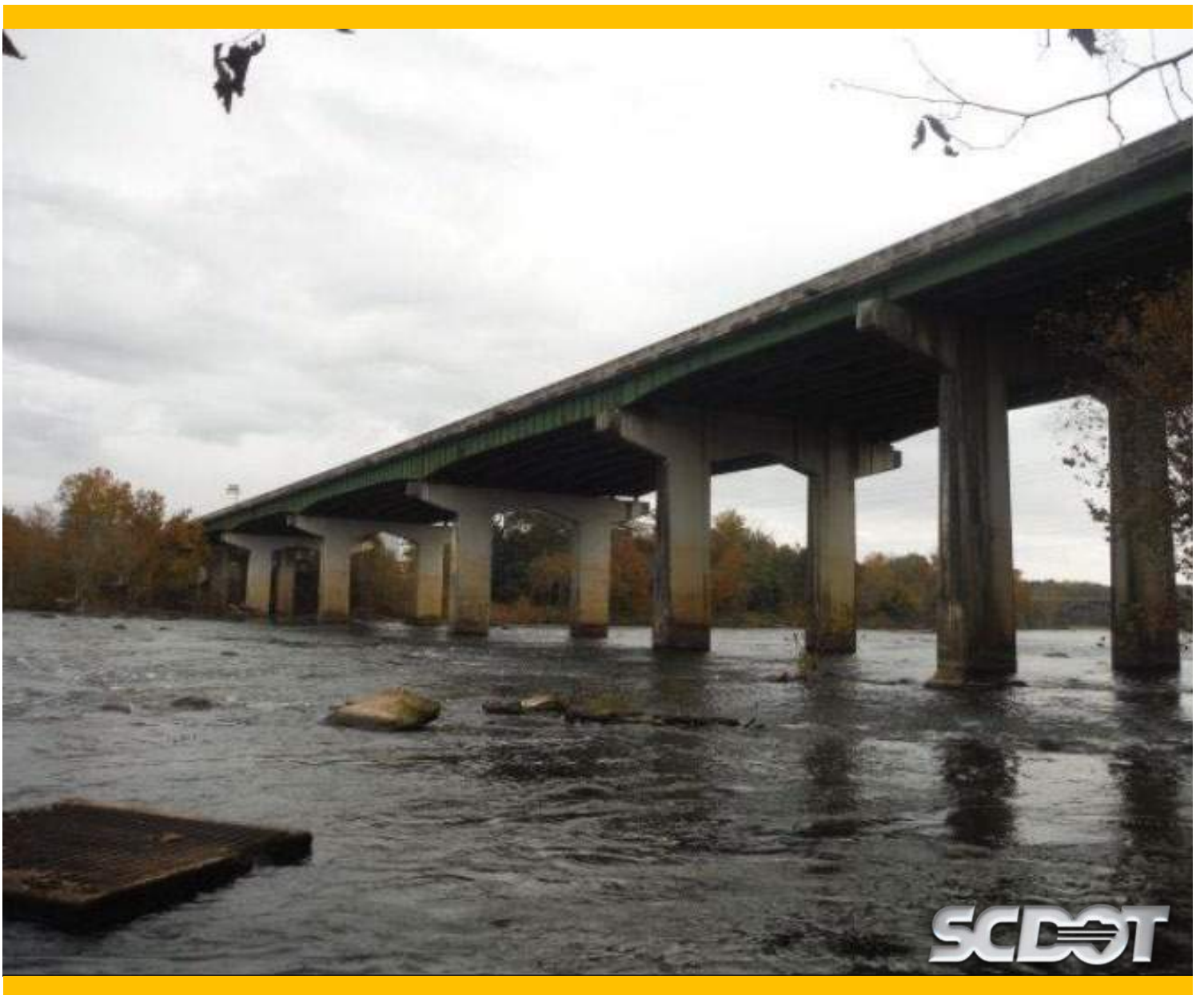
7.3 Admin and RDS Pages

The Admin page is editable to only BMO users and the RDS page is not editable to any user. These pages do appear read-only to all other inspection staff.

7.4 Damage Page

This page replaces Attachments A5.8, A5.9 and A5.10 of the BIGD. Condition information of the elements damaged should appear on the Inventory, Condition, Appraisal Page. Information related to the damage event should appear on this page. The inspection following the damage event should clear the data located on this page before submitting.

8 Submit



8 SUBMIT

Once a user has completed their updates to bridge data and they are ready to complete the inspection event, they can use the “Submit” Task to finalize their work. **NOTE: The “Submit” Task only works on the web browser version of BrM, inspections cannot be finalized on the application.** There are three sections of the “Submit” Task: Inspection Summary, Schedule, and Requests. To assist the BMO is providing effective response to requests and to schedule the next inspection events, some inspection recommendations require the use of the Requests Group Box. Failure in completing both Schedule and Request may result in a delayed response. To properly submit an inspection event, users should follow the steps outlined below:

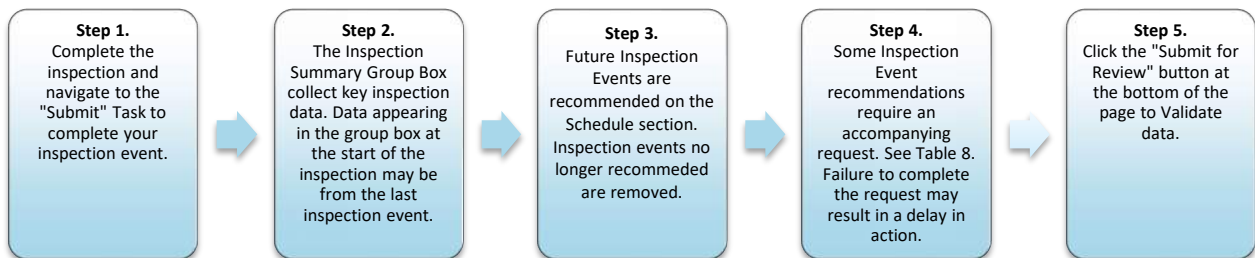


Figure 8: Steps to properly submit an inspection event in BrM.

8.1 Inspection Summary

Key inspection data is collected in the Inspection Summary Group Box. Clarification items for this group box are outlined below:

- Weather and Temperature for multiple day inspection shall match the weather and temperature on the day used for the inspection date.
- Consultant Inspection with Repair Recommendations shall be completed for all inspections, as noted:
 - Not a Consultant Inspection
 - The inspection event was completed by a user not working for a consultant.
 - No Repair Recommendations
 - The inspection event was completed by a user working for a consultant.
 - No repair recommendations associated with the inspection event.
 - Submitted Repair Recommendations Form
 - The inspection event was completed by a user working for a consultant.
 - There were repair recommendations based on the Consultant’s findings.
 - Attachment A5.6 has been sent to the District Bridge Inspection Supervisor (DBIS) for review and input into RIMS.
 - A5.6 has not been returned at the time the report is being submitted.
 - Completed and Uploaded Repair Recommendation Form
 - The inspection event was completed by a user working for a consultant.
 - There were repair recommendations based on the Consultant’s findings.

- Attachment A5.6 has been sent to the District Bridge Inspection Supervisor (DBIS) for review and input into RIMS.
- The DBIS has returned the form (signed) along with the HMMS Entry Confirmation Report(s), if any.
- The Consultant has uploaded A5.6 with the HMMS Entry Confirmation Report(s) attached to the “5 – Maintenance” Folder for the applicable bridge on SCDOT ProjectWise.

8.2 Schedule

The Schedule section is used to recommend future inspection events and remove future inspection events that are no longer needed.

Inspection being performed is read-only on the Schedule page. See **WARNING** in Section 5 and Section 6 of this Quick Guide. Selecting all inspection types associated with an inspection event **MUST** be completed at the start of the inspection when an inspection event record is created.

The next inspection events for an asset should be scheduled based on the condition of the bridge, the data input as part of the inspection or to adhere the agency’s requirements. Table 8 details the workflow associated with requesting follow-up inspections and completing requests. To recommend a future inspection, click the “Inspection Required” checkbox. Depending on the inspection type, an inspection interval and the estimated date of the future inspection event may or may not be required to be completed. The calendar day used in the date field for the estimated date of the future inspection event shall match the date of the subject inspection field. For example, a routine inspection with a 12-month interval that has an inspection date of 04/05/2024 shall have a routine inspection scheduled with a 12 month interval and an estimated date of the future Routine Inspection of 04/05/2025.

When completing the Schedule section, inspection events that are no longer required for the bridge shall be removed by unchecking the “Inspection Required” checkbox.

When requesting an inspection event or removing an inspection event, the user **MUST** include their reason in the “Schedule Notes” textual field in the Schedule section. If the inspection event being requested has a required request, **DO NOT** repeat information in the “Schedule Notes” use the following text. “[Inspection Type(s) are being requested. See reason for request in Requests Group Box.” If the interval is changed on an existing inspection type, state the reason why in “Schedule Notes”.

8.3 Requests

When requesting an inspection event or removing an inspection event, the user **MUST** include their reason in the “Schedule Notes” textual field in the Schedule section.

Table 8: Workflow Associated with Requesting Follow-up Inspections and Completing Requests

Inspection Type	FHWA Roll Up Inspection	Accompanying Request	Inspection Interval ¹	Notes
Complex Routine	Routine	N/A	24 Months or as required by Chapter 4 of the BIGD	A Complex Routine inspection was created to check a BITL’s qualifications to confirm that the BITL performing the inspection meets SCDOT’s requirement for a BITL of a bridge with a complex feature. At the implementation of BrM, bridges with complex features will be assigned to Consultants with Routine AND Complex Routine Inspections. During the first routine inspection, the Consultant BITL shall indicate at the inspection initiation that both a Routine and Complex Routine are being performed on the bridge. On the Submit Task, the Consultant BITL shall remove the need for a Routine Inspection and only schedule a Complex Routine in addition to other inspection types that may be needed.
Initial Underwater	Underwater	Underwater Requests Group Box MUST include reason (i.e., water depth over 4’) <u>AND</u> state locations where UW inspection is needed (i.e., Bent 4, all interior bents, etc.)	3 Months	If the BITL recommends a UW inspection on a bridge, an Initial Underwater Inspection shall be scheduled (not Underwater) and the reason for the request shall be stated in the Requests Group Box. After the completion of the Initial Underwater Inspection, the Underwater BITL shall determine if Underwater Inspections are warranted and shall schedule them. See Section 4.1 of the BIGD, Updated in TN03 for requirements related to Initial Underwater Inspections. After the completion of the Initial Underwater Inspection, additional Initial Underwater Inspections should not be scheduled and Underwater inspections should be scheduled, if required.
Inspection Procedure	N/A	Inspection Procedure If an existing inspection procedure required a revision or deletion, the existing inspection procedure shall be included in the Requests Group Box.	6 Months	<u>DOT Performed Inspections</u> If a DOT BITL recommends the revision, addition, or deletion a Bridge Specific Inspection Procedure (BSIP) for a bridge they are inspecting, they shall schedule an Inspection Procedure Inspection Event AND complete the Inspection Procedure section of the Request Group Box. The BMO will review the request and send the inspection assignment to either the District Bridge Engineer (DBE) or the Consultant assigned to that district for review and to take action, if needed.
				<u>Consultant Performed Inspections</u> Consultants performed inspections following the implementation of BrM are using a shared tracking spreadsheet on SCDOT ProjectWise to track updates to Bridge Specific Inspection Procedures (BSIPs). This process is discussed in Section 6.3 of this Quick Guide. After 2025, consultants will begin to recommend Inspection Procedure inspection events.
Hydraulic Analysis	N/A	Hydraulic Analysis (HDSO) Requests Group Box shall be completed, see Notes.	9 Months	If a user needs the Hydraulic Support Design Office (HDSO) to perform a hydraulic analysis on a bridge, a Hydraulic Analysis inspection event shall be recommended and the Hydraulic Analysis section of the Requests Group Box. A Hydraulic Analysis inspection is used to update NBI Item 71 and NBI Item 113, if required.
Load Rating ²	N/A	Load Rating Requests Group Box shall be completed, see Notes.	3 Months	TN15 of the LRGD provides specific timeline requirements for actions that must be followed when the need for a load rating is discovered. The user shall provide specific information according to the list below. <ul style="list-style-type: none"> <input type="checkbox"/> Component Rating (NBI 58, 59, 60 or 62) (Dropped 2 or Now Below 4) <input type="checkbox"/> Advanced Deterioration to Structural Element (Include Element) <input type="checkbox"/> Change in Dead Load (Wearing Surface, Roadway Barriers, etc.) <input type="checkbox"/> New/Rehabilitated Bridge (Include NBI Item 27 and/or NBI Item 106) <input type="checkbox"/> Other Reason Previous Rating is Obsolete
In-Depth	N/A	Testing/NDT Request	6 Months	If the BITL requests testing on a bridge (destruction or non-destructive), the dropdown field and reason for the request shall be filled out. The BMO will review the request and send the inspection assignment to either the District Bridge Engineer (DBE), the SCDOT Materials Lab or the Consultant assigned to that district for review and to take action, if needed.

1 – The inspection interval included here are recommendations and the maximum interval allowed to be entered. The BITL is responsible for recommending a shorter interval (if needed) based on bridge needs.

2 – If an urgent load rating is required, a Critical Finding **shall** be submitted, and a load rating task shall be assigned to the Consultant PM or designee who is responsible for the load ratings in the subject district.

9 Load Ratings and Postings



9 LOAD RATINGS AND POSTINGS

This section will be updated as the DOT updates the load rating process and the use of BrM to track load ratings. Following implementation, the same process outlined in the LRGD shall be followed except that load raters will now update applicable NBI and SBI information in BrM and not BIO.

As of 2021, BrR and BrM can establish an API link to send bridge data from BrM to BrR and to return load rating information from BrR to BrM. Instructions on how to use the API link are available on SCDOT's ProjectWise, [link here](#).

10 Multimedia



10 MULTIMEDIA

The Multimedia Page views bridge level and inspection level files.



Figure 10.1 Multimedia window showing Bridge and Inspection folder levels.

10.1 Bridge Level Folder

The bridge level folder displays the files from the Bridge File on ProjectWise. The ProjectWise directory is considered the bridge’s Bridge File. Files are displayed in ProjectWise as a convenience. Files are read-only and cannot be edited and saved back to ProjectWise. Please use ProjectWise to edit files. CAD Drawings (.dgn) files cannot be opened from BrM.

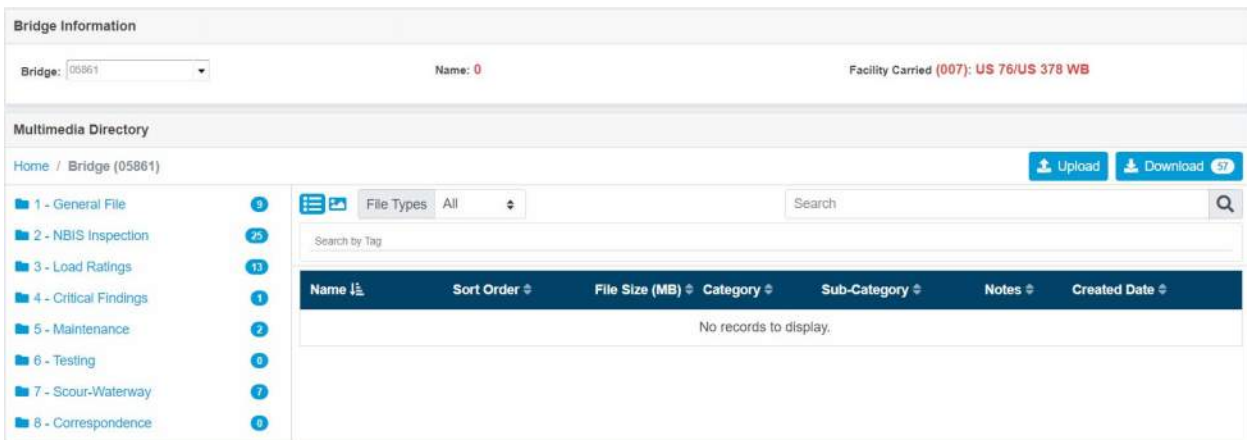


Figure 10.1.1 Multimedia window showing Bridge folder level.

10.2 Inspection Level Folder

The primary use for the inspection level folder is to store photographs and the inspection report related to the subject inspection.

Inspectors are recommended to use the Mobile application for inspections to take and upload pictures to a bridge inspection event. In the event pictures need to be added in BrM, inspectors shall upload the pictures to the inspection event folder and not the bridge folder. Photos are best viewed using the thumbnail preview versus the list view ().

At the completion of the inspection, the inspection report is saved in the inspection folder before being uploaded to ProjectWise by BrM.

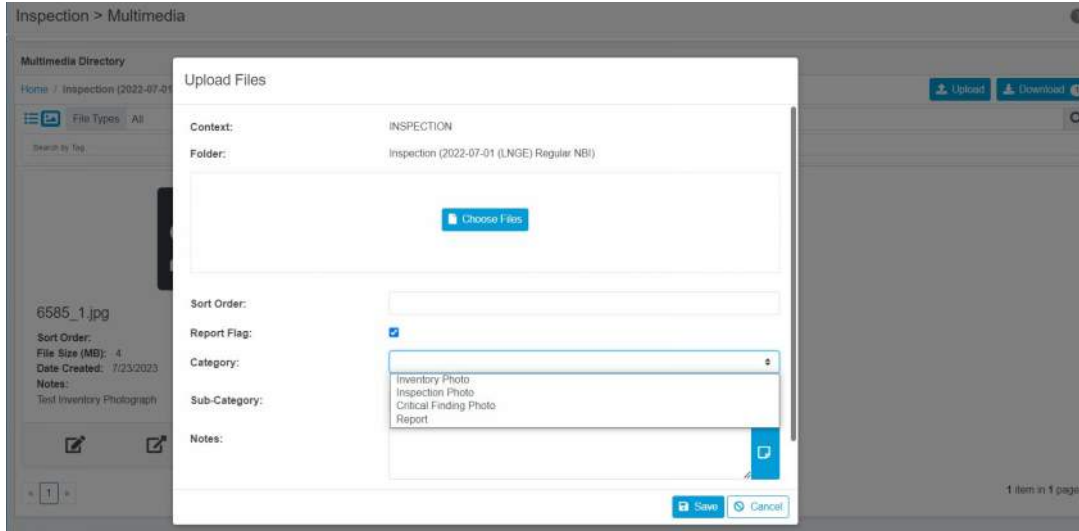


Figure 10.2.1 Multimedia window showing Inspection folder level and upload popup.

Three types of photographs can be uploaded:

- Inventory Photo
- Inspection Photo
- Critical Finding Photo

Any photograph which has the “Report Flag” checkmark selected that uploaded to the inspection level folder will appear in the inspection report. Inventory Photos also have a preset Sub-Category which must be used for proper file storage in ProjectWise. Critical Finding Photos will be applied to a Critical Finding Report, if one is generated for the bridge. Sub-Category is not needed for Inspection Photo and Critical Finding Photo. The photo caption in the reports is the “Notes” field. A photo number is not needed in the caption, BrM will apply one automatically in the report. SCDOT currently does not use the multimedia tags feature in BrM.

If a Critical Finding is happening outside of an inspection event, users may upload photos to the Bridge level folder and the 4-Critical Findings subfolder. These photos will not be sent to ProjectWise.

11 Sketches



11 SKETCHES

11.1 Cross Sections

The BrM Cross Section module was developed by Alabama DOT; ADOT’s user manual is available [here](#). BrM has extensive guidance which is viewable by using the “?” function (?) in the upper lefthand corner of the page.

Additional notes are added below.

- Water Surface must be entered as a negative number.
- An Inspection Event must be linked to the Cross Section, failure to do so will result in an incomplete QC/QA for bridges with Cross Sections.
- The “Copy” buttons are helpful when bringing forward an old Streambed. “Create” will require inspectors to start from scratch.
- So long as they are the same, a Structure Detail for the left and right orientations are not required.
- All pile tips are entered in as “-100”. If users are revising the pile tips based on plans or other inspection, they shall note that the pile tips are updated and include the data source in the Data Source textbox on the Structure Detail.
- The following fields are not required to be completed: Station EQ, Elev EQ, Highwater Elevation and Highwater Year.

The screenshot shows the 'Streambed Cross Sections' form. At the top, there is a 'View' button and an 'Orientation' dropdown set to 'Left View' with a 'Delete' button. Below this is a red header bar with 'Streambed Cross Sections', 'Month/Year: 7/2020', and buttons for 'Create', 'Copy', and 'Delete'. An 'Offset' dropdown is set to '17.8' with another set of 'Create', 'Copy', and 'Delete' buttons. The form is divided into two main sections: 'General Info' and 'Line Settings'. In the 'General Info' section, the 'Water Surface' text box and the 'Inspection' dropdown menu are highlighted with red boxes. Other fields include Station EQ, Snd/Elev Indicator (set to 'Soundings'), Offset Remark, Elev EQ, Location of BM (set to 'Top of Rail'), Elev Basis (set to 'Assumption'), and Name (set to 'Streambed Cross Sections'). The 'Line Settings' section includes Style (set to 'Solid') and Color (set to 'Red'), with checkboxes for 'Show In Legend' and 'Visible'.

Figure 11.1.1 Cross Section Streambed Section with Water Surface and Inspection boxed.

The screenshot shows the 'Structure Detail' form. It has a blue header bar with 'Structure Detail'. The form is divided into 'General Info' and 'Line Settings' sections. In the 'General Info' section, the 'Data Source' text box is highlighted with a red box. Other fields include Highwater Elev, Highwater Year (set to 'Unknown'), Upstream Side (set to 'Left'), Downstream Side (set to 'Right'), Station EQ, Station Direction (set to 'Increasing'), Bent Direction (set to '(FIX PARAM VALUES)'), Location of BM (set to 'Top of Rail'), Elev EQ, and Elev Basis (set to 'Assumption'). The 'Line Settings' section includes Name (set to 'Structure Detail'), Style (set to 'Solid'), and Color (set to 'Blue').

Figure 11.1.2 Cross Section Structure Detail Section with Data Source boxed.

Prior to BrM implementation, Streambed Cross Sections and Structure Detail data was pulled from BIGD Attachments A5.7 and A5.21 which were available to SCDOT. If accurate data was on the attachments, data was ported in to BrM.

If no data was provided or if the data was invalid, data was not ported in to BrM. To assist in creating the first Cross Section, NBI data was used to create dummy bridges with the same number of spans as the bridge or the same number of boxes as the culvert. However, 5' span lengths and 1' long boxes were used. Inspectors must correct the span lengths or culvert box lengths during the first inspection with a Cross Section after BrM implementation.

11.2 Sketch Tool

Users may create their own sketches in BrM using the Sketch Tool. Standard templates from the BIGD are included. If users require other templated to be added, please submit a ticket to the Help Desk.

11.3 Piles, Bearings and Joints

The piles, bearings and joint sketches are not required for every bridge but these sketches replace the need for sketches required by the BIGD. For example, the piles table will be required for all pile bridges with a substructure rating of Fair (5) or worse. **Pile Size/Thickness shall be entered are the CROSS SECTION AREA of the pile (in square inches) and not the diameter or size of the steel shape.** Pile Inclination shall measure the angle of the pile while considering a true vertical pile at 90 degrees.

11.4 Clearance Dimensions

Bridges over roadways, navigable waterways and railroads will require portions of the Clearance Dimensions Page to be completed. Use the "Roadway (005A)" dropdown to select which roadway that clearance information is being entered for bridges over multiple roadways. Railroads are not included in the dropdown so clearance over railroad shall be entered when the "Roadway (005A)" dropdown is set to "Route On Structure".

12 Critical Findings and Repair Recommendations



12 CRITICAL FINDINGS AND REPAIR RECOMMENDATIONS

12.1 Critical Findings Workflow (BrM Website)

A. Inspection Event

A1. Critical Finding During Inspection Event

Update the Inspection Event with related information for the Critical Finding (element data, traffic status, inspections notes and **photographs**).

A2. Critical Finding NOT During Inspection Event

Create an Inspection Event with related information for the Critical Finding (element data, traffic status, inspections notes and **photographs**).

- Damage Inspection – structural damage to the bridge
- Unscheduled Inspection – all other inspections

B. Photographs

Photographs for Critical Findings are added on the Inspection > Multimedia Page. Once an Inspection Event exists (Step A), you can use the Multimedia shortcut on this Inspection > Critical Findings and Repairs Items > Critical Findings Page to access the Multimedia Page. **All photographs related to Critical Findings, must have “Critical Finding Photo” selected at the Category.** The “Report Flag” checkmark is not required. Sort Order will sort the order photos appear in the Critical Finding Report. Non-photos such as sketches, HMMS reports, testing results, load rating files, diagrams, etc. can be attached to a Critical Finding but they will not appear in the Critical Finding Report.

C. Creating a Draft Critical Finding

Any user can create a Draft Critical Finding in BrM. If not already selected, select the bridge needed a Draft Critical Finding by using the Bridges Tab. Once a bridge is selected, initiate a Critical Finding by navigating to the Inspection Tab and then the Critical Findings and Repairs Items Page. The bridge’s “Critical Finding List” will appear.

Click “Create New” to Create a Draft Critical Finding

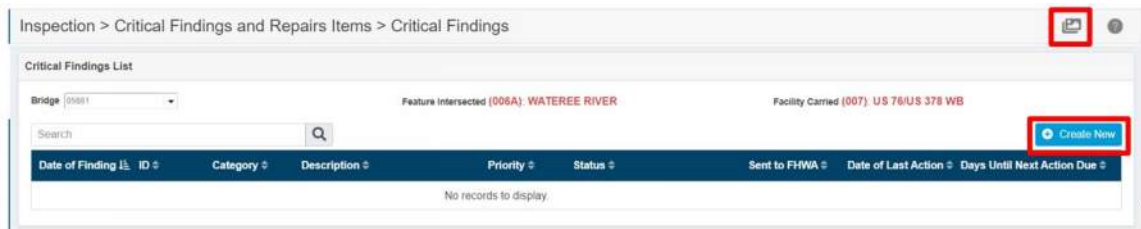


Figure 12.1.1 Critical Findings List with Multimedia shortcut and Create New boxed.

**** TIP: The Critical Findings Page updates live and has built-in automatic reporting features. For this reason, the page takes up to a minute to load and perform reporting tasks. Please be patient to let the page load and report Critical Findings. ****

D. Submitting a Draft Critical Finding

Complete the Draft Critical Finding. **Remember, photos and inspection information related to this Critical Finding should already be updated in BrM. See Step B.**

D1. User Information

BrM will automatically pull in user information in the “Reporter” fields based off your User Profile. The User Profile can be edited anytime by a user by clicking your name in the upper lefthand corner of BrM.

D2. Date and Time of Finding

BrM defaults to the date/time when the user clicked “**Create New**” update as needed. Remember, FHWA requires that Critical Findings are reported to FHWA within 24 hours of discovery. This field starts the 24 hours clock.

D3. Discovered During Inspection

This is where you will link the Inspection Event (inspection or load rating) that triggered the Critical Finding. **This field is required to link photographs to the Critical Finding Report.** Link the Inspection Event that you already had created (Step A1) or the Inspection Event that you created for this Critical Finding (Step A2).

D4. Critical Finding Category

Select how the Critical Finding was discovered:

- Maintenance – During the performance of maintenance on the bridge.
- Inspection – During a scheduled inspection on the bridge.
- Load Rating – During a load rating of the bridge.
- Other – Other, includes citizen calls, storm response, damage inspections, unscheduled inspections, etc.

D5. Initial Critical Finding Priority

Select the initial recommended priority of the Critical Finding:

- Urgent (Bridge Closure)
- Restrictive (Bridge Restriction – Lane Closure, Shoulder Closer, Weight Restriction)
- Serious (Immediate Safety Action – No Traffic Impact)
- Addressed – At the time of the Critical Finding Reporting, the Critical Finding has already been addressed by the Bridge Owner.

D5. Initial Critical Finding Priority

Select the initial recommended priority of the Critical Finding:

- Urgent (Bridge Closure)
- Restrictive (Bridge Restriction – Lane Closure, Shoulder Closer, Weight Restriction)
- Serious (Immediate Safety Action – No Traffic Impact)

- Addressed – At the time of the Critical Finding Reporting, the Critical Finding has already been addressed by the Bridge Owner.

D6. Initial Action Taken

Select the initial action taken by the Critical Finding Reporting Party:

- No Action Taken
- Close Lane(s) or Shoulder(s)
- Close Bridge
- Temporary Shoring
- Temporary Weight or Load Restriction
- Other Action – Describe any other actions taken in Critical Finding Description

**** REMEMBER: If the traffic status or other bridge information is changed as a result of Critical Finding Action (closed, lane closed, temporary shoring, weight posted, etc.), a Bridge Inspection Team Leader is required to update information on the Inspection Page of BrM. ****

D7. Bridge Owner Contact Information

The Critical Finding Report shall enter in the time/date when the Bridge Owner was contacted and contact information for the Bridge Owner.

D8. Critical Finding Description

Provide a detailed explanation of the Draft Critical Finding in the Description text box.

The screenshot shows a web interface for reporting critical findings. At the top, it displays 'Bridge ID: 05861', 'Feature Intersected (006A): WATEREE RIVER', and 'Facility Carried (007): US 76/US 378 WB'. Below this is a breadcrumb trail: 'Inspection > Critical Findings and Repairs Items > Critical Findings'. The main form is titled 'Critical Finding Status' and shows 'Draft'. Under 'Critical Finding Data', there are several input fields: Reporter (daniel.murdtia) Murdtia, Dan; Reporter Phone: 6175435298; Reporter Email: daniel.murdtia@hdvnc.com; Date of Finding: 08/31/2023; Time of Finding: 11:47 PM; Discovered During Inspection: [dropdown]; Category: [dropdown]; Initial Priority: [dropdown]; Initial Action Taken: [dropdown]; Bridge Owner Contacted Date: mm/dd/yyyy; Bridge Owner Contacted Time: [dropdown]; Contacted Name: [text box]; Contacted Phone: [text box]; and a large Description text box.

Figure 12.1.2 Draft Critical Findings Input.

D8. Save and Link

Press “Save” to initiate the Critical Finding Reporting. Click “Link Event” and link the linked Inspection Event (Step A) to the Critical Finding.

E. Submit the linked Inspection Event for Review

The inspection event (whether scheduled or unscheduled) should be submitted for review. The inspection event will enter the QC/QA process as detailed in this Quick Guide. During inspection review, the inspection data cannot be updated. When complete, the inspection data will be locked in BrM and the inspection report will be generated outside of the Critical Finding process.

F. Responding to a Draft Critical Finding

The DBIS or designee responsible for the bridge will receive a notification via email that a Draft Critical Finding has been submitted in their district. The DBIS or designee will review and approve the Draft Critical Finding. **When approved, FHWA is immediately notified of the Critical Finding.** Remember, FHWA requires that Critical Findings are reported to FHWA within 24 hours of discovery.

G. Updating and Addressing a Critical Finding

The district and the BMO will get weekly reminders of unaddressed Critical Findings. Users can assign tasks such as load ratings, inspections, or maintenance work to a specific user.

**** TIP: Projects and Maintenance Items are currently not supported by SCDOT's BrM. Only assign inspections and load ratings at this time. ****

When a consultant is assigned a task, the SCDOT user must assign the task to the Consultant PM. Users are required to input comments when changing the status of the Critical Finding.

If bridge inspection data (element data, traffic status, inspections notes and **photographs**) needs to be updated as part of addressing a Critical Finding, an Unscheduled Inspection shall be initiated for the bridge by a Bridge Inspection Team Leader. See Step B; **All photographs related to Critical Findings, must have "Critical Finding Photo" selected at the Category.**

Any related inspection events shall be Linked to the Critical Finding. Tasks should be updated by users who have tasks assigned. See "My Critical Finding Outstanding Tasks" and "My Dashboard" for any tasks assigned to you as a user. Any comments related to the Critical Finding should be updated by district inspection staff, district maintenance staff or the BMO.

BrM will generate an email noting the Critical Finding was addressed.

H. Resolving a Critical Finding

Similar to Step G: Addressing a Critical Finding

When the Critical Finding is resolved, there must be no incomplete tasks associated with the Critical Finding. BrM will generate an email noting the Critical Finding was resolved

BrM does have a "Reopen" button to reopen a resolved Critical Finding if needed.

12.2 Critical Findings Workflow (Mobile)

In Progress (Not Yet Available)

12.3 Repair Recommendations

Work candidates are currently not available in BrM.

12.3.1 DOT Performed Inspections

SCDOT inspectors shall complete their inspection and input any repair recommendations in to HMMS. SCDOT inspectors shall print to PDF the HMMS Bridge Deficiency Report(s) for the bridge and upload the PDF(s) to the 5 – Maintenance folder in the Bridge File prior to submitting the report for review.

12.3.2 Consultant Performed Inspections

Consultant inspectors shall complete their inspection and input any repair recommendations into Attachment A5.6 of the BIGD. The Consultant shall then send A5.6 to the DBIS for review and input into HMMS. When the report ready for QC, the BITL shall confirm that one of the following file types is uploaded to the 5 – Maintenance folder in the Bridge File prior to submitting the report for review.

- Attachment A5.6 (Unsigned from DBIS) (no HMMS Bridge Deficiency Report(s) available)
- Attachment A5.6 (Signed from the DBIS) with HMMS Bridge Deficiency Report(s) from the DBIS

If an unsigned copy of A5.6 was uploaded to the Bridge File, the signed A5.6 and the HMMS Bridge Deficiency Report(s) shall be uploaded by the Consultant when they are available from the District.

The status of the consultant’s repair recommendations is tracked on the Submit Page, see Section 8.1.

13 Quality Control and Quality Assurance



13 QUALITY CONTROL AND QUALITY ASSURANCE

Following the submission of an inspection report (see Section 8), BrM will review the Inspection Review configuration for the subject event. If an inspection review is required, two levels of review will be initiated per Chapter 9 of the BIGD, Quality Control (QC) and Quality Assurance (QA).

13.1 Quality Control

QC will be performed by the office, district or consultant who was responsible for the inspection event and 100% of inspections will be reviewed. Based on provided user lists, users involved in QC will be added to a designated review group. Any user in that group will have access to pending reviews by clicking Inspection > My Pending Inspection Reviews. Users cannot review their own inspection. My In-Progress Inspection Reviews indicates inspections that the user is responsible for. See Section 3 for how reviews are tracked on My Dashboard.

Due Date for Review	Days Remaining for Review	Status	Bridge ID	District	County	Facility Carried	Feature Intersected	Inspector	Inspection Date	Previous Review Completed By
4/18/2022	-393	Step 1	01067	01	055	SC 341	LITTLE LYNCHES RIVER (2)	Murdzia, Dan	3/28/2022	
7/30/2023	75	QC	00730	05	033	SC 34	MAPLE SWAMP	Cox, Spencer	5/16/2023	

Figure 13.1.1 My Pending Inspection Reviews.

Once a user initiates a review, that user is responsible for that review step. Other users in the review group will no longer be able to perform the review.

The BrM Review Page includes all fields that must be reviewed. A checkmark or flag must be applied to every field (or row) for every inspection. Fields may also receive a discussion topic. A review cannot be progressed to the next step until all flags are cleared.

Review Icons

- Checkmark (☑) – Reviewer agrees, no comment.
- Flag (🚩) – Reviewer needs to send back to inspector, comment required.
- Discussion (💬) – Topic of discussion between reviewer and inspector, allows next step to progress.

Bridge Information

Bridge:	00730	Facility Carried:	SC 34	Feature Intersected:	MAPLE SWAMP
Owner:	State Highway Agency	Maint. Resp:	State Highway Agency		

Inspection Information

Date Entered:	05/16/2023	Inspection Date:	05/16/2023
Inspector:	Cox, Spencer	Entered By:	Cox, Spencer
Inspection Types:	Routine		

Review Information

Step	Reviewer	Completed Date	Completed # of Days Since Inspection	Days Remaining for Review
QC	Boyle, Zac			75

Filter By: All

Use Filter to see only "Flagged" items during future reviews or items "Unaddressed" as you review.

Days remaining for review to be complete.

Figure 13.1.2 BrM Review Page (Header), note "Filter By".

Discussion

Date	Comment	Commenter
No records to display		

New Comment:

Hey, are you sure this would be an 0? Looks like a 4 to me.

Save & Mark as Flagged Cancel

Figure 13.1.3 BrM Review Comment Popup (Flag)

13.2 Quality Assurance

A similar process is used for QA, but a limited selection of bridges will appear for review. Most inspections will require approximately 10% of reports to be subject to QA but some may require elevated review. BrM performs automatic selection for QA.

13.3 Reporting

Following the completion of QA (whether the report was selected for not) will result in BrM automatically printing the bridge's inspection report to the inspection folder on the Multimedia Page. See Section 10.1.

Users can print their own inspections reports at any time using the Reports > Generate Page and selecting the "South Carolina Inspection Report". Users must select both the Asset ID and the inspection event. They may also generate a batch of reports using the parameters on the Generate Page.

Reports > Generate

Report Generation

Report: ⓘ

Format: PDF Text Excel RTF Word HTML

Arguments

Inspection Key

Latest Inspection per Structure in List

One Previous Inspection per Structure in List

Select Inspection: '01306'

Batch Key

All structures

1 structure(s) in the list

1 selected structures (01306)

Structure '01306'

Another structure (enter its **Bridge ID**)

Show Elem Notes

Show Photos

Show Work History

Show Work Candidates

Figure 13.3.1 BrM Report Generator

APPENDIX A. AVAILABLE EQUIPMENT IN BRM

Name	FHWA Equipment Roll-Up	Name	FHWA Equipment Roll-Up
A01 Ladder: Stepladder	A01 Ladder	I01 Ultrasonic: Steel Member	I01 Ultrasonic
A01 Ladder: Stepstool	A01 Ladder	I01 Ultrasonic: Timber Member	I01 Ultrasonic
A01 Ladder: Extension Ladder	A01 Ladder	I02 Ground-Penetrating Radar	
A01 Ladder: Other	A01 Ladder	I03 Infrared Thermography	
A02 Bucket: Under 34' Reach	A02 Bucket Lift Vehicle	I04 Radiographic Testing	
A02 Bucket: 35'-55' Reach	A02 Bucket Lift Vehicle	I05 Impact Echo	
A02 Bucket: Over 55' Reach	A02 Bucket Lift Vehicle	I06 Electromagnetic Methods	
A02 Bucket: Boom Lift	A02 Bucket Lift Vehicle	I07 Rebound & Penetration Methods	
A02 Bucket: Scissor Lift	A02 Bucket Lift Vehicle	I08 Acoustic Emissions Testing	
A02 Bucket: Other	A02 Bucket Lift Vehicle	I09 Dye Penetrant	
A03 UBIU: HP35 or HPT38	A03 UBIV ¹	I10 Magnetic Particle	
A03 UBIU: HPT43	A03 UBIV ¹	I11 Eddy Current	
A03 UBIU: HPT66	A03 UBIV ¹	I12 BoD ³ : Timber Resistance Drilling	I12 Boring or Drilling
A03 UBIU: UB under 40'	A03 UBIV ¹	I12 BoD ³ : Concrete Coring/Boring	I12 Boring or Drilling
A03 UBIU: 40'-50' UB	A03 UBIV ¹	I12 BoD ³ : Other Boring/Drill/Core	I12 Boring or Drilling
A03 UBIU: 50'-60' UB	A03 UBIV ¹	I13 Underwater Imaging	
A03 UBIU: 60'-70' UB	A03 UBIV ¹	IX Other: Pachometer	IX Other
A03 UBIU: UB over 70'	A03 UBIV ¹	IX Other: Sonic Testing	IX Other
A03 UBIU: Other	A03 UBIV ¹	IX Other: Spectral Analysis	IX Other
A04 Rigging: Rope Access	A04 Rigging	IX Other: Timber Vibration	IX Other
A04 Rigging: Scaffolding	A04 Rigging	IX Other: Depth finder/Fathometer	IX Other
A04 Rigging: Other	A04 Rigging	IX Other: Timber Stress Wave	IX Other
A05 Waders (Chest and Hip)	A05 Waders	IX Other: Other	IX Other
A06 Boat: John Boat w/o Motor	A06 Boat		
A06 Boat: Kayak/Canoe	A06 Boat		
A06 Boat: Motor Boat	A06 Boat		
A06: Bucket Boat/Water Lift	A06 Boat		
A07 Snorkel			
A08 SCUBA			
A09 Surface Supplied Air			
A10 Remotely Operated Vehicle (ROV)			
A11 Video Pole			
A12 Borescope			
A13 Unmanned Aerial Systems (UAS)			
AX Other: TC ² (Shoulder Closed)	AX Other		
AX Other: TC ² (1 Lane Closure)	AX Other		
AX Other: TC ² (2 Lane Closure)	AX Other		
AX Other: TC ² (Bridge Closure)	AX Other		
AX Other: Other	AX Other		

1 – UBIV = Under Bridge Inspection Vehicle

2 – TC = Traffic Control

3 – BoD = Boring or Drilling

APPENDIX B. SNBI TO NBI/SBI CONVERSION

SNBI Code	NBI/SBI Code	SNBI Data Title	BrM Table Name	BrM Column Name
B.IE.11	N/A	Inspection Note	bridge	notes
B.L.05	NBI 016	Latitude	bridge	precise_lat
B.L.06	NBI 017	Longitude	bridge	precise_lon
B.L.04	NBI 002	Highway Agency District	bridge	district
B.L.02	NBI 003	County Code	bridge	county
B.L.03	NBI 004	Place Code	bridge	placecode
B.ID.01	NBI 008	Bridge Number	bridge	struct_num
B.L.11	NBI 009	Bridge Location	bridge	location
B.CL.02	NBI 022	Maintenance Responsibility	bridge	custodian
B.CL.01	NBI 022	Owner	bridge	owner
B.W.01	NBI 027	Year Built	bridge	yearbuilt
B.LR.01	NBI 031	Design Load	bridge	designload
B.G.10	NBI 033	Bridge Median	bridge	bridgedmed
B.G.11	NBI 034	Skew	bridge	skew
B.CL.04	NBI 037	Historic Significance	bridge	histsign
B.N.01	NBI 038	Navigable Waterway	bridge	navcontrol
B.N.02	NBI 039	Navigation Minimum Vertical Clearance	bridge	navvc
B.N.04	NBI 040	Navigation Channel Width	bridge	navhc
B.F.01	NBI 042A	Feature Type	bridge	servtypon
B.F.02	NBI 042B	Feature Location	bridge	servtypund
B.G.03	NBI 048	Maximum Span Length	bridge	maxspan
B.G.01	NBI 049	NBIS Bridge Length	bridge	length
B.G.07	NBI 050A	Left Curb or Sidewalk Width	bridge	lftcurbsw
B.G.08	NBI 050B	Right Curb or Sidewalk Width	bridge	rtcurbsw
B.G.05	NBI 052	Bridge Width Out-to-Out	bridge	deckwidth
B.H.13	NBI 053	Highway Minimum Vertical Clearance	bridge	vclover
B.H.13	NBI 054A	Highway Minimum Vertical Clearance	bridge	refvuc
B.H.13	NBI 054B	Highway Minimum Vertical Clearance	bridge	vclrunder
B.H.15&14	NBI 055A	Highway Min Horizontal Clearance	bridge	refhuc
B.H.15	NBI 055B	Highway Min Horizontal Clearance, Right	bridge	hclrurt
B.H.14	NBI 056	Highway Min Horizontal Clearance, Left	bridge	hclrult
B.LR.04	NBI 063	Load Rating Method	bridge	ortype
B.LR.06	NBI 064	Operating Load Rating Factor	bridge	orload
B.LR.04	NBI 065	Load Rating Method	bridge	irtype
B.LR.05	NBI 066	Inventory Load Rating Factor	bridge	irload
B.L.08	NBI 098AA	Border Bridge State or Country Code	bridge	nstatecode
B.L.09	NBI 098B	Border Bridge Inspection Responsibility	bridge	bb_pct
B.L.07	NBI 099	Border Bridge Number	bridge	bb_brdgeid
B.W.02	NBI 106	Year Work Performed	bridge	yearrecon
B.N.03	NBI 116	Movable Bridge Max Nav Vertical Clr	bridge	lftbrnavcl

SNBI Code	NBI/SBI Code	SNBI Data Title	BrM Table Name	BrM Column Name
B.G.16	SBI 441	Calculated Deck Area	bridge	deck_area
B.ID.02	SBI 470	Bridge Name	bridge	strucname
B.L.12	SBI 475	Metropolitan Planning Organization	bridge	mpo
B.PS.01	NBI 041	Load Posting Status	inspevnt	oppostcl
B.C.01	NBI 058	Deck Condition Rating	inspevnt	dkrating
B.C.02	NBI 059	Superstructure Condition Rating	inspevnt	suprating
B.C.03	NBI 060	Substructure Condition Rating	inspevnt	subrating
B.C.09	NBI 061	Channel Condition Rating	inspevnt	chanrating
B.C.04	NBI 062	Culvert Condition Rating	inspevnt	culvrating
B.AP.02	NBI 071	Overtopping Likelihood	inspevnt	wateradeq
B.AP.01	NBI 072	Approach Roadway Alignment	inspevnt	appralign
B.N.06	NBI 111	Substructure Navigation Protection	inspevnt	pierprot
B.LR.03	SBI 859	Load Rating Date	load_rating_events	rating_date
B.H.07	NBI 011	Mile Point	roadway	kmpost
B.H.17	NBI 019	Bypass Detour Length	roadway	bypasslen
B.CL.05	NBI 020	Toll	roadway	tollfac
B.H.01&02	NBI 026	Functional Classification	roadway	funcclass
B.H.09	NBI 029	Annual Average Daily Traffic	roadway	adttotal
B.H.11	NBI 030	Year of Annual Average Daily Traffic	roadway	adtyear
B.G.09	NBI 032	Approach Roadway Width	roadway	aroadwidth
B.H.16	NBI 047	Highway Maximum Usable Surface Width	roadway	hclrinv
B.G.06	NBI 051	Bridge Width Curb-to-Curb	roadway	roadwidth
B.H.12	NBI 10	Highway Max Usable Vertical Clearance	roadway	vclrinv
B.RT.03	NBI 102	Route Direction	roadway	trafficdir
B.CL.03	NBI 105	Federal or Tribal Land Access	roadway	fedlandhwy
B.H.10	NBI 109	Annual Average Daily Truck Traffic	roadway	truckpct
B.H.04	NBI 110	National Highway Freight Network	roadway	trucknet
B.IR.04	SBI 453	Complex Feature	userinsp	bridgewithcomplex
B.C.15	SBI 600	Underwater Inspection Condition	userinsp	uw_insp_cond
B.C.09	SBI 601	Channel Protection Condition Rating	userinsp	channel_protect_cond_rate
B.G.12	SBI 619	Curved Bridge	userinsp	curved
B.C.05	SBI 602	Bridge Railing Condition Rating	userinsp	rail_cond_rate
B.C.06	SBI 603	Br Railing Transitions Condition Rating	userinsp	rail_trans_cond_rate
B.C.08	SBI 605	Bridge Joints Condition Rating	userinsp	joints_cond_rate
B.G.04	SBI 606	Minimum Span Length	userinsp	min_span_length
B.SP.03	SBI 607	Number of Beam Lines (Main)	userinsp	num_beam_lines_main
B.SP.05	SBI 608	Span Continuity (Main)	userinsp	span_cont_main
B.SP.07	SBI 609	Span Protective System (Main)	userinsp	span_prot_sys_main
B.SP.08	SBI 610	Deck Interaction (Main)	userinsp	deck_intr_main
B.SP.12	SBI 611	Deck Reinforcing Protective (Main)	userinsp	deck_rei_pro_sys_main
B.SP.13	SBI 612	Deck Stay-In-Place Forms (Main)	userinsp	deck_sip_main

SNBI Code	NBI/SBI Code	SNBI Data Title	BrM Table Name	BrM Column Name
B.C.07	SBI 604	Bridge Bearings Condition Rating	userinsp	bear_cond_rate
B.SP.03	SBI 613	Number of Beam Lines (Appr)	userinsp	num_beam_lines_appr
B.SP.05	SBI 614	Span Continuity (Appr)	userinsp	span_cont_appr
B.SP.07	SBI 615	Span Protective System (Appr)	userinsp	span_prot_sys_appr
B.SP.08	SBI 616	Deck Interaction (Appr)	userinsp	deck_intr_appr
B.SP.12	SBI 617	Deck Reinforcing Protective (Appr)	userinsp	deck_rei_pro_sys_appr
B.SP.13	SBI 618	Deck Stay-In-Place Forms (Appr)	userinsp	deck_sip_appr
B.G.13	SBI 620	Maximum Bridge Height	userinsp	max_height
B.G.14	SBI 621	Sidehill Bridge	userinsp	sidehill
B.RR.01	SBI 622	Railroad Service Type	userinsp	rr_serv_type
B.W.03	SBI 623	Work Performed	userinsp	sum_work_perf
B.IR.02	SBI 630	Fatigue Details	userinsp	fatig_details
B.N.05	SBI 631	Navigation Channel Min Horizontal Clr	userinsp	nav_chan_min_horz_clr
B.LR.02	SBI 850	Design Method	userinsp	design_method