

Technical Note e-Notification

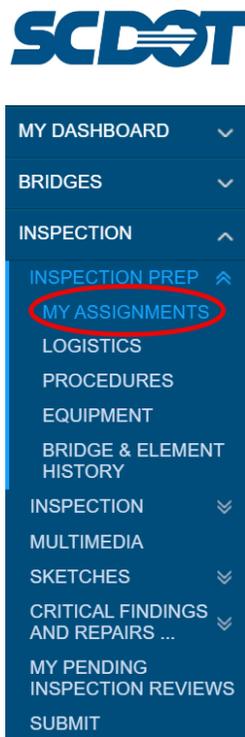
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1. BrM Guide for Load Raters

For bridge inspections started September 1, 2023 and later, load rating requests will be generated through BrM. The load rating team is responsible for updating applicable load rating and posting related NBI data and other SCDOT collected data in BrM within three months from the date of bridge inspection. See [BrM Quick Guide](#) for the process to request a load rating using BrM.

To view Load Rating assignments in BrM, click on “INSPECTION”, “INSPECTION PREP” and “MY ASSIGNMENTS”. Then, sort by the appropriate Assigned User Group (Load Raters) and click on the icon to view the status of each assigned load rating, as shown in the screenshots below. Users in multiple groups may have both inspection and load rating assignments listed. Load rating assignments are organized by the year of creation by the BMO for tracking purposes.



Inspection > Inspection Prep > My Assignments

My Group(s) Assignments

Current Assignments Show complete:

Search [Export](#)

Name	All Inspections Performed By	All Reviews Completed By	Assigned User Group	No. of Inspections	Not Started	Entered in BrM	In Review	
2023 Load Rating - MBI	12/31/2023	2/29/2024	MBI Load Raters	24	0	0	1	23
2024 Load Rating - MBI	12/31/2024	2/28/2025	MBI Load Raters	58	24	11	12	11
2025-10 D3+D4 - MBI	10/31/2025	12/31/2025	MBI Bridge Inspectors	49	49	0	0	0
2024-03 D3+D4 - MBI	3/31/2024	5/31/2024	MBI Bridge Inspectors	37	0	0	8	29
2025-01 D3+D4 - MBI	1/31/2025	3/31/2025	MBI Bridge Inspectors	75	75	0	0	0

Click to View Status (arrow pointing to eye icon)

Inspection > Inspection Prep > My Assignments

Assignment Status

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

Assignment Name: 2024 Load Rating - MBI Assigned Group: MBI Load Raters

All Inspections Performed By: 12/31/2024 All Reviews Completed By: 2/28/2025

Search [Export](#)

Status	Inspection Type	Bridge ID	District	County	Facility Carried	Feature Intersected	Owner	Maint	Equipment Needed	Inspection Procedures	
Not Started	Load Rating	03949	District 3	(37) Oconee	S-37-68	BARTON CREEK	SCDOT	01 SCDOT	0	0	
Entered in BrM	Load Rating	10914	District 4	(11) Cherokee	I-85	SC 18	SCDOT	01 SCDOT	0	0	
Review Complete	Load Rating	01883	District 4	(29) Lancaster	US 521	CAMP CREEK	SCDOT	01 SCDOT	0	0	
Review Complete	Load Rating	07737	District 3	(42) Spartanburg	SC 150	FAIRFOREST CREEK	SCDOT	01 SCDOT	0	0	

Status (arrow pointing to Status column)

Current copies of Load Rating Technical Notes can be obtained from the SCDOT Bridge Management website at <https://www.scdot.org/business/load-rating-guidance-doc.aspx>.

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Follow the steps below to create a load rating inspection type in BrM, enter the applicable data, and submit for review.

1. From “Assignment Details”, click the checkbox to initiate a load rating. After you select the checkbox, the Inspection Page will load.

Assignment Name: 2024 Load Rating - MBI Assigned Group: MBI Load Raters

All Inspections Performed By: 12/31/2024 All Reviews Completed By: 2/28/2025

Search

Status	Inspection Type	Bridge ID	District	County	Facility Carried	Feature Intersected	Owner	Maint	Equipment Needed	Inspection Process	
Not Started	Load Rating	03949	District 3	(37) Oconee	S-37-68	BARTON CREEK	SCDOT	01 SCDOT	0	0	<input checked="" type="checkbox"/> <input type="checkbox"/>
Entered In BrM	Load Rating	10914	District 4	(11) Cherokee	I-85	SC 18	SCDOT	01 SCDOT	0	0	<input type="checkbox"/>
Review Complete	Load Rating	01883	District 4	(29) Lancaster	US 521	CAMP CREEK	SCDOT	01 SCDOT	0	0	<input type="checkbox"/>
Review Complete	Load Rating	07737	District 3	(42) Spartanburg	SC 150	FAIRFOREST CREEK	SCDOT	01 SCDOT	0	0	<input type="checkbox"/>

Note: Do not use the “x” for reassignment for load ratings. Even if it’s determined that a load rating is not required, still go through the process to initiate a load rating, update the date last evaluated, update the conditions during rating, and add notes regarding why a load rating isn’t required in this case. The only time a load rating will be reassigned is if the load rating was assigned to the incorrect user group.

2. Click “Create”. The Engineer can only initiate a load rating if the user has the correct qualifications in BrM to start a load rating. A new inspection event date will be created for the date that the load rating inspection type was created. This date can be edited later, if needed, to match the date the load rating is signed and sealed.

Bridges > New Inspection

Inspection Form

Bridge 03949 Facility Carried (007)

Parking Location

Latitude: 34.64450421 Longitude

Parking Notes: Park on grass shoulder at southeast bridge end.

Inspection Details

* Inspection Date: 04/30/2024

* Inspector: Butler, Pietra

* Entered By: Butler, Pietra

Engineer of Record:

Current copies of Load Rating Technical Notes can be obtained from the SCDOT Bridge Management website at <https://www.scdot.org/business/load-rating-guidance-doc.aspx>.

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- Once a new load rating inspection is created, BrM automatically creates a new load rating request that needs to be cleared immediately to avoid accidental assignment of another load rating. The load rating request shall remain tied to the bridge inspection event. To remove the additional load rating request, navigate to the SUBMIT page, uncheck the Future Inspection Required box for Load Rating in Section 2. Then, uncheck “Requesting New Load Rating” and delete the justification notes for the New Load Rating in Section 3.

Inspection > Submit

Inspection Type	Inspection Being Performed	Most Recent Inspection Date	Future Inspection Required	Frequency (months)	Next Inspection Est. Date	Inspection Assignment Name	Inspection Assignment Group
Complex Movable	<input type="checkbox"/>		<input type="checkbox"/>				
Complex Routine	<input type="checkbox"/>		<input type="checkbox"/>				
Damage	<input type="checkbox"/>		<input type="checkbox"/>				
Data Update (BMO Only)	<input type="checkbox"/>		<input type="checkbox"/>				
Hydraulic Analysis	<input type="checkbox"/>		<input type="checkbox"/>				
Initial	<input type="checkbox"/>		<input type="checkbox"/>				
Initial (Complex)	<input type="checkbox"/>		<input type="checkbox"/>				
Initial (Underwater)	<input type="checkbox"/>		<input type="checkbox"/>				
Inspection Procedure	<input type="checkbox"/>		<input type="checkbox"/>				
Load Rating	<input checked="" type="checkbox"/>	04/30/2024	<input checked="" type="checkbox"/>	3	07/30/2024		

4.

Uncheck

Section 3: If new Inspections are added in Section 2, document the justification in the appropriate subsection below: (No justification is needed when completing Initial Inspections, and assigning the corresponding regular Inspection Types)

Uncheck

New Load Rating

Requesting New Load Rating for the reasons below. Load Rating NB
Rehabilitated Bridge. Year Reconstructed (Item 106): 2024

Clear Notes

(041) Traffic Status: P
(064) Operating RF: 1.13 rf
(066) Inventory RF: 0.68 rf
(411) Date Rated: 4/30/2024
(418) CRs During Load Rating: Deck Super Sub
6 4 5

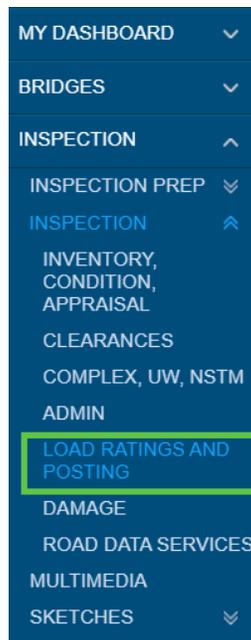
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- At the top of this page, use the drop-down menu to select Item (542) Bridge Inspection Team Leader, which is the Engineer of Record. In the box below this item, clear out any names that automatically populated. Enter the Inspection Date, which is the date the load rating was signed and sealed. The date entered will automatically populate with the current date. If needed, revise Name of Report Author, or the person who entered the data into BrM.

- To create a new load rating event or update load rating data, click on the LOAD RATING AND POSTING task under the INSPECTION tab as shown below:



Current copies of Load Rating Technical Notes can be obtained from the SCDOT Bridge Management website at <https://www.scdot.org/business/load-rating-guidance-doc.aspx>.

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A new load rating event is created by clicking “Create New Load Rating Event” at the top of the Load Ratings and Posting page.

Inspection > Inspection > Load Rating

Load Rating Event

Rating Event: Initial LR Create New Load Rating Event **Click**

Load Rating Event Data (Changes with Rating Event Dropdown)

Load Rating Event Name: Initial LR
 Name of Load Rater (PE):
 Name of QC Reviewer:
 (861) Software Used: AASHTOWare BrR
 (862) Secondary Software: N/A
 (501) Wearing Surface Depth (in):
 (411) Date Evaluated [B.LR.03]: 8/1/2020
 (418A) Deck/Culvert Condition: 6
 (418B) Superstructure Condition: 5
 (418C) Substructure Condition: 6

- Once the load rating is completed, update the Load Rating data in the LOAD RATING AND POSTING page as needed. Refer to **Attachment 1** for a detailed description of the items in the LOAD RATING AND POSTING page.

The Load Rating Event Name shall match the date the load rating is signed and sealed. Complete the Load Rating Event Data and Load Rating Event Milestones highlighted below. BMO or the QA Consultant will complete Items 871, 872, and 041, as needed.

Load Rating Event

Rating Event: 7/11/2024 Create New Load Rating Event

Load Rating Event Data (Changes with Rating Event Dropdown)

Load Rating Event Name: 7/11/2024
 Name of Load Rater (PE):
 Name of QC Reviewer:
 (861) Software Used: AASHTOWare BrR
 (862) Secondary Software: N/A
 (501) Wearing Surface Depth (in):
 (411) Date Evaluated [B.LR.03]: 8/1/2020
 (418A) Deck/Culvert Condition: 6
 (418B) Superstructure Condition: 5
 (418C) Substructure Condition: 6

Load Rating Event Milestones

To Be Completed by Load Rating Engineer

(865) Date Inspection Completed:
 (866) Date Load Rating Assigned by BMO:
 (867) Date QC Review Completed:
 (868) Date Signed and Sealed:
 (869) Date Uploaded Docs to PW:

QA/Post Rating Milestones (To Be Completed by BMO/QA Consultant)

Section to be completed by the BMO or the QA Consultant

(871) Date Quality Assurance Review Completed:
 (872) Date BMO Posting Form Signed [B.PS.02]:
Posting Traffic Status (To Be Completed by BMO/QA Consultant)
 (041) Traffic Status [B.PS.01]: P - Posted for Load

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It is important to accurately enter and track the Load Rating Data to ensure compliance with the timeline set by the 2022 SNBI and Technical Note 15. The reason for load rating updates and any important information related to the load rating shall be entered in Item (859) “Load Rating Event Notes”. Note that if a new load rating is not completed, such as in the case of a substructure repair or the load rater determines that the current load rating on file is accurate, the date evaluated and conditions during rating/evaluation shall be updated, and notes added to Item (859) “Load Rating Event Notes”.

(859) Load Rating Event Notes

In the space below, please include the remarks and assumptions related to this load rating event. This field should match any LRSF remarks created in parallel to this Load Rating Event.:

1. As-built plans 12.224 with included shop drawings, Repair Plans P041430, and February 08, 2024 inspection report were used for the rating.
2. Based on the year built, 1940, the following material properties were used:
 - Concrete compressive strength = 2.5 ksi
 - Reinforcing steel yield strength = 33 ksi

If a site assessment was completed as part of the load rating, then document the notes in Item (864) Load Rating Site Assessment Notes and upload applicable photographs in the MULTIMEDIA page under the appropriate load rating inspection event, as shown below.

(864) Load Rating Site Assessment Notes

In the space below, include information on items that affect the load rating, such as SIP forms, utilities, attached signs, overlays, etc. Do not include information that does not affect the load rating

MY DASHBOARD
BRIDGES
INSPECTION
INSPECTION PREP
INSPECTION
MULTIMEDIA
SKETCHES
CRITICAL FINDINGS AND REPAIRS
MY PENDING INSPECTION REVIEWS

Multimedia Directory
Home Inspection (2024-04-30 (WYJY) Load Rating) **Upload**

File Types All Search

Search by Tag

Name	Sort Order	File Size (MB)	Category	Sub-Category	Notes	Created Date
No records to display.						

Current copies of Load Rating Technical Notes can be obtained from the SCDOT Bridge Management website at <https://www.scdot.org/business/load-rating-guidance-doc.aspx>.

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At the bottom of the page, the controlling ratings for each vehicle shall be updated, as needed. If superstructure and substructure are both rated, then results for both are shown in the same load rating event. Enter “superstructure” or “substructure” in the Location field as appropriate. If only the substructure was rated as part of the load rating event, then only the ratings for substructure needs to be added. Use the drop down to select the controlling limit state for each rating.

BrM has the capability to import data from BrR files (version 7.3 and later). The BrR file shall be uploaded to ProjectWise to meet current SCDOT BrR version requirements. The consultant may use BrR v7.3 or later to automate the upload of the results into BrM. Please refer to **Attachment 2** for a guide with instructions on the BrR to BrM transfer process.

[Add New Vehicle/Rating](#)

Vehicle	Current	Rating	Tons	Method	Analysis Type	Limit State	Location	Notes
HL-93 (Inv)	<input type="checkbox"/>	0.36	0	8 LRFR	Design	STRENGTH-I Concrete Flex	Superstructure	
HL-93 (Oper)	<input type="checkbox"/>	0.47	0	8 LRFR	Design	STRENGTH-I Concrete Flex	Superstructure	
H 20-44 (Inv)	<input type="checkbox"/>	0.71	0	6 LFR	Design	Design Flexure - Concrete	Superstructure	
H 20-44 (Oper)	<input type="checkbox"/>	0.63	0	6 LFR	Design	Design Shear - Concrete	Superstructure	
HS 20-44 (Inv)	<input checked="" type="checkbox"/>	0.63	0	6 LFR	Design	Design Shear - Concrete	Superstructure	
HS 20-44 (Oper)	<input checked="" type="checkbox"/>	1.05	0	6 LFR	Design	Design Shear - Concrete	Superstructure	
Alternate Military Loading (Inv)	<input type="checkbox"/>	0.58	0	6 LFR	Design	Design Shear - Concrete	Superstructure	
Alternate Military Loading (Oper)	<input type="checkbox"/>	0.96	0	6 LFR	Design	Design Shear - Concrete	Superstructure	
Modified AASHTO SC - Type 3	<input type="checkbox"/>	0.77	0	8 LRFR	Legal	STRENGTH-I Concrete Flex	Superstructure	
Modified AASHTO SC - Type 3 (Inv)	<input type="checkbox"/>	0.79	0	6 LFR	Legal	Design Shear - Concrete	Superstructure	

The reported rating for Items 63-66 shall be the governing rating between superstructure and substructure, and the more favorable rating between LRFR and LFR. Select the current reported ratings, which is the current governing Inventory and Operating for the structure.

[Add New Vehicle/Rating](#)

Vehicle	Current	Rating	Tons	Method	Analysis Type	Limit State	Location	Notes
HL-93 (Inv)	<input type="checkbox"/>	0.36	0	8 LRFR	Design	STRENGTH-I Concrete Flex	Superstructure	
HL-93 (Oper)	<input type="checkbox"/>	0.47	0	8 LRFR	Design	STRENGTH-I Concrete Flex	Superstructure	
H 20-44 (Inv)	<input type="checkbox"/>	0.71	0	6 LFR	Design	Design Flexure - Concrete	Superstructure	
H 20-44 (Oper)	<input type="checkbox"/>	0.63	0	6 LFR	Design	Design Shear - Concrete	Superstructure	
HS 20-44 (Inv)	<input checked="" type="checkbox"/>	0.63	0	6 LFR	Design	Design Shear - Concrete	Superstructure	
HS 20-44 (Oper)	<input checked="" type="checkbox"/>	1.05	0	6 LFR	Design	Design Shear - Concrete	Superstructure	
Alternate Military Loading (Inv)	<input type="checkbox"/>	0.58	0	6 LFR	Design	Design Shear - Concrete	Superstructure	

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Next, a box will appear above the truck ratings that includes the ratings checked off as current reported data. In this box, check off the Operating Rating for Item 64 and the Inventory Rating for Item 66.

Vehicle	Item 64	Item 66	Rating	Tons	Event	Method 63/65
HS 20-44 (Inv)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0.63	0	4/23/2024	6 LFR
HS 20-44 (Oper)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1.05	0	4/23/2024	6 LFR

Update the Inventory and Operating Methods, as needed.

Current Rating Reported Data

(065) Inventory Rating Method [B.LR.04]:

(066) Inventory Rating [B.LR.05]: rf

(063) Operating Rating Method [B.LR.04]:

(064) Operating Rating [B.LR.06]: rf

(423) Date of Original Posting:

(070) Posting Appraisal:

Current Rating Evaluation & Bridge Condition

(411) Date Evaluated [B.LR.03]:

(418A) Deck/Culvert Condition:

(418B) Superstructure Condition:

(418C) Substructure Condition:

OSOW Rating Data

(425) Operating Rate Factor 100k:

(476) Operating Rate Factor 120k:

(427) Operating Rate Factor 130k:

Non-OSOW Fields

(465) Alt Inventory Rate Method:

(466) Alt Inventory Rating:

(463) Alt Operating Rate Method:

(464) Alt Operating Rating:

NOTE: If a previous load rating event controls the rating, then the previously reported Inventory and Operating Ratings are still valid. In this case, do not check off any ratings as “current” in the new load rating event. The only data to be updated in the screenshot above are items 411, 418A, 418B, and 418C in “Current Rating Evaluation & Bridge Condition”. Ensure the remaining items in Current Rating Reported Data, OSOW Rating Data, and Non-OSOW Fields are accurate to represent the controlling rating.

Click “Save” at the bottom of the screen. Check off the box indicating that the load rater updated the Submit page in accordance with Step 5. Click “Submit for Review” at the bottom of the page, as shown below.

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BrM Version 6.7.1.10ab4edda8 6.7.1 [Build Date: Wednesday April 24, 2024]
<https://aashtoware.org> | AASHTO Publications

When Submitting, Confirm Load Rater has updated the Inspection > Submit Page.

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BrM Version 6.7.1.10ab4edda8 6.7.1 [Build Date: Wednesday April 24, 2024]
<https://aashtoware.org> | AASHTO Publications

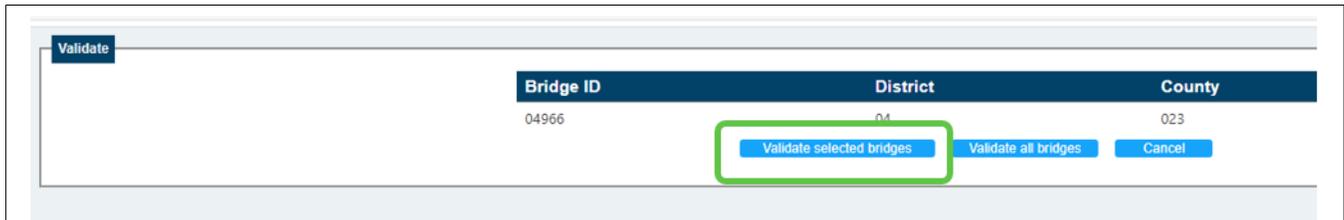
When Submitting, Confirm Load Rater has updated the Inspection > Submit Page.

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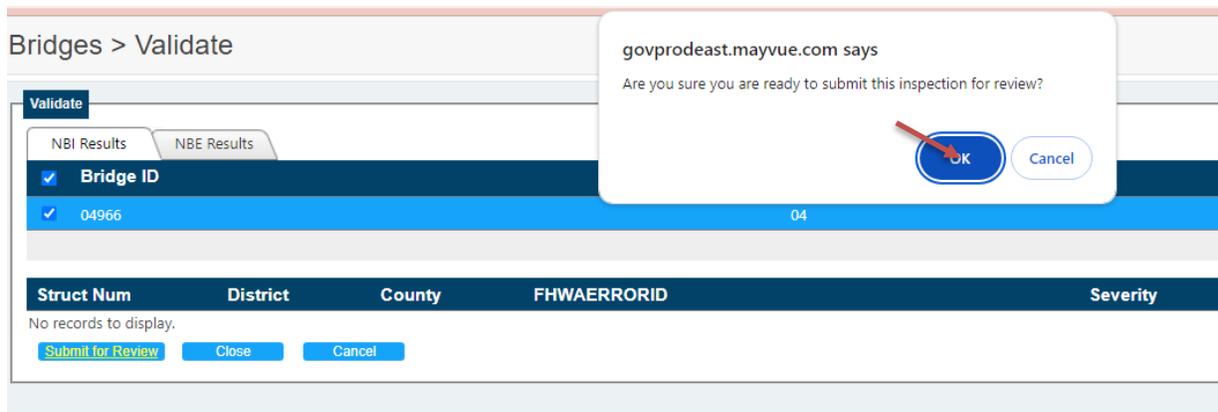
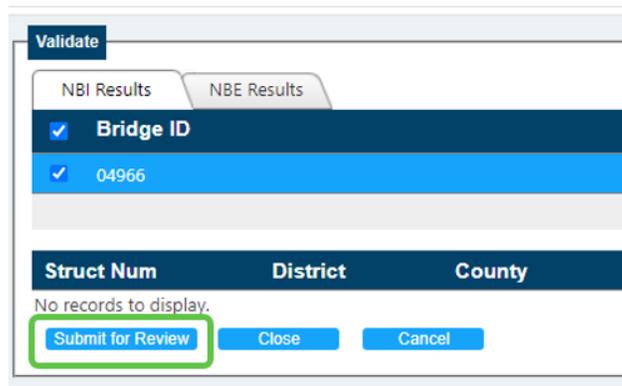
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Click “Validate Selected Bridges”. Note that all bridges that are selected in the “VIEW LIST” tab will show up here.



Clear any validation errors if they show up on either the NBI or NBE tabs. After validation errors are cleared, click “Submit for Review” and then “OK”.

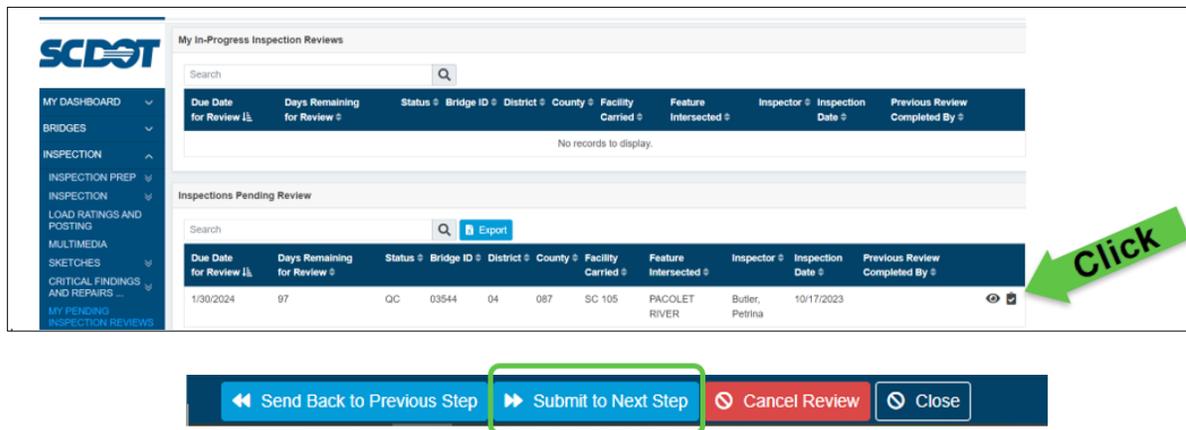


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- At this point, the bridge is ready for QC review. BrM users who are designated as load rating QC Engineers can view bridges that have been submitted for QC Review in the “Inspections Pending Review Section” by clicking on the “MY PENDING INSPECTION REVIEWS” page. Once QC review of the load rating BrM data is complete, designated QC Engineers click the checkbox to either send the load rating back for edits or click “Submit to Next Step.”



- BrM randomly selects 10% of the submitted load ratings for QA Review after this step. If the load rating is not selected for QA, it will either move into “locked” status or into BMO’s QA Consultant’s queue for “Load Rating Posting Review” if a posting change was indicated. If the load rating is selected for QA, it will be added to the BMO QA Consultant’s queue for Load Rating QA Review. Once the QA Engineer completes the review, the load rating is sent back to the original QC Engineer in BrM and an email sent with QA Comments, if applicable. The load rating will move into “My In-Progress Inspection Reviews” for the original QC reviewer. The QC Engineer clicks “Send Back to Previous Step” to allow updates to the load rating page in BrM, and the load rating will now appear in the load rater’s queue for “My In-Progress Inspection Reviews”. Once BrM updates are completed by the load rater, the load rater clicks “Submit to Next Step” for QC review. Once QC review of the updates is complete, the QC Engineer clicks “Submit to Next Step” for QA review. If there are further QA comments, then the process is repeated. Otherwise, the QA Engineer clicks “Submit to Next Step” and the load rating will either move into “locked” status or will move into BMO’s QA Consultant’s queue for “Load Rating Posting Review” if a posting change was indicated.

Please note that if a posting change is recommended, including a posting recission, the load rater will need to email BMO at mailto:SCDOT_LR_BMO_Approval@mbakerintl.com to submit the form for review.

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2. Load Rating for Phased Construction

For bridges constructed with phased or partial-width construction, a load rating must be performed and submitted as part of the Load Rating Submittal Package, encapsulating each of the phased conditions for all portions of the bridge that will be open to traffic. This extends to existing structures that are being rehabilitated or replaced, requiring a load rating to be performed for any intermediate phase during which a partially-demolished bridge will be open to traffic.

A separate load rating summary form (LRSF) will be required for the As-Let condition and for each new traffic pattern or change to the structural configuration, for the existing and replacement structures. An initial inspection will be required for each phase and a load rating shall be requested in BrM to update the current NBI data. In BrM, the data reported for NBI Items 63-66 shall match the current condition of each bridge.

For example, if an existing bridge will be partially demolished and a portion of the replacement structure built with both bridges open to live traffic, then a load rating of each bridge with its unique travel way and barrier configuration shall be completed and reported in BrM under its respective Asset ID. A separate LRSF will be required for the existing bridge, each phase of partial width construction of the new bridge, and the final As-Let condition of the new bridge. If the existing bridge will not be utilized for live traffic, then the Asset ID of the existing bridge shall be retired and a load rating of the temporary phase of traffic on the new bridge shall be completed and reported under the new Asset ID. A separate LRSF will be required for each phase of partial width construction and the final As-Let condition of the new bridge.

3. Bridge Signing/Posting Form Update

Please note that a new [Posting Form \(Version 1.3\)](#) has been updated on the website, which includes the following revisions:

- Clarification that NBI Item 109 (Truck ADT) shall be entered as a percentage
- Removal of sign R-12-7-48

4. Retirement of LRGD Appendix A5.1: Asset ID Request Form

Please note the LRGD Appendix A5.1: Asset ID Request Form has been updated to Attachment A5.1-A: Bridge Data Form (Request Asset ID), following the release of BIGD TN04. The link is shown below:

[A5.1 A Bridge Data Form Asset ID Request MAR2024 V1.pdf \(scdot.org\)](#)

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5. Bridges in Design – QA Approval of Load Rating

If load rating QA approval is received for 95% plans and there are any revisions that would affect the load rating when RFC is submitted, the load rating shall be updated and resubmitted for review. As-Let plans shall be uploaded to ProjectWise when design is complete or when the Asset is ready for an initial inspection and As-Built load rating.

6. Definition of Load Rating Event and File Name Policy

If a load rating event includes both superstructure and substructure ratings, file names shall have the same date and it shall be entered into BrM as one load rating event. There shall only be one posting form based on the controlling rating between the superstructure and substructure, if applicable. Historic posting forms shall be stored in ProjectWise and not deleted.

7. Reopening of Closed Bridges

In order to reopen a closed bridge, a new load rating request is required. The current load rating on file must be considered/evaluated to ensure it meets the current condition of the bridge. If the current load rating in the bridge file does not represent the current condition of the bridge, a new load rating shall be performed.

8. Supplemental Calculations for Steel Beam End Section Loss

AASHTOWare BrR software is primarily used to rate bridges in South Carolina. BrR 7.2 does not evaluate the web local crippling capacity of steel girders, however it does evaluate the shear capacity of a steel girder as per the AASHTO LRFD Bridge Design Specification (2020). In BrR, corrosion damage is modeled by defining three inputs: (1) starting point of the corrosion from the support, (2) length of the corroded region from the starting point, and (3) average thickness loss in the steel section. However, there is no provision to input the height of the corroded region and instead BrR software considers the input corrosion damage for the entire height of the web. This is the source of underprediction of the residual shear capacity estimated by BrR software. Calculations were developed from Massachusetts Department of Transportation (MassDOT) research and saved in the Supplemental Documentation section on the SCDOT Bridge Management website. These calculations may be used as a tool to account for reduced capacity in beam ends due to section loss. The calculated capacity is then entered into BrR as a defined Point of Interest if the calculated capacity is less than the capacity calculated by BrR.

9. BrR Input for Deck Reinforcing for Cont. PSC girders

BrR checks negative flexure at the centerline of the pier instead of the face of the support, which can create unrealistically lower rating factors. Two solutions are outlined below to determine realistic rating factors at this location.

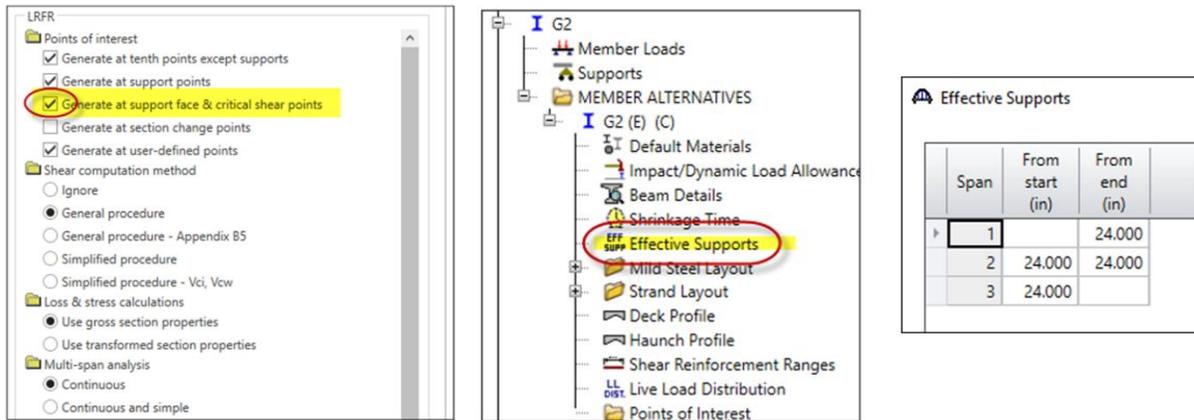
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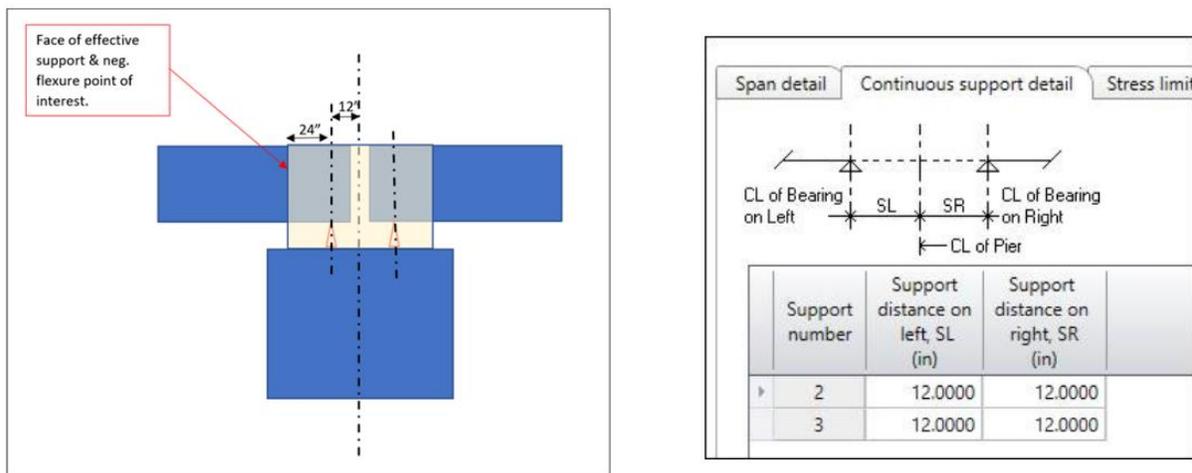
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A) Incorporate the closure poured diaphragm over the interior bent

BrR allows a direct way to compute the negative moment ratings at face of integral diaphragm instead of at the centerline of pier. First, check “Generate at support face & critical shear points” in the LRFR member Control Options and then define “Effective Supports” in the member alternative work-tree, as shown below. This will allow BrR to compute flexure ratings at the effective support location and not over the center of pier.



Assuming a three-span continuous bridge where the face of the continuity diaphragm is 24 inches from the centerline of bearing at the pier and the centerline of bearing is 12 inches from the centerline of pier, BrR will check flexure 36 inches away from the centerline of pier and not over the centerline.



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B) Include Minimum Haunch Thickness in the Deck Rebar Cover

Modify the reinforcing as shown below to reflect a more accurate location of reinforcing. The reinforcing must stay within the limits of the deck. The example below shows the suggested updates for a 3-inch haunch. This attempts to move the reinforcing up and use the true height very near the top of the deck.

Material	Support number	Start distance (ft)	Length (ft)	End distance (ft)	Std bar count	LRFD bar count	Bar size	Distance (in)	Row	Bar spacing (in)
A706 Gra	1	0.00	176.80	176.80	9.00	9.00	5	1.9375	Bottom of Slab	8.5000
A706 Gra	1	0.00	176.80	176.80	5.00	5.00	5	3.1875	Top of Slab	18.0000
A706 Gra	1	27.65	28.50	56.15	9.00	9.00	7	3.3125	Top of Slab	6.0000
A706 Gra	2	74.75	28.50	103.25	9.00	9.00	7	3.3125	Top of Slab	6.0000

Update these distances to:
 4.9375" (from bottom)
 0.1875" (from top)
 0.3125" (from top)
 0.3125" (from top)

10. H-10/H-15 Precast Slab Panel Bridge Research, Testing, and Load Rating Modifications

SCDOT contracted with Clemson University and the University of South Carolina to complete load testing of the SCDOT Precast Concrete Bridge Standard (H-10 design live load) in accordance with AASHTO MBE Section 8.8. The January 2023 final report titled “Safe and Cost-Effective Reduction of Load Postings for South Carolina Bridges” determined that the flexural capacity of the slabs is higher than calculated through theorized mathematical analysis by a K-factor of 1.54. The University testing results were verified through field load testing conducted in July 2024 and the K-factor was deemed appropriate.

The K-Factor represents the increase to the flexural capacity based on testing in accordance with AASHTO MBE Section 8.8.2.3. The increase to the flexural capacity will be updated under a new superstructure definition and preserved in the BrR model to assist future load ratings and permitting. The K-Factor is applied as a resistance factor override in the LFR and LRFR “Factors” section in BrR to increase the flexural capacity.

Technical Note e-Notification

No. 16
May 2025

Technical Note 16

Instead of utilizing 0.90 for the flexural resistance factor, a factor of $0.90 * 1.54 = 1.386$ will be applied for both LFR and LRFR to account for the increase in flexural capacity.



Factors - LFD

Name: Phi*Mn Override (H10 Slab)

Description: Resistance factor (0.9) multiplied by K-factor (1.54) to get flexural capacity increase based on testing.

Load factors | Resistance factors | Specifications

Strength reduction factors:

Resistance	Resistance factor
Reinforced concrete: flexure	1.386
Reinforced concrete: shear	0.850
Prestressed concrete: flexure	1.000
Prestressed concrete: shear	0.900
Prestressed concrete: flexure in non-p/s components	0.900
Post-tensioned concrete: flexure	0.950

Factors - LRFR

Name: Phi*Mn Override (H10 Slab)

Description: Resistance factor (0.9) multiplied by K-factor (1.54) to get flexural capacity increase based on testing.

Load factors | Legal loads | Permit loads | Concrete | Steel | Wood

Resistance factors for concrete:

Resistance	Resistance factor
Tension-controlled reinforced concrete: normal weight concrete	1.386
Tension-controlled reinforced concrete: lightweight concrete	0.900
Tension-controlled prestressed concrete: normal weight concrete	1.000
Tension-controlled prestressed concrete: lightweight concrete	1.000
Tension-controlled post-tensioned concrete: normal weight concrete unbonded strands or tendons	0.900

In the “Specs” tab of the Member Alternative Description window, the override specs are selected with the appropriate “Factors” definition:

Member Alternative Description

Member alternative: Resistance Factor Multiplier

Description | Specs | Factors | Engine | Import | Control options

Analysis method type	Analysis module	Selection type	Spec version	Factors
ASD	AASHTO ASD	System Default	MBE 3rd 2020i, Std 17th	N/A
LFD	AASHTO LFD	Override	MBE 3rd 2020i, Std 17th	Phi*Mn Override (H10 Slab)
LRFD	AASHTO LRFD	System Default	LRFD 9th	2020 AASHTO LRFD Specifications
LRFR	AASHTO LRFR	Override	MBE 3rd 2020i, LRFD 9th	Phi*Mn Override (H10 Slab)

Load Rating Guidance Document



Technical Note e-Notification

No. 16
May 2025

Technical Note 16

To efficiently update the H-10 slab ratings described above, BrR templates have been developed based on standard plans for precast panels, assuming an asphalt thickness of 5 inches and GCR of “5- Fair” for superstructure. The templates have been reviewed through the standard checking and QC process. Therefore, by signing and sealing the LRSF and using the BrR template, an individual QC checklist is not required. A QC check in BrM shall be completed to check that the correct template was used, and the correct rating factors were entered into BrM. The BrR templates are saved in the Supplemental Documentation section on the SCDOT Bridge Management website. If the template is altered in any way, a QC checklist must be submitted with the load rating.

The modified rating factor for H-10 slabs shall only be applicable if the bridge meets the following criteria, unless BMO approval is acquired:

- No signs of significant distress
- No CS4 quantities for Element 38
- CS3 quantities for Element 38 less than 25%
- GCR of “5- Fair” or greater for deck/superstructure.

The use of the template shall be re-evaluated if there is a decrease in superstructure GCR of 2 or more points, there is an increase in dead load, or the criteria above is no longer met. The research gained from studying H-10 slabs can also be applied to H-15 slabs. Typical SCDOT standard plans for H-10 and H-15 slabs are identified by the title block such as shown below.

REV. WFL NCH 8-68 From 31-6 Roadway MEL RRB 10-67 31-6 ROADWAY AGW RRS 15-62 37 ROADWAY IN CHARGE FILE NO. 39.449 COUNTY PICKENS ROAD NO. S-50 DATE 8-68 APPROVED BY [Signature] ASS'T [Signature]		S.C. STATE HIGHWAY DEPARTMENT BRIDGE DIVISION COLUMBIA, S.C. H 10-44 PRECAST CONCRETE BRIDGE STANDARD 15' SPAN - 32' ROADWAY		REV. WFL NCH 4-69 For H15-44 MEL RRB 10-67 31-6 Roadway AGW RRS 15-62 37 Roadway REVIEWED IN CHARGE FILE NO. COUNTY ROUTE NO. DATE APPROVED BY [Signature] ASS'T [Signature]		S.C. STATE HIGHWAY DEPARTMENT BRIDGE DIVISION COLUMBIA, S.C. H 15-44 PRECAST CONCRETE BRIDGE STANDARD 15' SPAN - 31-6 ROADWAY	
QUAN. RRS	HDL 1-57	FILE NO.	COUNTY	ROUTE NO.	DATE	APPROVED BY [Signature]	APPROVED BY DESIGN [Signature]
TR. RET	J.C. 10-69					BRIDGE DESIGN & PLANS ENGINEER	BRIDGE ENGINEER
DR. HDL	1-57						
DES. RRS	DFD 1-57						
BY	CHK'D	DATE					

Please direct any questions concerning the above to:
 Michael Baker International
 email: SCDOT_LR_Help_Desk@mbakerintl.com

Approved: _____
 Director of Bridge Management

5/15/25

 Date

**Technical Note
e-Notification**

No. 16
May 2025

Technical Note 16

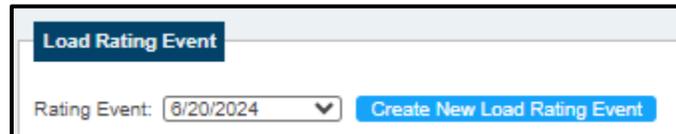
LRGD Technical Note 01, August 9, 2019
LRGD Technical Note 02, January 17, 2020
LRGD Technical Note 03, April 17, 2024
LRGD Technical Note 04, January 17, 2020
LRGD Technical Note 05, December 17, 2019
LRGD Technical Note 06, July 13, 2021
LRGD Technical Note 07, November 7, 2023
LRGD Technical Note 08, April 13, 2020
LRGD Technical Note 09, July 13, 2021
LRGD Technical Note 10, October 5, 2020
LRGD Technical Note 11, February 22, 2021
LRGD Technical Note 12, May 2025
LRGD Technical Note 13, August 25, 2021
LRGD Technical Note 14, August 31, 2022
LRGD Technical Note 15, May 2025
LRGD Technical Note 16, May 2025

Attachment 1

BrM Load Ratings and Posting Input Guide

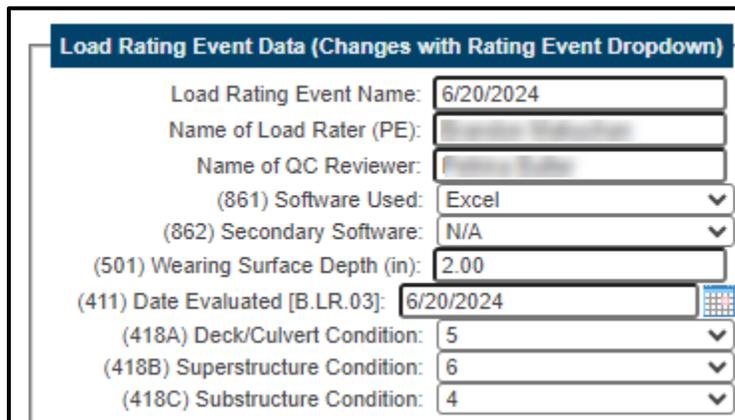
The following document is a guide to assist load raters with data input on the AASHTOWare BrM Load Ratings and Posting page.

Load Rating Event



- **Rating Event** - Click the “Create New Load Rating Event” button to begin a load rating event.

Load Rating Event Data (Changes with Rating Event Dropdown)



- **Load Rating Event Name** - Date load rating has been evaluated or signed and sealed. This should also match the Inspection Date on the Submit page and Item 411.
- **Name of Load Rater (PE)** - Name of the Professional Engineer who evaluated or signed & sealed the load rating (Engineer of Record).
- **Name of QC Reviewer** - Name of the Professional Engineer who performed QC on the load rating.
- **(861) Software Used** - Primary software used to perform this particular load rating event. Typically, AASHTOWare BrR for superstructure rating events. If only a substructure rating was completed as part of the load rating event, it is likely Excel, Hand Calculations, or some type of Alternate Software was used. If a superstructure and substructure rating was completed, then select the rating type for the superstructure and enter the rating type for substructure for Item 862.
- **(862) Secondary Software** - Secondary software used to perform this particular load rating event. Select N/A if only one type of software was used.

- **(501) Wearing Surface Depth (in)** - Wearing surface depth applied in the load rating event. In general, the depth should match the most recent inspection or site assessment (if one was performed as part of the load rating). As-let load ratings and Item 501 should include the wearing surface depth shown on the structure plans.
- **(411) Date Evaluated [B.LR.03]** - The date the rating was signed and sealed or the date the bridge was evaluated for a load rating. The load rating may be performed independently and at a different date than the inspection. The date should correspond to the Date Rated on current LRSF (the date the rating was signed and sealed), or the date that the engineer evaluated the need for a load rating if it was determined that a load rating update was not necessary.
- **(418A) Deck/Culvert Condition** - The deck or culvert condition at the time of the load rating event or at the time of evaluation that determined a load rating was not required.
- **(418B) Superstructure Condition** - The superstructure condition at the time of the load rating event or at the time of evaluation that determined a load rating was not required.
- **(418C) Substructure Condition** - The substructure condition at the time of the load rating event or at the time of evaluation that determined a load rating was not required.

Load Rating Event Milestones

Load Rating Event Milestones	
To Be Completed by Load Rating Engineer	
(865) Date Inspection Completed:	5/20/2024 
(866) Date Load Rating Assigned by BMO:	5/22/2024 
(867) Date QC Review Completed:	6/20/2024 
(868) Date Signed and Sealed:	6/20/2024 
(869) Date Uploaded Docs to PW:	6/21/2024 

- The following dates are to be entered so the workflow can be tracked. Refer to LRGD Technical Note 15 for additional details on necessary milestone completion dates.
- **(865) Date Inspection Completed** - Inspection date the load rating is referenced to, which represents the rated condition of the bridge. Generally, load ratings are requested by the BITL as part of an inspection event. Periodically, a load rating may be initiated outside of an inspection event. The latest inspection date shall be listed which reflects the condition shown in Items 418A, 418B, and 418C.
- **(866) Date Load Rating Approval** - Date BMO assigned the load rating to the load rating team.
- **(867) Date QC Review Completed** - Date the QC Checklist was Signed.
- **(868) Date Signed and Sealed** - Date the load rating was signed & sealed. Date should match Item 411 & Load Rating Event Name
- **(869) Date Upload Docs to PW** - Date the load rating documents were uploaded to the ProjectWise bridge file.

QA/Post Rating Milestones & Posting Traffic Status (To Be Completed by BMO/QA Consultant)

QA/Post Rating Milestones (To Be Completed by BMO/QA Consultant)

Section to be completed by the BMO or the QA Consultant.

(871) Date Quality Assurance Review Completed:

(872) Date BMO Posting Form Signed [B.PS.02]:

Posting Traffic Status (To Be Completed by BMO/QA Consultant)

(041) Traffic Status [B.PS.01]:

- **Items 871, 872, and 41 should not be modified by load raters. These data fields will be entered by BMO or the QA Consultant.**
- **(871) Date QA Review Completed** - Date the QA comments have been addressed. If bridge has not been selected for QA review, leave blank.
- **(872) Date BMO Posting Form Signed [B.PS.02]** - Date Posting Form is signed by BMO. If no posting required, leave blank.
- **(041) Traffic Status [B.PS.01]**
 - If a posting decision has been approved on an Open bridge, the Traffic Status should be changed from “A - Open, no restriction” to “B - Posting Recommended”.
 - If a new posting decision has been approved on a Posted bridge, the Traffic Status should be changed from “P - Posted” to “B - Posting Recommended”.
 - If a posting has been rescinded, the Traffic Status should be changed from “P - Posted” to “B - Posting Recommended”.

(859) Load Rating Event Notes

(859) Load Rating Event Notes

In the space below, please include the remarks and assumptions related to this load rating event. This field should match any LRSF remarks created in parallel to this Load Rating Event.

1. As-let plan 12.314, February 12, 2024 inspection report and photos provided by District 4 on June 20, 2024 were used for the rating.
2. An 8" thick asphalt overlay was applied to the as-built structure based on the original 10" curb height (per plan) and minimum 2" curb reveal included within the February 12, 2024 in
3. Based on the year of reconstruction (1953), the following material properties were used:

- Enter any remarks and assumptions used in the load rating (typically shown in the LRSF).

(864) Load Rating Site Assessment Notes

(864) Load Rating Site Assessment Notes

In the space below, include information on items that affect the load rating, such as SIP forms, utilities, attached signs, overlays, etc. Do not include information that does not affect the load rating. Refer to the Multimedia tab for the April 24, 2024 site assessment info.

- Include any site assessment data needed to complete the load rating. Upload any photos or sketches under the Multimedia tab as part of the load rating inspection event. If no site assessment was required as part of the load rating, leave blank.

Design and Current Rating Info

Design and Current Rating Info	
(031) Design Load [B.LR.01]:	1 M 9 (H 10) ▼
(850) Design Method [B.LR.02]:	LFD (Load Factor) ▼
(851) Routine Permit Loads [B.LR.08]:	N - Not Approved for Rte ▼
(855) Basis for Load Rating:	Sister Bdg/Standard Plan ▼
(856) Substructure Rating:	Yes ▼
(874) Load/Material Test Incorporated:	No Testing Used ▼
(883) Non-BrR Program Controls Rating:	No ▼
(884) Component Controlling Rating:	1 - Superstructure ▼
(858) BrR Model Version:	6.8.4 ▼
(890) Multiple BrR Models (Y/N):	No ▼

- **(031) Design Load [B.LR.01]** - The live load for which the bridge was designed (H-10, H-15, etc.). Confirm against design plans (if available).
- **(850) Design Method [B.LR.02]** - The method by which the bridge was designed (ASD, LFD, LRFD). Guidance below notes the design method likely used based on the construction date.
 - ASD: Prior to Early 1970's
 - LFD: Early 1970's through Early 2000's
 - LRFD: 2010 - Present. Plans should clearly state the design truck being HL-93 (LRFD).
 - Unknown: If design or construction date is unknown.
- **(851) Routine Permit Loads [B.LR.08]** - Coding whether the bridge carries routine permit loads or whether routine permit loads are restricted from the bridge. Refer to the link below for the Permit Load Truck Map for additional details on permit load approved routes, which include Interstates, US Routes, and SC Routes.
<https://www.scdot.org/business/pdf/osow/TruckRouteMap.pdf?v=2>

Item 851 [B.LR.08] Coding	A	B	C	N
Permit Loads Approved for Route?	Y	Y	Y	N
Permit Ratings > 1.0?	All	Some	None	N/A
Bridge Carries Routine Permit Loads?	Y	Y	N	N

- A - Yes, w/o Restrictions - If all the permit ratings shown in Items 425-427 are > **1.0** and approved for the route segment
- B - Yes w/ Restrictions - If some of the permit ratings shown in Items 425-427 are < **1.0** and approved for the route segment
- C - No Permit Loads - If all of the permit ratings shown in Items 425-427 are < **1.0** and approved for the route segment
- N - Not Approved for Route - Routine permit loads are not approved for the route segment, which includes routes not on Interstates, US Routes, and SC Routes
- **(855) Basis for Load rating** - Select the type of plans or drawings that were used to complete the load rating. Consider using the hierarchy as shown in the list. (If As-Built Drawings and Schematics were used, select as As-Built Drawings)
- **(856) Substructure Load Rating** - Select Yes if a Substructure Rating has been completed for the bridge (includes this particular load rating event and prior substructure load ratings).

- **(874) Load/Material Test Incorporated**
 - Rating Used Load Testing - Assumptions indicate “bridge-specific” load testing results have been included as part of the load rating event
 - Load Test from Similar Bridge - Assumptions indicate load testing results from a similar bridge are included as part of the load rating event. (For example, RC T-beam K-factor live load distribution modifications and H-10 capacity increase modifications based on load testing, etc.)
 - Material Test w/ Rating - Assumptions indicate “bridge specific” material testing results have been included as part of the load rating event (Concrete strength coring)
 - Load & Material Testing Used - Assumptions indicate both load and material testing were used as part of the load rating event
 - No Testing Used - No material or load testing was incorporated into the load rating.
 - Material Test from Similar Bridge - Assumptions indicate material testing was used on a similar bridge type and is applicable to this bridge load rating. (Bridges built in same timeframe, on same route, close proximity to each other. Assumptions could use similar material testing results.)
- **(883) Non-BrR Program Controls Rating** - Select Yes if load rating is controlled by alternative rating software (Excel, MathCAD, MIDAS, CANDE, etc.).
- **(884) Component Controlling Rating** - The controlling load rating component at the time of the load rating event (Superstructure, Substructure, Deck, or Culvert)
- **(858) BrR Model Version** - BrR version used for load rating. This field mainly corresponds to the BrR superstructure (or timber deck rating in some cases).
- **(890) Multiple BrR Models (Y/N)** - Select Yes if the same superstructure is modeled multiple times.

OSOW Rating Data

OSOW Rating Data	
(433) LRT/Federal Formula:	Load Rating Tool
(434) OSOW BrR:	Yes, but add'l checks
(435) BrR Method (for Rating):	LFR
(436) BrR Analysis Type:	Line Girder
(437) BrR Multiple Model Names:	
(425) Operating Rate Factor 100k:	0.652
(426) Operating Rate Factor 120k:	0.571
(427) Operating Rate Factor 130k:	0.559

- **(433) LRT/Federal Formula** - Indicates whether a bridge is assigned to either Load Rating Tool (LRT) or Federal Formula for SafeHaul Weight Analysis. These two Weight Analysis Methods are provided by ProMiles and housed within the ProMiles Load Rating Tool web-based application.
 - Load Rating Tool - Load Rating Tool is a utility of AASHTOWare BrR which allows for high-speed load ratings by saving precomputed data (e.g., dead load actions, section capacities, and influence lines). The precomputed data consists of XML files (different than those created by the bridge model) that are created by the system for use with the

Load Rating Tool. With the precomputed data and the Load Rating Tool, a full BrR analysis is performed but much more quickly.

- LRT does not support 3D curved girders or trusses of any type. Below are the structure types that are supported by LRT (Version 7.2):

Structure	LFD	LRFR
Steel multi-girder	X	X
PS Multi-girder	X	X
RC Multi-girder	X	X
RC Slabs	X	X
MCB	X	X
Culvert	X	Not supported
Floor System	X	Not supported

X – Supported by the Load Rating Tool

- Federal Formula - The Federal Formula weight analysis method is a calculation that utilizes the FHWA Federal Bridge Formula to determine safe overweight loads for permit crossings. The calculation consists of comparing a Truck Factor, TF, (demand) to the Bridge Factor, BF, (capacity). A BF/TF ratio equal to or greater than 1.0 is considered passing.
 - Federal Formula is assigned to bridges that are not suitable for the SafeHaul BrR API or AASHTOWare Load Rating Tool (e.g., bridges rated with alternate software, curved steel girders, trusses, substructure ratings, etc.)
- **(434) OSOW BrR** - Indicates whether a bridge is assigned to the SafeHaul BrR weight analysis method. SafeHaul utilizes an Application Program Interface (API) to call BrR and perform the weight analysis for an overweight permit. Essentially, any bridge that is analyzed in BrR as a line girder is suitable for the BrR API, with a few exceptions.
 - No - The bridge is not assigned to BrR weight analysis.
 - Yes - The bridge is assigned to BrR weight analysis and the permit will be automatically generated.
 - Yes, but add'l checks - The bridge is assigned to BrR weight analysis, but the permit will not be automatically generated even if the analysis passes. The bridge will require a manual review in order to approve the result and generate the permit. (A bridge with a 'Poor' NBI condition rating, or a substructure rating exists and there are concerns about the condition of the substructure, etc.)
 - Yes, multiple BrR models - The bridge is assigned to BrR weight analysis, and there are multiple models for the bridge. SafeHaul needs this information in order to ensure that each model for the bridge is analyzed.
 - Multiple models but add'l checks - If multiple BrR models for the bridge (Item 437), and the bridge will require a manual review in order to approve the result and generate the permit.
- **(435) BrR Method (for Rating)** - The BrR rating method is based on Items 425, 426, and 427 shown below. If a combination of methods between the permit vehicles are favorable, code the most common. This is the rating methodology used for permitting that SafeHaul will use for the BrR API analysis. BrR API is not capable of ASR analysis.

- **(436) BrR Analysis Type** - The analysis type used in BrR: Line Girder or 3D FEM. Leave blank if BrR is not used for superstructure rating.
- **(437) BrR Multiple Model Names** - For bridges with multiple BrR models, this field is used to enter the model names. Multiple BrR models will rarely be needed for single load rating events. If multiple models are needed, refer to LRGD Technical Note 13, Item 2 for naming convention input.
- **(425) Operating Rate Factor 100k** - Controlling component per Item 884, more favorable rating factor for SC-100k Permit. Refer to example table below.
- **(426) Operating Rate Factor 120k** - Controlling component per Item 884, more favorable rating factor for SC-120k Permit. Refer to example table below.
- **(427) Operating Rate Factor 130k** - Controlling component per Item 884, more favorable rating factor for SC-130k Permit. Refer to example table below.

Permit Truck	LRFR (Super)	LFR (Super)	ASR (Sub)
(425) SC-100k	0.636	0.652	1.176
(426) SC-120k	0.571	0.559	1.061
(427) SC-130k	0.579	0.559	1.061

The screenshot displays two side-by-side form panels. The left panel, titled 'R-12-6-48 Legal Load Posting', includes a dropdown for '(431) Legal (non-EV) Posting Change Recommended' set to 'N/A', and input fields for 'Legal (non-EV) Single 2-3 Axles (tons)', 'Legal (non-EV) Single 4+ Axles (tons)', and 'Legal (non-EV) Combinations (tons)'. Below this is a 'Section Completed by BMO' section with 'Approved Posting Values' and a dropdown for '(432) Legal (non-EV) BMO Posting Decision' set to 'Not Applicable'. The right panel, titled 'R-12-9-36 Emergency Vehicle Posting', includes a dropdown for '(429) EV Posting Change Recommended' set to 'Yes', and input fields for 'EV Single Axle (tons)', 'EV Tandem Axle (tons)', and 'EV Gross (tons)'. It also has a 'Section Completed by BMO' section with 'Approved Posting Values' and dropdowns for '(430) EV BMO Posting Decision', '(886) EV BMO Posting Rescission', and '(888) EV District Post Decision', all set to 'null (FIX PARAM VALUE: v)'. The 'Approved Posting Values' section in both panels contains input fields for 'Legal (non-EV) Single 2-3 Axles (tons)', 'Legal (non-EV) Single 4+ Axles (tons)', and 'Legal (non-EV) Combinations (tons)' on the left, and 'EV Single Axle (tons)', 'EV Tandem Axle (tons)', and 'EV Gross (tons)' on the right.

- **(431) Legal (non-EV) Posting Change Recommended** - Select Yes if R-12-6-48 Posting modification is required based on Item 882 methodology. Examples of posting modifications are: an increase or decrease to the previous rating, a recommended posting removal or rescission due to a repair.
- **(429) EV Posting Change Recommended** - Select Yes if R-12-9-36 Posting modification is required based on Item 882 methodology.
- **Approved Posting Values, Items 432, 885, 887, 430, 886, and 888 should not be modified by load raters. These data fields will be entered by BMO or the QA Consultant once the Director of Bridge Management (or designee) has made a posting decision.**

40T Combination Posting

(884) Posting Change Recommended for 40T Combo:

Section Completed by BMO

(889) 40T Combination Sign Posted:

- **(884) Posting Change Recommended for 40T Combo** - 40-ton combination signs are being phased out and not typically recommended to be installed. Enter “No” for typical circumstances. Enter “Yes” for recommended removal of the sign.
- **(889) 40T Combination Sign Posted** - To be updated by BMO or QA Consultant only once the Director of Bridge Management (or designee) has made a posting decision.

Posting Review Notes

Posting Review Notes (BMO/QA Consultant)

Posting Review Notes to be completed by BMO/QA Consultant

- Posting review notes should not be entered by load raters. These notes may be added (if necessary) by the QA Consultant to provide additional details on posting decisions.

Current Reported NBI Data (NBI 63 to 66 and 70)

Current Reported NBI Data (NBI 63 to 66 and 70)

(065) Inventory Rating Method [B.LR.04]: (465) Alternate Inventory Rate Method:

(066) Inventory Rating (in RF) [B.LR.05]: 0.60 rf (466) Alternate Inventory Rating Factor:

(063) Operating Rating Method [B.LR.04]: (463) Alternate Operating Rate Method:

(064) Operating Rating (in RF) [B.LR.06]: 1.01 rf (464) Alternate Operating Rating Factor:

(070) Posting Appraisal:

(882) BrR Method (for Posting):

- **(065) Inventory Rating Method [B.LR.04]** - The inventory method by which the bridge was load rated (LRFR, LFR, ASR). Note, this should be the method by which posting is determined and the method which provides the most favorable results. (LFR may be used on bridges designed prior to October 1, 2010)
- **(066) Inventory Rating [B.LR.05]** - Automatically updated based on Controlling Design Vehicle Table. Refer to “Controlling Design Vehicle Table” section for more details.
- **(063) Operating Rating Method [B.LR.04]** - The operating method by which the bridge was load rated (LRFR, LFR, ASR). Note, this should be the method by which posting is determined and the method which provides the most favorable results. (LFR may be used on bridges designed prior to October 1, 2010)
- **(064) Operating Rating [B.LR.06]** - Automatically updated based on Controlling Design Vehicle Table. Refer to “Controlling Design Vehicle Table” section for more details.

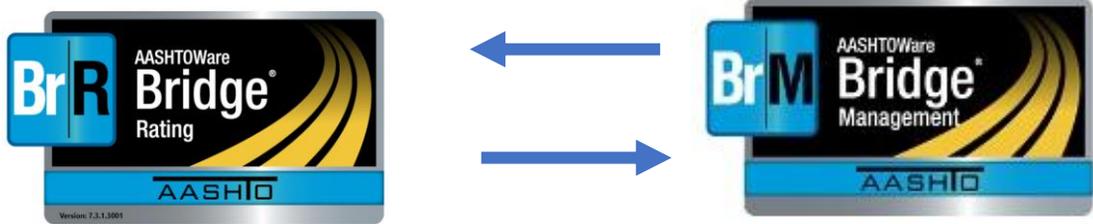
- **(070) Posting Appraisal** - Refer to the formula on the Load Rating Summary Form “Posting Summary” tab for coding.
- **(882) BrR Method (for Posting)** - The rating method used for current reported data and posting. This method should typically match Items 63 & 65.
- **(465) Alt Inventory Rating Method** - The alternative method by which the bridge was load rated (LRFR, LFR, ASR). If no alternative method was used, enter “5 No Rating or Eval”.
- **(466) Alt Inventory Rating** - The inventory load rating factor for HS-20 or HL-93 loadings, based on alternative rating method used. If no alternative method was used, leave blank.
- **(463) Alt Operating Rating Method** - The alternative method by which the bridge was load rated (LRFR, LFR, ASR). If no alternative method was used, enter “5 No Rating or Eval”.
- **(464) Alt Operating Rating** - The operating load rating factor for HS-20 or HL-93 loadings, based on alternative rating method used. If no alternative method was used, leave blank.

Controlling Design Vehicle Table

Vehicle	Item 64	Item 66	Rating	Tons	Event	Method 63/65	
HS 20-44 (Inv)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0.6	0	6/10/2024	6 LFR	
HS 20-44 (Oper)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1.01	0	6/10/2024	6 LFR	

Vehicle	Current	Rating	Tons	Method	Analysis Type	Limit State	Location
H 20-44 (Inv)	<input type="checkbox"/>	1.35	0	7 ASR	Design	Combined axial compressi	Substructure
H 20-44 (Oper)	<input type="checkbox"/>	1.86	0	7 ASR	Design	Combined axial compressi	Substructure
HS 20-44 (Inv)	<input checked="" type="checkbox"/>	0.6	0	6 LFR	Design	Design Flexure - Concret	Superstructure
HS 20-44 (Inv)	<input type="checkbox"/>	1.35	0	7 ASR	Design	Combined axial compressi	Substructure
HS 20-44 (Oper)	<input checked="" type="checkbox"/>	1.01	0	6 LFR	Design	Design Flexure - Concret	Superstructure

- Once the Current checkboxes are checked in the larger truck rating table, the rating factors will be prepopulated in the Controlling Design Vehicle table above. Item 66 should be checked for the Inventory design vehicle, and Item 64 should be checked for the Operating design vehicle.
 - Example: If the controlling component (Item 884) is listed as superstructure, and a substructure rating is being completed as part of the load rating event, all Current checkboxes **shall remain unchecked** under the Substructure event. It may be necessary to go back to the latest superstructure rating to check the Current ratings for the most favorable superstructure rating.
- If multiple rating methods have been used, rating factors for both methods should be listed for all vehicles. The Current checkboxes should match the methodology listed in Item 63 & 65. (If LFR produces more favorable i.e., higher rating factors than LRFR, controlling HS-20 inventory and operating ratings should be checked as “Current”).

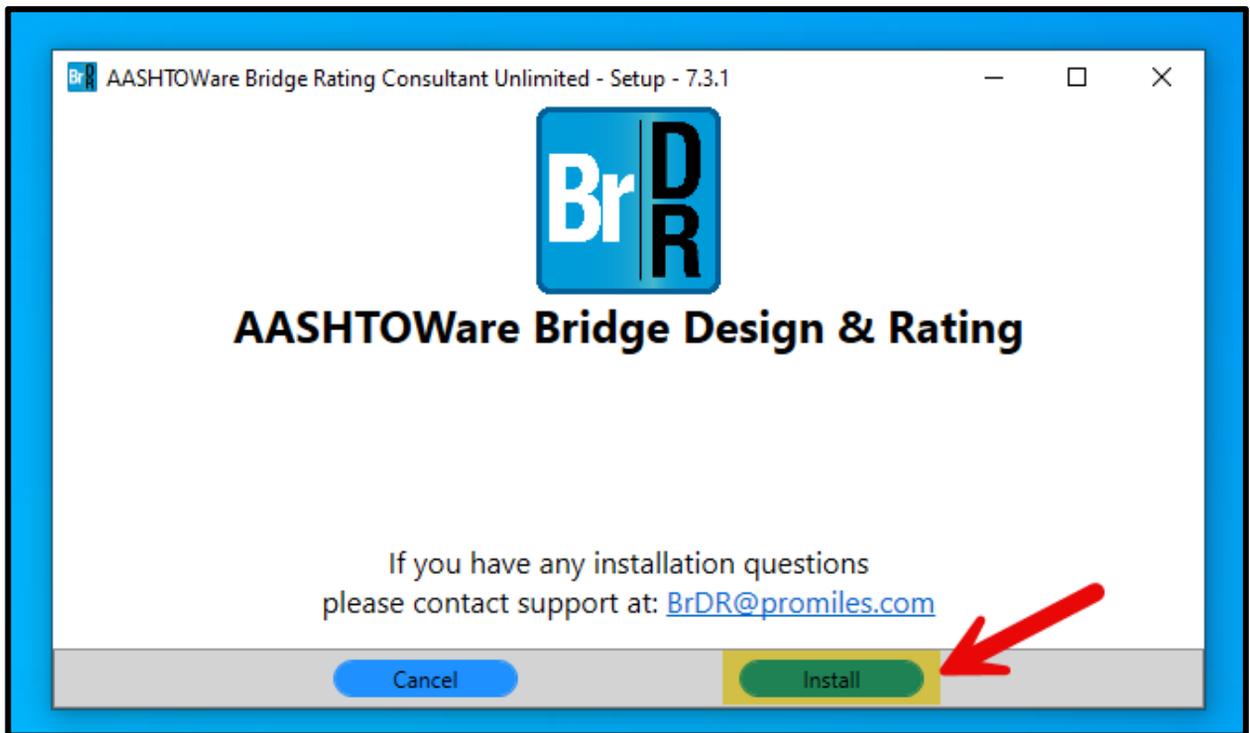


SCDOT BrR to BrM Data Exchange Setup

BrR Installation

To complete the exchange setup, users will need:

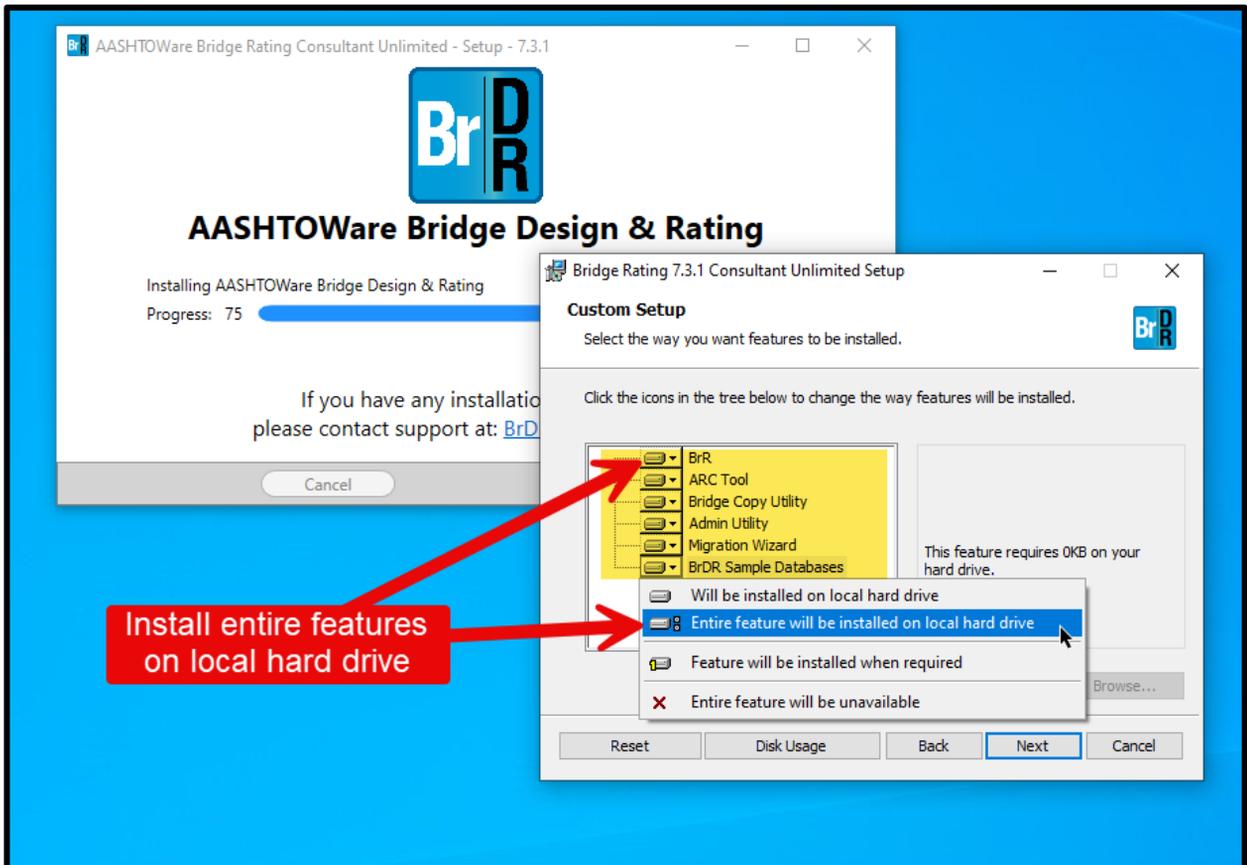
- An internet connection
- A BrM login
- BrR installed (including Admin Utility). Version 7.3 or later.



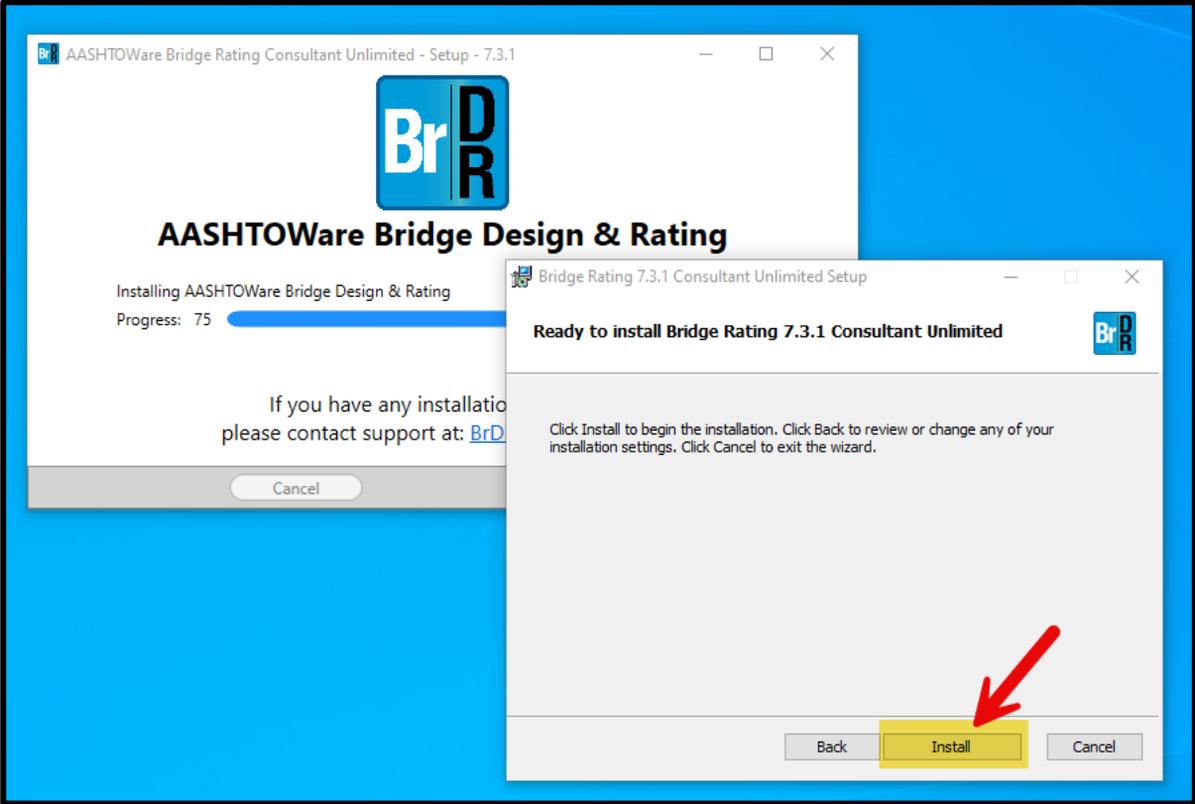
Install AASHTOWare BrR

BrR Installation

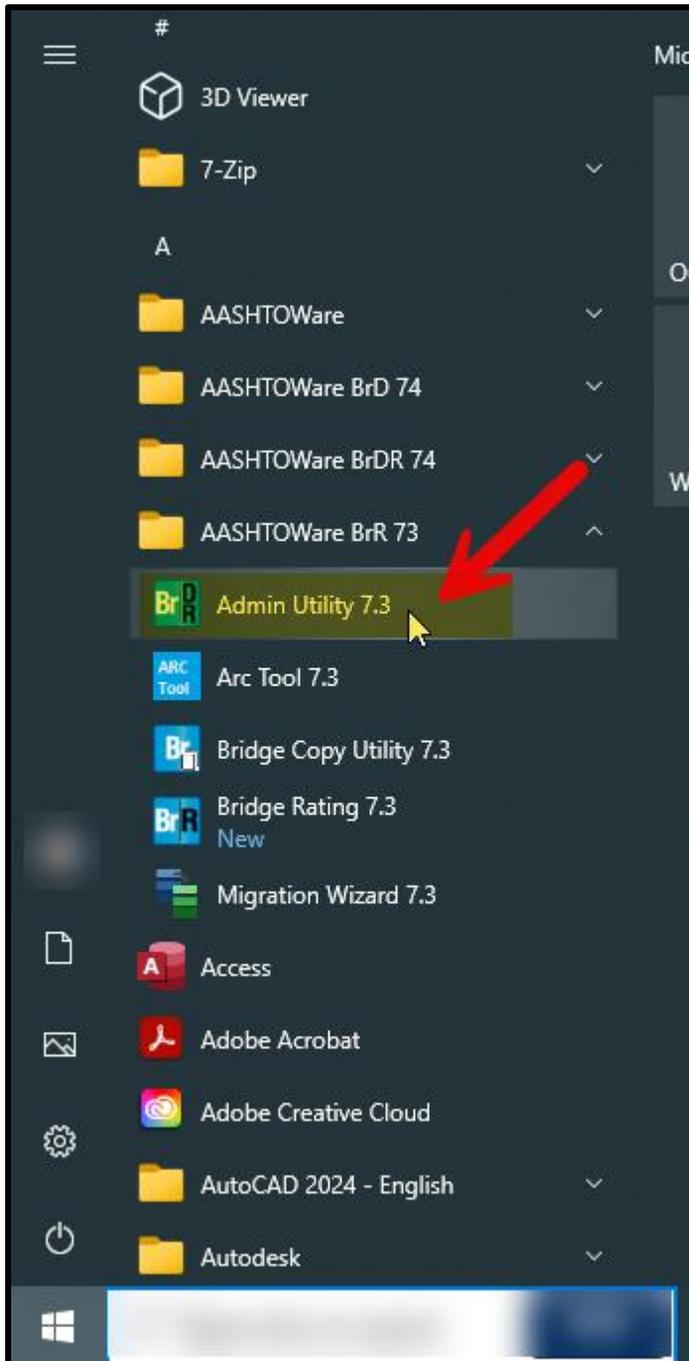
Install features on local hard drive.



BrR Installation

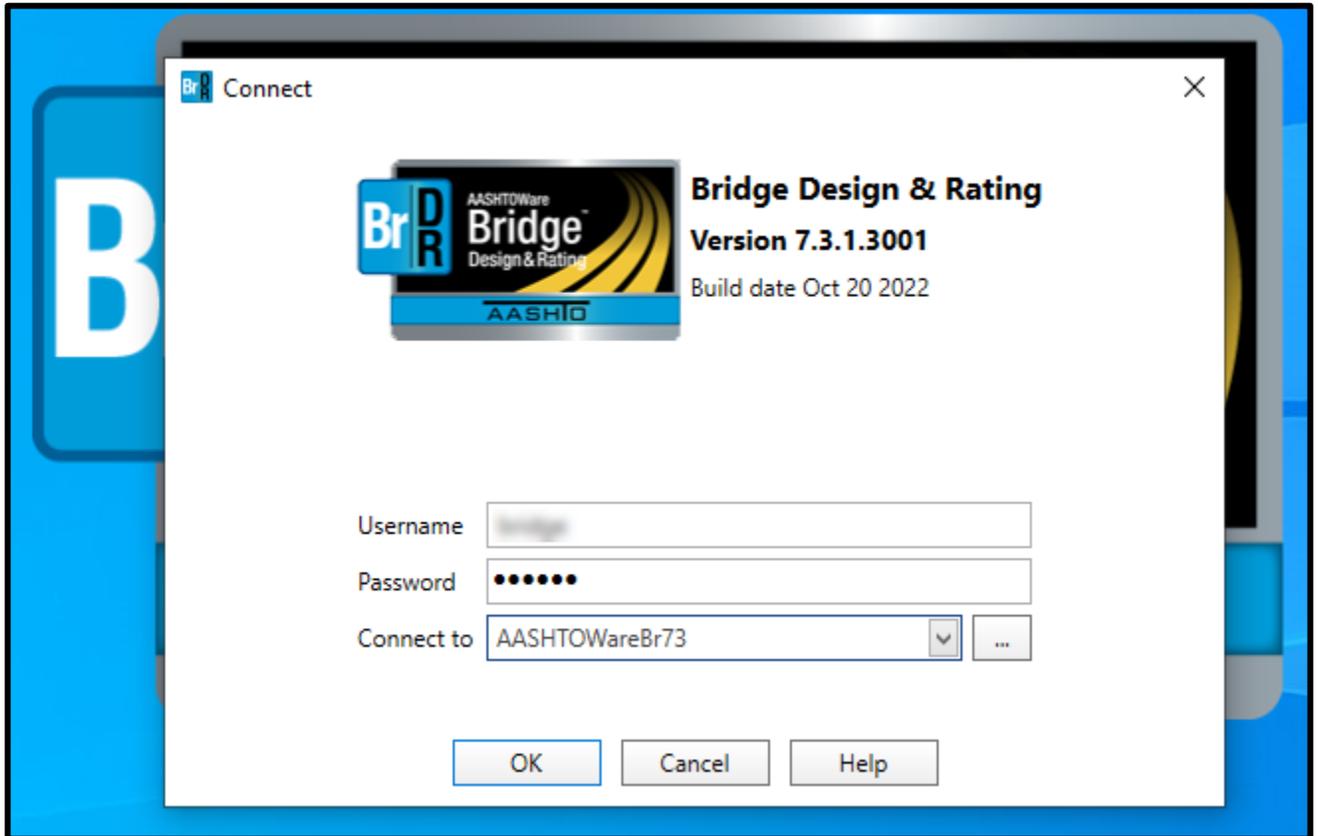


Admin Utility



Open the Admin Utility App from the Start Menu

Admin Utility



Admin Utility

The screenshot shows the 'AASHTOWare Bridge Admin' window with the following sections:

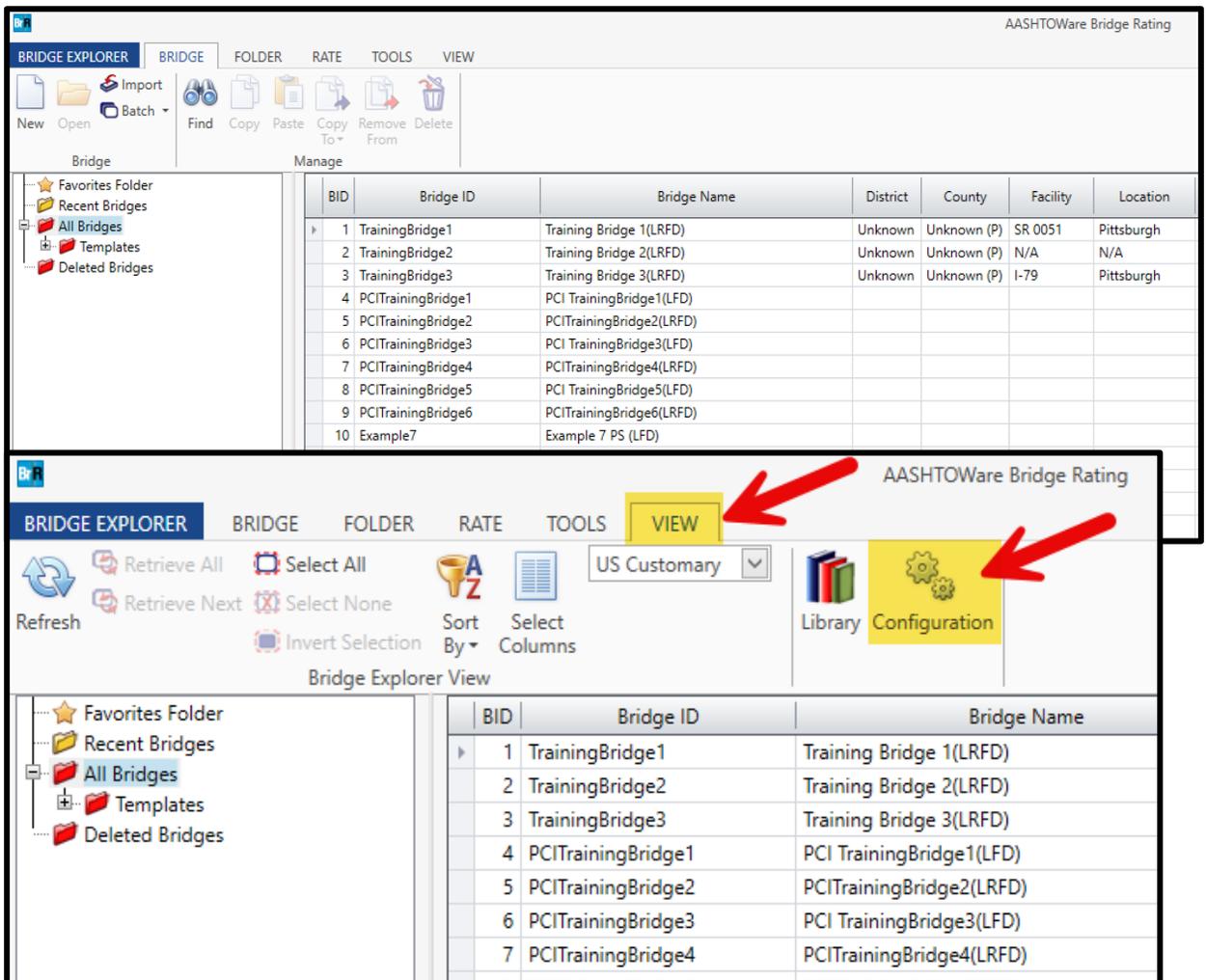
- Database properties:** Contains five checkboxes: 'Enable Check-In/Check-Out', 'Bridge Repository', 'Bridge Exchange', 'Enable Bridge Protection', 'Enable Load Rating Tool', and 'Enable Bridge Management'. The 'Enable Bridge Management' checkbox is checked and highlighted in yellow.
- Database access role settings:** Includes fields for 'Role name', 'Password', and 'Confirm password'.
 - Read only role: VIRTIS_USER_READ_ONLY_ROLE
 - Read/write role: VIRTIS_USER_READ_WRITE_ROLE
 - Buttons for 'Clean now' and 'Transfer now' are present.
 - A 'Show password' checkbox is located below the password fields.
- Database cleanup:** Includes a 'Modification event cleanup' section with checkboxes for 'Clean events older than' (with a days input field) and 'Keep at least' (with an events input field).
- Transfer events:** Includes 'From:' and 'To:' dropdown menus and a 'Transfer now' button.

At the bottom right, there are 'Save' and 'Close' buttons.

Check Box to Enable Bridge Management within Admin Utility App. Save and Close.

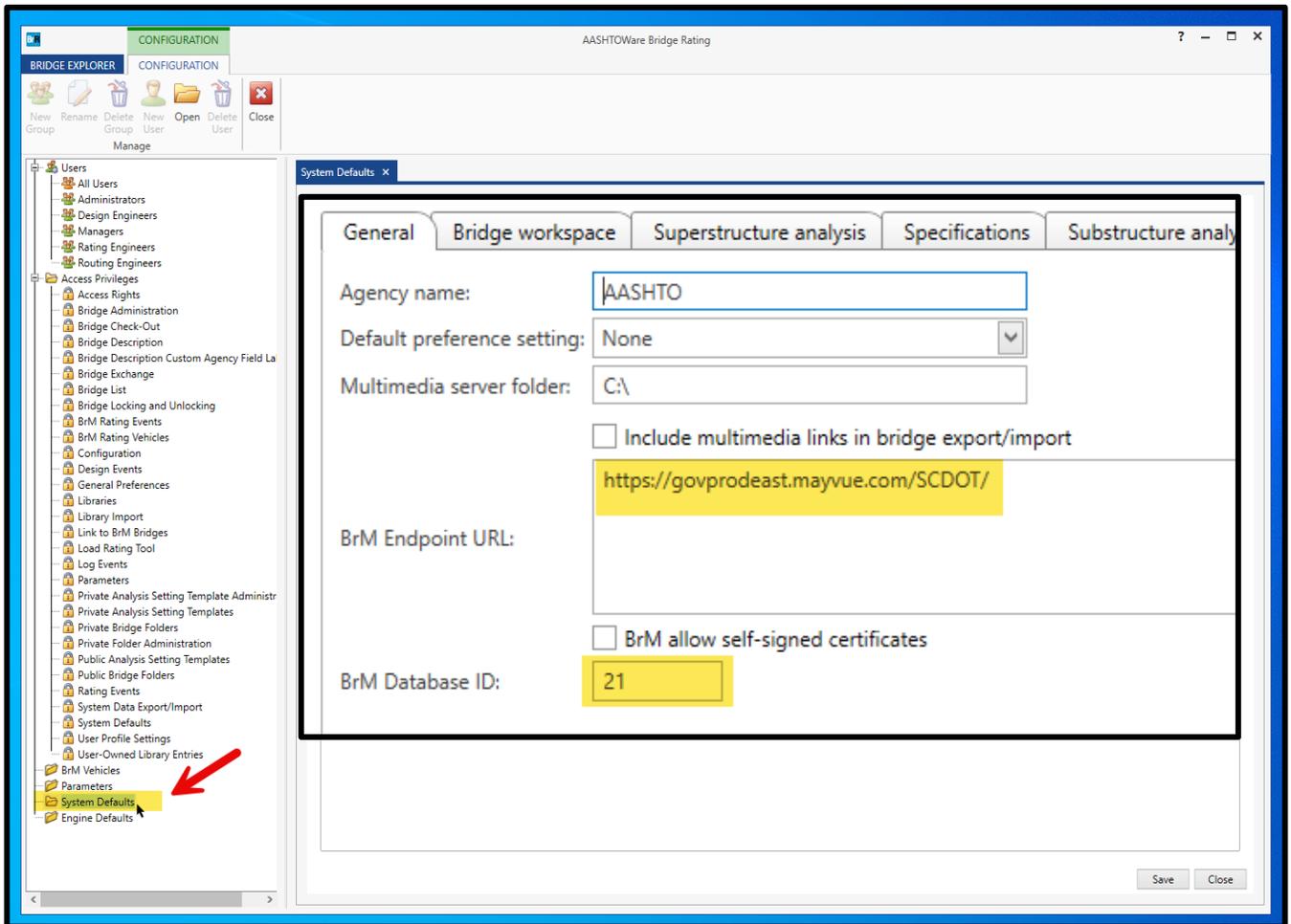
BrR Configuration

Open BrR Bridge Workspace -> View -> Configuration



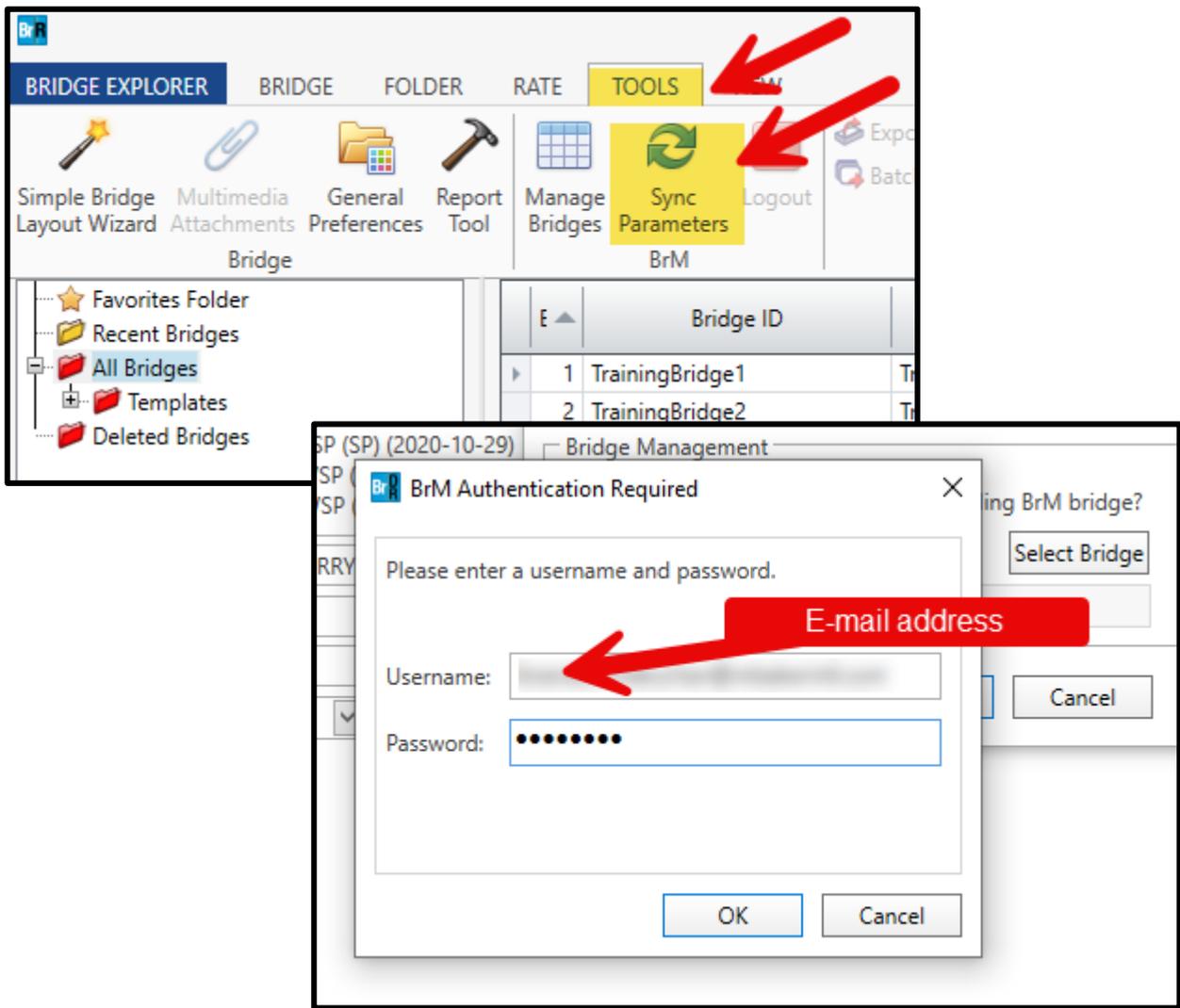
BrR Configuration

Open System Defaults -> Enter URL and Database ID as shown. Save and Close.



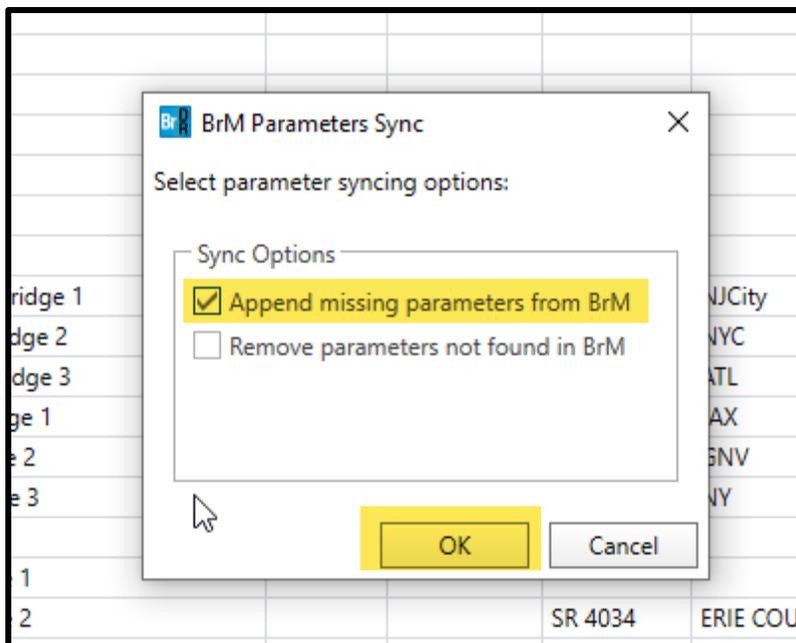
Sync BrM Data into BrR

Open BrR Bridge Explorer -> Tools -> Sync Parameters -> Enter your email address as the Username and “password” for the Password.



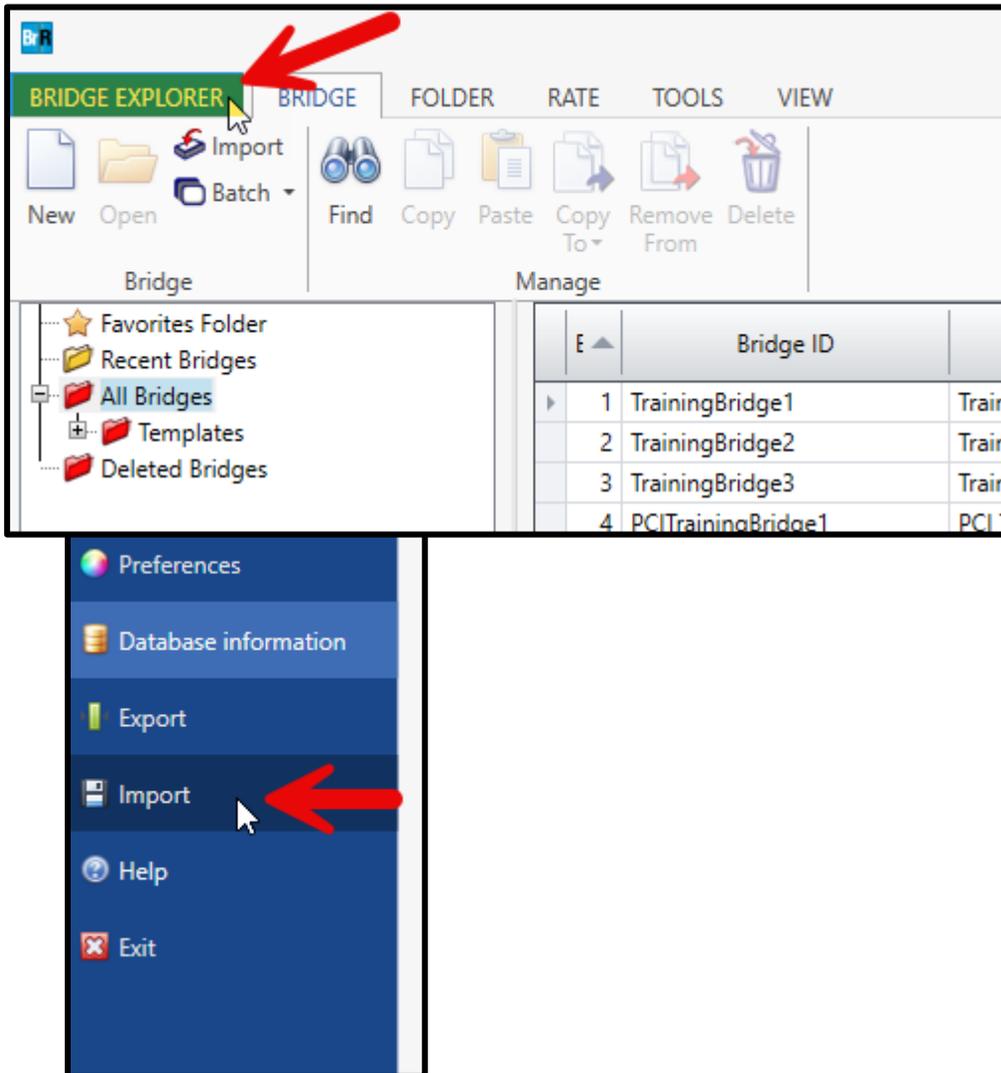
Sync BrM Data into BrR

Select “Append missing parameters from BrM”, click OK. Close window when finished syncing.



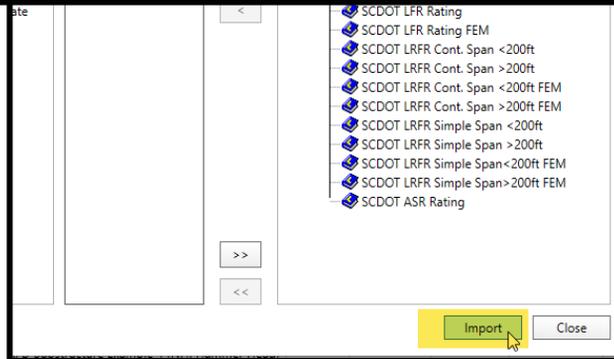
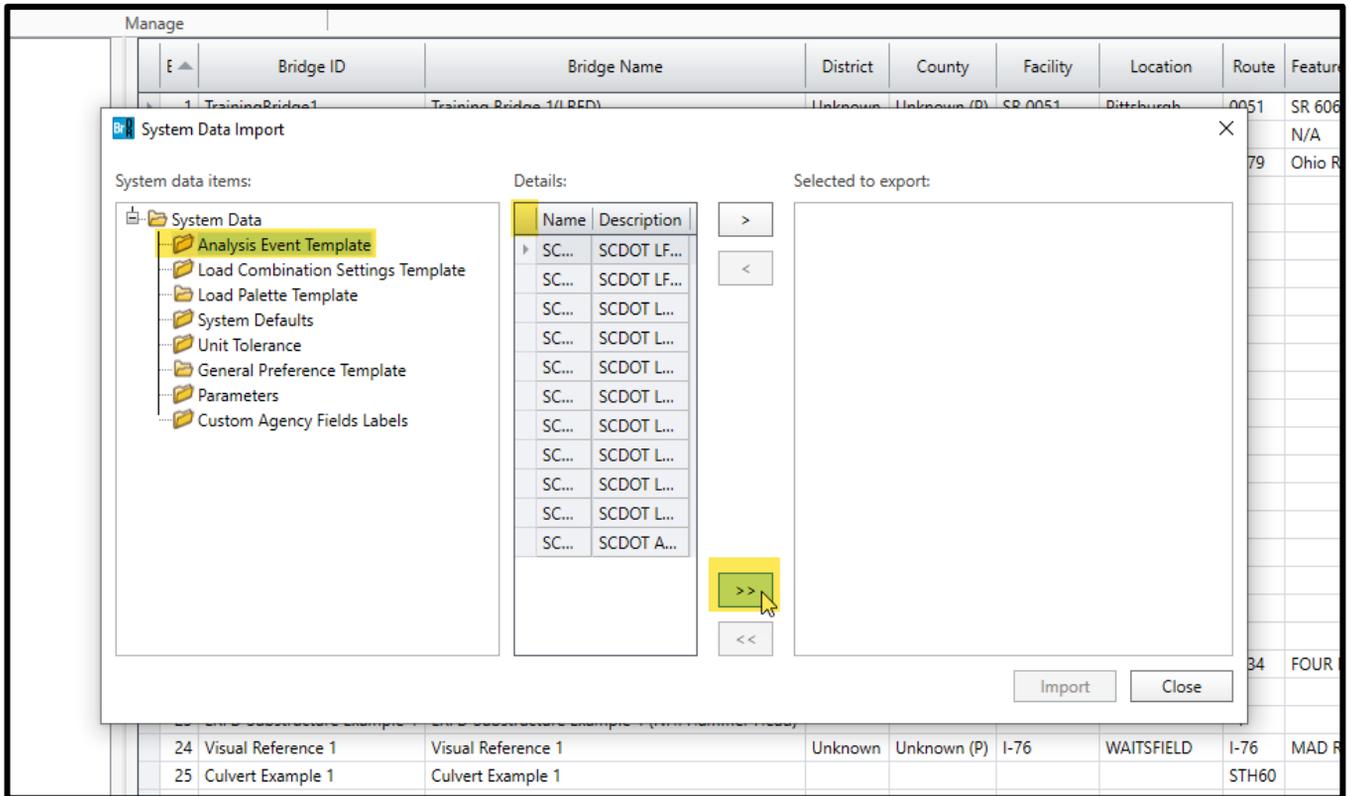
Import Analysis Template File

Select the Bridge Explorer tab in BrR. Select Import. Import SCDOT_7.3.brsx file saved in the Supplemental Documentation section on the SCDOT Bridge Management website.



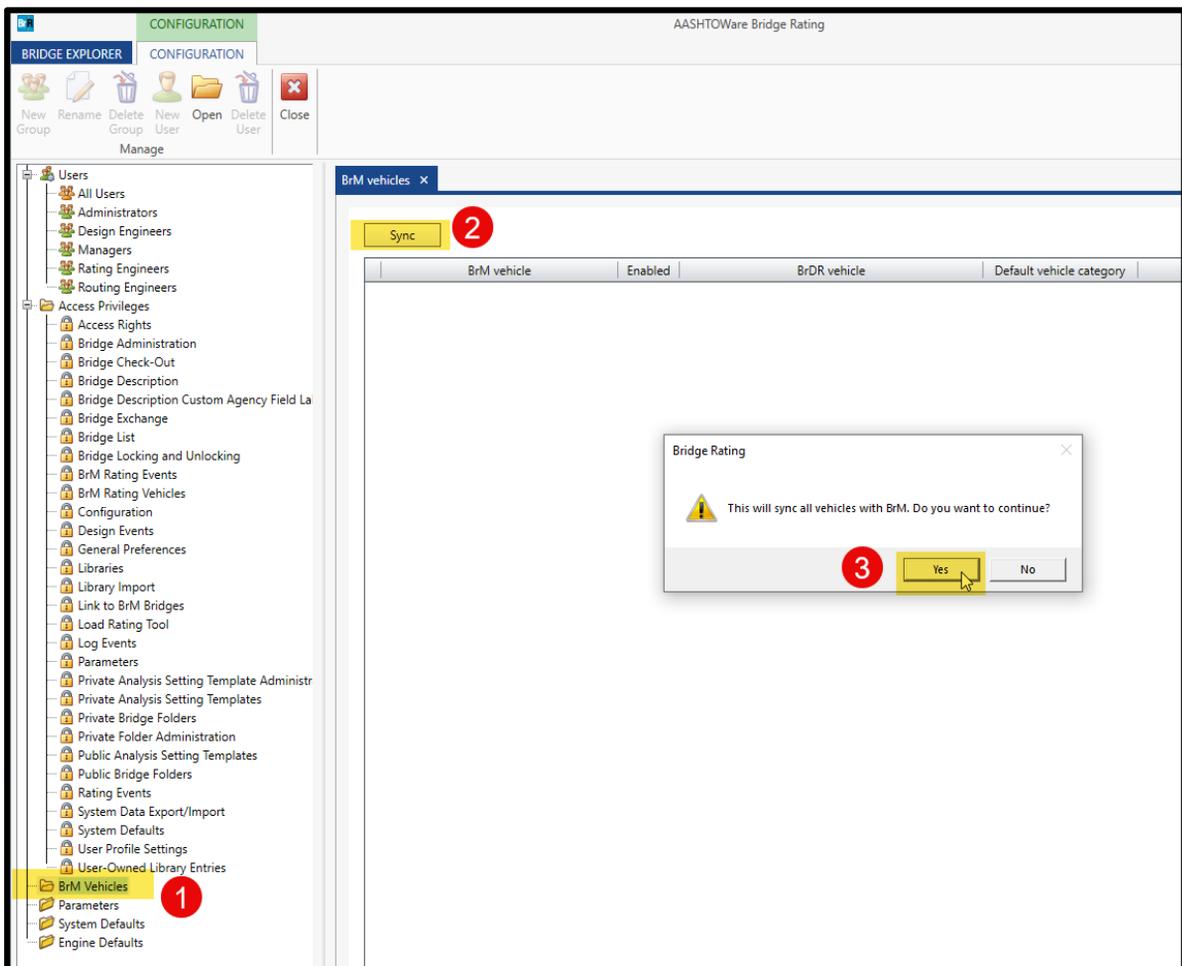
Import Analysis Template File

Select the Analysis Event Template. Select all templates from the Details window. Click ">>" to engage all analysis templates for import. Click "Import".



Sync BrM Vehicles into BrR

Select “BrM Vehicles” within Configuration tab. Select “Sync” and “Yes” to sync all vehicles with BrM.



Sync BrM Vehicles into BrR

Full list of SCDOT BrM Vehicles should now be included.

BrM vehicles x

Sync

BrM vehicle	Enabled	BrDR vehicle	Default vehicle category
HL-93 Truck + Lane (Inv)	<input type="checkbox"/>		None
HL-93 Truck Train + Lane (90%) (Inv)	<input type="checkbox"/>		None
HL-93 Tandem + Lane (Inv)	<input type="checkbox"/>		None
HL-93 Truck + Lane (Oper)	<input type="checkbox"/>		None
HL-93 Truck Train + Lane (90%) (Oper)	<input type="checkbox"/>		None
HL-93 Tandem + Lane (Oper)	<input type="checkbox"/>		None
Modified AASHTO SC - Type 3 (Legal)	<input type="checkbox"/>		None
Modified AASHTO SC - Type 3S2 (Legal)	<input type="checkbox"/>		None
AASHTO - Type 3-3 (Legal)	<input type="checkbox"/>		None
Lane Type Loading (Neg. M only) (Legal)	<input type="checkbox"/>		None
Lane Type Loading (Span > 200 ft) (Legal)	<input type="checkbox"/>		None
Modified AASHTO SC - Type 3 (Permit)	<input type="checkbox"/>		None
Modified AASHTO SC - Type 3S2 (Permit)	<input type="checkbox"/>		None
AASHTO - Type 3-3 (Permit)	<input type="checkbox"/>		None
Lane Type Loading (Neg. M only) (Permit)	<input type="checkbox"/>		None
Lane Type Loading (Span > 200 ft) (Permit)	<input type="checkbox"/>		None
SC-SHV1A (Legal)	<input type="checkbox"/>		None
SC-SHV1B (Legal)	<input type="checkbox"/>		None
SC-SHV2A (Legal)	<input type="checkbox"/>		None
SC-SHV2B (Legal)	<input type="checkbox"/>		None
SC-SHV3A (Legal)	<input type="checkbox"/>		None
SC-SHV3B (Legal)	<input type="checkbox"/>		None
SC Representative School Bus (Legal)	<input type="checkbox"/>		None
SC-SU2 (Legal)	<input type="checkbox"/>		None
SU4 (Legal)	<input type="checkbox"/>		None
SU5 (Legal)	<input type="checkbox"/>		None
SU6 (Legal)	<input type="checkbox"/>		None
SU7 (Legal)	<input type="checkbox"/>		None
EV2 (Legal)	<input type="checkbox"/>		None
EV3 (Legal)	<input type="checkbox"/>		None
SC-SHV1A (Permit)	<input type="checkbox"/>		None
SC-SHV1B (Permit)	<input type="checkbox"/>		None

Bridge Rating

Successfully synced BrM Vehicles!

OK

Sync BrM Vehicles into BrR

Map BrM Vehicles to BrR Vehicles as shown in the following pages. Take careful consideration they are mapped properly.

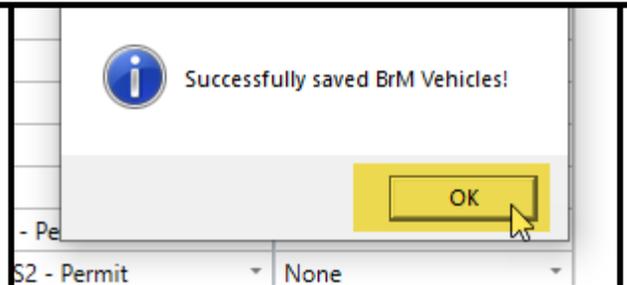
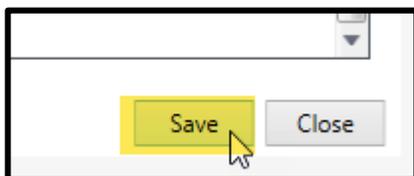
BrM vehicle	Enabled	BrDR vehicle	Default vehicle category
▶ HL-93 Truck + Lane (Inv)	<input type="checkbox"/>		None
HL-93 Truck Train + Lane (90%) (Inv)	<input type="checkbox"/>		None
HL-93 Tandem + Lane (Inv)	<input type="checkbox"/>		None
HL-93 Truck + Lane (Oper)	<input type="checkbox"/>		None
HL-93 Truck Train + Lane (90%) (Oper)	<input type="checkbox"/>		None
HL-93 Tandem + Lane (Oper)	<input type="checkbox"/>		None
Modified AASHTO SC - Type 3 (Legal)	<input checked="" type="checkbox"/>	Modified AASHTO SC - Type 3 (LRFR)	None
Modified AASHTO SC - Type 3S2 (Legal)	<input checked="" type="checkbox"/>	Modified AASHTO SC - Type 3S2 (LRFR)	None
AASHTO - Type 3-3 (Legal)	<input checked="" type="checkbox"/>	Type 3-3 (LRFR)	None
Lane Type Loading (Neg. M only) (Legal)	<input type="checkbox"/>		None
Lane Type Loading (Span > 200 ft) (Legal)	<input type="checkbox"/>		None
Modified AASHTO SC - Type 3 (Permit)	<input checked="" type="checkbox"/>	Modified AASHTO SC - Type 3 - Permit	None
Modified AASHTO SC - Type 3S2 (Permit)	<input checked="" type="checkbox"/>	Modified AASHTO SC - Type 3S2 - Permit	None
AASHTO - Type 3-3 (Permit)	<input checked="" type="checkbox"/>	Type 3-3 - Permit	None
Lane Type Loading (Neg. M only) (Permit)	<input checked="" type="checkbox"/>	Lane Type Permit Load-Pair	None
Lane Type Loading (Span > 200 ft) (Permit)	<input checked="" type="checkbox"/>	Lane Type Permit Load	None
SC-SHV1A (Legal)	<input checked="" type="checkbox"/>	SC SHV1A (LRFR)	None
SC-SHV1B (Legal)	<input checked="" type="checkbox"/>	SC SHV1B (LRFR)	None
SC-SHV2A (Legal)	<input checked="" type="checkbox"/>	SC SHV2A (LRFR)	None
SC-SHV2B (Legal)	<input checked="" type="checkbox"/>	SC SHV2B (LRFR)	None
SC-SHV3A (Legal)	<input checked="" type="checkbox"/>	SC SHV3A (LRFR)	None
SC-SHV3B (Legal)	<input checked="" type="checkbox"/>	SC SHV3B (LRFR)	None
SC Representative School Bus (Legal)	<input checked="" type="checkbox"/>	SC Representative School Bus (LRFR)	None
SC-SU2 (Legal)	<input checked="" type="checkbox"/>	SC - SU2 (LRFR)	None
SU4 (Legal)	<input checked="" type="checkbox"/>	SU4 (LRFR)	None
SU5 (Legal)	<input checked="" type="checkbox"/>	SU5 (LRFR)	None
SU6 (Legal)	<input checked="" type="checkbox"/>	SU6 (LRFR)	None
SU7 (Legal)	<input checked="" type="checkbox"/>	SU7 (LRFR)	None
EV2 (Legal)	<input checked="" type="checkbox"/>	EV2 (LRFR)	None
EV3 (Legal)	<input checked="" type="checkbox"/>	EV3 (LRFR)	None
SC-SHV1A (Permit)	<input checked="" type="checkbox"/>	SC SHV1A - Permit	None
SC-SHV1B (Permit)	<input checked="" type="checkbox"/>	SC SHV1B - Permit	None

Sync BrM Vehicles into BrR

BrM vehicle	Enabled	BrDR vehicle	Default vehicle category
SC-SHV2A (Permit)	<input checked="" type="checkbox"/>	SC SHV2A - Permit	None
SC-SHV2B (Permit)	<input checked="" type="checkbox"/>	SC SHV2B - Permit	None
SC-SHV3A (Permit)	<input checked="" type="checkbox"/>	SC SHV3A - Permit	None
SC-SHV3B (Permit)	<input checked="" type="checkbox"/>	SC SHV3B - Permit	None
SC Representative School Bus (Permit)	<input checked="" type="checkbox"/>	SC Representative School Bus - Permit	None
SC-SU2 (Permit)	<input checked="" type="checkbox"/>	SC - SU2 - Permit	None
SU4 (Permit)	<input checked="" type="checkbox"/>	SU4 - Permit	None
SU5 (Permit)	<input checked="" type="checkbox"/>	SU5 - Permit	None
SU6 (Permit)	<input checked="" type="checkbox"/>	SU6 - Permit	None
SU7 (Permit)	<input checked="" type="checkbox"/>	SU7 - Permit	None
SC - 100k (Permit)	<input checked="" type="checkbox"/>	SC - 100k Permit (LRFR)	None
SC - 120k (Permit)	<input checked="" type="checkbox"/>	SC - 120k Permit (LRFR)	None
SC - 130k (Permit)	<input checked="" type="checkbox"/>	SC - 130k Permit (LRFR)	None
SC Crane #527568 (Permit)	<input checked="" type="checkbox"/>	SC Crane #527568 (LRFR)	None
SC Crane #544726 (Permit)	<input checked="" type="checkbox"/>	SC Crane #544726 (LRFR)	None
H 20 (Inv)	<input type="checkbox"/>		None
H 20 Lane (Inv)	<input type="checkbox"/>		None
HS-20 (Inv)	<input type="checkbox"/>		None
HS-20 Lane (Inv)	<input type="checkbox"/>		None
Alternate Military Loading (Inv)	<input checked="" type="checkbox"/>	Alternate Military Loading	Inventory
Modified AASHTO SC - Type 3 (Inv)	<input checked="" type="checkbox"/>	Modified AASHTO SC - Type 3 (LFR)	Inventory
Modified AASHTO SC - Type 3S2 (Inv)	<input checked="" type="checkbox"/>	Modified AASHTO SC - Type 3S2 (LFR)	Inventory
AASHTO - Type 3-3 (Inv)	<input checked="" type="checkbox"/>	Type 3-3 (LFR)	Inventory
SC-SHV1A (Inv)	<input checked="" type="checkbox"/>	SC SHV1A (LFR)	Inventory
SC-SHV1B (Inv)	<input checked="" type="checkbox"/>	SC SHV1B (LFR)	Inventory
SC-SHV2B (Inv)	<input checked="" type="checkbox"/>	SC SHV2B (LFR)	Inventory
SC-SHV2A (Inv)	<input checked="" type="checkbox"/>	SC SHV2A (LFR)	Inventory
SC-SHV3A (Inv)	<input checked="" type="checkbox"/>	SC SHV3A (LFR)	Inventory
SC-SHV3B (Inv)	<input checked="" type="checkbox"/>	SC SHV3B (LFR)	Inventory
SC Representative School Bus (Inv)	<input checked="" type="checkbox"/>	SC Representative School Bus (LFR)	Inventory
SC-SU2 (Inv)	<input checked="" type="checkbox"/>	SC - SU2 (LFR)	Inventory
SU4 (Inv)	<input checked="" type="checkbox"/>	SU4 (LFR)	Inventory

Sync BrM Vehicles into BrR

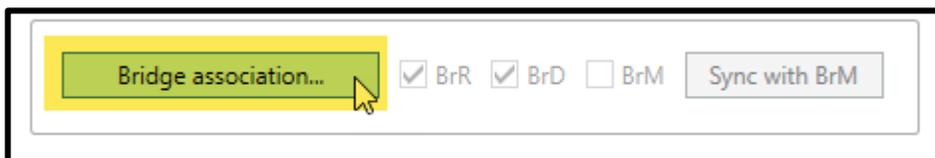
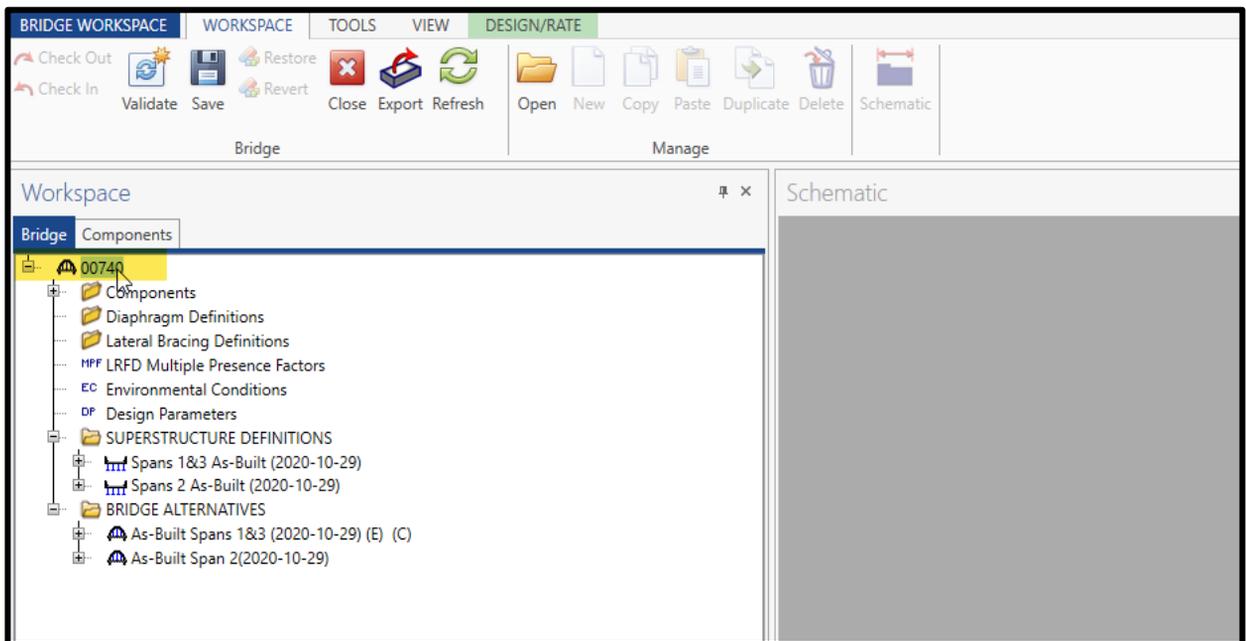
BrM vehicle	Enabled	BrDR vehicle	Default vehicle category
SU5 (Inv)	<input checked="" type="checkbox"/>	SU5 (LFR)	Inventory
SU6 (Inv)	<input checked="" type="checkbox"/>	SU6 (LFR)	Inventory
SU7 (Inv)	<input checked="" type="checkbox"/>	SU7 (LFR)	Inventory
H 20 (Oper)	<input type="checkbox"/>		None
H 20 Lane (Oper)	<input type="checkbox"/>		None
HS-20 (Oper)	<input type="checkbox"/>		None
HS-20 Lane (Oper)	<input type="checkbox"/>		None
Alternate Military Loading (Oper)	<input checked="" type="checkbox"/>	Alternate Military Loading	Operating
Modified AASHTO SC - Type 3 (Oper)	<input checked="" type="checkbox"/>	Modified AASHTO SC - Type 3 (LFR)	Operating
Modified AASHTO SC - Type 3S2 (Oper)	<input checked="" type="checkbox"/>	Modified AASHTO SC - Type 3S2 (LFR)	Operating
AASHTO - Type 3-3 (Oper)	<input checked="" type="checkbox"/>	Type 3-3 (LFR)	Operating
SC-SHV1A (Oper)	<input checked="" type="checkbox"/>	SC SHV1A (LFR)	Operating
SC-SHV1B (Oper)	<input checked="" type="checkbox"/>	SC SHV1B (LFR)	Operating
SC-SHV2A (Oper)	<input checked="" type="checkbox"/>	SC SHV2A (LFR)	Operating
SC-SHV2B (Oper)	<input checked="" type="checkbox"/>	SC SHV2B (LFR)	Operating
SC-SHV3A (Oper)	<input checked="" type="checkbox"/>	SC SHV3A (LFR)	Operating
SC-SHV3B (Oper)	<input checked="" type="checkbox"/>	SC SHV3B (LFR)	Operating
SC Representative School Bus (Oper)	<input checked="" type="checkbox"/>	SC Representative School Bus (LFR)	Operating
SC-SU2 (Oper)	<input checked="" type="checkbox"/>	SC - SU2 (LFR)	Operating
SU4 (Oper)	<input checked="" type="checkbox"/>	SU4 (LFR)	Operating
SU5 (Oper)	<input checked="" type="checkbox"/>	SU5 (LFR)	Operating
SU6 (Oper)	<input checked="" type="checkbox"/>	SU6 (LFR)	Operating
SU7 (Oper)	<input checked="" type="checkbox"/>	SU7 (LFR)	Operating
SC - 100k (Oper)	<input checked="" type="checkbox"/>	SC - 100k Permit (LFR)	None
SC - 120k (Oper)	<input checked="" type="checkbox"/>	SC - 120k Permit (LFR)	None
SC - 130k (Oper)	<input checked="" type="checkbox"/>	SC - 130k Permit (LFR)	None
SC Crane #527568 (Oper)	<input checked="" type="checkbox"/>	SC Crane #527568 (LFR)	None
SC Crane #544726 (Oper)	<input checked="" type="checkbox"/>	SC Crane #544726 (LFR)	None
EV2 (Oper)	<input checked="" type="checkbox"/>	EV2 (LFR)	None
EV3 (Oper)	<input checked="" type="checkbox"/>	EV3 (LFR)	None



Rating Data Back into BrM

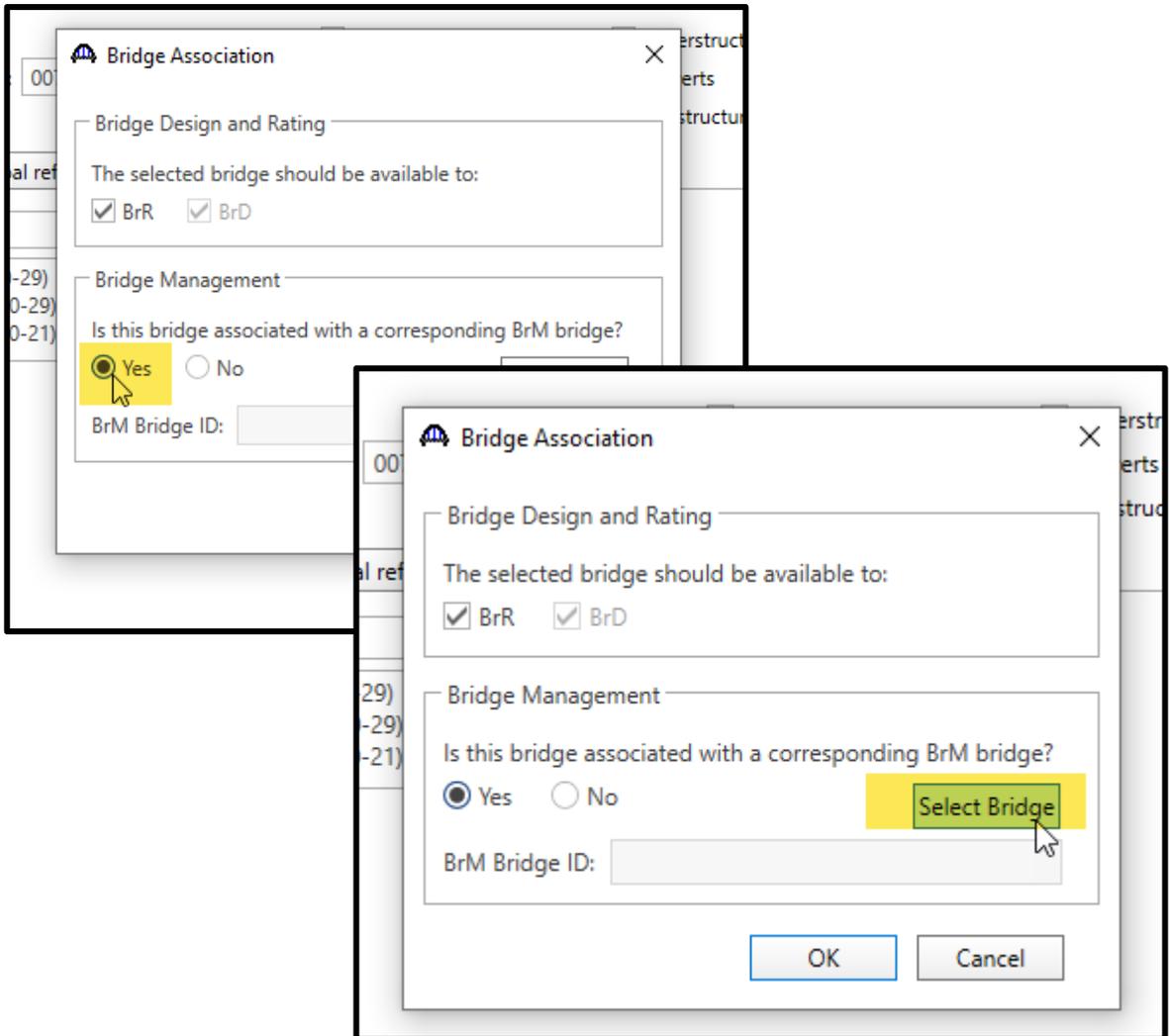
To export ratings from BrR to BrM:

- Open the bridge data tab by double clicking the asset ID
- Select “Bridge association...”



Rating Data Back into BrM

- Select “Yes” and “Select Bridge”



Rating Data Back into BrM

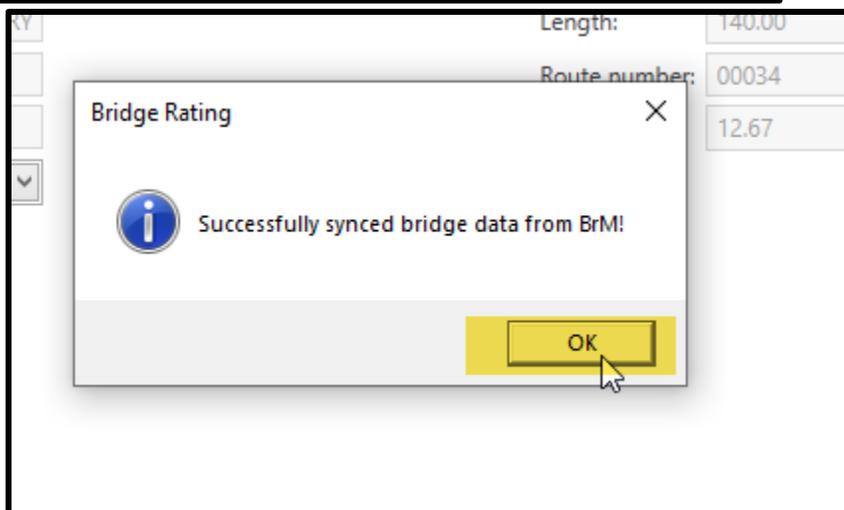
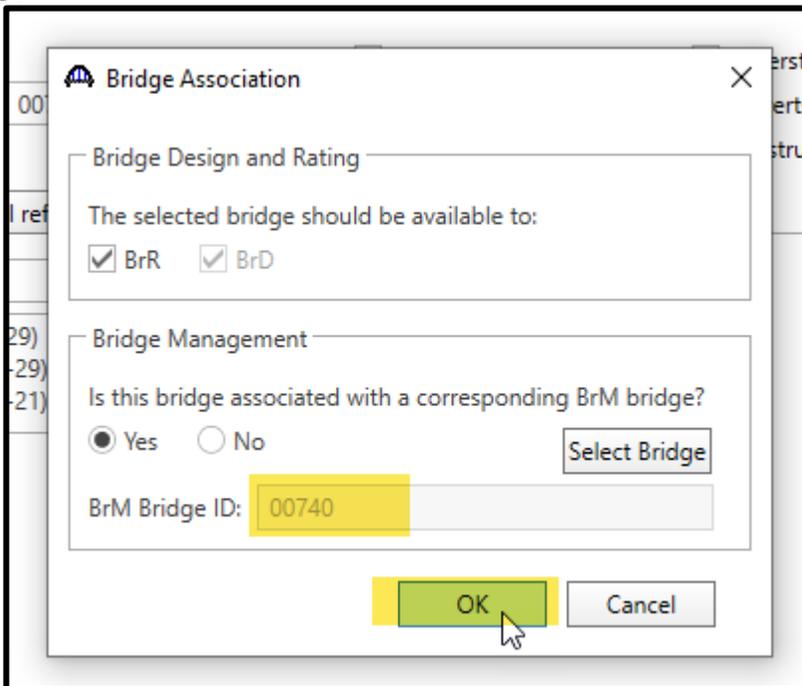
- Enter your e-mail address as the Username and “password” as the Password.
- Select the corresponding Bridge ID (asset ID) and click OK.

The image shows a screenshot of a software interface. In the foreground, a dialog box titled "BrM Authentication Required" is open. It contains the text "Please enter a username and password." Below this are two input fields: "Username:" and "Password:". A red arrow points from a red box labeled "E-mail address" to the Username field. Another red arrow points from a red box labeled "'password'" to the Password field. The dialog has "OK" and "Cancel" buttons at the bottom. In the background, a table is visible with columns "Facility carried" and "Feat. interest". The table contains several rows of data, including bridge IDs and facility names. A yellow box highlights the "OK" button in the bottom right corner of the dialog.

Facility carried	Feat. interest
US 21	OLDFIELD CF
SC 34	MAPLE SWAI
SC 917	CATFISH CAI
US 601	BRIAR CREEK
US 17 BUS	MIDWAY SW
US 321	RR CSXT
SC 336/TILLMAN RD	GREAT SWAI
US 501	S.C.L. RAILRC
SC 41	REEDY CREEK
S-35-17	MCNAIRS MI
SC 34	NS RR
SC 202	ROCKY CREE
SC 183	CANE CREEK
SC 183	CANE CREEK
SC 183	LITTLE CANE
US 1	RR CSXT
US 176	RR CSXT
US 378	ROCKY CREE
SC 101	MAPLE CREE
US 15	COWPEN SW

Rating Data Back into BrM

- The bridge's BrM Bridge ID should now be input and is now linked to BrM. Click OK twice to return to the bridge data page.



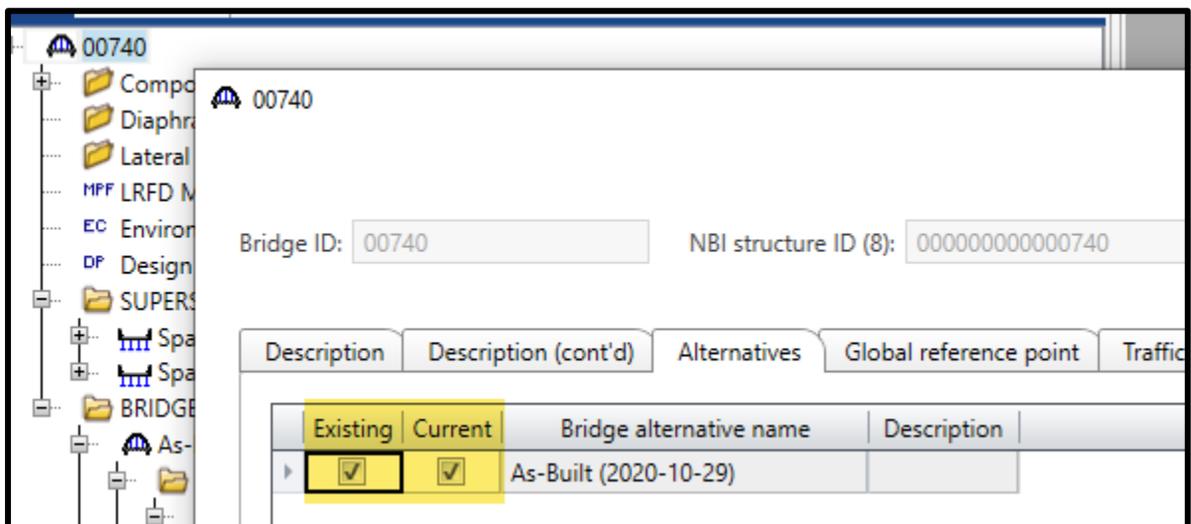
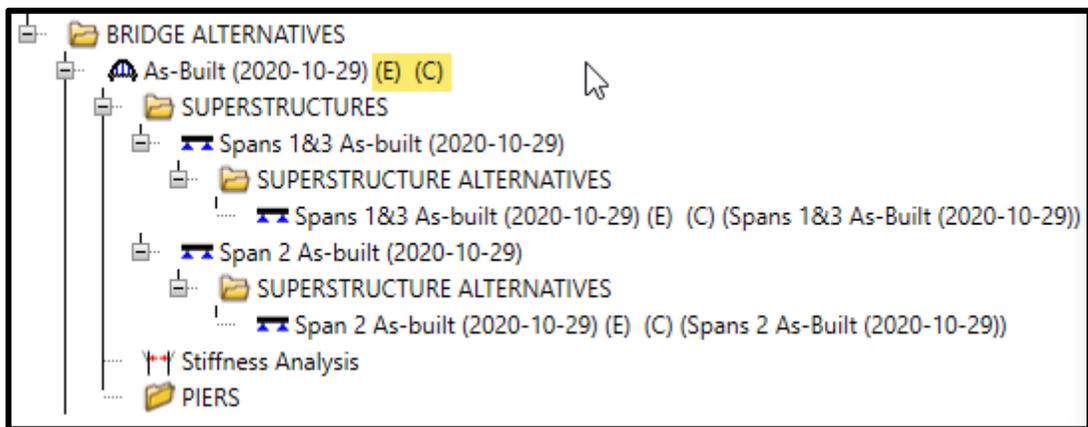
Rating Data Back into BrM

- Note the bridge's SI&A data is now linked to BrM and is now prepopulated.

Bridge ID:	<input type="text" value="00740"/>	NBI structure ID (8):	<input type="text" value="000000000000740"/>	<input type="checkbox"/> Template	<input checked="" type="checkbox"/> Superstructures
				<input checked="" type="checkbox"/> Bridge completely defined	<input type="checkbox"/> Culverts
					<input type="checkbox"/> Substructures
Description Description (cont'd) Alternatives Global reference point Traffic Custom agency fields					
Name:	<input type="text"/>			Year built:	<input type="text" value="1936"/>
Description:	<input type="text" value="6.9 MI S W OF NEWBERRY"/>				
Location:	<input type="text" value="6.9 MI S W OF NEWBERRY"/>			Length:	<input type="text" value="140.00"/> ft
Facility carried (7):	<input type="text" value="SC 34"/>			Route number:	<input type="text" value="00034"/>
Feat. intersected (6):	<input type="text" value="NS RR ."/>			Mi. post:	<input type="text" value="12.67"/>
Default units:	<input type="text" value="US Customary"/> ▼				

Rating Data Back into BrM

- Confirm all bridge alternatives are set appropriately. All spans to be rated should be under the appropriate parent bridge alternative.
- The current condition (as-built/deteriorated) should also be set as Existing and Current within the BrR.



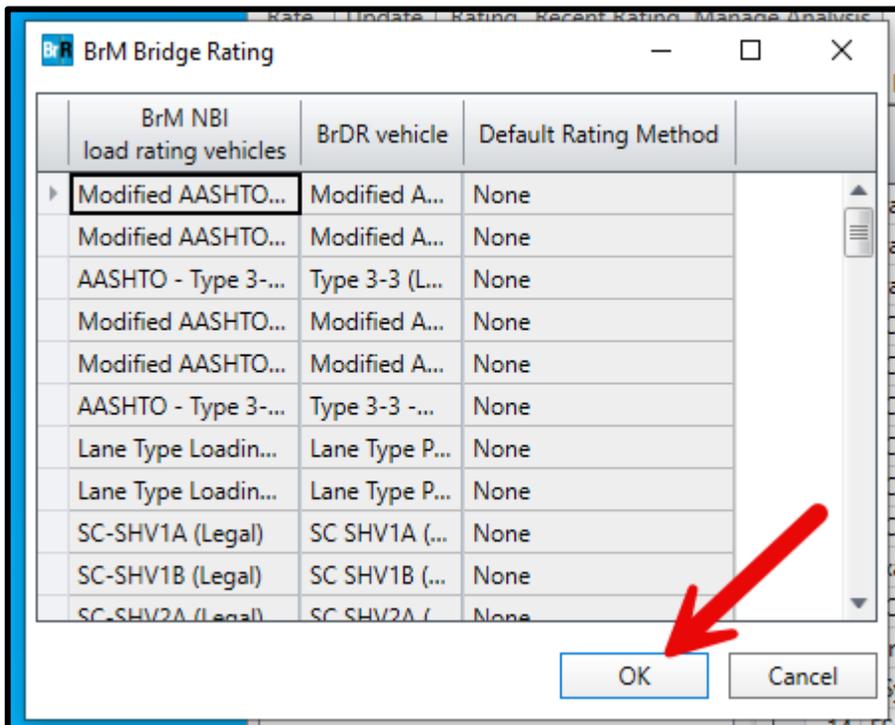
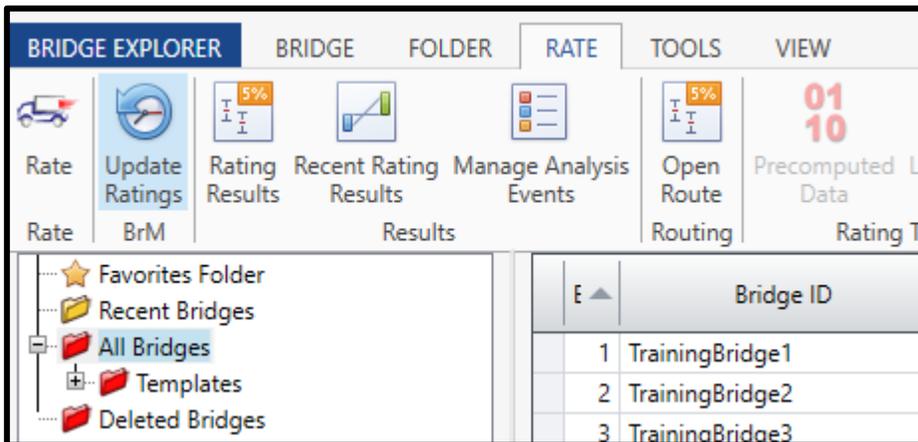
Rating Data Back into BrM

- Save any changes to the bridge and go to the Bridge Explorer window to rate the bridge.
 - **Note!** The SCDOT BrR templates are listed below. If a combination of LRFR templates is required to rate the bridge, the bridge cannot be ported correctly from BrR to BrM. Rating from the Bridge Explorer window will only allow the user to select one template. Therefore, if multiple LRFR templates are needed for a combination bridge, rating each Superstructure Definition is recommended manual BrM rating factor input is recommended. Use the Load Rating Summary Form to determine controlling rating factors.
 - If **LRFR and LFR** runs are needed, follow the similar process for both methods shown on the following pages.

SCDOT LFR Rating	SCDOT LFR Rating	LFD
SCDOT LFR Rating FEM	SCDOT LFR Rating FEM	LFD
SCDOT LRFR Cont. Span <200ft	SCDOT LRFR Cont. Span <200ft	LRFR
SCDOT LRFR Cont. Span >200ft	SCDOT LRFR Cont. Span >200ft	LRFR
SCDOT LRFR Cont. Span <200ft FEM	SCDOT LRFR Cont. Span <200ft FEM	LRFR
SCDOT LRFR Cont. Span >200ft FEM	SCDOT LRFR Cont. Span >200ft FEM	LRFR
SCDOT LRFR Simple Span <200ft	SCDOT LRFR Simple Span <200ft	LRFR
SCDOT LRFR Simple Span >200ft	SCDOT LRFR Simple Span >200ft	LRFR
SCDOT LRFR Simple Span <200ft FEM	SCDOT LRFR Simple Span < 200ft FEM	LRFR
SCDOT LRFR Simple Span >200ft FEM	SCDOT LRFR Simple Span > 200ft FEM	LRFR
SCDOT ASR Rating	SCDOT ASR Rating	ASD

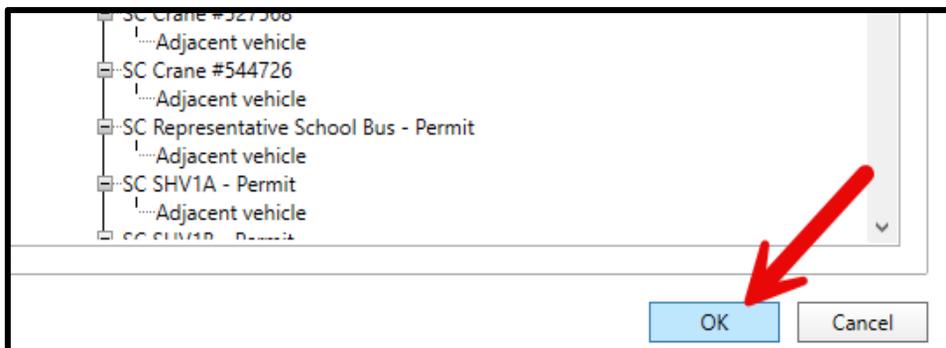
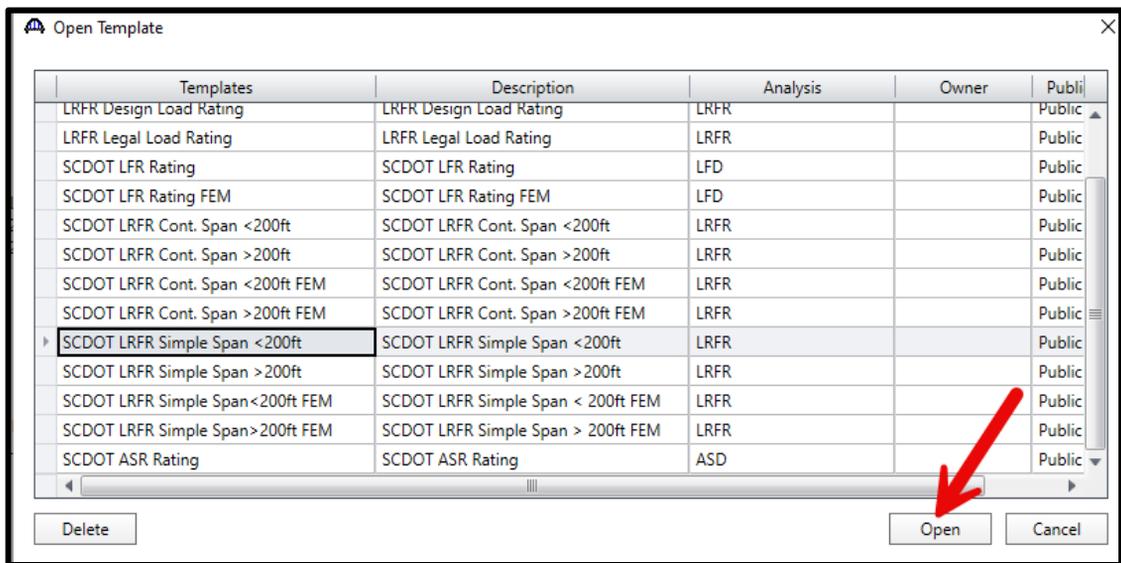
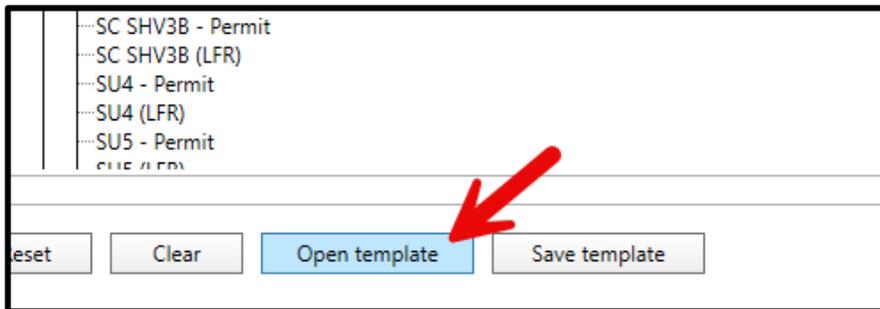
Rating Data Back into BrM

- Click Update Ratings
- Click OK to update the full list of load rating vehicles



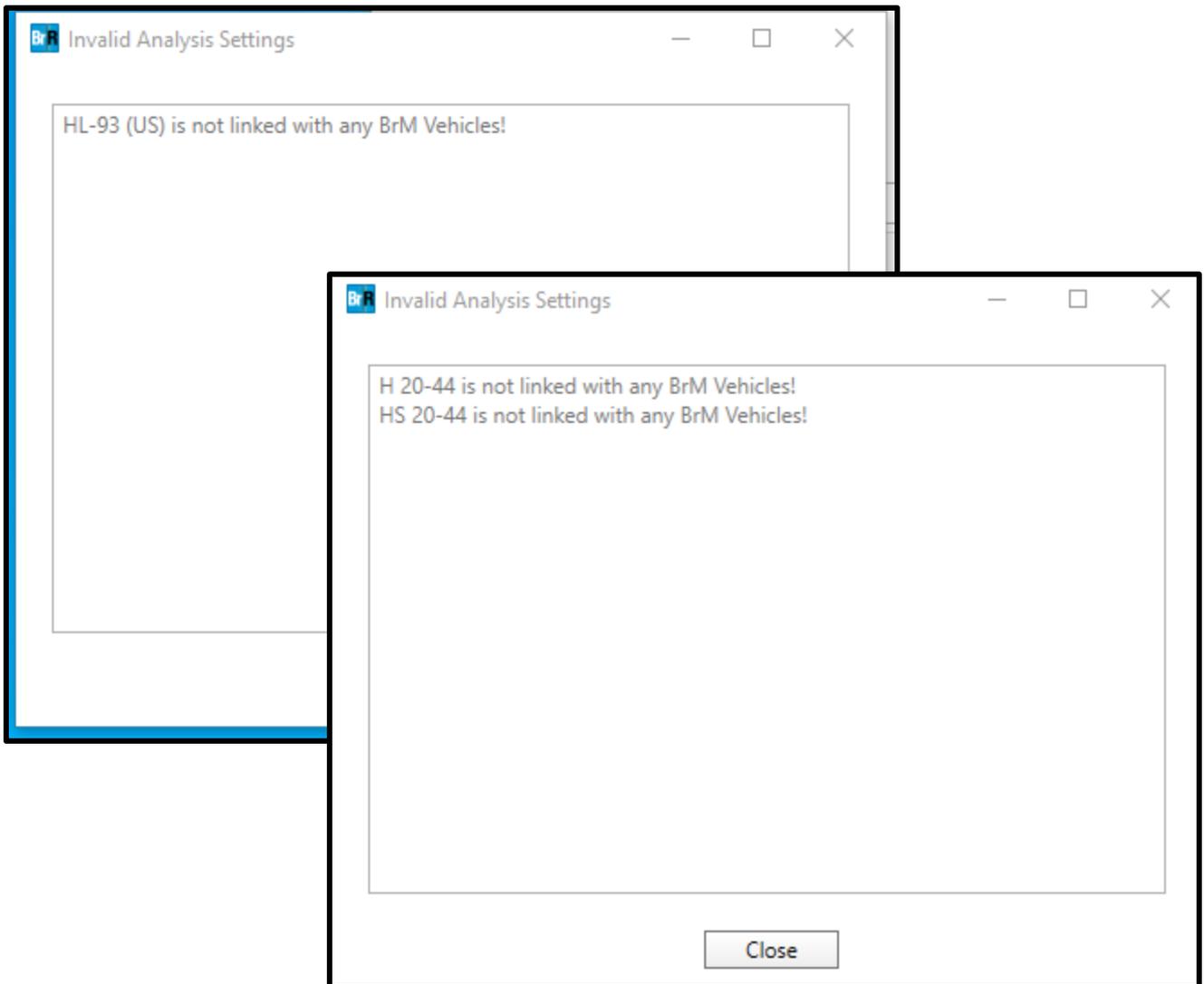
Rating Data Back into BrM

- Click Open template and select the SCDOT template applicable to the bridge. Click Open to use the template, and OK to rate the bridge.



Rating Data Back into BrM

- Depending on which load rating methodology is chosen (LRFR, LFR, or ASR), BrM will give the following errors shown below. See the next page for further details.



Rating Data Back into BrM

- The BrR to BrM transfer requires users to rate from the bridge workspace which selects the controlling HL-93, HS-20, or lane loading. Since the BrM Load Ratings and Posting page requires input for each rating associated with these loadings, manual input is required for the following:

HL-93 Truck + Lane (Inv)
HL-93 Truck Train + Lane (90%) (Inv)
HL-93 Tandem + Lane (Inv)
HL-93 Truck + Lane (Oper)
HL-93 Truck Train + Lane (90%) (Oper)
HL-93 Tandem + Lane (Oper)
Lane Type Loading (Neg. M only) (Legal)
Lane Type Loading (Span > 200 ft) (Legal)
H 20 (Inv)
H 20 Lane (Inv)
HS-20 (Inv)
HS-20 Lane (Inv)

- The above vehicle ratings may be pulled from the Load Rating Summary Form and input manually on the BrM Load Ratings and Posting page.

Rating Data Back into BrM

- Click OK after bridge is finished running.
- The rating factors should now be populated in the BrM Rating Summary Table.



BrM Rating Summary

Analysis method: Rating date: 5/9/2024 BrM rater initials: brr

Bridge ID	Bridge completely defined	Accept new rating	BrM vehicle	BrDR vehicle	Analysis type	Rating	Capacity (tons)	Notes
00330	<input type="checkbox"/>	<input type="checkbox"/>	Alternate Military Loading (Inv)	Alternate...	Design	0.51	12.18	
00330	<input type="checkbox"/>	<input type="checkbox"/>	Alternate Military Loading (Oper)	Alternate...	Design	0.85	20.34	
00330	<input type="checkbox"/>	<input type="checkbox"/>	EV2	EV2	Design	0.98	28.31	
00330	<input type="checkbox"/>	<input type="checkbox"/>	EV3	EV3	Design	0.66	28.21	
00330	<input type="checkbox"/>	<input type="checkbox"/>	H 20-44 (Inv)	H 20-44	Design	0.62	12.35	
00330	<input type="checkbox"/>	<input type="checkbox"/>	H 20-44 (Oper)	H 20-44	Design	1.03	20.62	
00330	<input type="checkbox"/>	<input type="checkbox"/>	HS 20-44 (Inv)	HS 20-44	Design	0.62	22.23	
00330	<input type="checkbox"/>	<input type="checkbox"/>	HS 20-44 (Oper)	HS 20-44	Design	1.03	37.12	
00330	<input type="checkbox"/>	<input type="checkbox"/>	Modified AASHTO SC - Type 3 (Inv)	Modified A...	Design	0.69	17.30	
00330	<input type="checkbox"/>	<input type="checkbox"/>	Modified AASHTO SC - Type 3 (Oper)	Modified A...	Design	1.16	28.89	
00330	<input type="checkbox"/>	<input type="checkbox"/>	Modified AASHTO SC - Type 3S2 (Inv)	Modified A...	Design	0.69	25.33	
00330	<input type="checkbox"/>	<input type="checkbox"/>	Modified AASHTO SC - Type 3S2 (Oper)	Modified A...	Design	1.16	42.30	
00330	<input type="checkbox"/>	<input type="checkbox"/>	SC - 100k Permit	SC - 100k P...	Design	0.89	44.53	
00330	<input type="checkbox"/>	<input type="checkbox"/>	SC - 120k Permit	SC - 120k P...	Design	0.74	44.11	
00330	<input type="checkbox"/>	<input type="checkbox"/>	SC - 130k Permit	SC - 130k P...	Design	0.74	47.78	
00330	<input type="checkbox"/>	<input type="checkbox"/>	SC-SU2 (Inv)	SC - SU2 (L...	Design	0.90	17.96	
00330	<input type="checkbox"/>	<input type="checkbox"/>	SC-SU2 (Oper)	SC - SU2 (L...	Design	1.50	29.99	
00330	<input type="checkbox"/>	<input type="checkbox"/>	SC Crane #527568	SC Crane #...	Design	0.80	71.11	
00330	<input type="checkbox"/>	<input type="checkbox"/>	SC Crane #544726	SC Crane #...	Design	0.74	59.43	
00330	<input type="checkbox"/>	<input type="checkbox"/>	SC Representative School Bus (Inv)	SC Represe...	Design	0.86	15.05	
00330	<input type="checkbox"/>	<input type="checkbox"/>	SC Representative School Bus (Oper)	SC Represe...	Design	1.43	25.14	
00330	<input type="checkbox"/>	<input type="checkbox"/>	SC-SHV1A (Inv)	SC SHV1A (...)	Design	0.49	15.83	
00330	<input type="checkbox"/>	<input type="checkbox"/>	SC-SHV1A (Oper)	SC SHV1A (...)	Design	0.81	26.44	

Accept all | Accept bridge | Accept vehicle | Clear accepted

View rating results... | View bridges not rated... | Push to BrM | Close

Rating Data Back into BrM

- Select the Analysis Method.
 - 2 for ASR, 6 for LFR, 8 for LRFR
- Enter your full name to be shown on the BrM ratings page (not just BrM rater initials).

BrM Rating Summary

Analysis method: Rating date: 5/9/2024 BrM rater initials: brr

Bridge ID	Analysis Method	Accept rating	BrM vehicle	BrDR vehicle	Analysis type	Rating	Capacity (tons)	Notes
00330	0 Field eval and docs	<input type="checkbox"/>						
00330	1 LF Load Factor	<input type="checkbox"/>						
00330	2 AS Allowable Stress	<input type="checkbox"/>	Alternate Military Loading (Inv)	Alternate...	Design	0.51	12.18	
00330	3 LRFR Load & Res. Fact	<input type="checkbox"/>	Alternate Military Loading (Oper)	Alternate...	Design	0.85	20.34	
00330	4 Load Testing	<input type="checkbox"/>	EV2	EV2	Design	0.98	28.31	
00330	5 No rating or eval	<input type="checkbox"/>	EV3	EV3	Design	0.66	28.21	
00330	6 Load Factor (MS18)	<input type="checkbox"/>	H 20-44 (Inv)	H 20-44	Design	0.62	12.35	
00330	7 Allowable Stress(MS18)	<input type="checkbox"/>	H 20-44 (Oper)	H 20-44	Design	1.03	20.62	
00330	8 LRFR (HL93)	<input type="checkbox"/>	HS 20-44 (Inv)	HS 20-44	Design	0.62	22.23	
00330	A LFD (metric tons)	<input type="checkbox"/>	HS 20-44 (Oper)	HS 20-44	Design	1.03	37.12	
00330	B ASD (metric tons)	<input type="checkbox"/>	Modified AASHTO SC - Type 3 (Inv)	Modified A...	Design	0.69	17.30	
00330	C LRFD (metric tons)	<input type="checkbox"/>	Modified AASHTO SC - Type 3 (Oper)	Modified A...	Design	1.16	28.89	
00330	D LFD (MS18)	<input type="checkbox"/>	Modified AASHTO SC - Type 3S2 (Inv)	Modified A...	Design	0.69	25.33	
00330	E ASD (MS18)	<input type="checkbox"/>	Modified AASHTO SC - Type 3S2 (Oper)	Modified A...	Design	1.16	42.30	
00330	F LRFD (HL93)	<input type="checkbox"/>	SC - 100k Permit	SC - 100k P...	Design	0.89	44.53	
00330		<input type="checkbox"/>	SC - 120k Permit	SC - 120k P...	Design	0.74	44.11	
00330		<input type="checkbox"/>	SC - 130k Permit	SC - 130k P...	Design	0.74	47.78	

BrM rater initials:

BrDR vehicle	Analysis type	Rating	Capacity (tons)	Notes
Alternate...	Design	0.51	12.18	
Alternate...	Design	0.85	20.34	
EV2	Design	0.98	28.31	
EV3	Design	0.66	28.21	
H 20-44	Design	0.62	12.35	
H 20-44	Design	1.03	20.62	

Rating Data Back into BrM

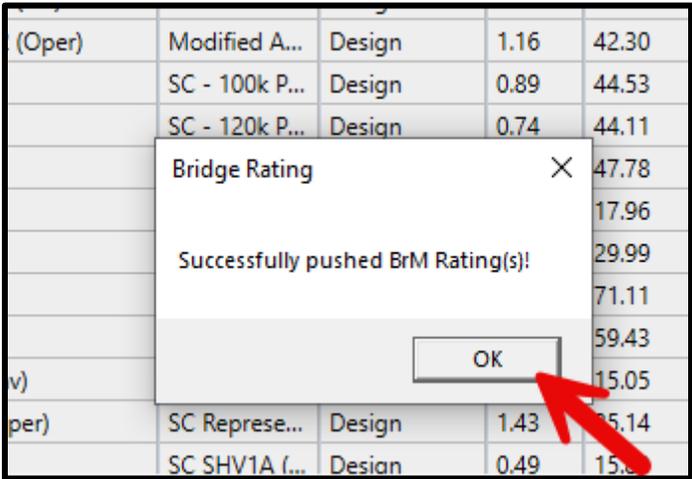
- Click Accept all to check all truck checkboxes
- Click Push to BrM

00330	<input type="checkbox"/>	<input checked="" type="checkbox"/>	H 20-44 (Oper)
00330	<input type="checkbox"/>	<input checked="" type="checkbox"/>	HS 20-44 (Inv)
00330	<input type="checkbox"/>	<input checked="" type="checkbox"/>	HS 20-44 (Oper)
00330	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Modified AASHTO SC - Type 3 (In
00330	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Modified AASHTO SC - Type 3 (O
00330	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Modified AASHTO SC - Type 3S2
00330	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Modified AASHTO SC - Type 3S2
00330	<input type="checkbox"/>	<input checked="" type="checkbox"/>	SC - 100k Permit
00330	<input type="checkbox"/>	<input checked="" type="checkbox"/>	SC - 120k Permit
00330	<input type="checkbox"/>	<input checked="" type="checkbox"/>	SC - 130k Permit
00330	<input type="checkbox"/>	<input checked="" type="checkbox"/>	SC-SU2 (Inv)
00330	<input type="checkbox"/>	<input checked="" type="checkbox"/>	SC-SU2 (Oper)
00330	<input type="checkbox"/>	<input checked="" type="checkbox"/>	SC Crane #527568
00330	<input type="checkbox"/>	<input checked="" type="checkbox"/>	SC Crane #544726
00330	<input type="checkbox"/>	<input checked="" type="checkbox"/>	SC Representative School Bus (Inv
00330	<input type="checkbox"/>	<input checked="" type="checkbox"/>	SC Representative School Bus (Op
00330	<input type="checkbox"/>	<input checked="" type="checkbox"/>	SC-SHV1A (Inv)
00330	<input type="checkbox"/>	<input checked="" type="checkbox"/>	SC-SHV1A (Oper)

0.90	17.90	
1.50	29.99	
0.80	71.11	
0.74	59.43	
0.86	15.05	
1.43	25.14	
0.49	15.83	
0.81	26.44	

Rating Data Back into BrM

- Click OK once BrR successfully pushes ratings to BrM.



Rating Data Back into BrM

- Open BrM and navigate to the Asset ID's Load Ratings and Posting page.
- Notice the rating event was generated with the date and Name of Load Rater that was previously entered in BrR.

The screenshot displays the BrM software interface. On the left is a dark blue sidebar with a menu. The menu items are: BRIDGES, INSPECTION, INSPECTION PREP, INSPECTION (highlighted in light blue), INVENTORY, CONDITION, APPRAISAL, CLEARANCES, COMPLEX, UW, NSTM, ADMIN, **LOAD RATINGS AND POSTING** (circled in red), DAMAGE, and ROAD DATA SERVICES. The main content area shows a 'Rating Event' dropdown set to '11/18/2024' and a 'Create New Load Rating Event' button. Below this is a section titled 'Load Rating Event Data (Changes with Rating Event Dropdown)'. The fields in this section are: 'Load Rating Event Name' (11/18/2024), 'Name of Load Rater (PE)' (circled in red), 'Name of QC Reviewer' (empty), '(861) Software Used' (AA SHTOWare BrR), '(862) Secondary Software' (N/A), '(501) Wearing Surface Depth (in)' (2.00), '(411) Date Evaluated [B.LR.03]' (6/1/2020), '(418A) Deck/Culvert Condition' (5), '(418B) Superstructure Condition' (6), and '(418C) Substructure Condition' (6). Below this is a section titled '(859) Load Rating Event Notes [B.LR.03]' with a text area containing the instruction: 'In the space below, please include the remarks and assumptions related to th...'

Rating Data Back into BrM

- Rename the Load Rating Event Name with the date and either “(LRFR)”, “(LFR)”, or “(ASR)”. The event name may need changed later to match the sign and sealed date.

Rating Event: 11/18/2024 (LRI) Create New Load Rating Event

Load Rating Event Data (Changes with Rating Event Dropdown)

Load Rating Event Name: 11/18/2024 (LRFR)

Name of Load Rater (F.E.):

Name of QC Reviewer:

(861) Software Used: AASHTOWare BrR

(862) Secondary Software: N/A

(501) Wearing Surface Depth (in): 2.00

(411) Date Evaluated [B.LR.03]: 6/1/2020

(418A) Deck/Culvert Condition: 5

(418B) Superstructure Condition: 6

(418C) Substructure Condition: 6

- If another methodology is needed, follow the previous steps to port into BrM. Another rating event will be generated once pushed to BrM.

Rating Data Back into BrM

- Note the Analysis type has ported in as “Design” for all LFR vehicles and Limit States & Location are blank. This is due to running BrR from the Bridge Workspace for the transfer.
- Refer to the following page for Analysis Type input revisions.

Add New Vehicle/Rating										
Vehicle	Current	Rating	Tons	Method	Analysis Type	Limit State	Location	Notes		
H 20-44 (Inv)	<input type="checkbox"/>	0.62	12.35	6 LFR	Design					X
H 20-44 (Oper)	<input type="checkbox"/>	1.03	20.62	6 LFR	Design					X
HS 20-44 (Inv)	<input type="checkbox"/>	0.62	22.23	6 LFR	Design					X
HS 20-44 (Oper)	<input type="checkbox"/>	1.03	37.12	6 LFR	Design					X
Alternate Military Loading (Inv)	<input type="checkbox"/>	0.51	12.18	6 LFR	Design					X
Alternate Military Loading (Oper)	<input type="checkbox"/>	0.85	20.34	6 LFR	Design					X
Modified AASHTO SC - Type 3 (Inv)	<input type="checkbox"/>	0.69	17.3	6 LFR	Design					X
Modified AASHTO SC - Type 3 (Oper)	<input type="checkbox"/>	1.16	28.89	6 LFR	Design					X
Modified AASHTO SC - Type 3S2 (Inv)	<input type="checkbox"/>	0.69	25.33	6 LFR	Design					X
Modified AASHTO SC - Type 3S2 (Oper)	<input type="checkbox"/>	1.16	42.3	6 LFR	Design					X
SC-SU2 (Inv)	<input type="checkbox"/>	0.9	17.96	6 LFR	Design					X

- Manual input is required for limit states & locations. Refer to the Load Rating Summary Form for limit states. Location should typically be “Superstructure”.
- Refer to Technical Note 16 for additional coding guidance on the Load Rating and Posting page.

Vehicle Analysis Type

Vehicle Name	Analysis Type	Vehicle Name	Analysis Type
HL-93 (Inv)	Design	SU4	Legal
HL-93 (Oper)	Design	SU4 (Inv)	Legal
H 20-44 (Inv)	Design	SU4 (Oper)	Legal
H 20-44 (Oper)	Design	SU5	Legal
HS 20-44 (Inv)	Design	SU5 (Inv)	Legal
HS 20-44 (Oper)	Design	SU5 (Oper)	Legal
Alternate Military Loading (Inv)	Design	SU6	Legal
Alternate Military Loading (Oper)	Design	SU6 (Inv)	Legal
Lane Type Legal Load	Legal	SU6 (Oper)	Legal
Modified AASHTO SC - Type 3	Legal	SU7	Legal
Modified AASHTO SC - Type 3 (Inv)	Legal	SU7 (Inv)	Legal
Modified AASHTO SC - Type 3 (Oper)	Legal	SU7 (Oper)	Legal
Modified AASHTO SC - Type 3S2	Legal	Type 3-3	Legal
Modified AASHTO SC - Type 3S2 (Inv)	Legal	Type 3-3 (Inv)	Legal
Modified AASHTO SC - Type 3S2 (Oper)	Legal	Type 3-3 (Oper)	Legal
SC-SU2	Legal	EV2	Legal
SC-SU2 (Inv)	Legal	EV3	Legal
SC-SU2 (Oper)	Legal	Lane Type Permit Load	Permit
SC Representative School Bus	Legal	Lane Type Permit Load Pair	Permit
SC Representative School Bus (Inv)	Legal	Modified AASHTO SC - Type 3 Permit	Permit
SC Representative School Bus (Oper)	Legal	Modified AASHTO SC - Type 3S2 Permit	Permit
SC-SHV1A	Legal	SC - 100k Permit	Permit
SC-SHV1A (Inv)	Legal	SC - 120k Permit	Permit
SC-SHV1A (Oper)	Legal	SC - 130k Permit	Permit
SC-SHV1B	Legal	SC - SU2 - Permit	Permit
SC-SHV1B (Inv)	Legal	SC Crane #527568	Permit
SC-SHV1B (Oper)	Legal	SC Crane #544726	Permit
SC-SHV2A	Legal	SC Representative School Bus Permit	Permit
SC-SHV2A (Inv)	Legal	SC-SHV1A Permit	Permit
SC-SHV2A (Oper)	Legal	SC-SHV1B Permit	Permit
SC-SHV2B	Legal	SC-SHV2A Permit	Permit
SC-SHV2B (Inv)	Legal	SC-SHV2B Permit	Permit
SC-SHV2B (Oper)	Legal	SC-SHV3A Permit	Permit
SC-SHV3A	Legal	SC-SHV3B Permit	Permit
SC-SHV3A (Inv)	Legal	SU4 Permit	Permit
SC-SHV3A (Oper)	Legal	SU5 Permit	Permit
SC-SHV3B	Legal	SU6 Permit	Permit
SC-SHV3B (Inv)	Legal	SU7 Permit	Permit
SC-SHV3B (Oper)	Legal	Type 3-3 Permit	Permit