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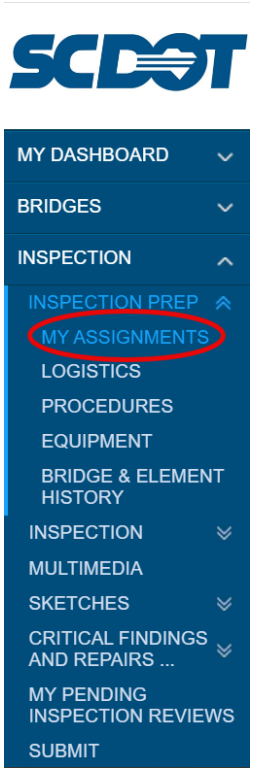
May 2025

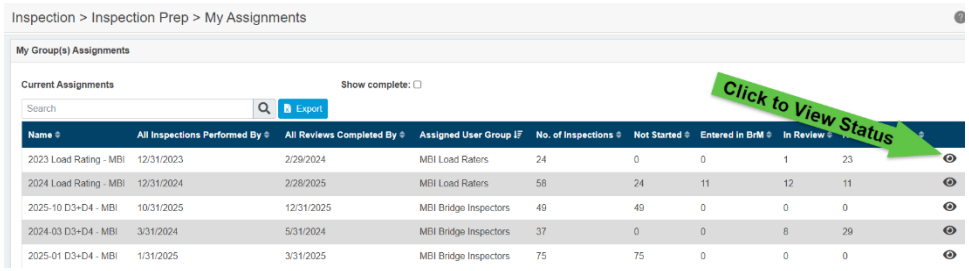
Technical Note 16

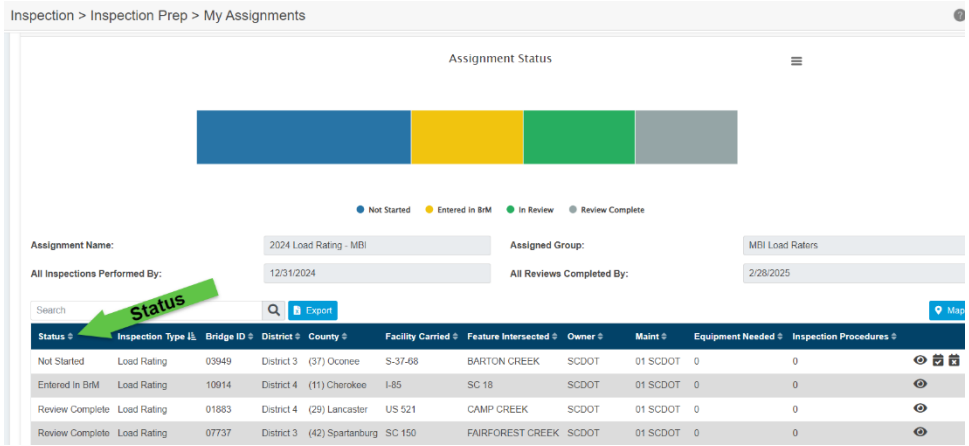
1. BrM Guide for Load Raters

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.







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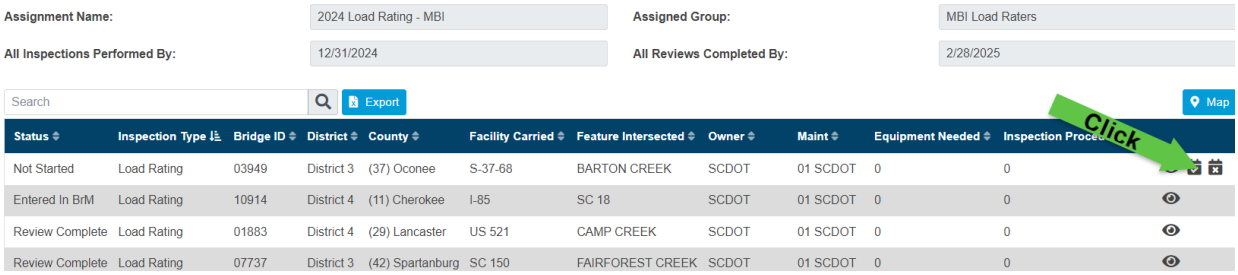
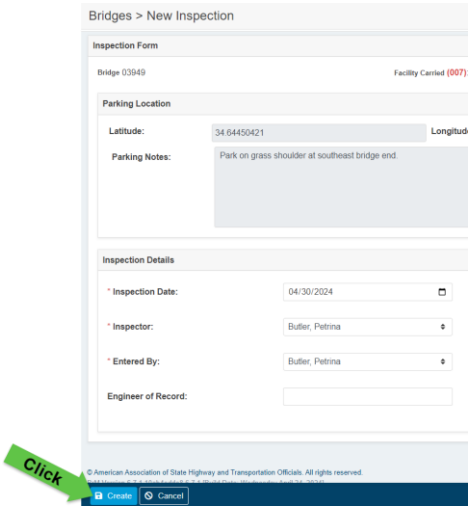
Follow the steps below to create a load rating inspection type in BrM, enter the applicable data, and submit for review.

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



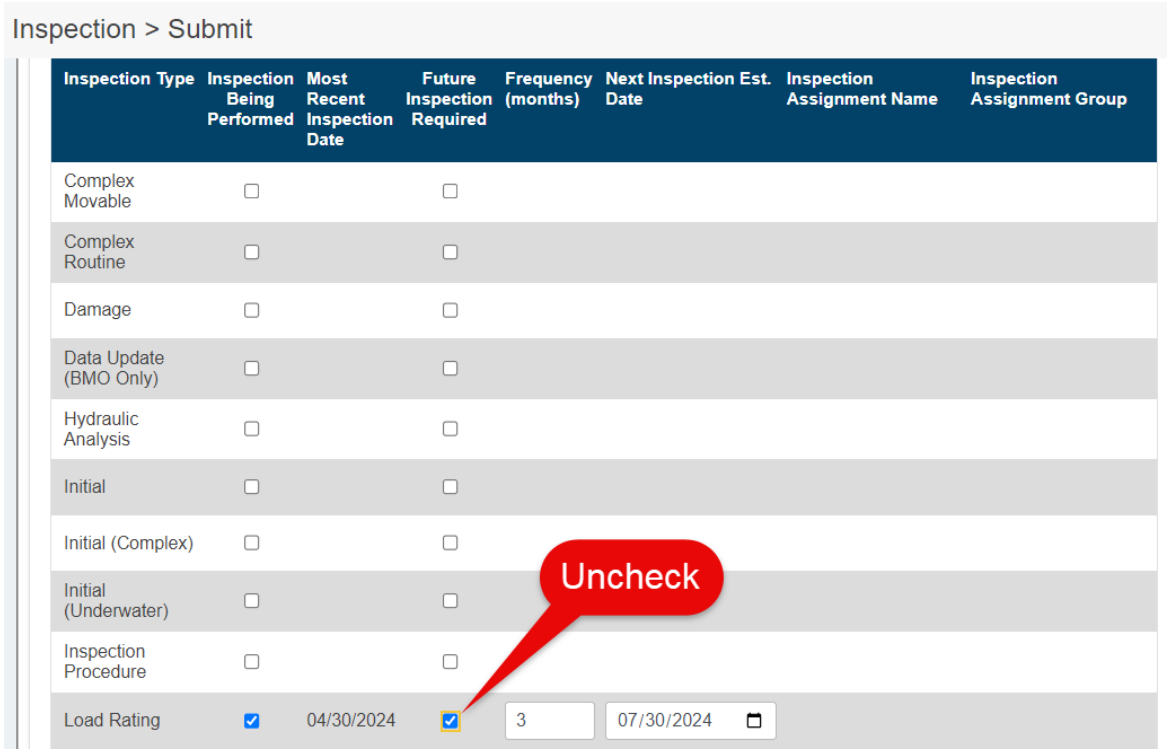
   Note: Do not use the "x" for reassignment for load ratings. Even if it's determined that a load rating is not required, still go through the process to initiate a load rating, update the date last evaluated, update the conditions during rating, and add notes regarding why a load rating isn't required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

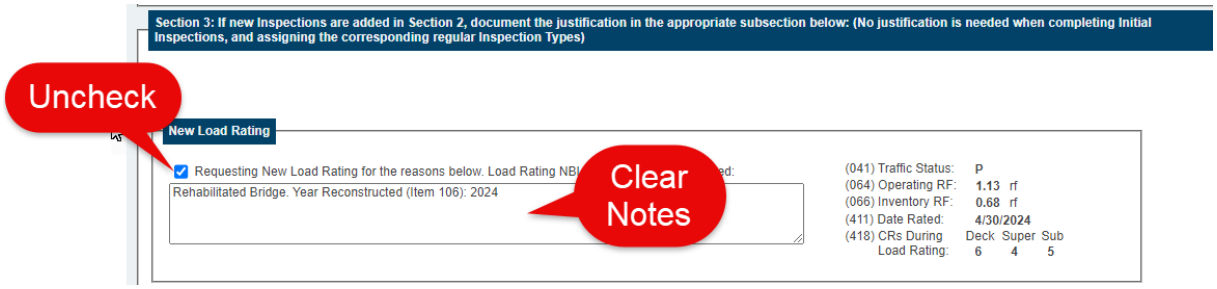
2. Click "Create". The Engineer can only initiate a load rating if the user has the correct qualifications in BrM to start a load rating. A new inspection event date will be created for the date that the load rating inspection type was created. This date can be edited later, if needed, to match the date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



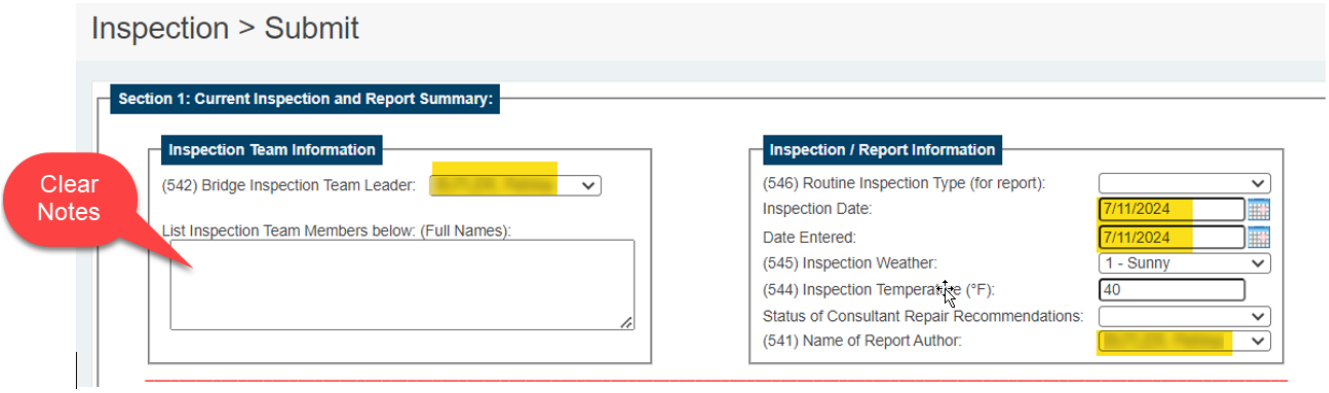
3. Once a new load rating inspection is created, BrM automatically creates a new load rating request that needs to be cleared immediately to avoid accidental assignment of another load rating. The load rating request shall remain tied to the bridge inspection event. To remove the additional load rating 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.

4.

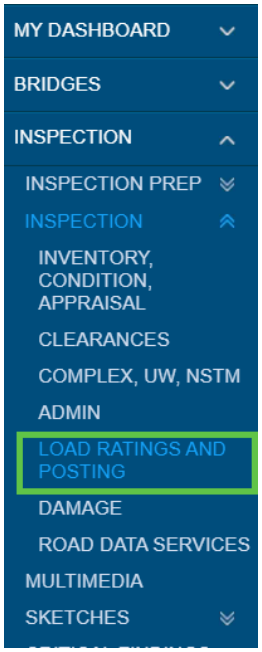




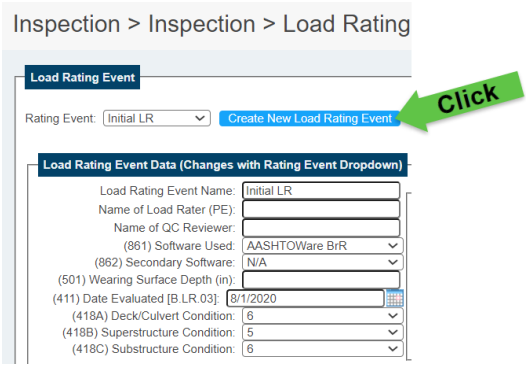
5. At the top of this page, use the drop-down menu to select Item (542) Bridge Inspection Team Leader, which is the Engineer of Record. In the box below this item, clear out any names that automatically populated. Enter the Inspection Date, which is the date the load rating was signed and sealed. The 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.



6. 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:

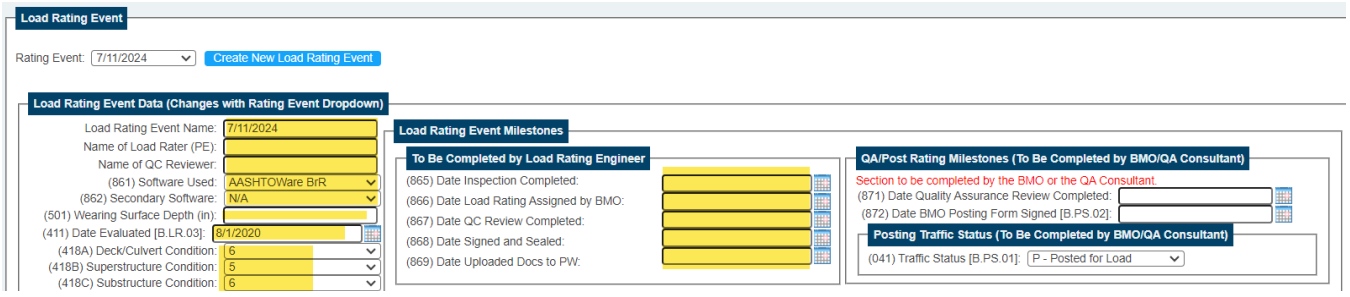


A new load rating event is created by clicking "Create New Load Rating Event" at the top of the Load Ratings and Posting page.



7. 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.



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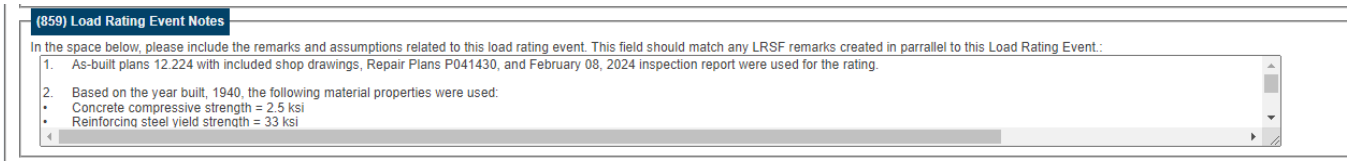
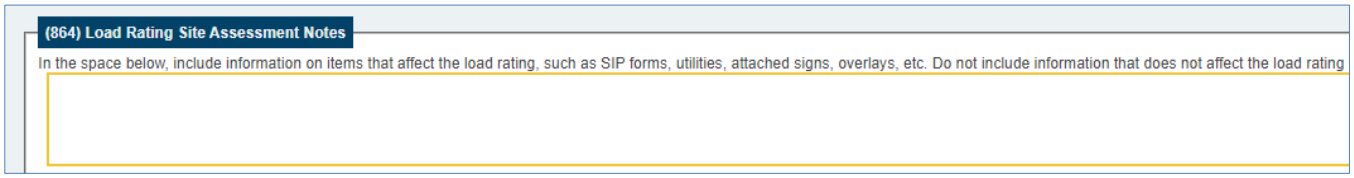
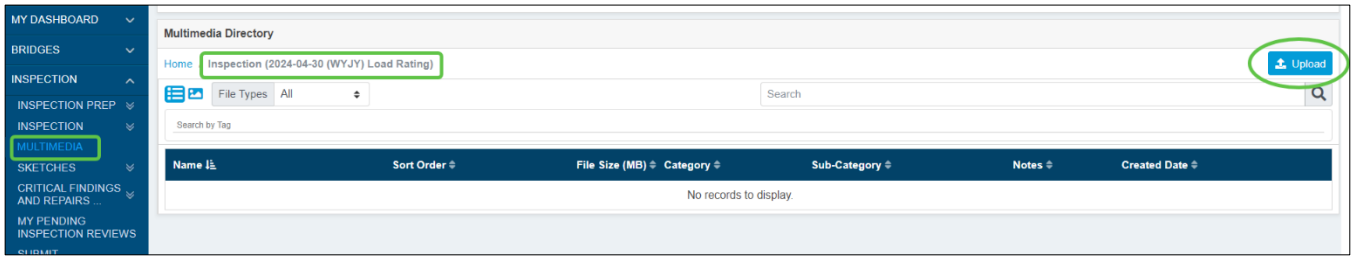
It is important to accurately enter and track the Load Rating Data to ensure compliance with the timeline set by the 2022 SNBI and Technical Note 15. The reason for load rating updates and any important information related to the load rating shall be entered in Item (859) "Load Rating Event Notes". Note 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".



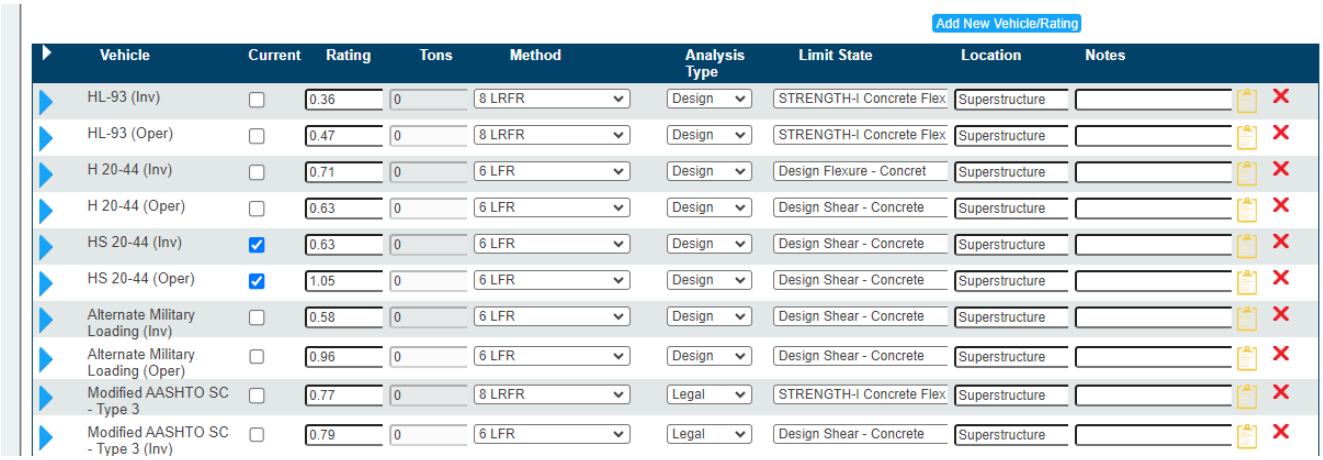
If a site assessment was completed as part of the load rating, then document the notes in Item (864) Load Rating Site Assessment Notes and upload applicable photographs in the MULTIMEDIA page under the appropriate load rating inspection event, as shown below.



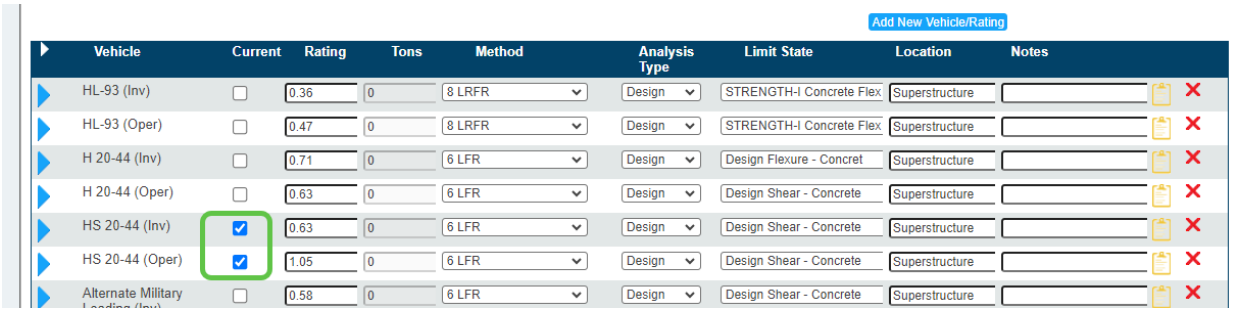


At the bottom of the page, the controlling ratings for each vehicle shall be updated, as needed. If superstructure and substructure are both rated, then results for both are shown in the same load rating event. Enter "superstructure" or "substructure" in the Location field as appropriate. If only the 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.

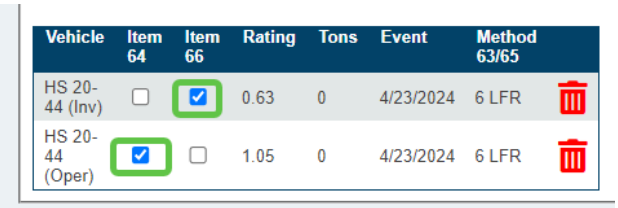
BrM has the capability to import data from BrR files (version 7.3 and later). The BrR file shall be uploaded to ProjectWise to meet current SCDOT BrR version requirements. The consultant may use BrR v7.3 or later to automate the upload of the results into BrM. Please refer to **Attachment 2** for a guide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



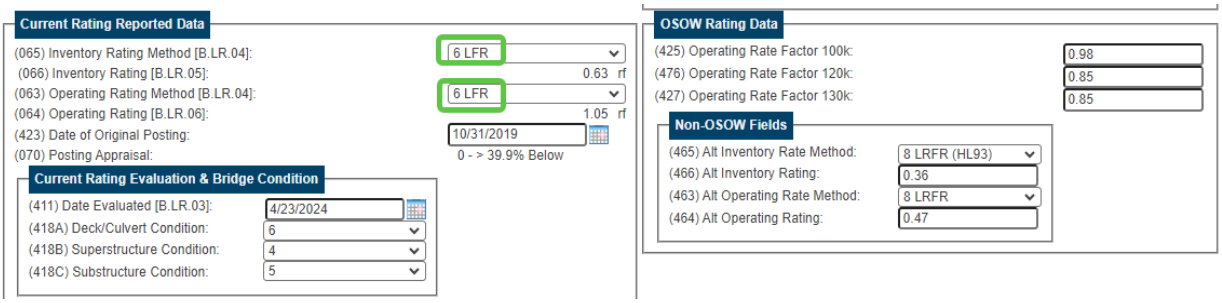
The reported rating for Items 63-66 shall be the governing rating between superstructure and substructure, and the more favorable rating between LRFR and LFR. Select the current reported ratings, which is the current governing Inventory and Operating for the structure.



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.

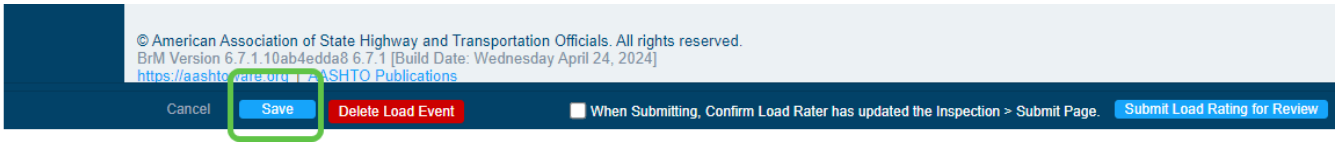


Update the Inventory and Operating Methods, as needed.

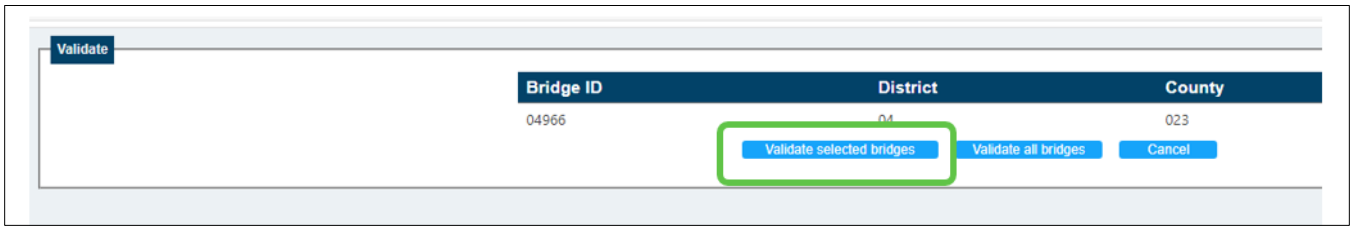


NOTE: If a previous load rating event controls the rating, then the previously reported Inventory and Operating Ratings are still valid. In this case, do not check off any ratings as "current" in the new load rating event. The only data to be updated in the screenshot above are items 411, 418A, 418B, 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.

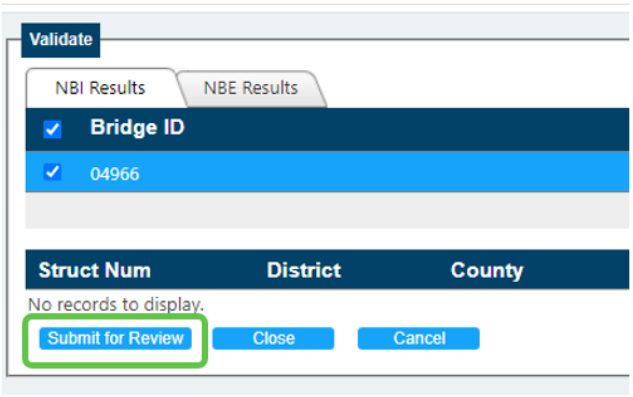
Click "Save" at the bottom of the screen. Check off the box indicating that the load rater updated the Submit page in accordance with Step 5. Click "Submit for Review" at the bottom of the page, as shown below.

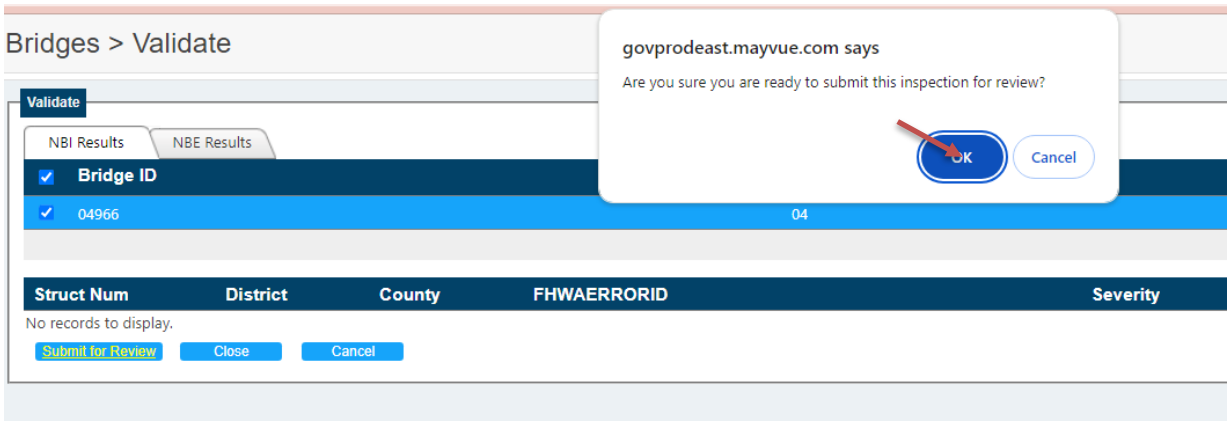


Click "Validate Selected Bridges". Note that all bridges that are selected in the "VIEW LIST" tab will show up here.

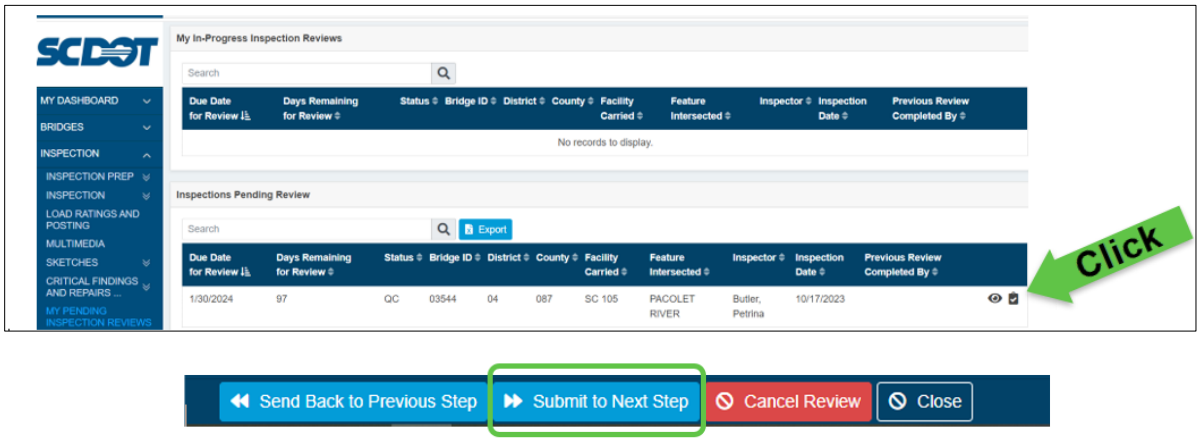


Clear any validation errors if they show up on either the NBI or NBE tabs. After validation errors are cleared, click "Submit for Review" and then "OK".





8. 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."



9. 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.

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)

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.

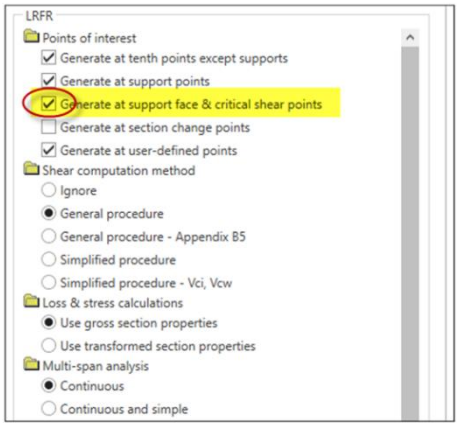
7. **Reopening of Closed Bridges**
   In order to reopen a closed bridge, a new load rating request is required. The current load rating on file must be considered/evaluated to ensure it meets the current condition of the bridge. If the current load rating in the bridge file does not represent the current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

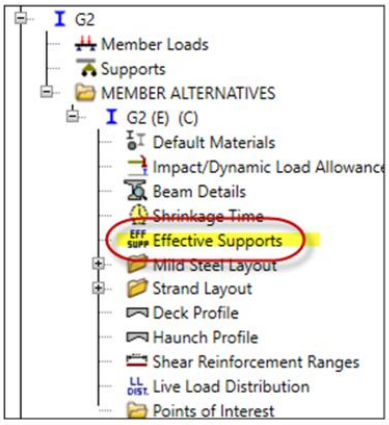
8. **Supplemental Calculations for Steel Beam End Section Loss**
   AASHTOWare BrR software is primarily used to rate bridges in South Carolina. BrR 7.2 does not evaluate the web local crippling capacity of steel girders, however it does evaluate the shear capacity of a steel girder as per the AASHTO 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.

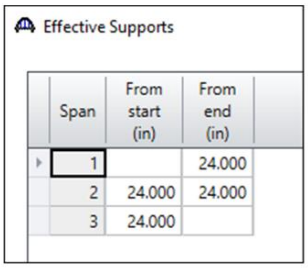
9. **BrR Input for Deck Reinforcing for Cont. PSC girders**
   BrR checks negative flexure at the centerline of the pier instead of the face of the support, which can create unrealistically lower rating factors. Two solutions are outlined below to determine realistic rating factors at this location.

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.

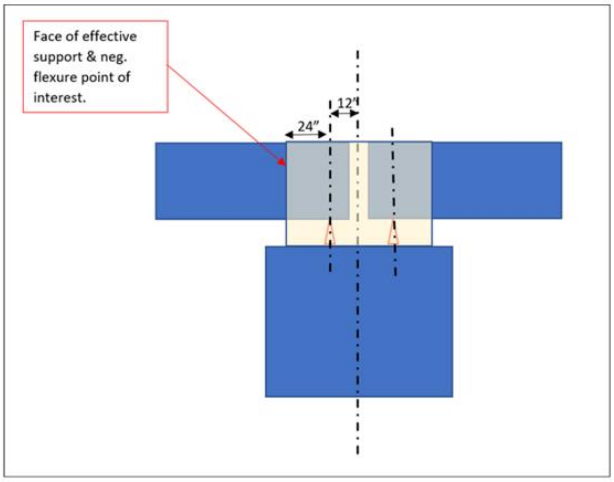


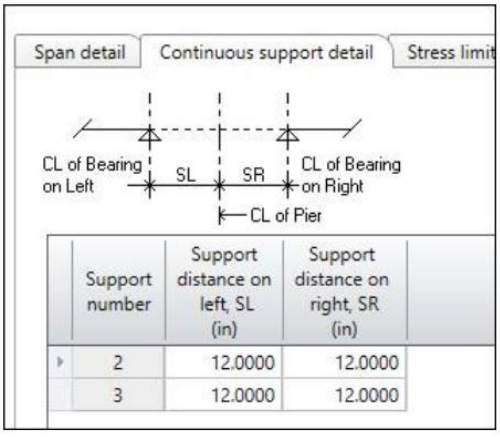




Span	From start (in)	From end (in)
1		24.000
2	24.000	24.000
3	24.000	

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.

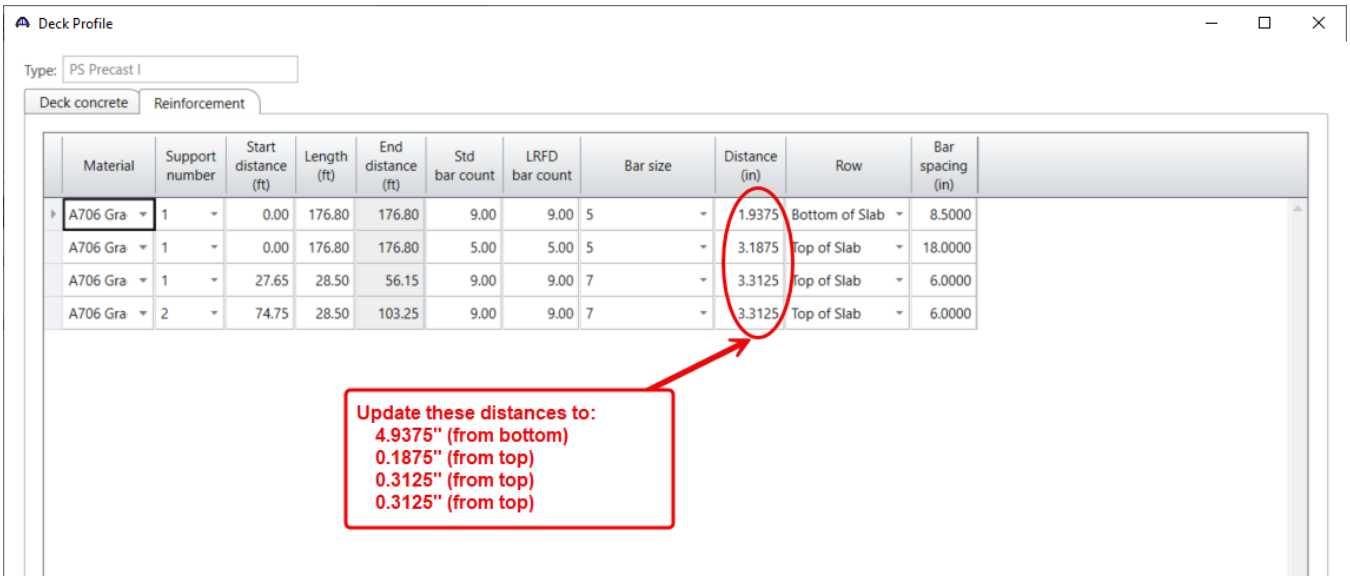




Support number	Support distance on left, SL (in)	Support distance on right, SR (in)
2	12.0000	12.0000
3	12.0000	12.0000

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.

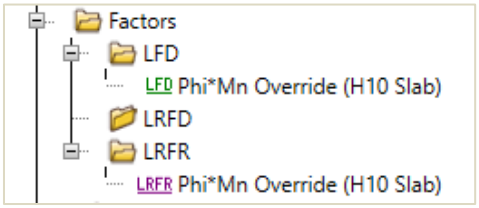


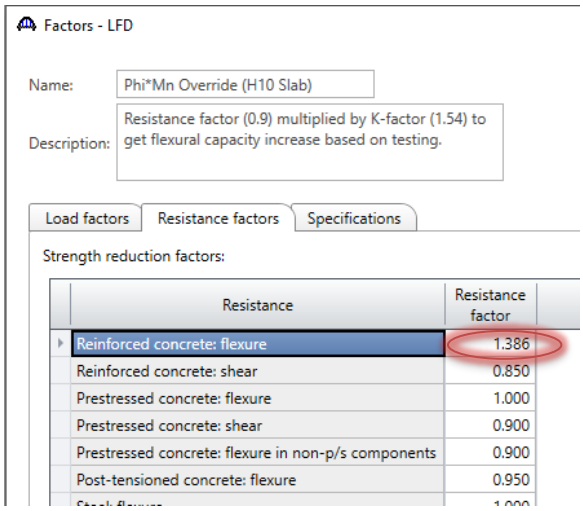
10. <u>H-10/H-15 Precast Slab Panel Bridge Research, Testing, and Load Rating Modifications</u>

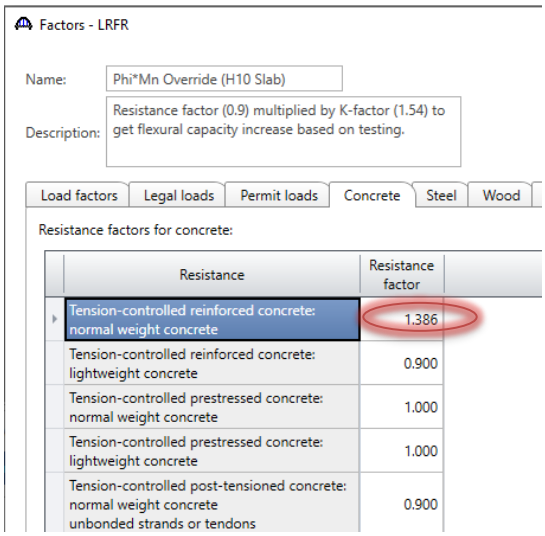
SCDOT contracted with Clemson University and the University of South Carolina to complete load testing of the SCDOT Precast Concrete Bridge Standard (H-10 design live load) in accordance with AASHTO MBE Section 8.8. The January 2023 final report titled "Safe and Cost-Effective Reduction of Load Postings 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.

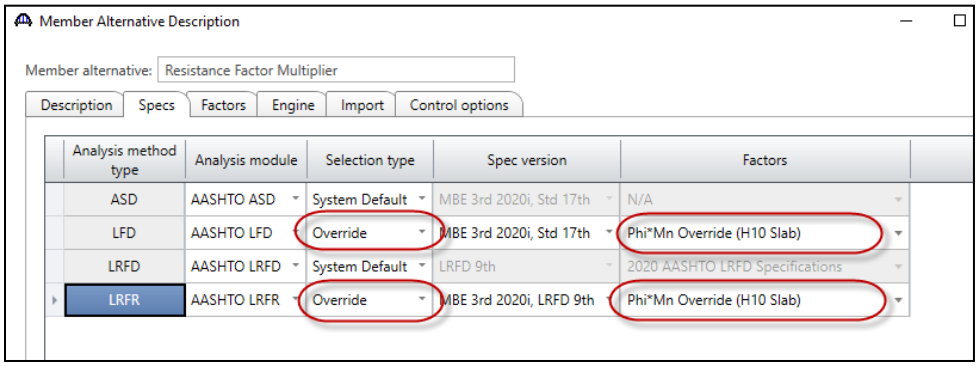
Instead of utilizing 0.90 for the flexural resistance factor, a factor of $0.90 * 1.54 = \mathbf{1.386}$ will be applied for both LFR and LRFR to account for the increase in flexural capacity.







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



Technical Note e-Notification
No. 16
May 2025

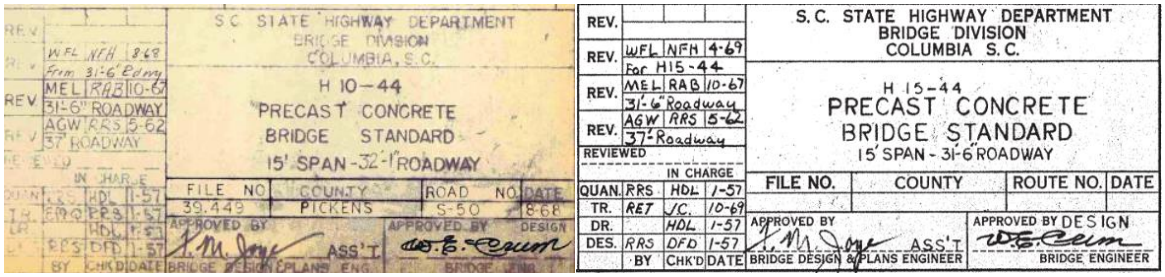
Technical Note 16

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.



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

Approved: Chris R. Lacy Digitally signed by Chris R. Lacy Date: 2025.05.15 08:22:09 -04'00' 5/15/25

Director of Bridge Management — Date

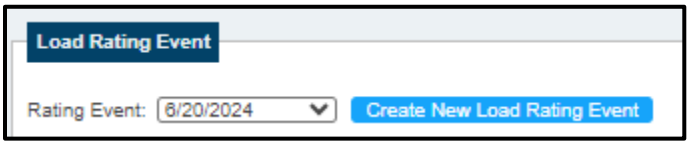
Technical Note e-Notification No. 16 May 2025	**Technical Note 16**

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

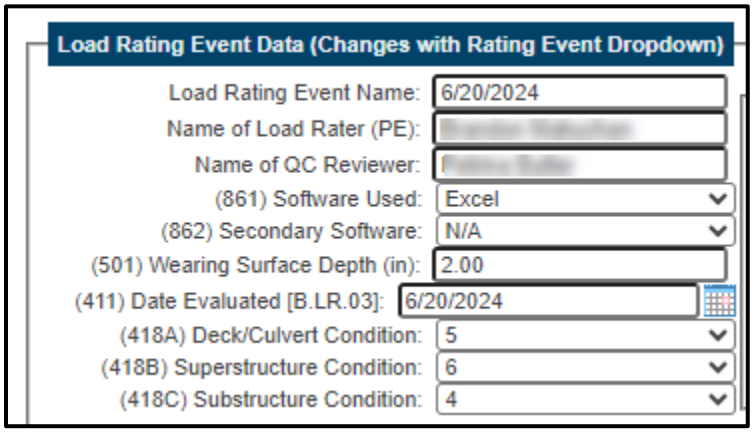
The following document is a guide to assist load raters with data input on the AASHTOWare BrM Load Ratings and Posting page.

Load Rating Event



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

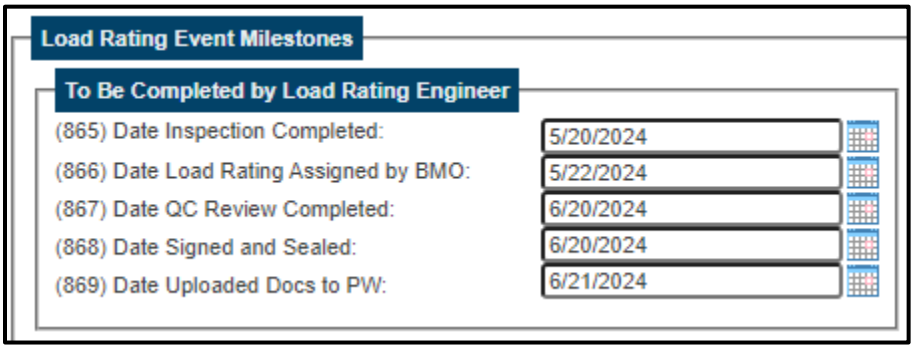
Load Rating Event Data (Changes with Rating Event Dropdown)



- **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.

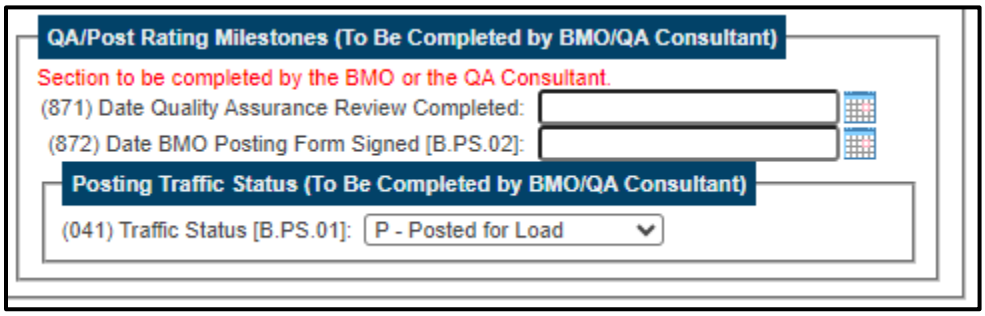
- **(501) Wearing Surface Depth (in)** - Wearing surface depth applied in the load rating event. In general, the depth should match the most recent inspection or site assessment (if one was performed as part of the load rating). As-let load ratings and Item 501 should include the wearing surface depth 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



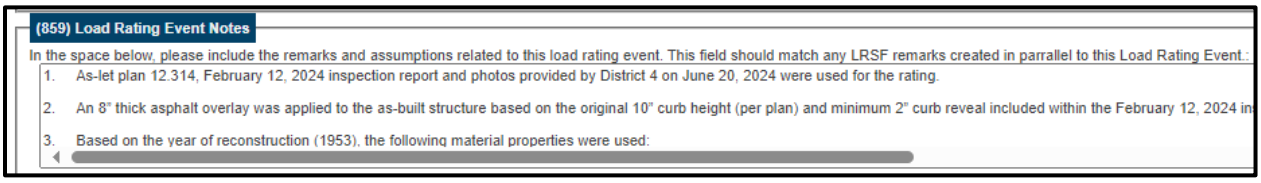
- The following dates are to be entered so the workflow can be tracked. Refer to LRGD Technical Note 15 for additional details on necessary milestone completion dates.
- **(865) Date Inspection Completed** - Inspection date the load rating is referenced to, which represents the rated condition of the 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)



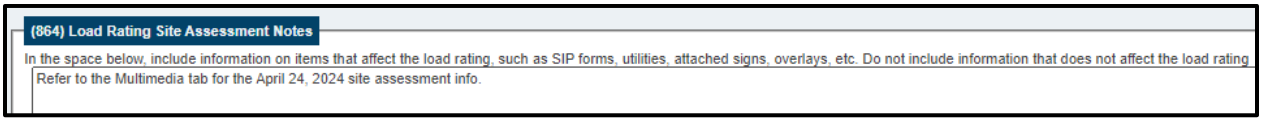
- **Items 871, 872, and 41 should not be modified by load raters. These data fields will be entered by BMO or the QA Consultant.**
- **(871) Date QA Review Completed** - Date the QA comments have been addressed. If bridge has not been selected for QA review, leave blank.
- **(872) Date BMO Posting Form 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



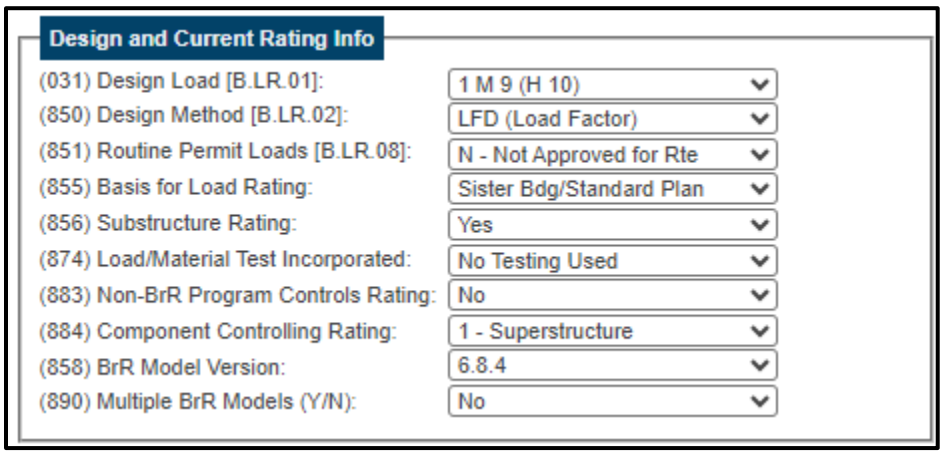
- Enter any remarks and assumptions used in the load rating (typically shown in the LRSF).

(864) Load Rating Site Assessment Notes



- 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



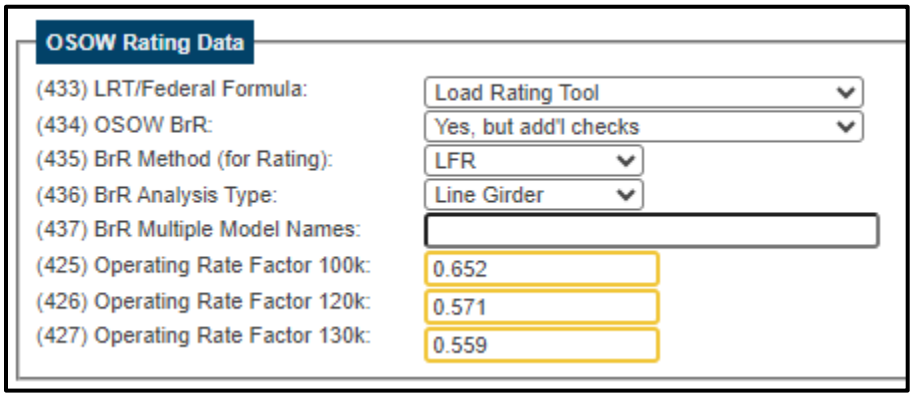
- **(031) Design Load [B.LR.01]** - The live load for which the bridge was designed (H-10, H-15, etc.). Confirm against design plans (if available).
- **(850) Design Method [B.LR.02]** - The method by which the bridge was designed (ASD, LFD, LRFD). Guidance below notes the design method likely used based 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



- **(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

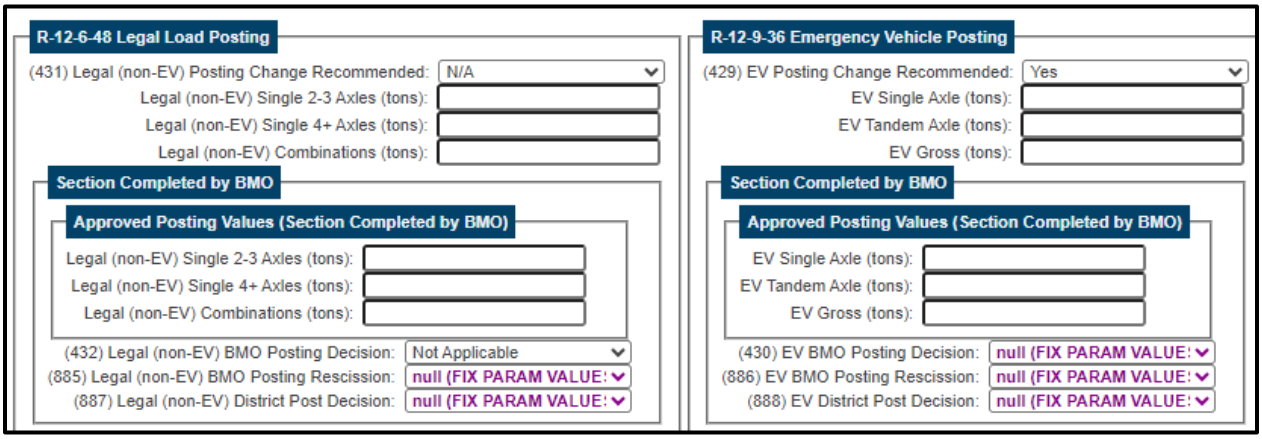
X – Supported by the Load Rating Tool

  - 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.

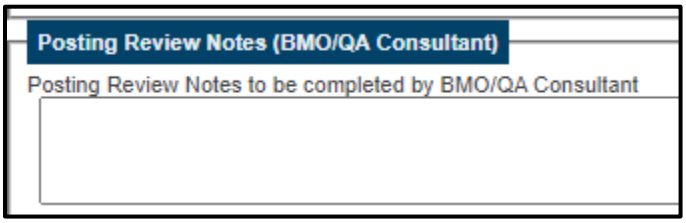
Permit Truck	LRFR (Super)	LFR (Super)	ASR (Sub)
(425) SC-100k	0.636	0.652	1.176
(426) SC-120k	0.571	0.559	1.061
(427) SC-130k	0.579	0.559	1.061



- **(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.**

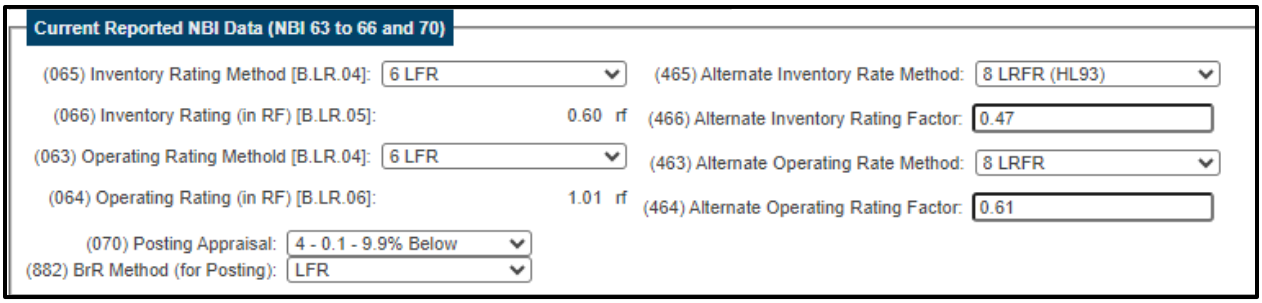
- **(884) Posting Change Recommended for 40T Combo** - 40-ton combination signs are being phased out and not typically recommended to be installed. Enter "No" for typical circumstances. Enter "Yes" for recommended removal of the sign.
- **(889) 40T Combination Sign Posted -** To be updated by BMO or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

Posting Review Notes



- Posting review notes 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.

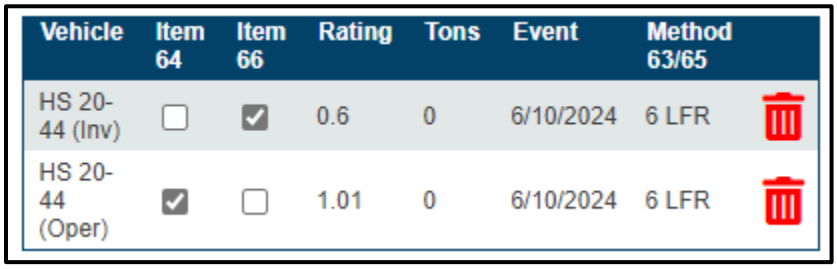
Current Reported NBI Data (NBI 63 to 66 and 70)



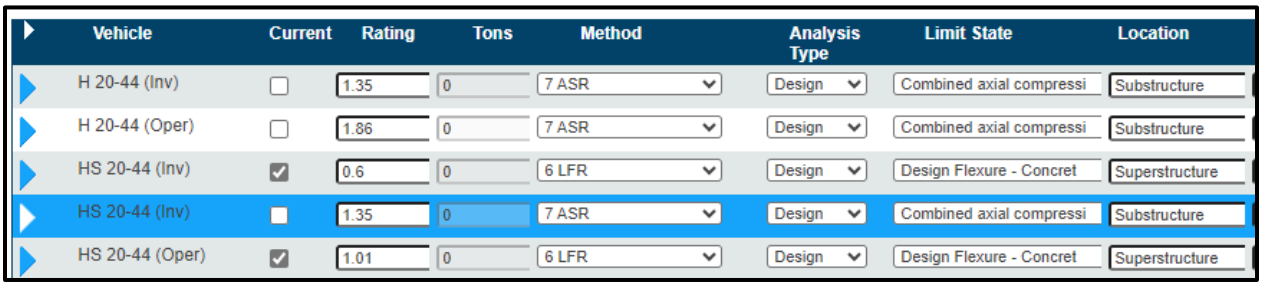
- **(065) Inventory Rating Method [B.LR.04]** - The inventory method by which the bridge was load rated (LRFR, LFR, ASR). Note, this should be the method by which posting is determined and the method which provides the most favorable results. (LFR may be used on bridges designed prior to October 1, 2010)
- **(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

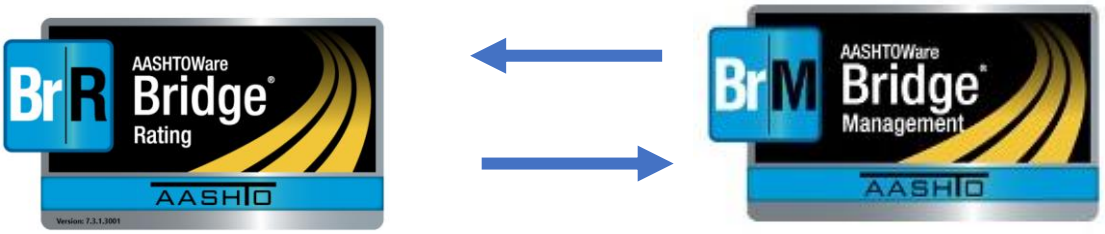


Vehicle	Item 64	Item 66	Rating	Tons	Event	Method 63/65	
HS 20-44 (Inv)	☐	☑	0.6	0	6/10/2024	6 LFR	🗑
HS 20-44 (Oper)	☑	☐	1.01	0	6/10/2024	6 LFR	🗑



Vehicle	Current	Rating	Tons	Method	Analysis Type	Limit State	Location
H 20-44 (Inv)	☐	1.35	0	7 ASR	Design	Combined axial compressi	Substructure
H 20-44 (Oper)	☐	1.86	0	7 ASR	Design	Combined axial compressi	Substructure
HS 20-44 (Inv)	☑	0.6	0	6 LFR	Design	Design Flexure - Concret	Superstructure
HS 20-44 (Inv)	☐	1.35	0	7 ASR	Design	Combined axial compressi	Substructure
HS 20-44 (Oper)	☑	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").

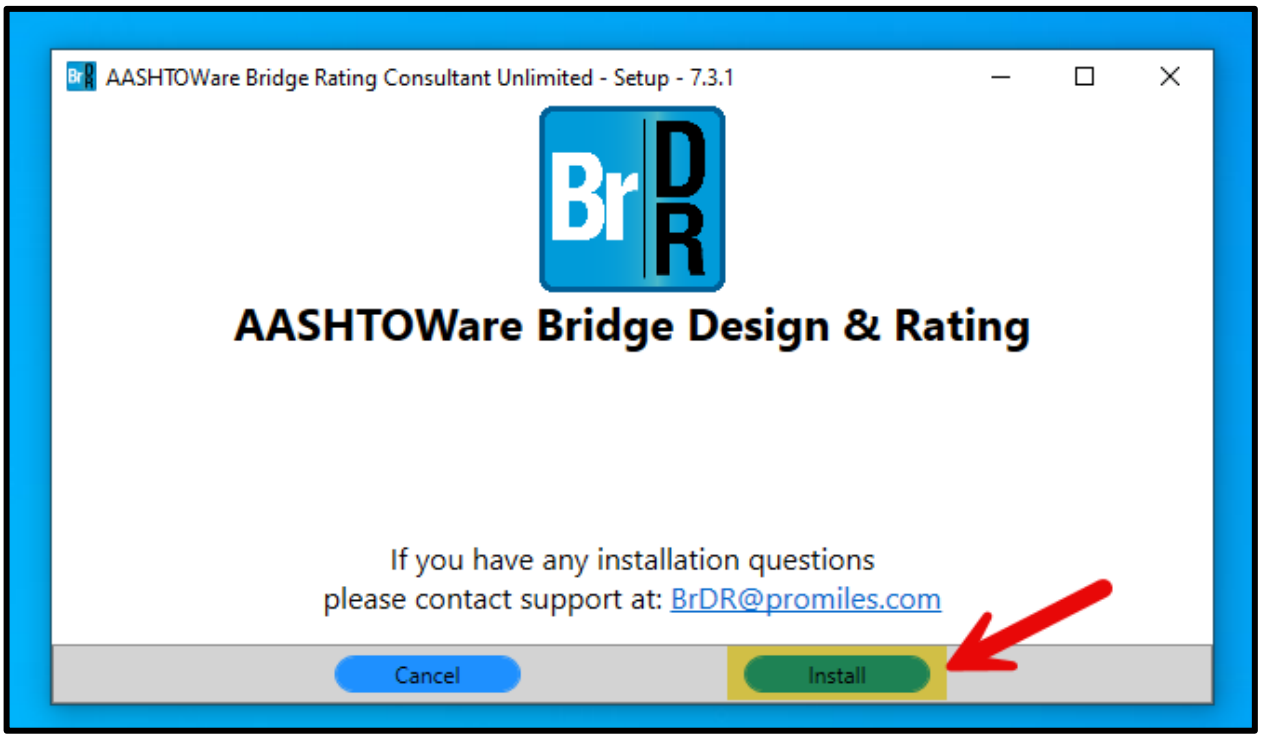


SCDOT BrR to BrM Data Exchange Setup

BrR Installation

To complete the exchange setup, users will need:

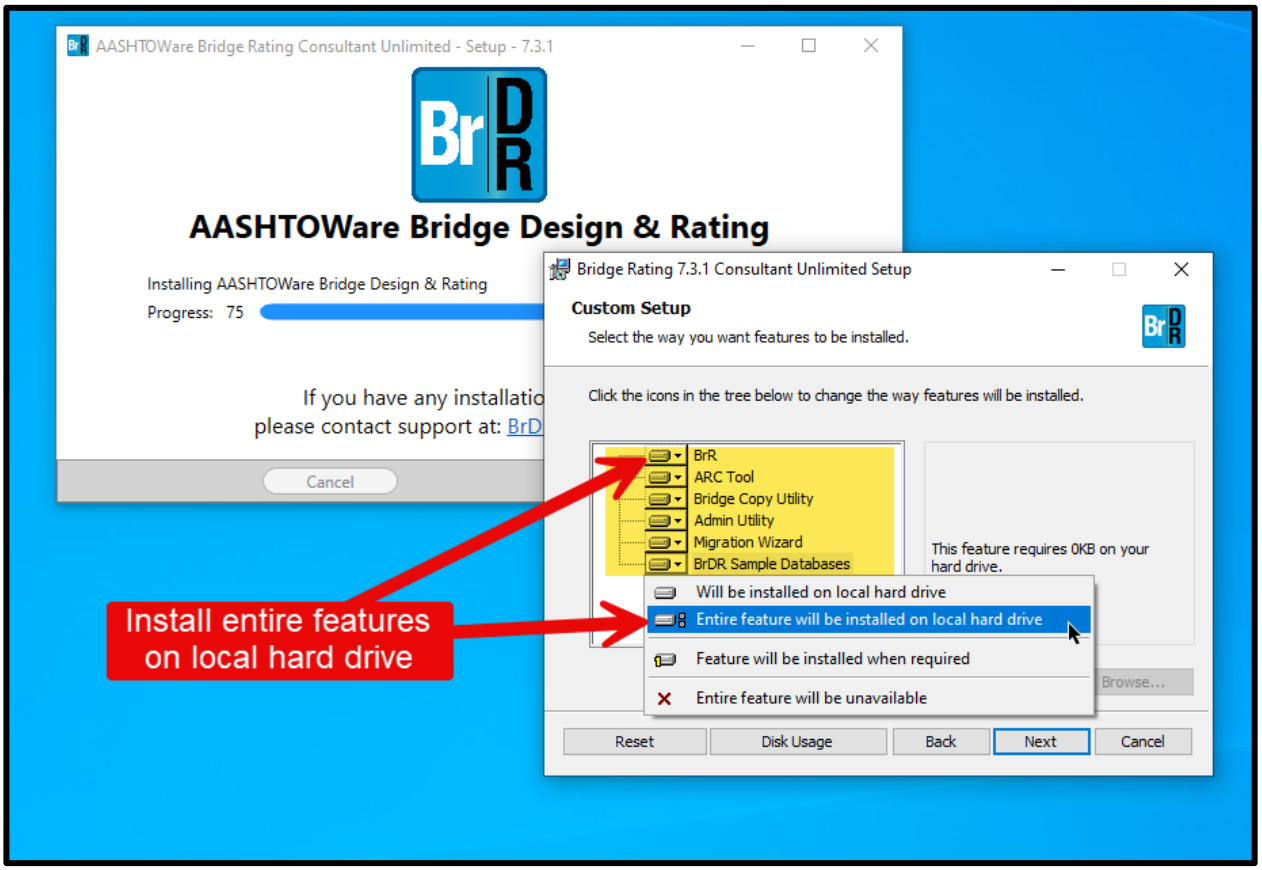
- An internet connection
- A BrM login
- BrR installed (including Admin Utility). Version 7.3 or later.



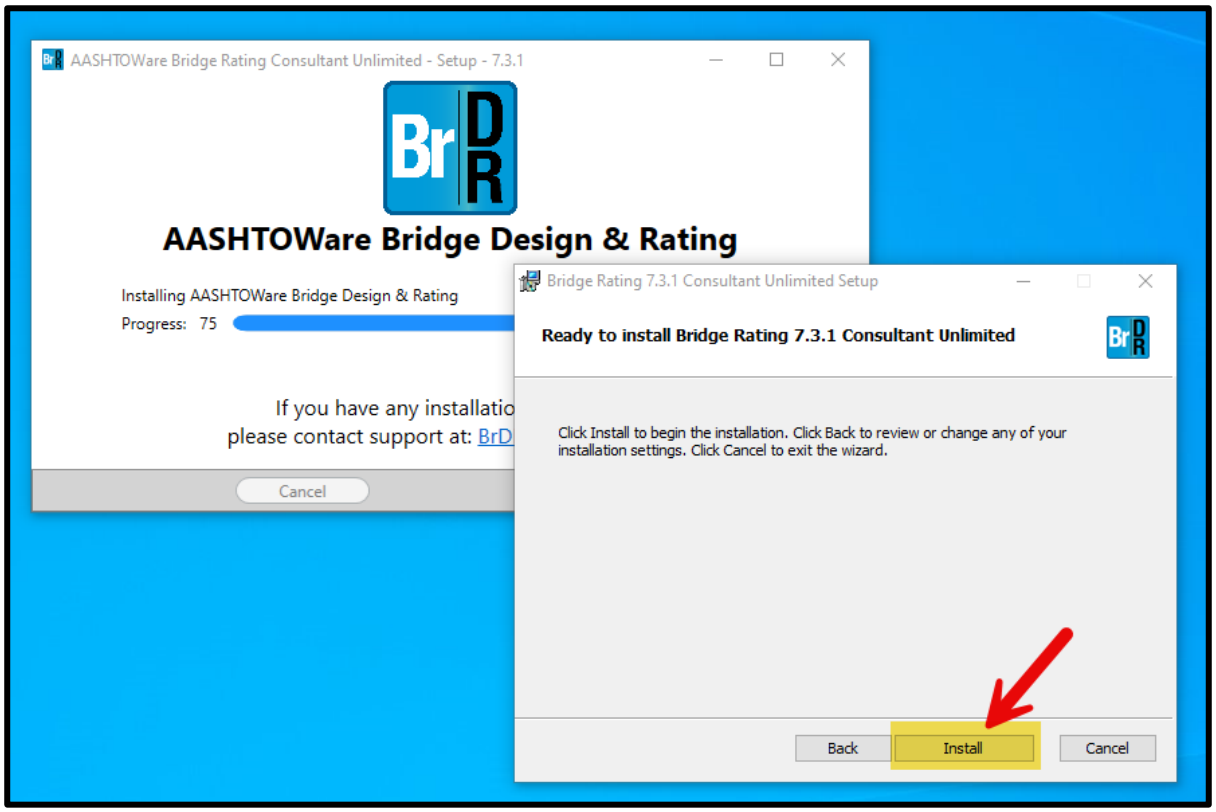
Install AASHTOWare BrR

BrR Installation

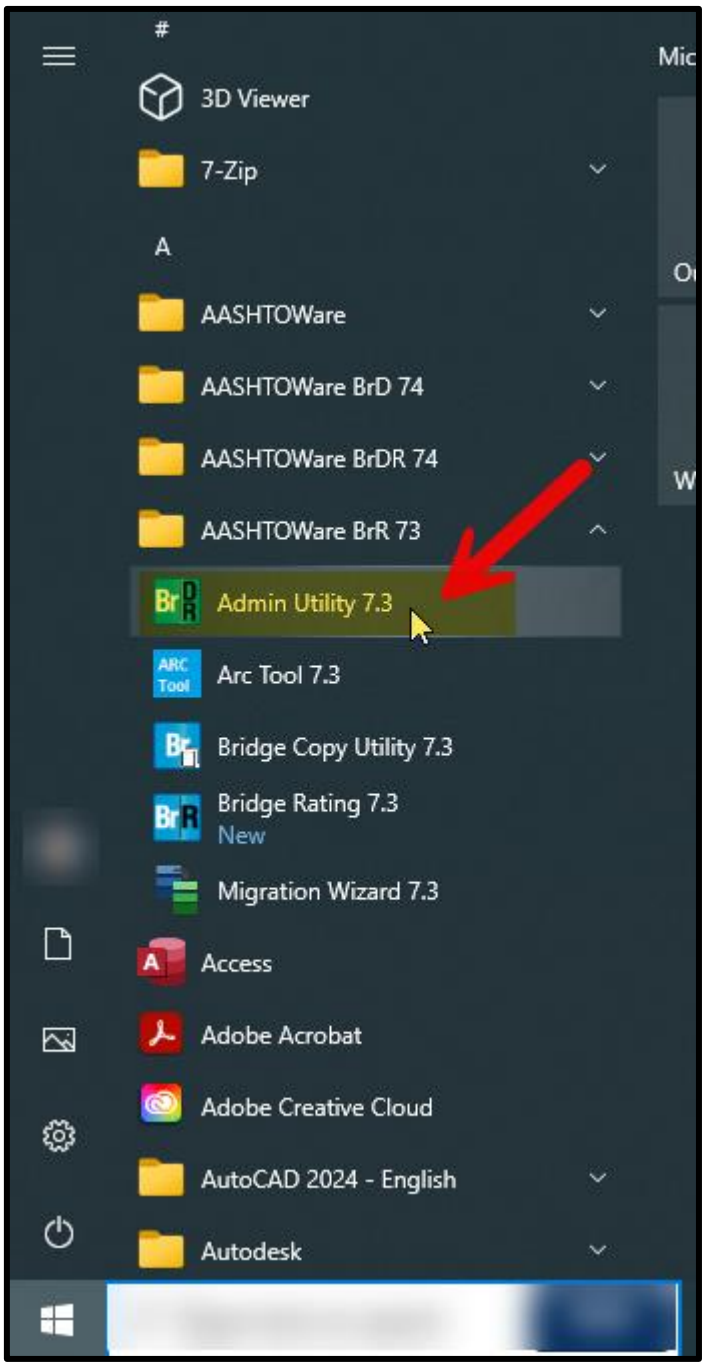
Install features on local hard drive.



BrR Installation

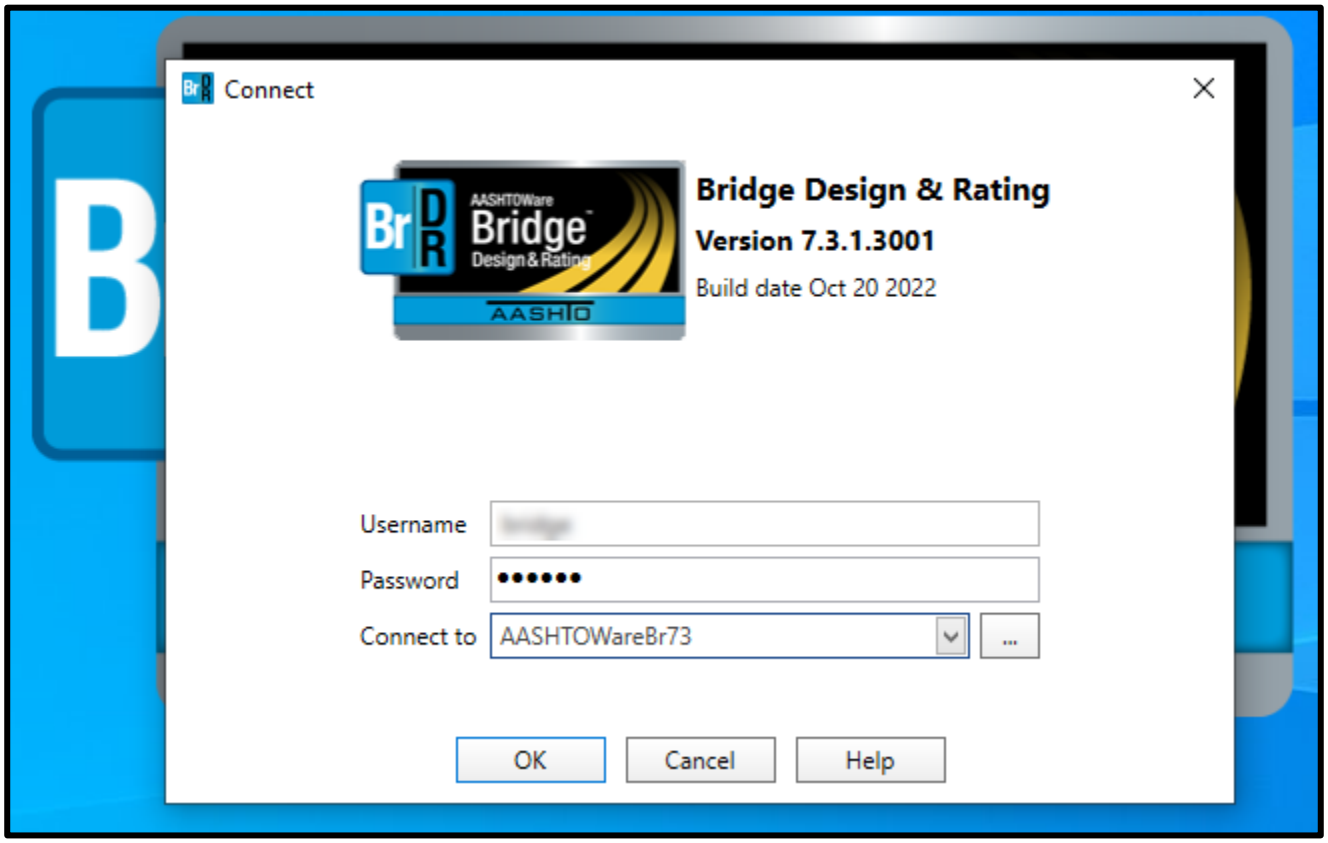


Admin Utility

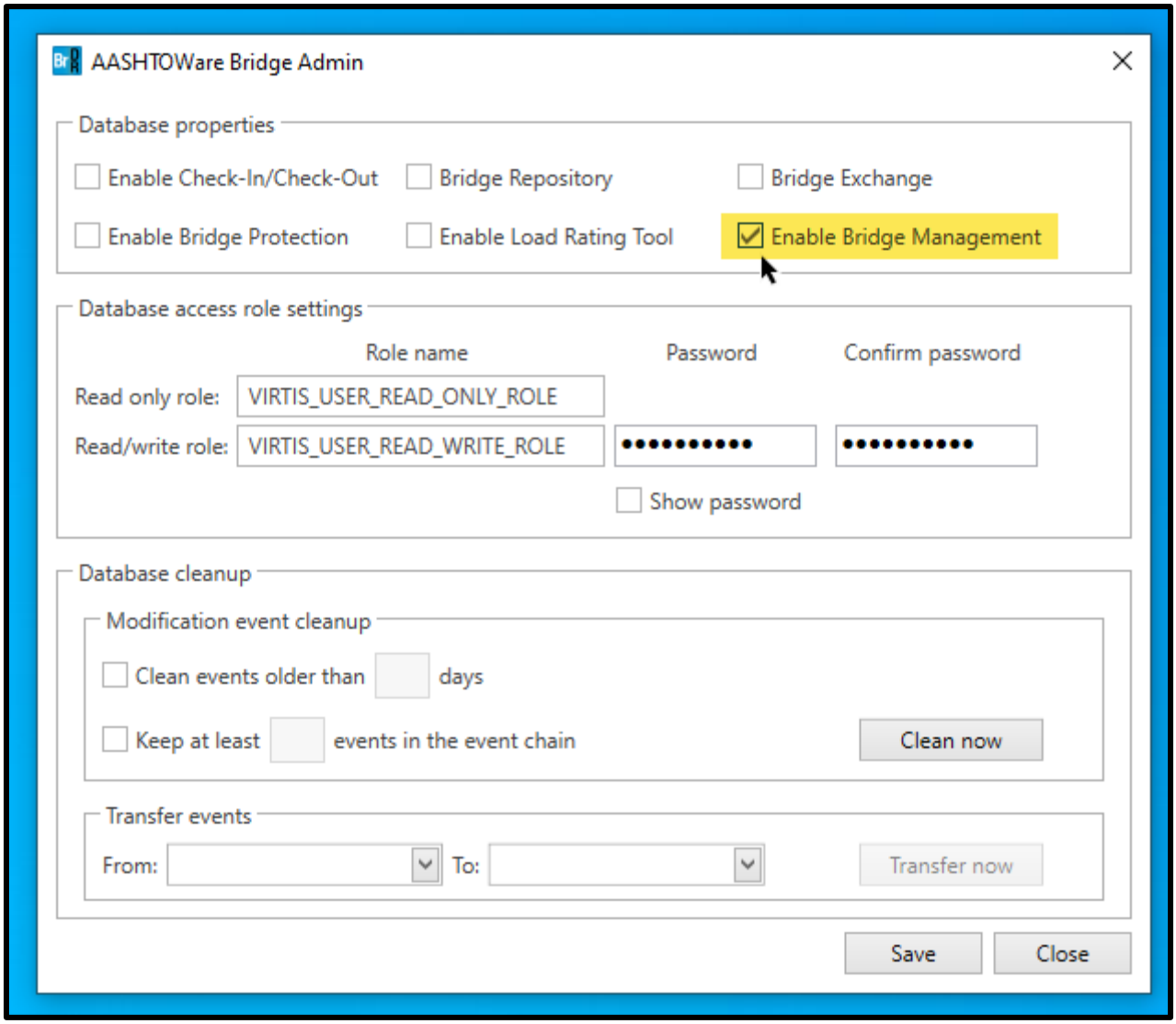


Open the Admin Utility App from the Start Menu

Admin Utility



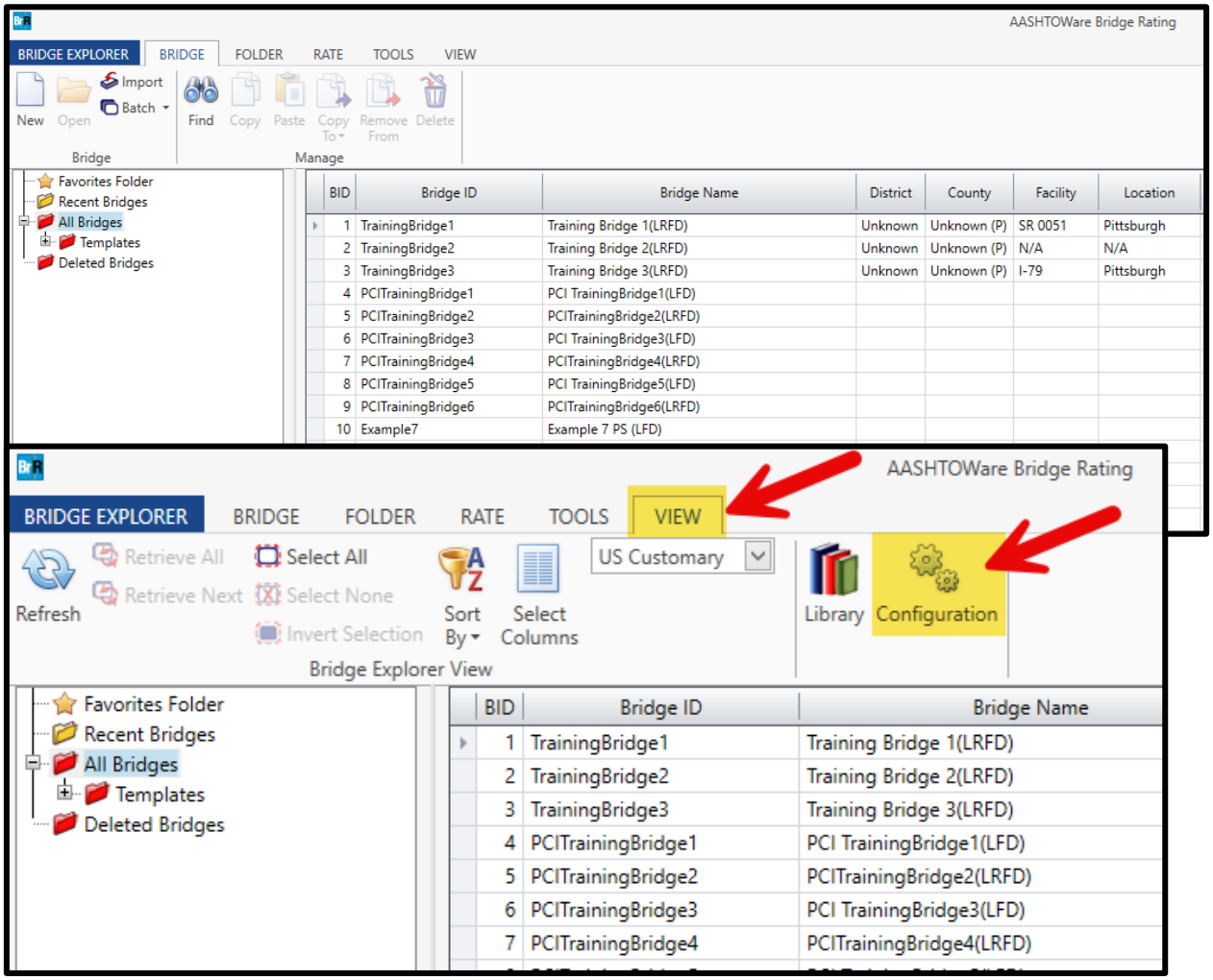
Admin Utility



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

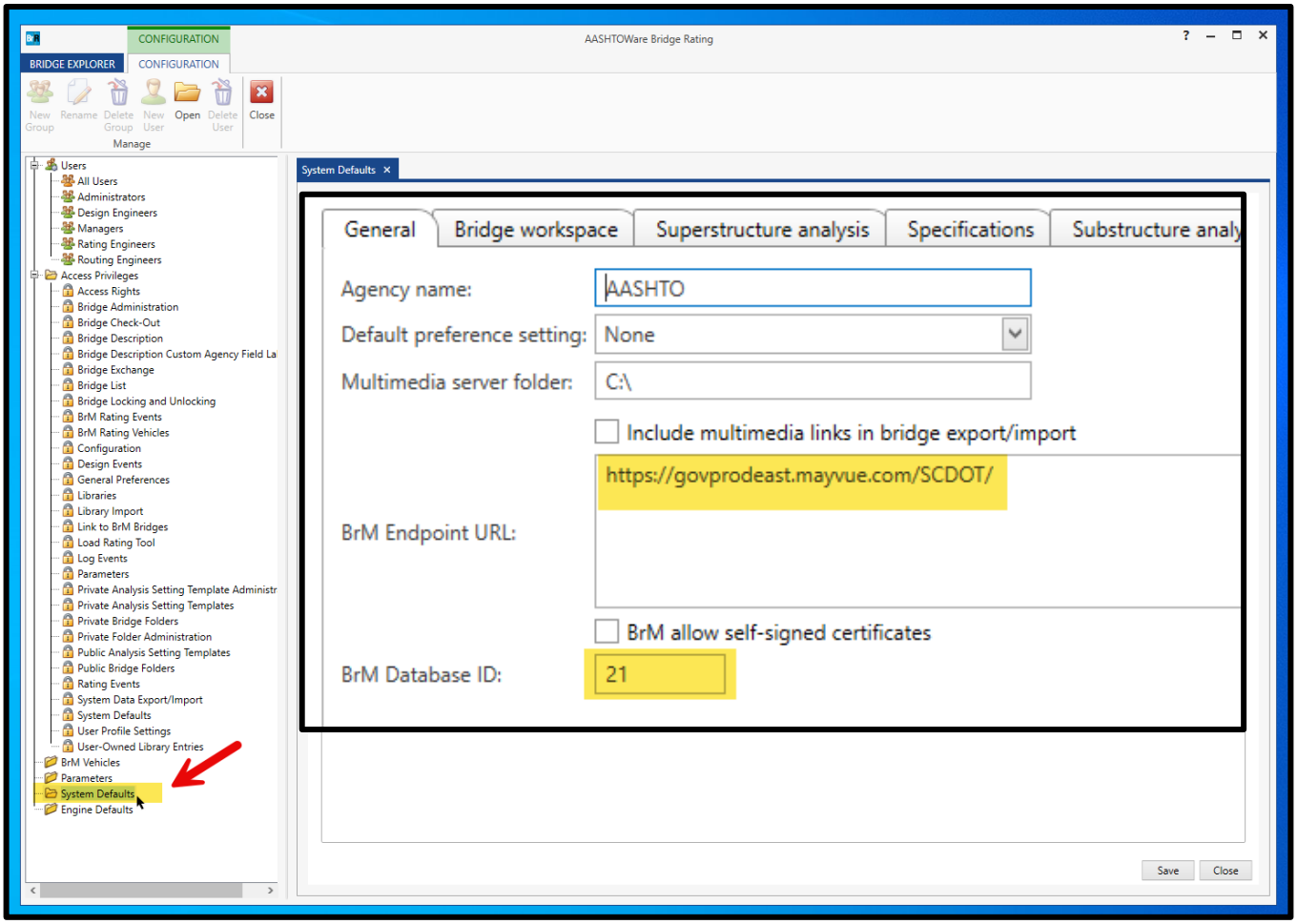
BrR Configuration

Open BrR Bridge Workspace -> View -> Configuration



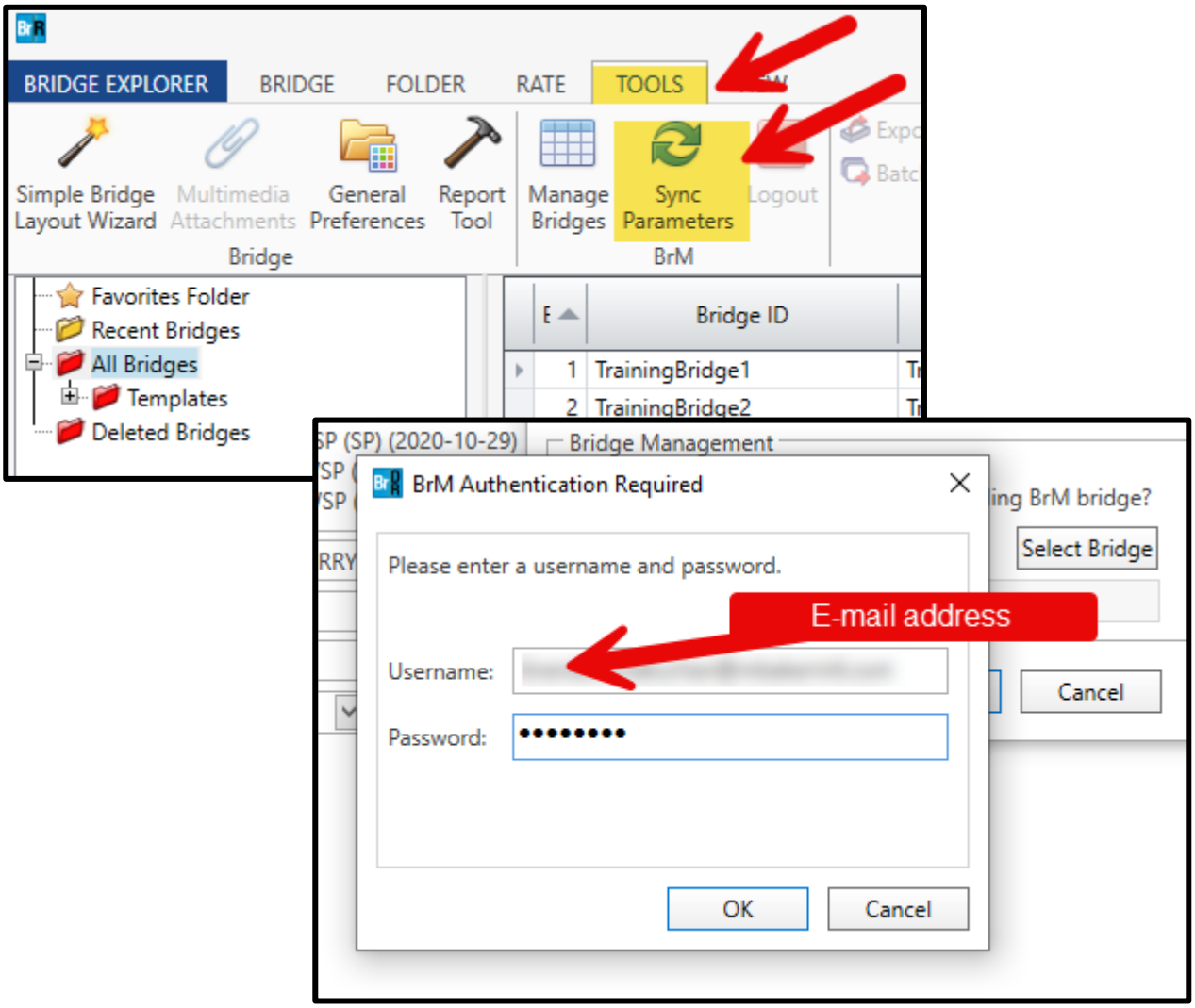
BrR Configuration

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



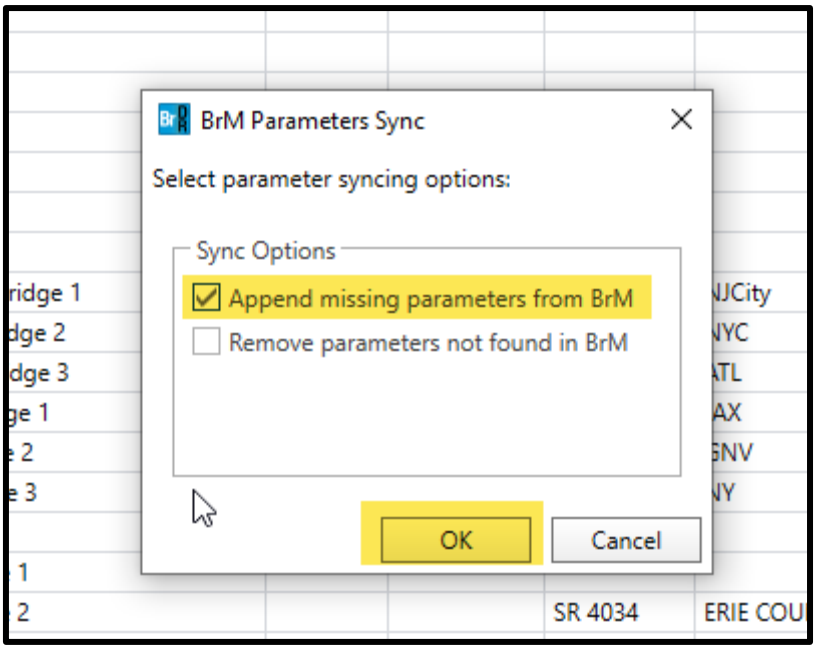
Sync BrM Data into BrR

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



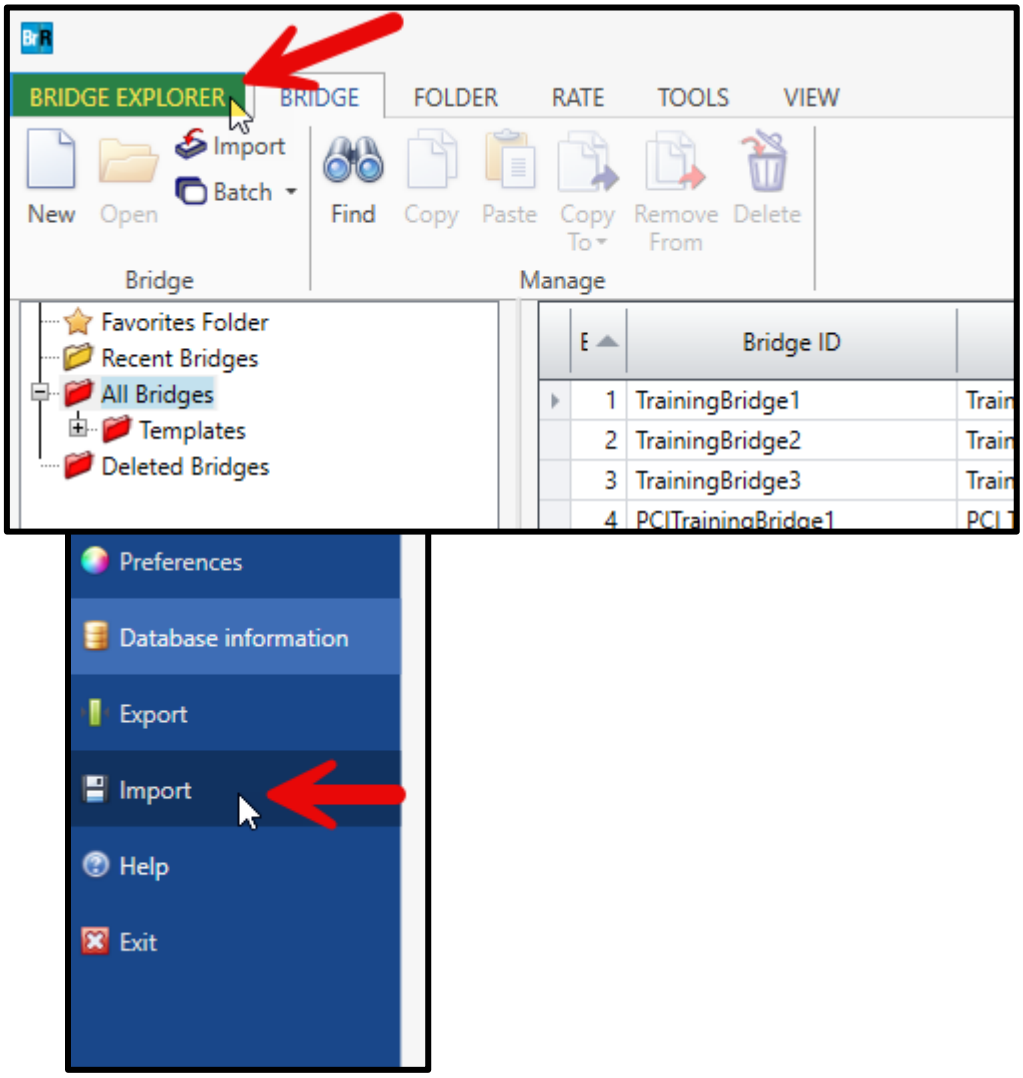
Sync BrM Data into BrR

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



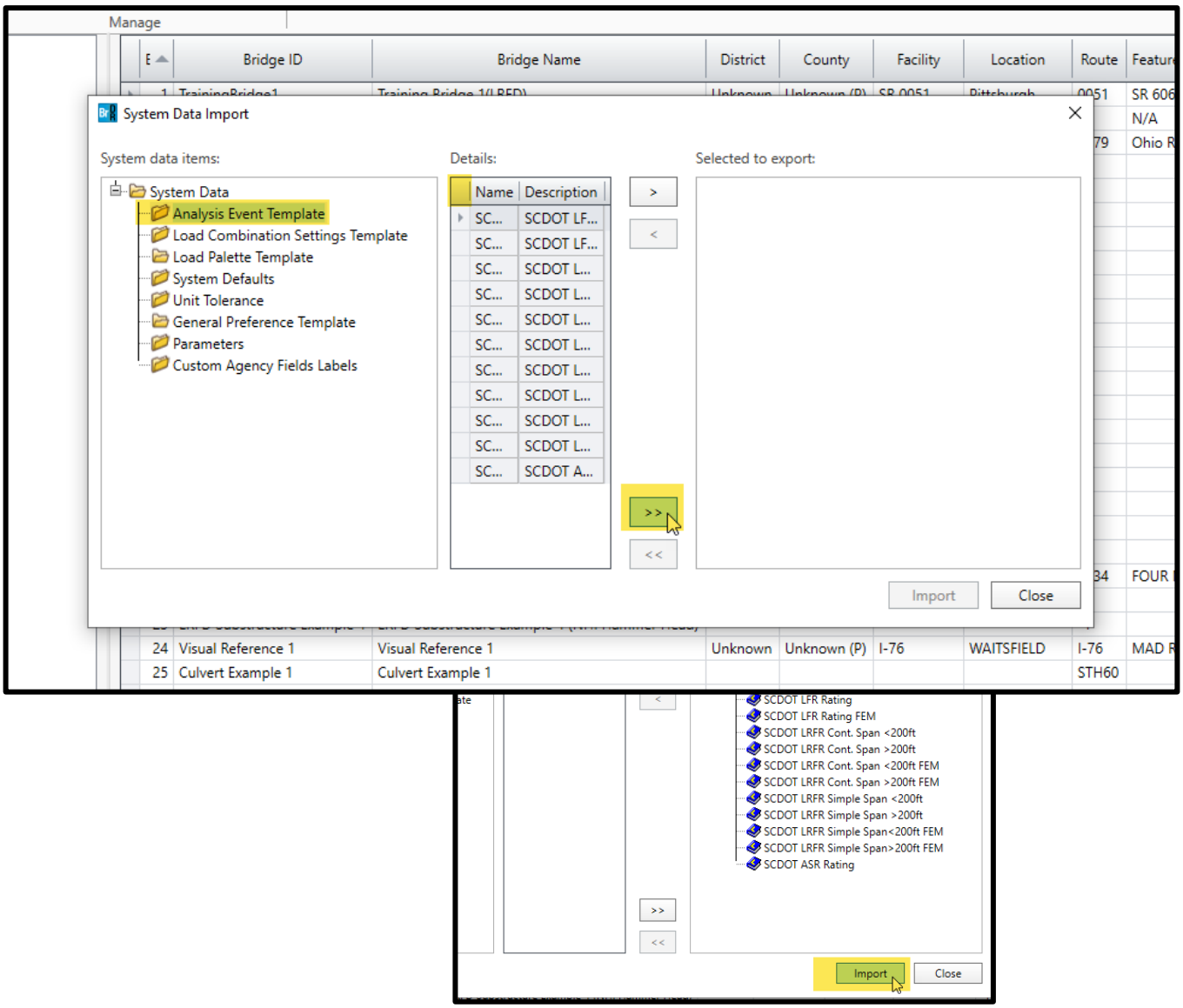
Import Analysis Template File

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.



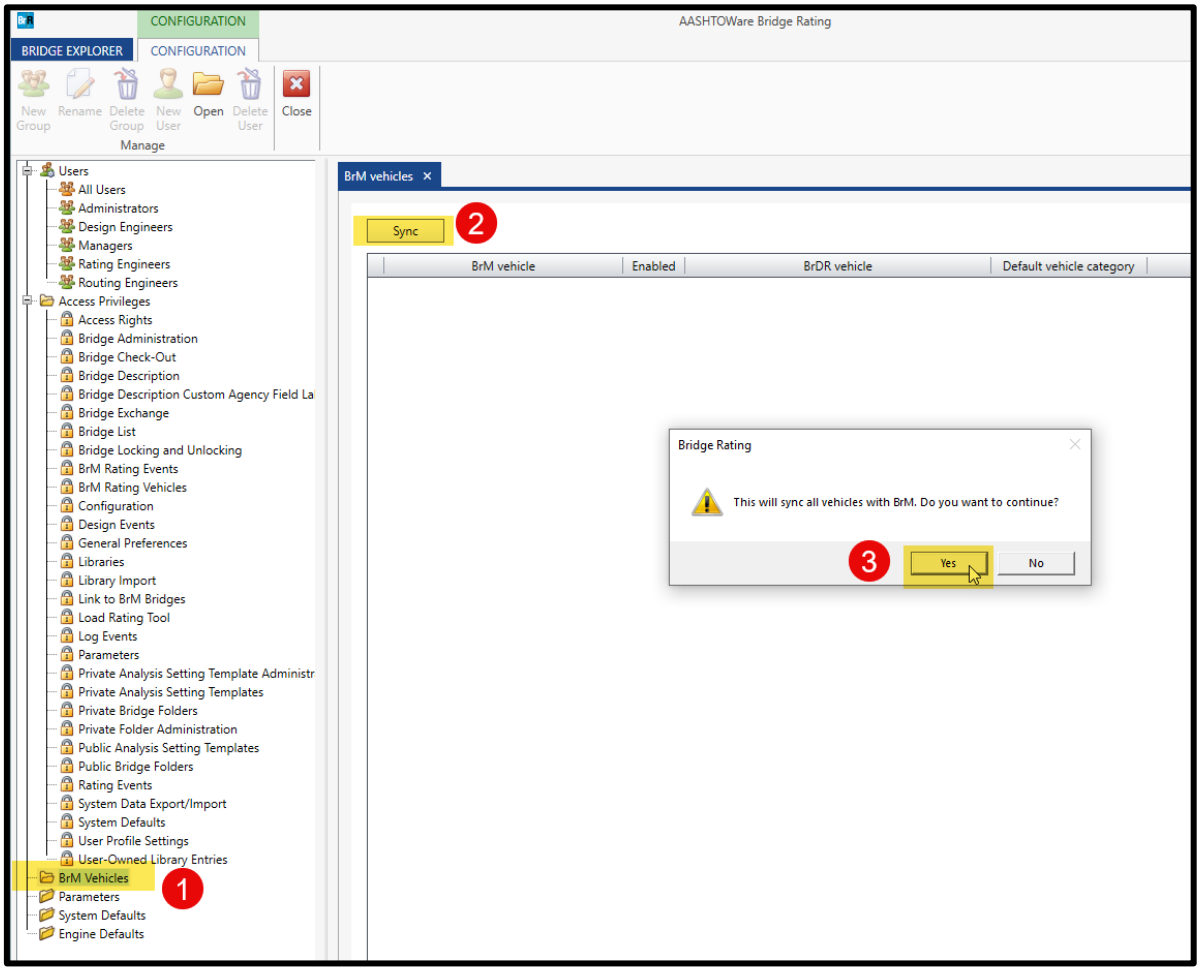
Import Analysis Template File

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



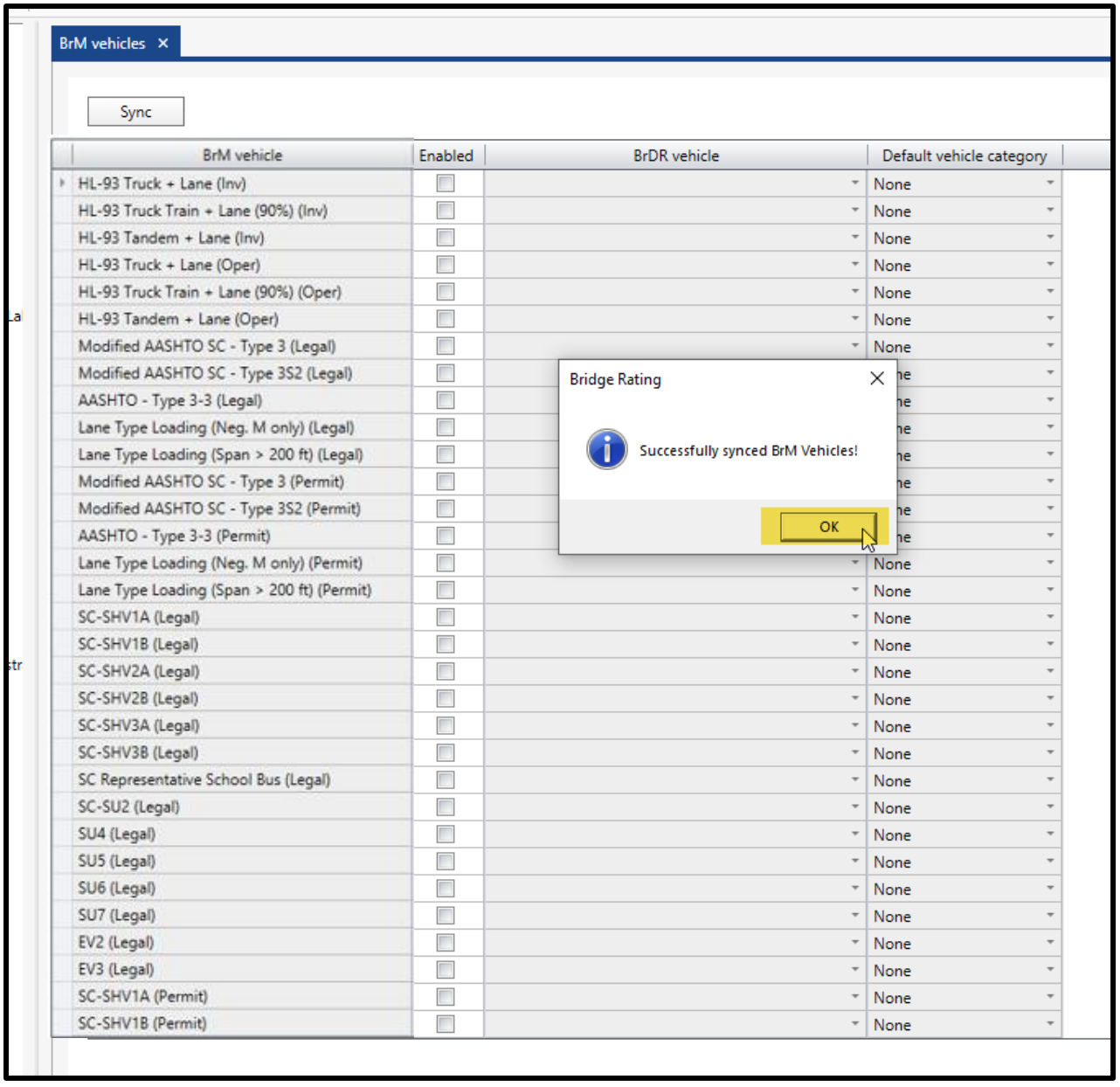
Sync BrM Vehicles into BrR

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.



Sync BrM Vehicles into BrR

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

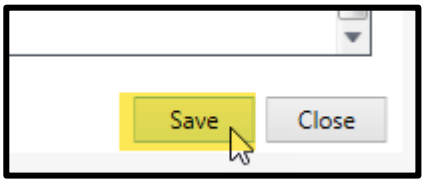
BrM vehicle	Enabled	BrDR vehicle	Default vehicle category
HL-93 Truck + Lane (Inv)	☐		None
HL-93 Truck Train + Lane (90%) (Inv)	☐		None
HL-93 Tandem + Lane (Inv)	☐		None
HL-93 Truck + Lane (Oper)	☐		None
HL-93 Truck Train + Lane (90%) (Oper)	☐		None
HL-93 Tandem + Lane (Oper)	☐		None
Modified AASHTO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

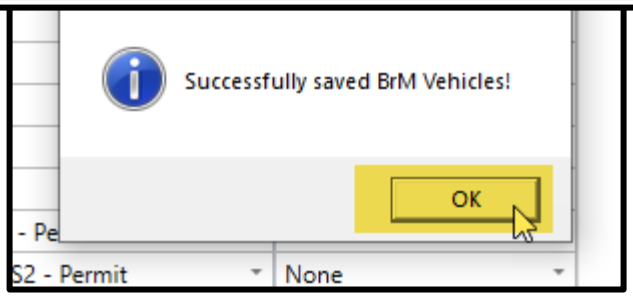
Sync BrM Vehicles into BrR

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

Sync BrM Vehicles into BrR

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

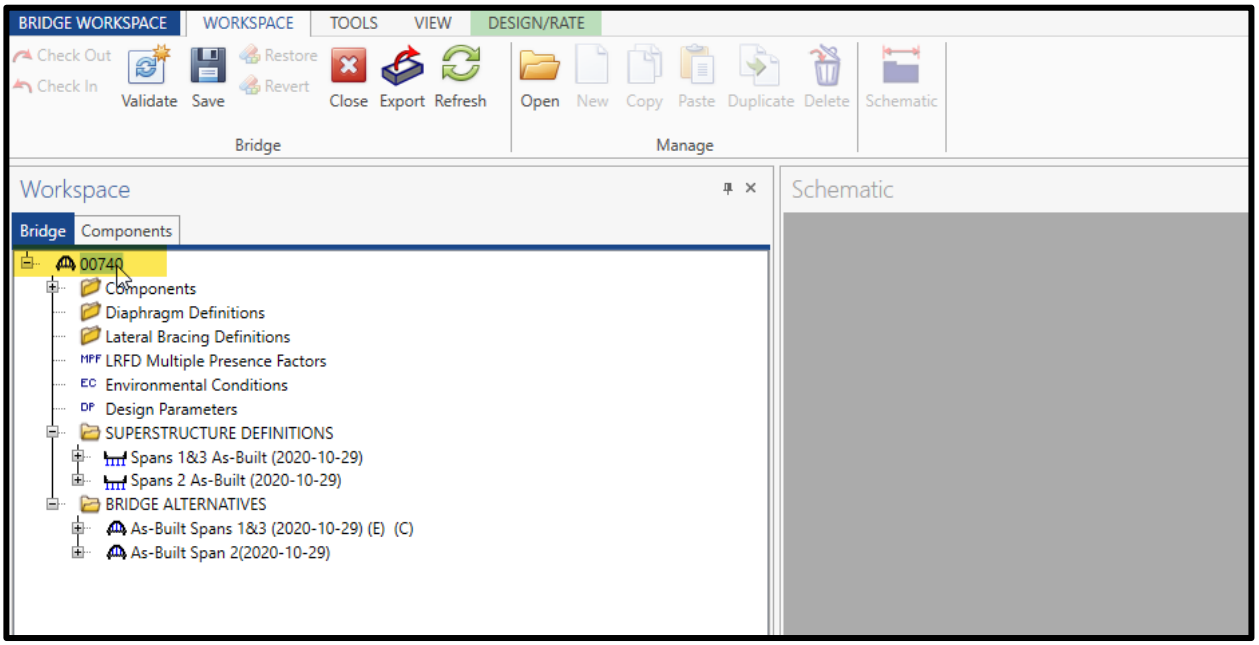




Rating Data Back into BrM

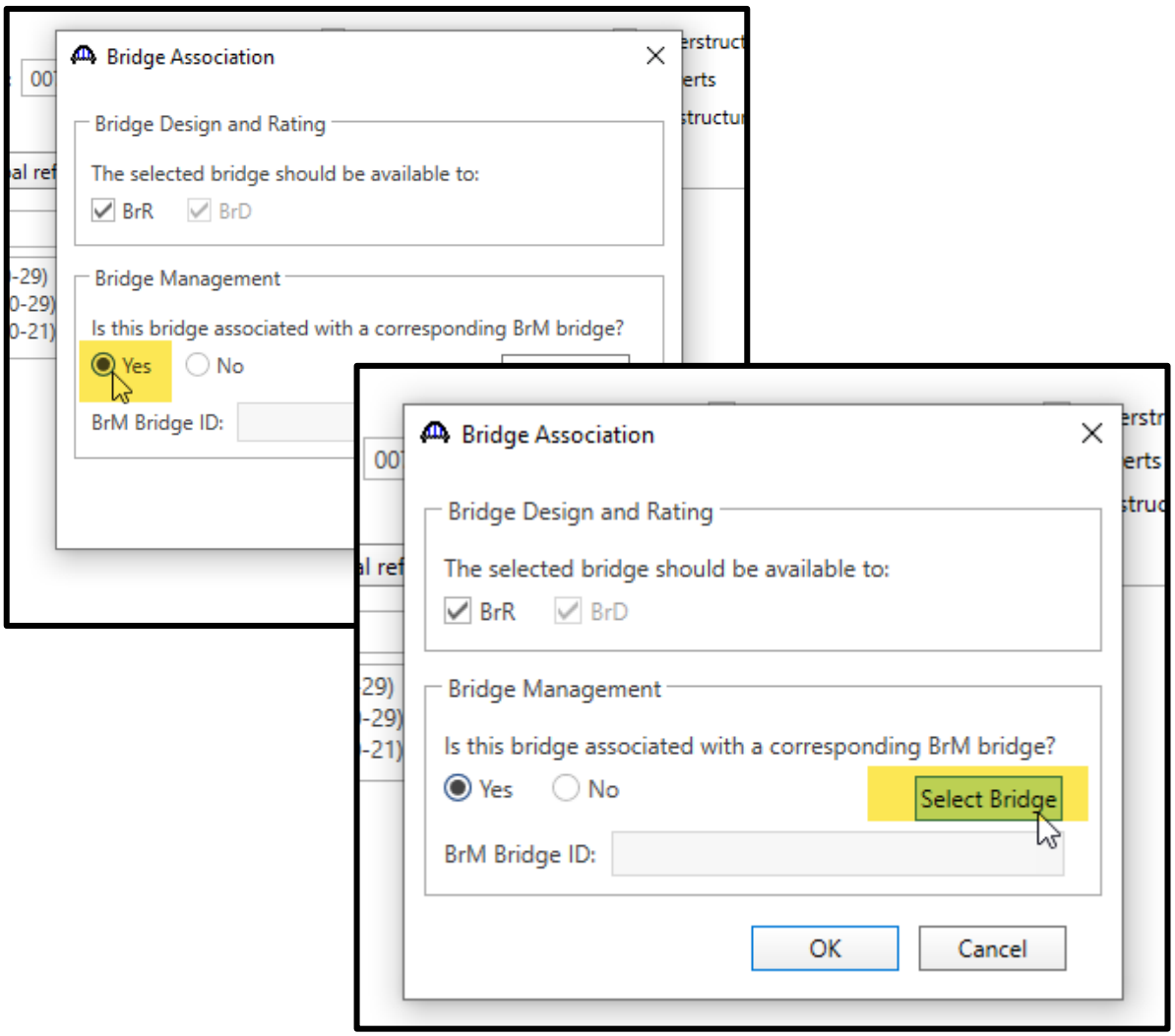
To export ratings from BrR to BrM:

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



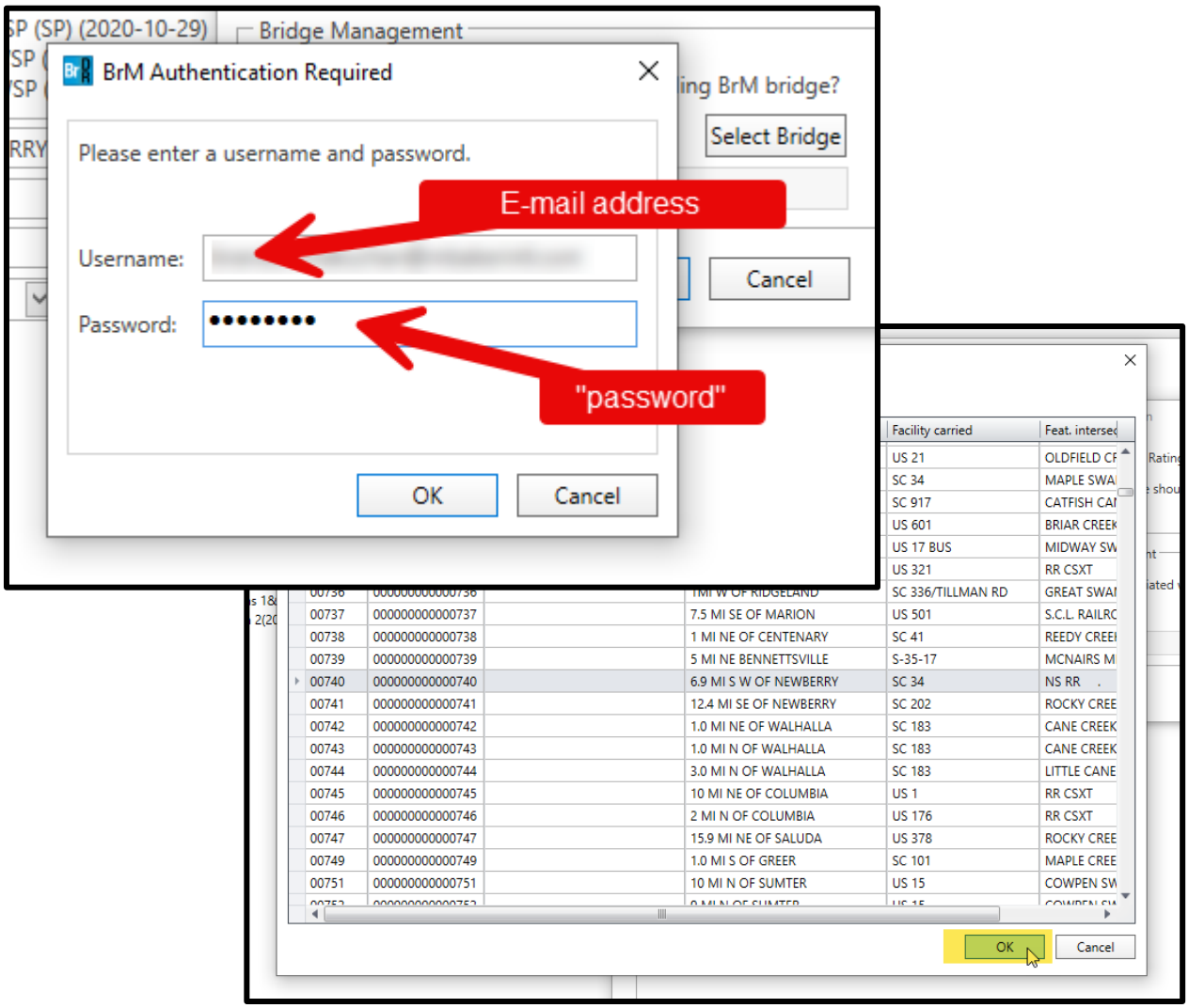
Rating Data Back into BrM

- Select “Yes” and “Select Bridge”



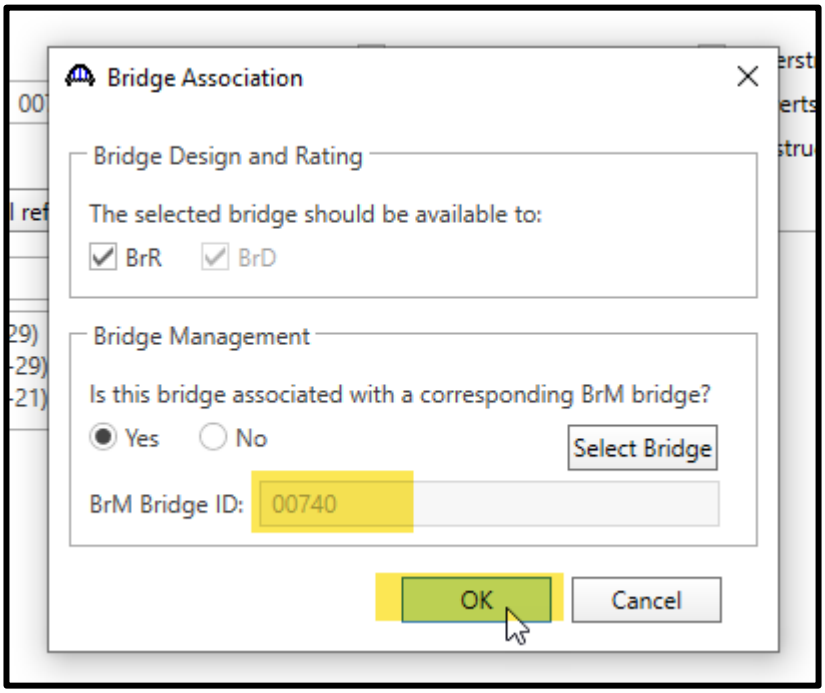
Rating Data Back into BrM

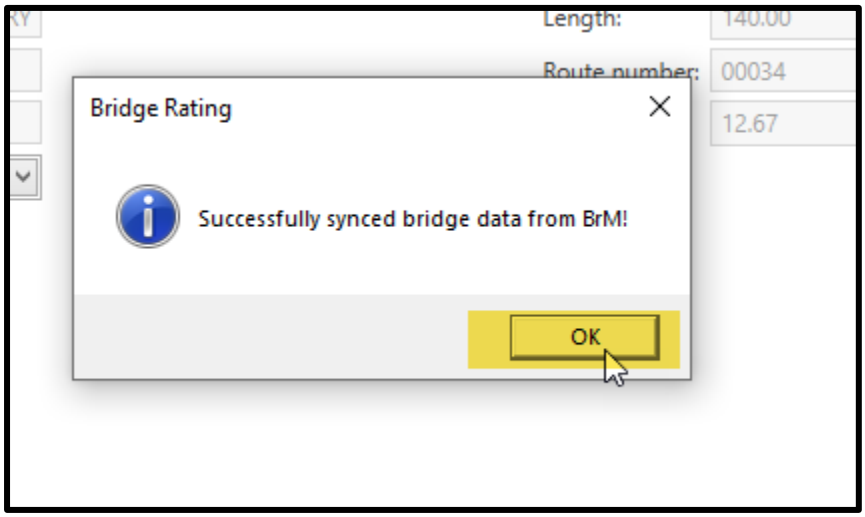
- Enter your e-mail address as the Username and “password” as the Password.
- Select the corresponding Bridge ID (asset ID) and click OK.



Rating Data Back into BrM

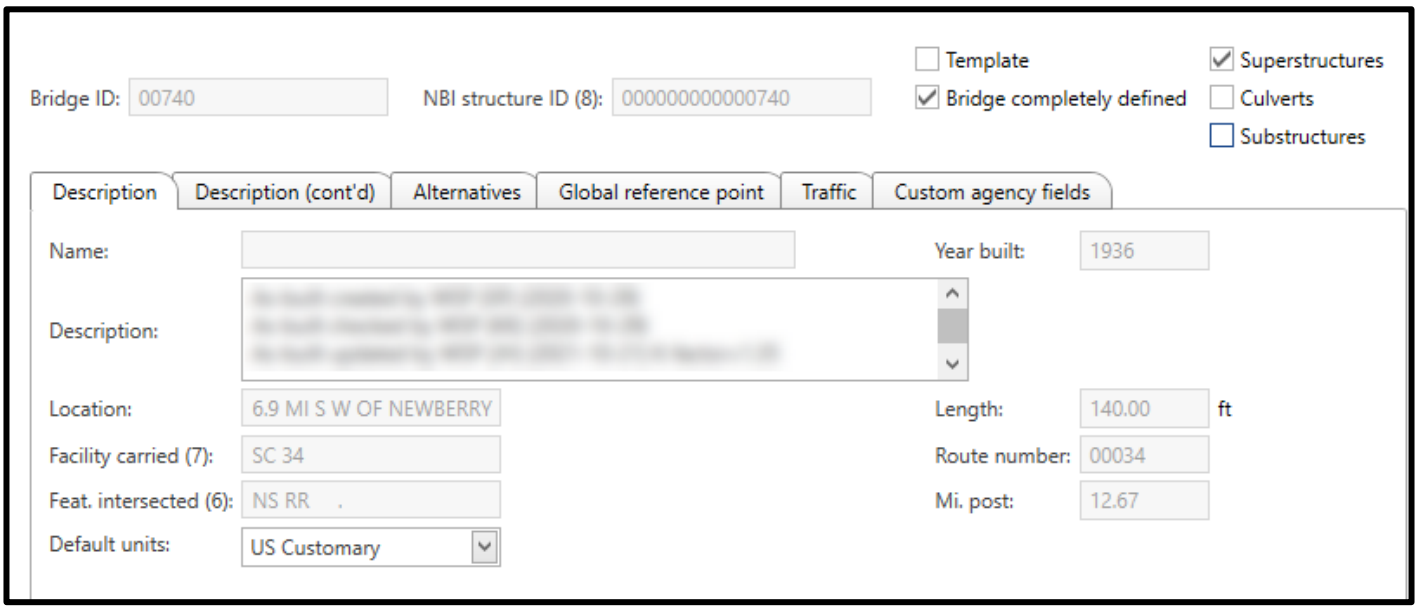
- The bridge's BrM Bridge ID should now be input and is now linked to BrM. Click OK twice to return to the bridge data page.





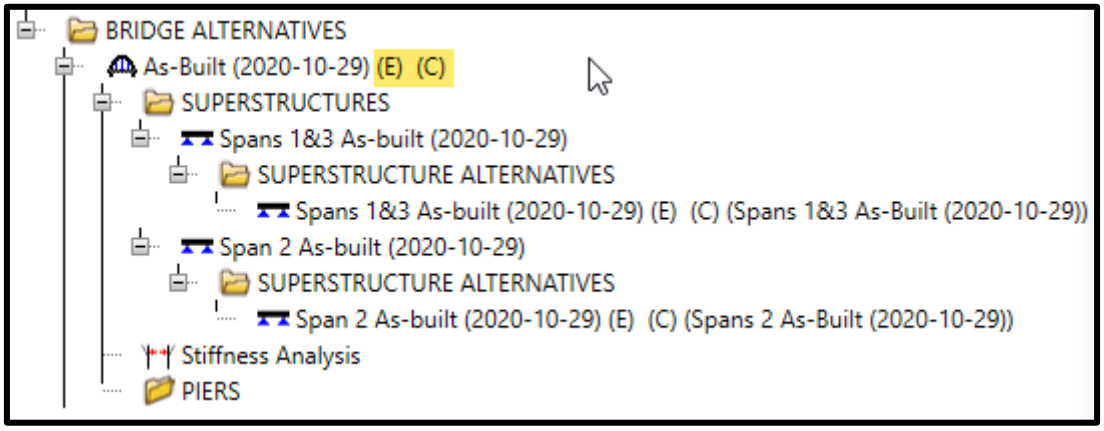
Rating Data Back into BrM

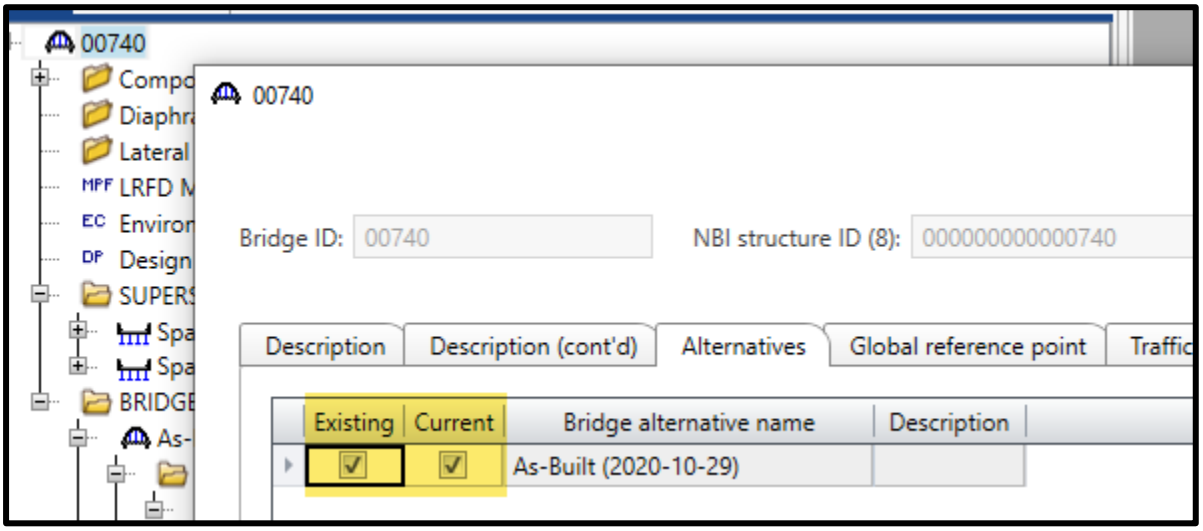
- Note the bridge's SI&A data is now linked to BrM and is now prepopulated.



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.





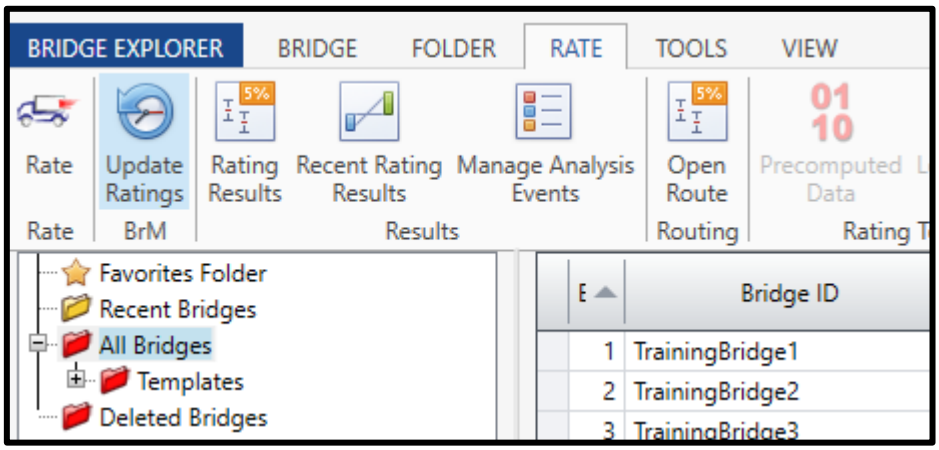
Rating Data Back into BrM

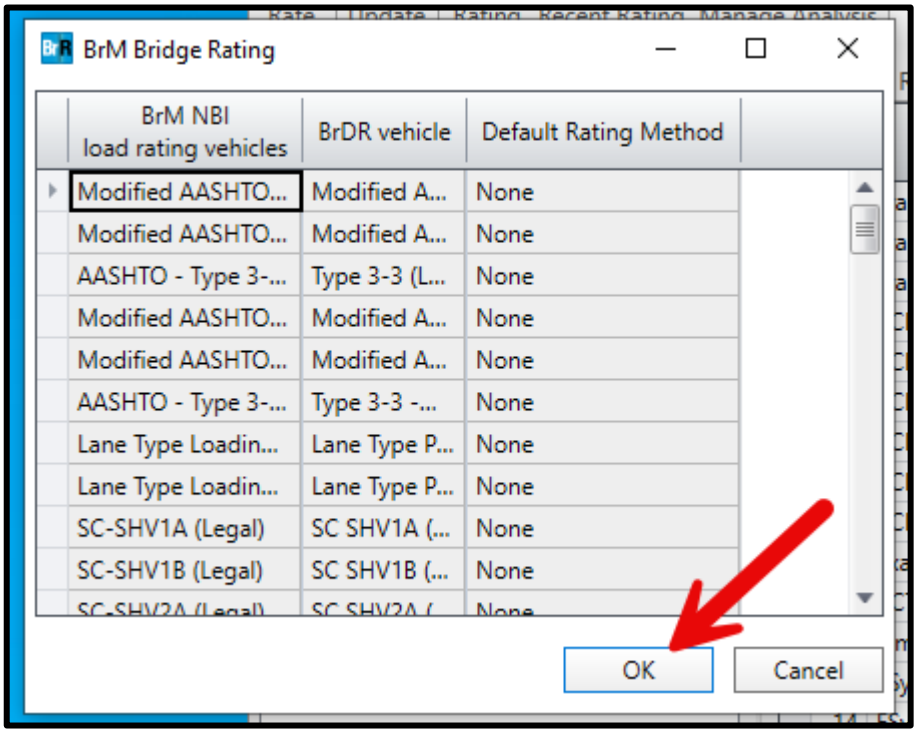
- Save any changes to the bridge and go to the Bridge Explorer window to rate the bridge.
  - Note! The SCDOT BrR templates are listed below. If a combination of LRFR templates is required to rate the bridge, the bridge cannot be ported correctly from BrR to BrM. Rating from the Bridge Explorer window 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

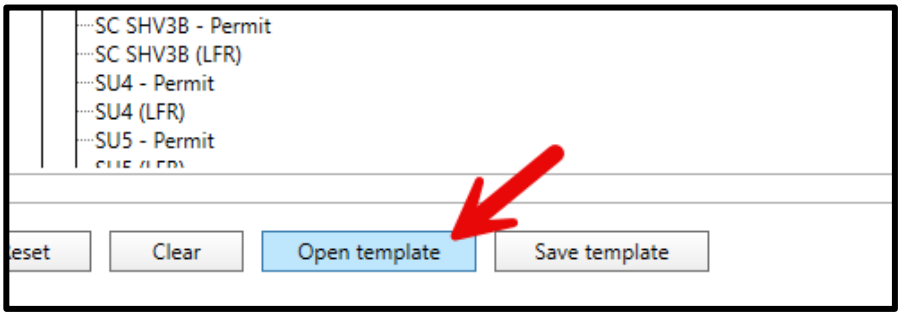
- Click Update Ratings
- Click OK to update the full list of load rating vehicles

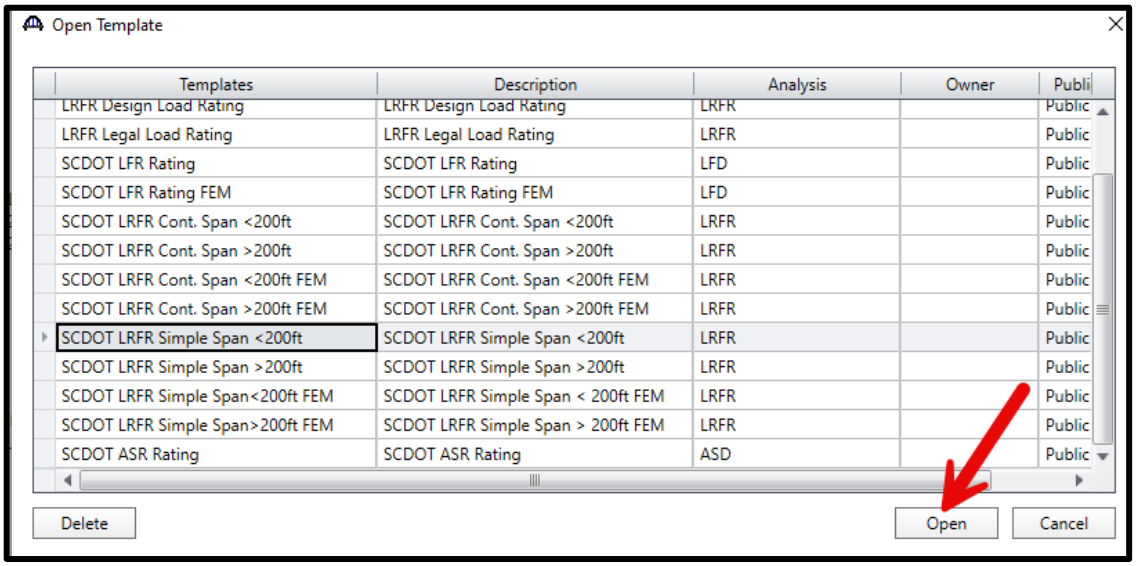


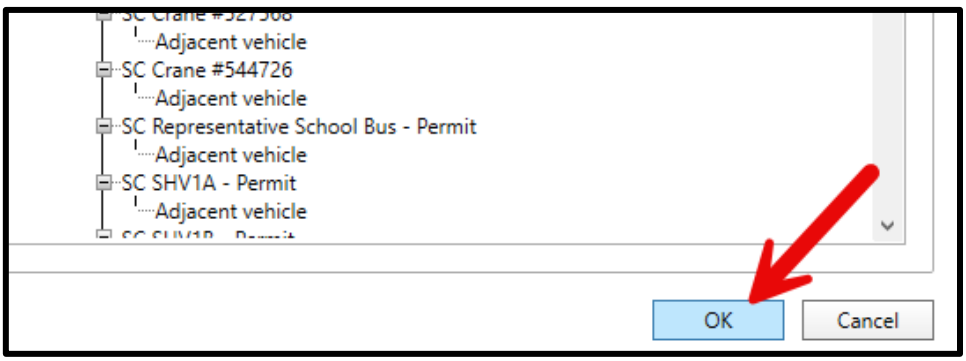


Rating Data Back into BrM

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

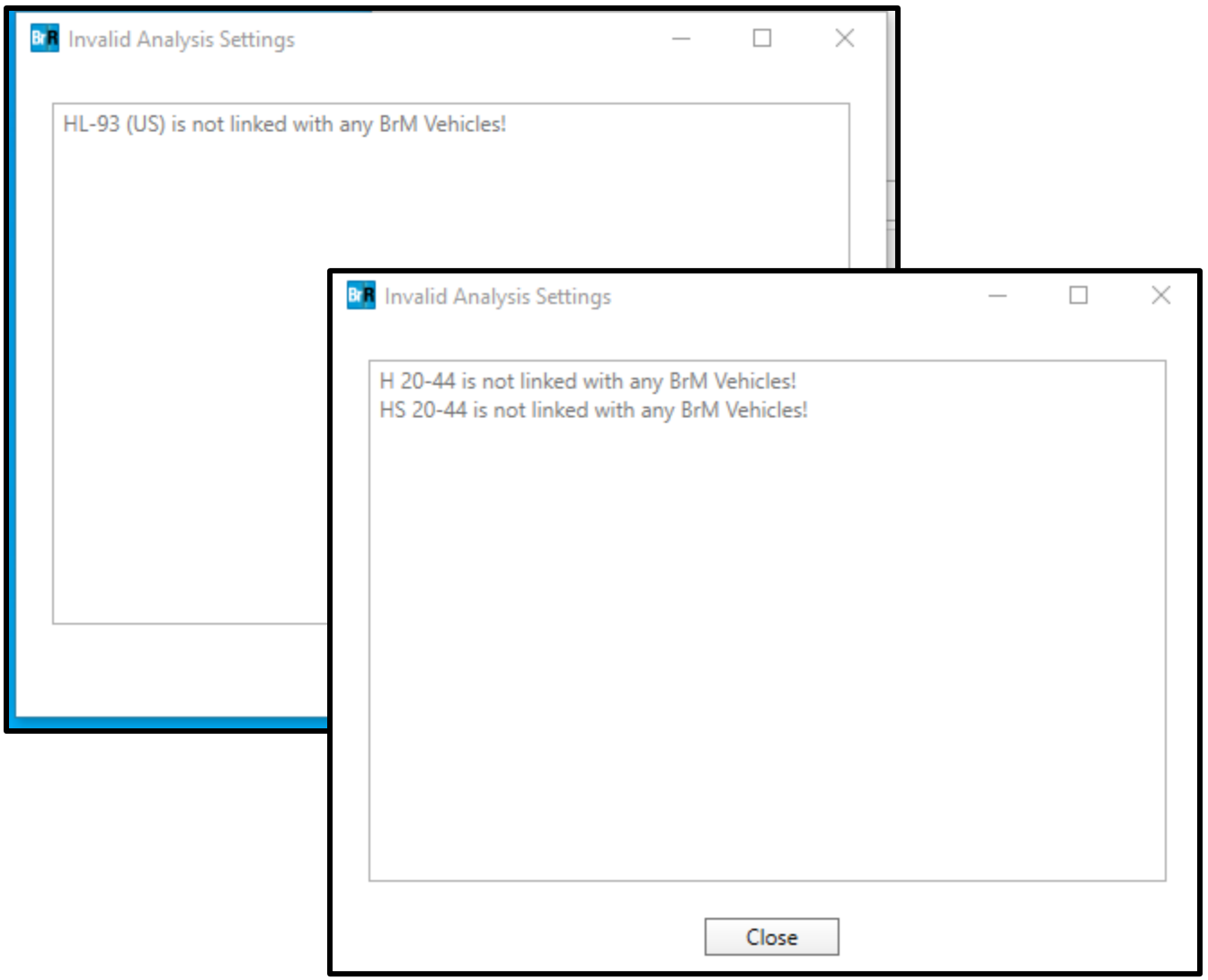






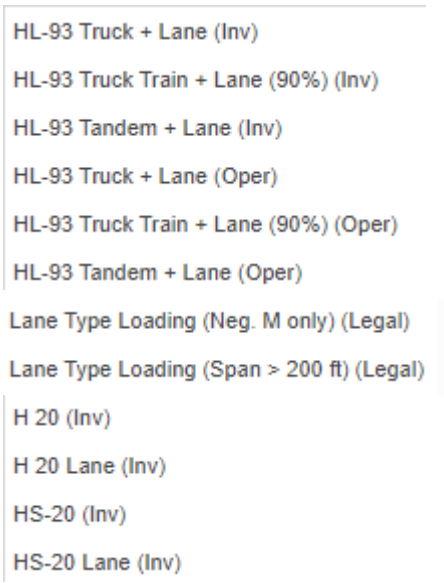
Rating Data Back into BrM

- 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

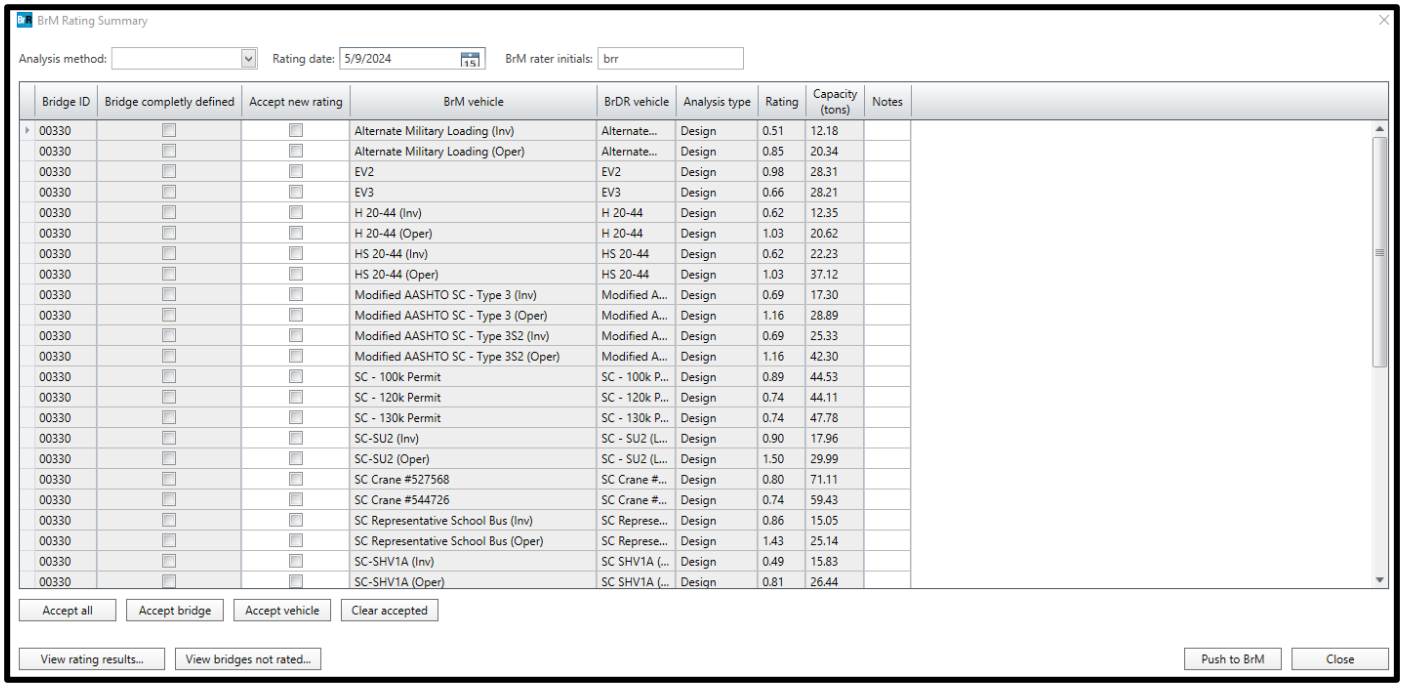
- The BrR to BrM transfer requires users to rate from the bridge workspace which selects the controlling HL-93, HS-20, or lane loading. Since the BrM Load Ratings and Posting page requires input for each rating associated with these loadings, manual input is required for the following:



- 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

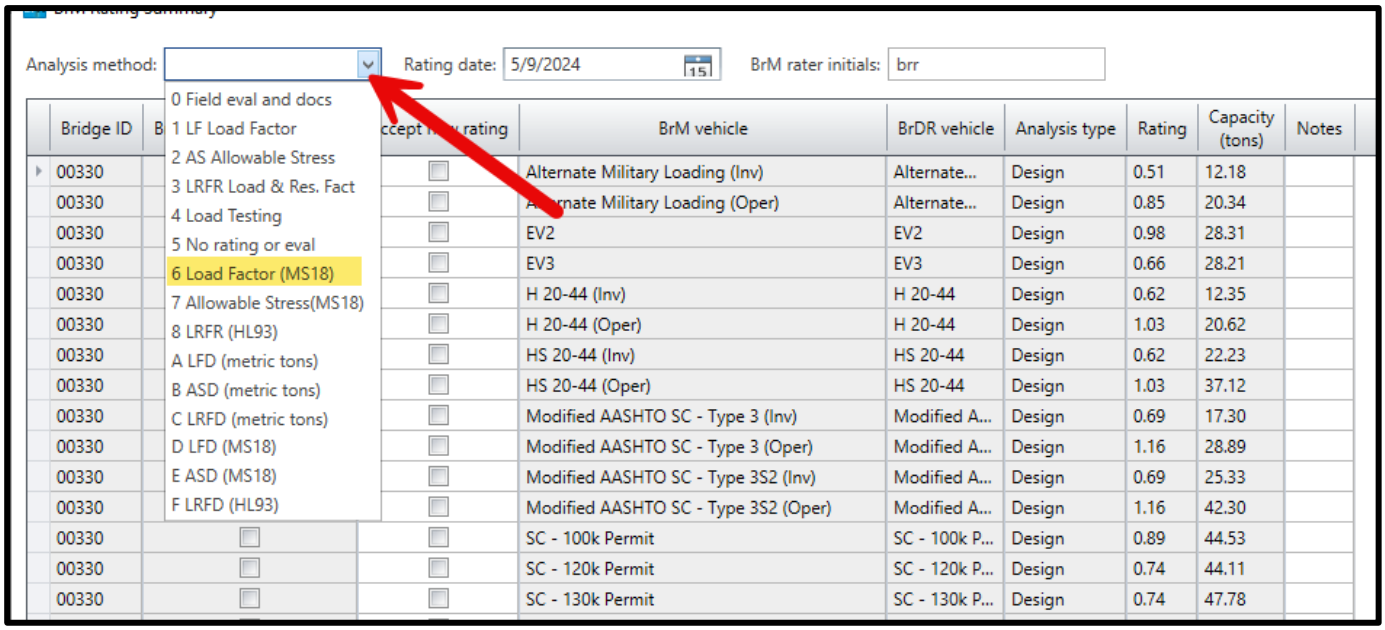
- Click OK after bridge is finished running.
- The rating factors should now be populated in the BrM Rating Summary Table.



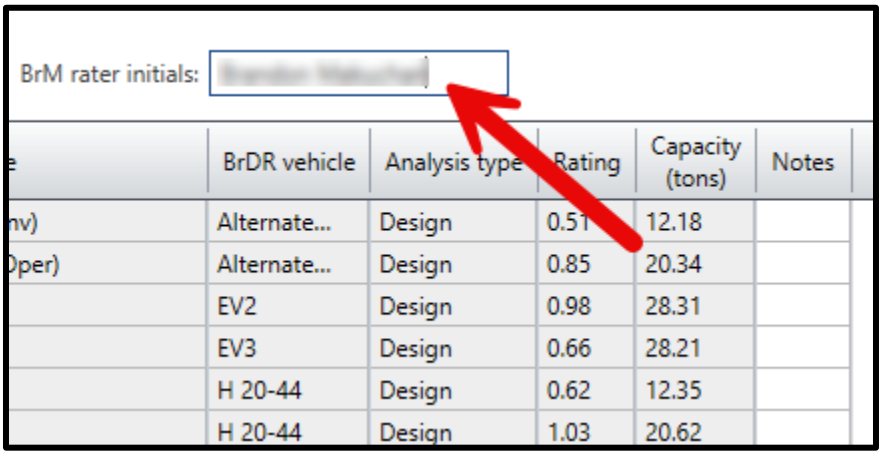
Bridge ID	Bridge completly defined	Accept new rating	BrM vehicle	BrDR vehicle	Analysis type	Rating	Capacity (tons)	Notes
00330			Alternate Military Loading (Inv)	Alternate...	Design	0.51	12.18	
00330			Alternate Military Loading (Oper)	Alternate...	Design	0.85	20.34	
00330			EV2	EV2	Design	0.98	28.31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

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).

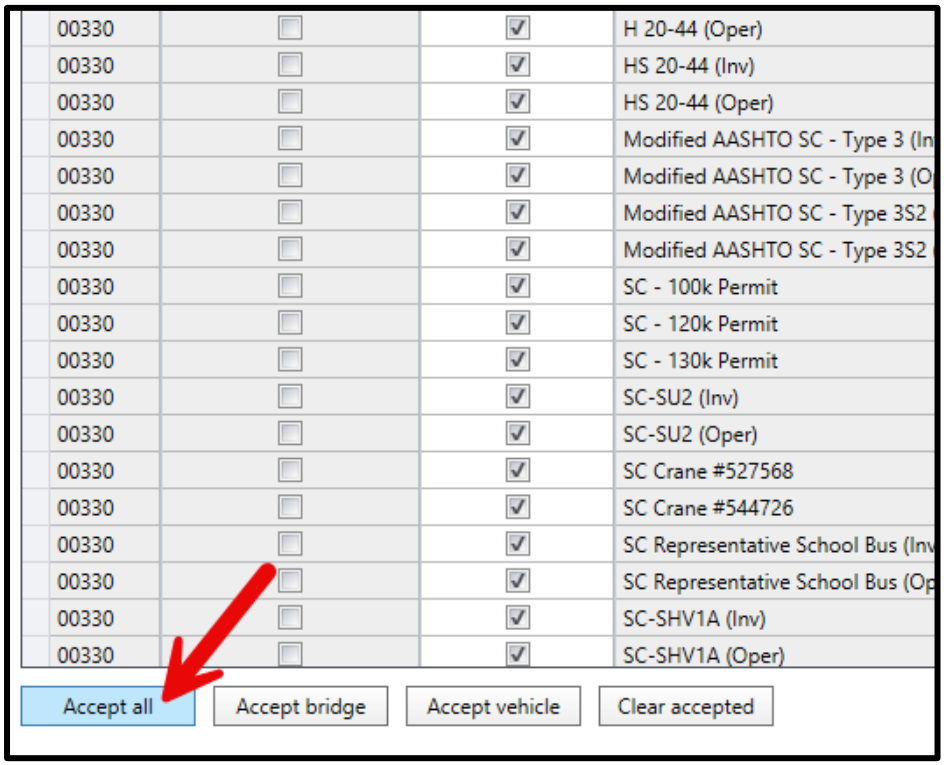


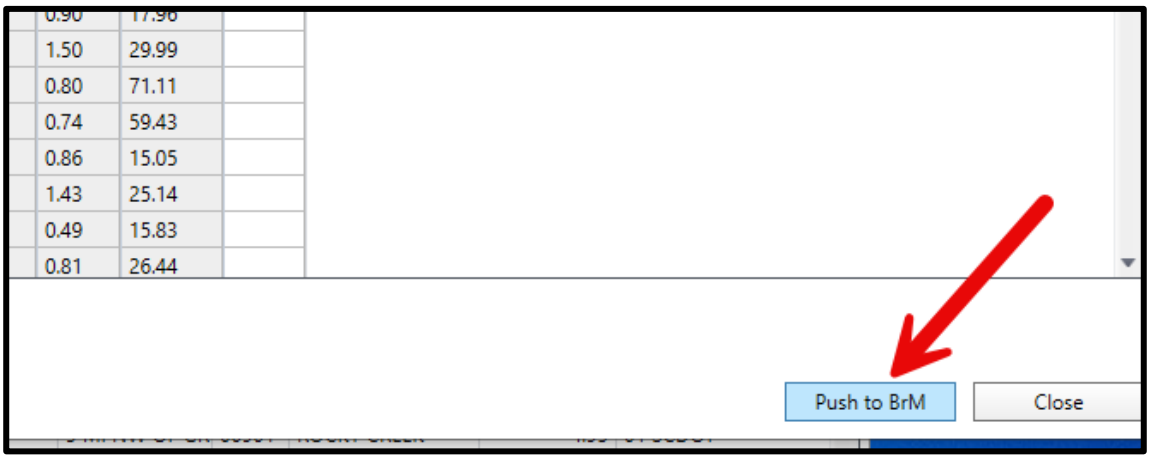
Bridge ID	BrM vehicle	BrDR vehicle	Analysis type	Rating	Capacity (tons)	Notes
00330	Alternate Military Loading (Inv)	Alternate...	Design	0.51	12.18	
00330	Alternate Military Loading (Oper)	Alternate...	Design	0.85	20.34	
00330	EV2	EV2	Design	0.98	28.31	
00330	EV3	EV3	Design	0.66	28.21	
00330	H 20-44 (Inv)	H 20-44	Design	0.62	12.35	
00330	H 20-44 (Oper)	H 20-44	Design	1.03	20.62	
00330	HS 20-44 (Inv)	HS 20-44	Design	0.62	22.23	
00330	HS 20-44 (Oper)	HS 20-44	Design	1.03	37.12	
00330	Modified AASHTO SC - Type 3 (Inv)	Modified A...	Design	0.69	17.30	
00330	Modified AASHTO SC - Type 3 (Oper)	Modified A...	Design	1.16	28.89	
00330	Modified AASHTO SC - Type 3S2 (Inv)	Modified A...	Design	0.69	25.33	
00330	Modified AASHTO SC - Type 3S2 (Oper)	Modified A...	Design	1.16	42.30	
00330	SC - 100k Permit	SC - 100k P...	Design	0.89	44.53	
00330	SC - 120k Permit	SC - 120k P...	Design	0.74	44.11	
00330	SC - 130k Permit	SC - 130k P...	Design	0.74	47.78	



Rating Data Back into BrM

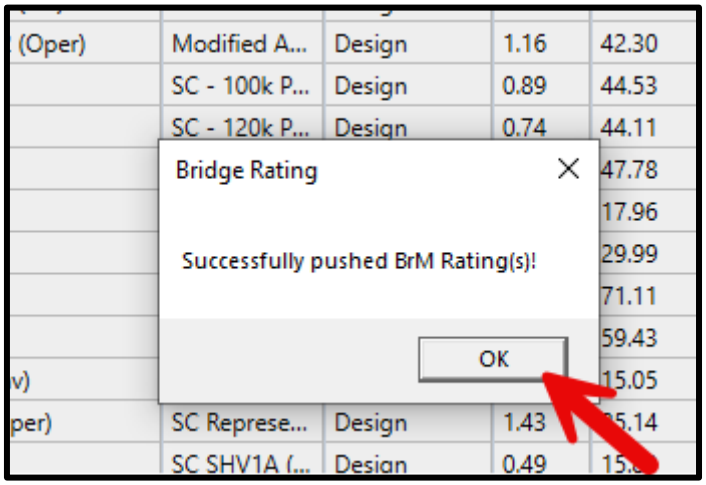
- Click Accept all to check all truck checkboxes
- Click Push to BrM





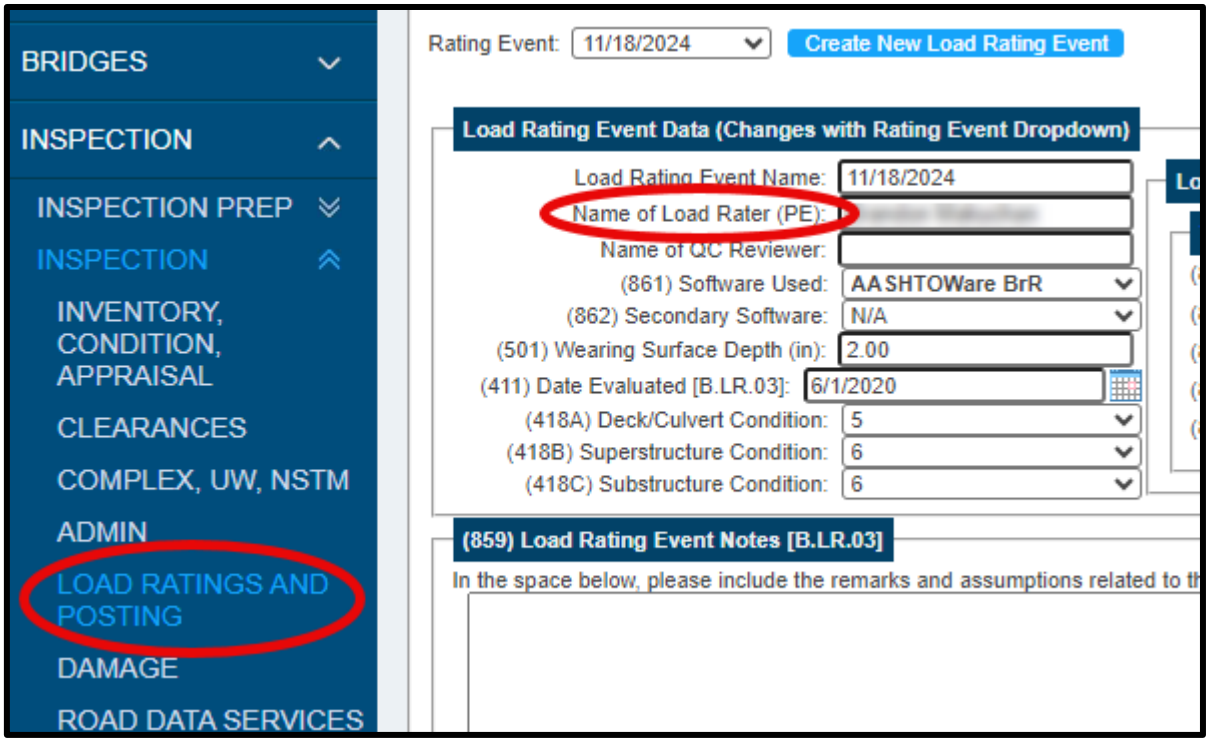
Rating Data Back into BrM

- Click OK once BrR successfully pushes ratings to BrM.



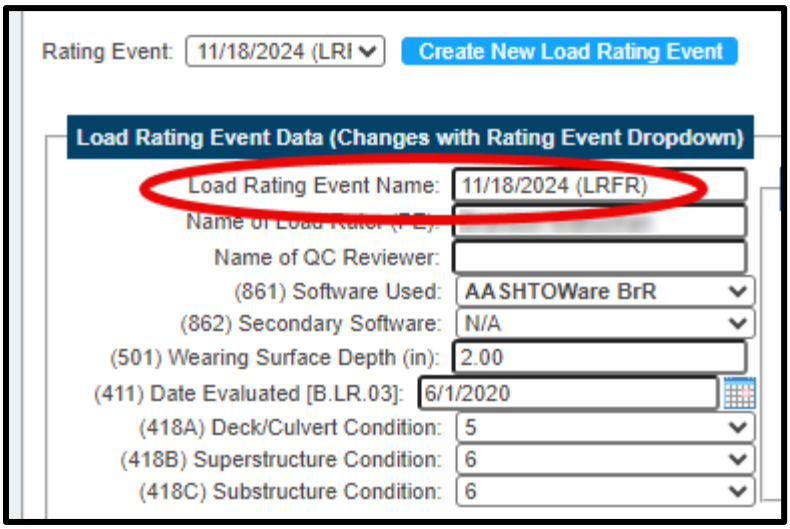
Rating Data Back into BrM

- 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.



Rating Data Back into BrM

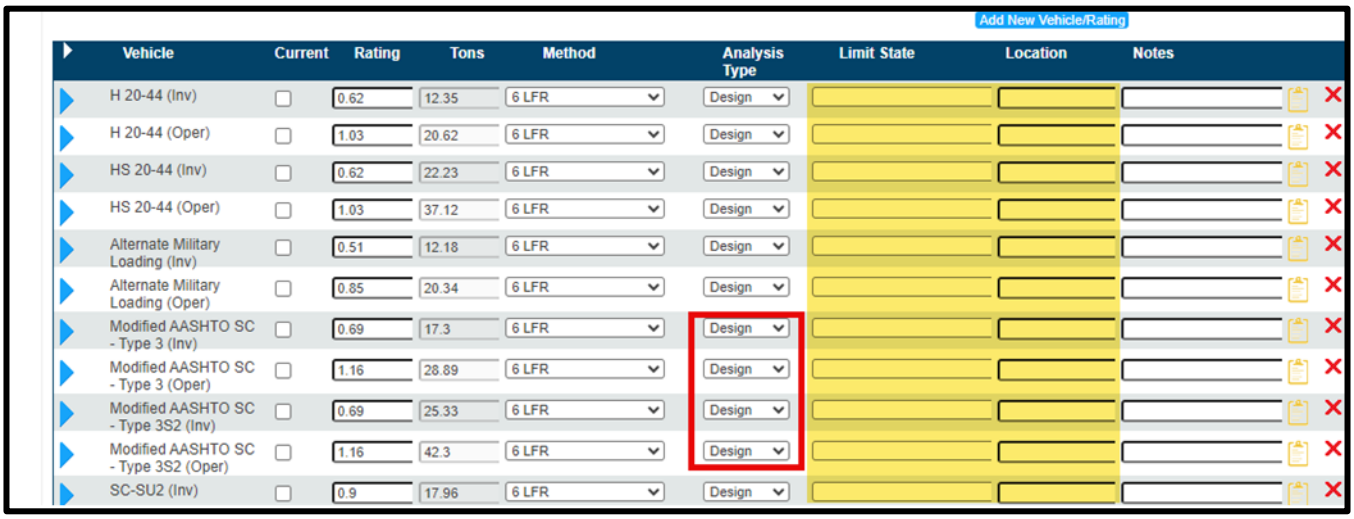
- Rename the Load Rating Event Name with the date and either “(LRFR)”, “(LFR)”, or “(ASR)”. The event name may need changed later to match the sign and sealed date.



- 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)	☐	0.62	12.35	6 LFR	Design			
H 20-44 (Oper)	☐	1.03	20.62	6 LFR	Design			
HS 20-44 (Inv)	☐	0.62	22.23	6 LFR	Design			
HS 20-44 (Oper)	☐	1.03	37.12	6 LFR	Design			
Alternate Military Loading (Inv)	☐	0.51	12.18	6 LFR	Design			
Alternate Military Loading (Oper)	☐	0.85	20.34	6 LFR	Design			
Modified AASHTO SC - Type 3 (Inv)	☐	0.69	17.3	6 LFR	Design			
Modified AASHTO SC - Type 3 (Oper)	☐	1.16	28.89	6 LFR	Design			
Modified AASHTO SC - Type 3S2 (Inv)	☐	0.69	25.33	6 LFR	Design			
Modified AASHTO SC - Type 3S2 (Oper)	☐	1.16	42.3	6 LFR	Design			
SC-SU2 (Inv)	☐	0.9	17.96	6 LFR	Design			

- 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
HL-93 (Inv)	Design
HL-93 (Oper)	Design
H 20-44 (Inv)	Design
H 20-44 (Oper)	Design
HS 20-44 (Inv)	Design
HS 20-44 (Oper)	Design
Alternate Military Loading (Inv)	Design
Alternate Military Loading (Oper)	Design
Lane Type Legal Load	Legal
Modified AASHTO SC - Type 3	Legal
Modified AASHTO SC - Type 3 (Inv)	Legal
Modified AASHTO SC - Type 3 (Oper)	Legal
Modified AASHTO SC - Type 3S2	Legal
Modified AASHTO SC - Type 3S2 (Inv)	Legal
Modified AASHTO SC - Type 3S2 (Oper)	Legal
SC-SU2	Legal
SC-SU2 (Inv)	Legal
SC-SU2 (Oper)	Legal
SC Representative School Bus	Legal
SC Representative School Bus (Inv)	Legal
SC Representative School Bus (Oper)	Legal
SC-SHV1A	Legal
SC-SHV1A (Inv)	Legal
SC-SHV1A (Oper)	Legal
SC-SHV1B	Legal
SC-SHV1B (Inv)	Legal
SC-SHV1B (Oper)	Legal
SC-SHV2A	Legal
SC-SHV2A (Inv)	Legal
SC-SHV2A (Oper)	Legal
SC-SHV2B	Legal
SC-SHV2B (Inv)	Legal
SC-SHV2B (Oper)	Legal
SC-SHV3A	Legal
SC-SHV3A (Inv)	Legal
SC-SHV3A (Oper)	Legal
SC-SHV3B	Legal
SC-SHV3B (Inv)	Legal
SC-SHV3B (Oper)	Legal

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