

## Summary of Key Changes (BMS2 Version 5.63) (3/12/2024)

### **BMS2**

1. Users were unable to update any information tied to a railroad feature type. This was caused by a null value in a field that is not displayed for railroad features. This issue has been resolved and users are able to update these features.
2. On various screens in BMS, a new identification number assigned to Nationally Certified Bridge Inspectors (NCBI) for FHWA has been added (coding in [Appendix N](#)). The label associated with this field is B.IE.04a, NCBI Number, on the Ratings & Schedule screen and “Inspector ID Number” on the User Preferences screen. This number is generated by PennDOT for inspectors who meet the qualifications as a team leader and the number is submitted to FHWA in lieu of the team leader’s name. The inspector ID begins with PA and is followed by six digits (PA#####). If a user believes they should have an identification number associated with their username and a number does not appear, please contact the Bridge Inspection Section at Central Office ([PD-BridgeInspectSection@pa.gov](mailto:PD-BridgeInspectSection@pa.gov)). Similarly, this number is not specific to a team leader’s place of employment. When an inspector changes employment, they are required to notify PennDOT’s Bridge Inspection Section to have their identification number assigned to their new username at their new place of employment. This can be done by clicking this [link](#). ***Please note, the functionality has been added for this field, however, the data has not yet been populated and will appear in the near future.***
3. The Key Field Comparison could not properly account for an Item IN15 value of D9 – Designed Scour Measures if all IN15 values were recorded as D9 on a given structure’s subunits. This issue has been resolved and the Key Field Comparison will properly display if D9 is the controlling streambed material.
4. A loophole that allowed the submission of inspection data from an inspection key that was already accepted in BMS2 has been closed. When a user would submit an inspection record in submitted status within iForms after the record was accepted (same BRKEY and Inspection Key), the resubmitted data would overwrite the accepted data in BMS2 and the record would move back to submitted status.
5. New functionality was added to BMS to allow future versions of the M1 report to identify if a bridge has an outstanding Priority 0 or Priority 1 maintenance item. This functionality will improve the accuracy of required inspection intervals and scheduling future inspections.
6. A connection to the GIS database was added to BMS to improve the data of the following fields:
  - a. 5A10 - Latitude
  - b. 5A11 - Longitude
  - c. 6A01 – State Senate District
  - d. 6A02 – US Congressional District
  - e. 6A03 – State Legislative District

Fields 5A10 and 5A11 remain editable fields but there is a feature that compares data in BMS versus data in GIS. The new connection with the GIS database updates data in the GIS latitude and longitude fields (only displayed by clicking the ⚠ icon if the distance between GIS and BMS is greater than 100') nightly to ensure the comparison is using current data. Also, the latitude and longitude columns in the database labeled "Precise" on the Bridge Table have been repurposed to store the data from Fields 5A10 and 5A11 in decimal degrees for submission to FHWA.

Fields 6A01, 6A02 and 6A03 are now automated if there is an available BRKEY to reference in GIS. If there are more than two records for Items 6A01, 6A02, or 6A03 (e.g. a structure that crosses six (6) legislative Districts), only the 1<sup>st</sup> two records will be shown, similar to the way the field previously displayed data in BMS2. Otherwise, the fields will remain editable. If there are known issues with the data imported from GIS, please report them to [Central Office](#).

7. A bug that was populating a "P" suffix on Structure Plan Numbers for all wall structures has been resolved. The suffix should only be added to the alternate plan sets. This applies to only retaining walls, specifically those with an Item 6A29 = 61 thru 72, & 76).
8. The list of available training records for a user to log in the User Preferences screen has been updated to reflect course offerings mandated by the NBIS and other commonly attended courses. Additional guidance regarding the use of these certifications to appear on the Team Leader list will be provided in the near future following this release. A full list of the courses is available below:
  - a. NHI-BS - NHI Basic Course or EQ - NHI Basic Course (130055 or equivalent)
  - b. NHI-BREF - NHI Refresher or EQ - NHI Refresher Course (130053 or equivalent)
  - c. NHI-PEBS - NHI PE Basic Course - NHI PE Basic Course (130056)
  - d. NHI-TS - NHI Tunnel Safety Insp. - NHI Tunnel Basic Course (130110)
  - e. NHI-TSR - NHI Tunnel Safety Refresher - NHI Tunnel Refresher Course (130125)
  - f. NHI-NSTM - NHI NSTM Inspections - NHI NSTM Inspections (130078 or Equivalent) \*
  - g. NHI-NSTR - NHI NSTM Refresher - NHI NSTM Refresher (130078A)
  - h. NHI-UD - NHI Underwater Diving - NHI Underwater Diving (130091)
  - i. NHI-EC - NHI-Eng. Concepts for Brd Insp - NHI Eng. Concepts for Bridge Inspectors (130101)
  - j. NHI-SSS - NHI Stream and Scour – NHI Stream Stability and Scour at Highway Bridges (135046)
  - k. PD-BSE - PennDOT Br Scour Eval - PD Bridge Scour Evaluation
  - l. PD-ISBF - PennDOT Insp St Br Fa - PD Inspecting Steel Bridges for Fatigue
  - m. PD-ELEM - PennDOT Element Insp – PD Intro to Element Level Bridge Insp.
  - n. PD-LRA - PennDOT Load Rating AHB - PD Load Rating Analysis of Highway Bridges
  - o. PD-PaP - PennDOT P&P - PD Practices and Procedures

\* Training records that were previously logged for "Fracture Critical Inspection Techniques for Steel Bridges" and "NHI - Fracture Critical Inspection Techniques for

- Steel Bridges" were migrated to "NHI - NSTM Inspections". Users should review this change in their profile if applicable.
9. Functionality has been added to the User Preferences screen to identify how a diver is qualified, similar to a Team Leader for bridges and tunnels. This change was prompted by the NBIS changes that took effect June 6, 2022. The user must select how they qualify as a diver by one of the two following options:
    - a. Underwater Diver Course (130091)
      - i. Required for any divers who's first bridge inspection dive was completed on or after June 6, 2022.
    - b. Experience + Training (Refer to Publication 100A)
      - i. These individuals completed a diving inspection prior to June 6, 2022 and were previously trained as a bridge inspector.
  10. A bug that was preventing the posting status from being updated on the INSPEVNT table has been resolved. There were a few instances where the posting status was being displayed with two different values in reports from BMS, BMS3 and *iForms*. All data points are now showing the same information.
  11. A bug was truncating the comments entered for warning validations. If the ampersand symbol (&) was entered, any comment text after the "&" was deleted upon saving the record in BMS2. This issue has been resolved and the text entered will save properly, regardless if a special character is used.
  12. Wingwalls have been removed from the calculation of Item IU29 – Scour Vulnerability, similar to their removal in a previous release from the calculation of the overall scour critical bridge indicator for the bridge (IU04).
  13. Access to the User Preferences screen has been removed for BMS users with only Browser access. The User Preferences screen should only be used by individuals needing to store inspection qualifications in the system, which does not apply to individuals only browsing available data in BMS.
  14. The Item 5C18 – Mile Point data imported from RMS to BMS for features that integrate with RMS was not properly calculating the correct mile point. The mile point was not accounting for offset of the bridge from the beginning mile point imported from RMS. This issue has been resolved and the mile point being displayed in BMS accounts for the offset.
  15. The audit log in the BMS database has been improved to allow for better tracking of inspection statuses. The log will now populate the beginning inspection status and the ending inspection status for the action that occurred in BMS.
  16. Previously, on the Structure Group page, there was an ability to delete BRKEY's. That functionality has been removed to ensure BRKEY's are deleted properly in the database via a Help Desk Ticket and approval by the Bridge Inspection Section.

## ***iForms***

1. The ability to download structures within *iForms* has been turned off. All new inspection records should be created within BMS3 (<https://bms3.penndot.pa.gov>). Users are still

able to upload existing records that are in their local *iForms*. A date to stop uploads from *iForms* will be announced in the future.

### **Summary of Key Changes (*iForms* Version 5.24.3) (1/9/2024)**

#### **BMS2**

1. Following the mandate from the Governor’s Office, the domain for BMS2 has been migrated from “penndot.gov” to penndot.pa.gov”. Users will be shown a white screen with information on the change and a link to the new web address.

#### ***iForms***

1. A bug was introduced with *iForms* Version 5.24.2 on December 18, 2023, that was limiting the submission of inspection records for sign structures with only a “Z – Inventory” inspection record previously. The issue has been resolved and users are able to submit new inspection records from *iForms* and/or BMS3 to BMS2.

### **Summary of Key Changes (BMS2 Version 5.62 and *iForms* Version 5.24.2) (12/18/2023)**

#### **BMS2**

1. Each structure in BMS2 is required to have a county coded via Item 5A05. Previously, this field had a coding value of “(blank)” and there were structures with this coding. The value has been removed to ensure each structure in BMS2 has a county value coded.
2. The coding value of “\_ - Unknown” is not a valid option for Item 5D04 and has been removed from the available options.
3. The calculation to determine eligibility for 48-month Routine inspections on non-NBIS state bridges (Item 7A19) has been updated to include a check for outstanding Priority 0 and 1 maintenance items. When an outstanding Priority 0 or 1 exists, the bridge is flagged as not eligible for 48-month Routine inspections.
4. Updated the calculation for when Items 7A19 and 7A21 are updated to require a save on the Ratings & Schedule screen. Previously, the items would automatically update when that screen was navigated to without a save.
5. The Scour Critical Category calculation (Item 4A08b) is based on the Item 4A08 value and the controlling IN03 value. Previously, wingwall Item IN03 values were being included in the determination of the Scour Critical Category even without an individual SCBI value (Item IU27). The calculation has been updated to only include subunits with both an individual SCBI (Item IU27) and Observed Scour Rating (IN03). This includes abutments, piers, culvert-in and culvert-out.
6. Sign specific inspection types (Item IS01) have been removed. The inspection type should be recorded directly in B.IE.01, similar to a bridge. Similarly, the next inspection scheduling fields (Items IS12, IS13 and IS14) have been removed and future sign inspection scheduling data should be documented directly on the Ratings & Schedule page.
7. Wall specific inspection types (Item IW01) have been removed. The inspection type should be recorded directly in B.IE.01, similar to a bridge. Similarly, the next inspection

scheduling fields (Items IW12, IW13 and IW14) have been removed and future wall inspection scheduling data should be documented directly on the Ratings & Schedule page.

8. On the Features screen within the Highway and Other Feature detail screens, users reported an issue when tabbing between fields with a value of “-1”. This issue was causing a popup to appear and trapping the user in a loop. The issue has been resolved and users can tab between fields without the popup appearing.
9. Non-Department users are restricted from viewing the Bridge Problem Report screen. While the screen did not appear as a visible link in the header bar, it was accessible via the “Go To” drop-down. That access has been removed.
10. An error was preventing the deletion of an inspection record by an authorized party when the character count in Item 2A02 was greater than 2,000 characters. The issue has been resolved to allow for the deletion of inspection records.
11. The clearance detail information on the APRAS screen would appear in random orders. The default sort by the clearance sequence number has been fixed and the display is now in order.
12. With the recent changes to the Ratings and Schedule screen, it became apparent there was a need to have the ability to edit Z-Type inspection dates. Superusers have been given the ability to modify the begin and end date of a Z-type inspection for a bridge created after AMS Release 83. Previous inspection records would need to be modified by a data ticket.
13. Users reported issues with download files from BMS2 directly from the website or through *iForms* when the file size exceeded 240MB. A change in the coding that facilitates the download has reduced the required memory to allow for the files to download without issue.
14. Additional fields have been added to the “Key Field Comparison” in both the Inspection Report Generator Summary file and the Ratings & Schedule page. These additions added condition ratings that are reportable to FHWA.
15. Validations #429 through #432 were not working in *iForms* because the full condition rating history information is maintained in *iForms*. Additional code has been added to allow the validations to work properly in *iForms*.
16. Previously, users were allowed to put any expiration date on certain certifications within the User Preferences screen. If a user enter a year of 9998 or 9999, the system could not handle the value and would lock the system. To prevent future issues, dates beyond 2099 will be rejected.
17. An internal validation was added to BMS2 to ensure the team leader and the person accepting the inspection record in BMS2 are not the same person. This ensures proper quality control checks have been completed by someone other than the person who did the primary work.

## ***iForms***

1. After the transition to SNBI inspection types, the Item 7A06 check boxes for legacy inspection performed data was not populating. This issue has been resolved and the values will populate accordingly based on the inspections performed.

2. During the submission process from iForms to BMS2, users are presented with three (3) summary pages to review the current inspection data prior to the data being submitted to BMS2. The values on Summary Page 3 for Item 7A07 from the previous inspection record were not displaying properly. This issue has been resolved and the data is displaying correctly.
3. There was an issue with the joints and bearing records being submitted to BMS2 tied to the inspection key. This occurred when multiple users downloaded the same base inspection from BMS2 and tried to upload the data to BMS2 after one another. This issue has been resolved.

**Summary of Key Changes (iForms Version 5.24.1) (10/4/2023)**

**iForms**

1. The character count of Item 2A02 was inadvertently changed to 300 characters in iForms during the AMS 83 Release on October 1<sup>st</sup>. The field has been restored to 4,000 characters with this release.
2. Item 7A05a was not updating as inspection types (B.IE.01) were being saved on Form P following Release 83. This issue has been resolved and value will update when Form P is saved based on the controlling team leader populated in Item 7A02.
3. There was an issue with validations stopping the submission of data from iForms to BMS2, specifically related to the new SNBI inspection types and associated scheduling fields. This issue has been resolved and the validations have been re-enabled in iForms.
4. The drop down menu for the B.IE.04 NCBI Team Leader was not allowing users to scroll down to last names starting with W, X, Y, and Z. It has been reconfigured to allow all team leaders to be selected.

**Summary of Key Changes (BMS2 Version 5.61 and iForms 5.24.0) (10/1/2023)**

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*Release 83 introduces new coding items that are required as part of the transition from FHWA’s Recording and Coding Guide for the Structure Inventory & Appraisal to the Specification for the National Bridge Inventory. In addition to changes in iForms and BMS2, Publication 100A will be modified and/or appended with the new coding items as needed. Refer to the updated [Appendix N](#) for the newly added fields.*  
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**BMS2**

1. In conjunction with [SOL 483-23-06](#) announcing changes to the steel types available in Item VD05, an informational message icon ⓘ has been added to BMS2 to provide users a quick reference on which steel types are considered to be weathering steel.
2. The following fields were added to assist PennDOT with the implementation of the SNBI and NBIS. These fields are described briefly below with the entire coding guidance provided in an updated [Appendix N](#) to Publication 100A.
  - a. B.IE.01 – SNBI Inspection Type

- i. Location:
    - 1. BMS2: Ratings & Schedule
    - 2. *iForms*: Form P – SNBI Scheduling – Inspection Types Tab
  - ii. Used to record the specific inspection type performed as part of the overall inspection record.
  - iii. This field is not back populated and will only begin populating after the field is implemented in BMS2.
  - iv. Each individual inspection type is submitted to FHWA. Previously, only one inspection type was reported to FHWA per bridge on the annual submission.
- b. B.IE.02 – Inspection Start Date
- i. Location:
    - 1. BMS2: Ratings & Schedule
    - 2. *iForms*: Form P – SNBI Scheduling – Inspection Types Tab
  - ii. Used to indicate the inspection start date for the specific inspection type identified in Item B.IE.01.
  - iii. This field is not back populated and will only begin populating after the field is implemented in BMS2.
  - iv. If a single inspection type exists for the overall inspection record, the B.IE.02 value will be used to populate Item 7A01.
  - v. If multiple inspection types exist for the overall inspection record, Item 7A01 will use the inspection start date from B.IE.01 records in the following order: Inspection Type Z, 1, 2, 7, 3, 5, 6, 9, P, E, 4, 8, Q.
  - vi. This may result in the overall start date (7A01) being a date after one of the individual inspection types has been started.
- c. B.IE.03 – Inspection End Date
- i. Location:
    - 1. BMS2: Ratings & Schedule
    - 2. *iForms*: Form P – SNBI Scheduling – Inspection Types Tab
  - ii. Used to indicate the inspection end date for the specific inspection type identified in Item B.IE.01.
  - iii. This field is not back populated and will only begin populating after the field is implemented in BMS2.
  - iv. The latest end date out of all the B.IE.03 values is used to populate 7A01e.
- d. B.IE.04 – Nationally Certified Bridge Inspector
- i. Location:
    - 1. BMS2: Ratings & Schedule
    - 2. *iForms*: Form P – SNBI Scheduling – Inspection Types Tab
  - ii. Used to indicate the Nationally Certified Bridge Inspector (i.e., Team Leader) who is responsible for the specific inspection type identified in Item B.IE.01.
  - iii. This field is not back populated and will only begin populating after the field is implemented in BMS2.

- iv. If a single inspection type exists for the overall inspection record, the B.IE.04 value will be used to populate Item 7A02.
  - v. If multiple inspection types exist for the overall inspection record, Item 7A02 will use the team leader from B.IE.04 records in the following order: Inspection Type Z, 1, 2, 7, 3, 5, 6, 9, P, E, 4, 8, Q.
- e. Item B.IE.05 – Inspection Interval
- i. Location:
    1. BMS2: Ratings & Schedule
    2. iForms: Form P – SNBI Scheduling – Inspection Types Tab
  - ii. Used to indicate the inspection interval for the specific inspection type identified in Item B.IE.01.
  - iii. Inspection Intervals are not applicable for Inspection Types Z, 1, 5, 9, P, Q.
  - iv. Upon the creation of a specific inspection type, the Inspection Interval will be populated if the corresponding value in Item 7A59 – SNBI Inspection Interval exists on the previous inspection record. Otherwise, the value will begin at 0.
  - v. This field is read-only and if the value needs to be updated, it must be changed via Item 7A59.
- f. Item B.IE.06 – Next Inspection Due Date
- i. Location:
    1. BMS2: Ratings & Schedule
    2. iForms: Form P – SNBI Scheduling – Inspection Types Tab
  - ii. Used to indicate the next inspection due date for the specific inspection type identified in Item B.IE.01.
  - iii. Upon the creation of a specific inspection type, the next inspection due date will be automatically calculated based on Items 7A57, B.IE.03, and B.IE.05 values for the specific inspection type. If the inspection type is not required (Item 7A57) and the inspection interval (Item 7A59) is 0, the next inspection due date will not populate.
  - iv. After the initial population, if this value must be updated, it must be changed via the corresponding Item 7A60 value.
  - v. This field is read-only and if the value needs to be changed, it must be changed by updating the values of the corresponding Item 7A57 and 7A59 values.
  - vi. This field is used to populate Items 7A10 and 7A60 using the following rules:
    1. Inspection Type 2 Due Date – 7A10/7A60 NBI Due Date
    2. Inspection Type 3 Due Date – 7A10/7A60 UW Due Date
    3. Inspection Type 4 Due Date – 7A10/7A60 NSTM Due Date
    4. Inspection Type 7 Due Date – 7A10/7A60 OS Due Date
    5. Inspection Type E Due Date – 7A10/7A60 Element Due Date



- g. Item B.IE.07 – Risk-Based Inspection Interval Method
  - i. Location:
    - 1. BMS2: Ratings & Schedule
    - 2. iForms: Form P – SNBI Scheduling – Inspection Types Tab
  - ii. Used to indicate the Risk-Based Inspection Interval Method that is applied to the specific inspection type identified in Item B.IE.01.
  - iii. This field is only applicable to inspection types 2, 3, and 4. Remaining inspection types are not eligible for risk-based inspection intervals.
  - iv. This field is only editable by a SuperUser. The default value is Method 1 for Item 5A24 (Report Group) = A1, L1, S1, and S2. Remaining structures are marked as N/A. Risk-Based Method 2 is not used in Pennsylvania.
- h. Item B.IE.08 – Inspection Quality Control Date
  - i. Location:
    - 1. BMS2: Ratings & Schedule
    - 2. iForms: Form P – SNBI Scheduling – Inspection Types Tab
  - ii. Used to indicate when the specific inspection type was accepted (i.e., Item 1A09 changed to “9 – Accepted” in BMS2).
  - iii. This field is populated with the date when Item 1A09 is changed to “9- Accepted” in BMS2. The value is the same for each individual inspection type recorded under the overall inspection record.
  - iv. This field is read-only.
- i. Item B.IE.09 – Inspection Quality Assurance Date
  - i. Location:
    - 1. BMS2: Ratings & Schedule
    - 2. iForms: Form P – SNBI Scheduling – Inspection Types Tab
  - ii. Used to indicate if the specific inspection type identified in B.IE.01 within the overall inspection record was subjected to a Quality Assurance inspection by the Bridge Inspection Section at Central Office.
  - iii. This field is only editable by SuperUsers at Central Office.
- j. Item B.IE.10 – Inspection Data Update Date
  - i. Location:
    - 1. BMS2: Ratings & Schedule
    - 2. iForms: Form P – SNBI Scheduling – Inspection Types Tab
  - ii. Used to indicate when any changes are made to the Ratings & Schedule page. Any time the page is saved, the value of B.IE.10 for all of the individual inspection types that exist, is populated with the current date and timestamp.
  - iii. This field is read-only.
- k. Item B.IE.11 – Limited Scope Description
  - i. Location:
    - 1. BMS2: Ratings & Schedule
    - 2. iForms: Form P – SNBI Scheduling – Inspection Types Tab

- ii. Used to record a brief description of the members or features inspected when limited portions of the bridge are inspected. This is recorded for each individual inspection type identified in Item B.IE.01.
  - iii. This field is required for inspection types 3, 4, 5, 6, 7, 8, 9, or P.
  - iv. This field is limited to 300 characters and inspectors should use abbreviations as needed.
- l. Item B.IE.12 – Inspection Equipment
  - i. Location:
    - 1. BMS2: Ratings & Schedule
    - 2. iForms: Form P – SNBI Scheduling – Inspection Types Tab
  - ii. Used to indicate the Access and Inspection Equipment used for each individual inspection type identified in Item B.IE.01.
  - iii. At a minimum, one box is required to be checked in both the “Access Equipment” and the “Inspection Equipment” sections. Each section has an option for “No Equipment Used” if no access or inspection equipment was needed for the inspection.
- m. Item 7A01e – Overall Inspection End Date
  - i. Location:
    - 1. BMS2: Ratings & Schedule
    - 2. iForms: Form P – SNBI Scheduling – SNBI Schedule
  - ii. Used to indicate the overall inspection end date for the inspection record.
  - iii. This item is populated with latest end date of all the inspection end dates (B.IE.03) from each of the individual inspection types identified in Item B.IE.01.
  - iv. This field is read-only.
- n. Item 7A53 – SNBI Concatenated Inspection Type
  - i. Location:
    - 1. BMS2: Every Inspection Page
    - 2. iForms: Not Displayed
  - ii. Used to record the concatenated inspection type for the overall inspection record.
  - iii. This item concatenates the performed inspection type values from Item B.IE.01 and places them in the inspection type drop down at the top of each inspection page.
  - iv. The values are concatenated in the following order if the inspection types exist: 1, 2, 3, 4, 5, 6, 7, 8, 9, P, E, Q, Z.
  - v. This value can only be modified by adding or deleting individual inspection types (B.IE.01) from the overall inspection record.
- o. Item 7A57 – SNBI Inspection Type Required
  - i. Location:
    - 1. BMS2: Ratings & Schedule
    - 2. iForms: Form P – SNBI Scheduling – SNBI Schedule

- ii. Used to indicate if an individual SNBI inspection type is required for the structure.
- iii. Per the SNBI, only specific inspection types are required on a reoccurring basis. Those inspection types can be scheduled in the future and have a checkbox for this field. If the inspection type cannot be scheduled in the future, this field is marked as N/A.
- iv. This value is used to populate Item 7A07 using the following rules:
  1. Inspection Types 1 or 2 Checked – 7A07 NBI Box Checked
  2. Inspection Type 3 Checked – 7A07 UW Box Checked
  3. Inspection Type 4 Checked – 7A07 NSTM Box Checked
  4. Inspection Type 7 Checked – 7A07 OS Box Checked
  5. Inspection Type E Checked – 7A07 Element Box Checked
- p. Item 7A58 – SNBI Last Inspection Date
  - i. Location:
    1. BMS2: Ratings & Schedule
    2. iForms: Form P – SNBI Scheduling – SNBI Schedule
  - ii. Used to record the last date the individual inspection type was performed. This field is populated with the end date (B.IE.03) of the previously performed individual inspection type. If the inspection type was never previously performed, the value will be blank.
  - iii. This field will update on the current record when the inspection record is accepted.
  - iv. The value is used to populate Item 7A08 using the following rules:
    1. Inspection Types 1 & 2 Date – 7A08 NBI Date
    2. Inspection Type 3 Date – 7A08 UW Date
    3. Inspection Type 4 Date – 7A08 NSTM Date
    4. Inspection Type 7 Date – 7A08 OS Date
    5. Inspection Type E Date – 7A08 Element Date
- q. Item 7A59 – SNBI Inspection Interval
  - i. Location:
    1. BMS2: Ratings & Schedule
    2. iForms: Form P – SNBI Scheduling – SNBI Schedule
  - ii. Used to record the inspection interval for the individual SNBI inspection type. An inspection interval can only be entered if the inspection type is required (7A57 = Checked).
  - iii. The value is used to populate Items 7A09 and B.IE.05 using the following rules:
    1. Inspection Type 2 Interval – B.IE.05 Routine/7A09 NBI Interval
    2. Inspection Type 3 Interval – B.IE.05 UW/7A09 UW Interval
    3. Inspection Type 4 Interval – B.IE.05 NSTM/7A09 NSTM Interval
    4. Inspection Type 7 Interval – B.IE.05 Special/7A09 OS Interval
    5. Inspection Type E Interval – B.IE.05 Element/7A09 Element Interval

- r. Item 7A60 – SNBI Next Inspection Due Date
  - i. Location:
    - 1. BMS2: Ratings & Schedule
    - 2. iForms: Form P – SNBI Scheduling – SNBI Schedule
  - ii. Used to display the next inspection due date for each individual SNBI inspection type. An inspection due date will only be displayed if the inspection type is required (7A57 = Checked).
  - iii. The next inspection due date is populated based on a hierarchy as follows:
    - 1. If the inspection type exists on the current record, use the date from the inspection end date (B.IE.03) and the inspection interval (7A59/B.IE.05) to forecast the next inspection due date.
    - 2. If the inspection type does not exist on the current inspection but existed previously, the last date the inspection type was performed (7A58) and the inspection interval (7A59/B.IE.05) are used to forecast the next inspection due date.
    - 3. If the inspection type has never been completed before, the overall end date (7A01e) in addition to the interval (7A59/B.IE.05) will be used to forecast the next inspection due date.
  - iv. This item is auto-populated based on the value of B.IE.06.
- 9. The ability to create validations based on inspection comment fields has been added. For example, if a comment field is left blank but is required to be filled out every inspection, the validation can run on the comment type.
- 10. A bug that was calculating the Scour Critical Category (Item 4A08b) differently than as described in Publication 100A has been corrected. The formula was not calculating a Category C when Item 4A08 = 3, and IN03 = 8 or 9. The issue has been resolved.
- 11. A bug that was incorrectly calculating the Structural Evaluation (Item 4A09) has been resolved. The calculation was returning a value of “3” when the load rating exceeded the values in Table 1 (Refer to Publication 100A) and the NBI vehicle was reported in rating factors instead of tonnage. The issue has been resolved.

### **iForms**

- 1. A bug that was resulting in a submission failure from iForms to BMS2 has been resolved. There was an issue with the inspection keys on the Joints and Bearing tabs of Form B that did not work with the rest of the inspection keys.
- 2. Refer to Detailed Summary #2 under the BMS2 section above for the remaining changes to iForms.

### **Summary of Key Changes (BMS2 Version 5.60.1) (5/11/2023)**

#### **BMS2**

- 1. Corrected an issue that was limiting the creation of new structures in BMS2.

**Summary of Key Changes (iForms Version 5.23.1) (5/8/2023)**

**iForms**

1. The previous release of iForms from April 30<sup>th</sup>, introduced a new issue. Users were unable to save changes to newer screens of iForms (Form C, E, F, J, M) when the team member field (Item 6B23) exceeded 30 characters. This issue has been resolved and the forms are acting as designed.

**Summary of Key Changes (BMS2 Version 5.60 and iForms 5.23.0) (4/30/2023)**

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*Release 82 introduces new coding items that are required as part of the transition from FHWA’s Recording and Coding Guide for the Structure Inventory & Appraisal to the Specification for the National Bridge Inventory. In addition to changes in iForms and BMS2, Publication 100A will be modified and/or appended with the new coding items as needed. Refer to the updated [Appendix N](#) for the newly added fields.*

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**BMS2**

3. The logic for Items 7A19 and 7A21 (Extended Interval Fields) has been modified due to clarifications from FHWA on the new NBIS regulation. The logic now only looks at the current condition ratings, rather than looking at current and past inspections to determine the bridge’s eligibility. The requirement to perform an Initial (First Time) Inspection and a Routine Inspection 24-months later to be eligible for 48-months remains in place.
4. PennDOT has modified the underwater M1 report to include the new SNBI fields (channel protection condition rating, scour condition rating, underwater condition rating, scour vulnerability and scour POA required) that have been added with Releases 81 and 82. Channel condition rating was also added because it will impact upcoming underwater interval requirements.
5. In accordance with the new definitions in the NBIS, the term “Fracture Critical” and the abbreviation “FC” has been replaced with “Non-redundant Steel Tension Member” and “NSTM” throughout BMS2 and iForms. There is no change in policy associated with this change for PennDOT.
6. Items 5E22 and 5E23 have been displayed again on the Structure Home page, between 5E17 and 5E24 in the “Agency Item” section. Item 5E22 is used to display the P3 Owner for the given bridge. Item 5E23 displays the P3 ID Number. These fields can only be edited by a SuperUser at PennDOT.
7. Item IR01a, Load Rating Review Recommended, was previously stored at the bridge level in the database. PennDOT was unable to track this record from one inspection to the next. Now the field is stored on the inspection record level and is tied to the inspection key for record keeping purposes. The data is now on the USERINSP table.

8. Item VP02, Posting Status, has been automated based off of two new fields, VP02a and VP02b. These new fields are described below. It also sets the value of Item 5E03 = T anytime VP02a is coded T or S.
9. The coding options for [Item IL02](#), Risk of Overtopping, have been updated to match the parameters set forth in the SNBI, B.AP.02. A crosswalk to migrate data from the old parameters to the new parameters was created and incorporated based on Items IL02, 1A06 (Waterway Adequacy), 5A18 (Service Type Under), 5C22 (Functional Classifications), IL13 (Worst Flood Event), and IL14 (Worst Flood Event Date).
10. The following fields were added to assist PennDOT with the implementation of the SNBI and NBIS. These fields are described briefly below with the entire coding guidance provided in an updated Appendix N to Publication 100A.
  - a. VP02a – Posting Type (SNBI Item B.PS.01 First Character)
    - i. Location:
      1. BMS2: Posting Screen
      2. iForms: Form K – Load Rating Tab
    - ii. Used to indicate the type of posting at a bridge (new, permanent, temporary, supported, closed, or demolished).
    - iii. The initial population of this field was limited to the active posting record on the structure. The population was generated based off Items VP02, 5E03, ID01 and ID04.
    - iv. This field along with VP02b, combine to populate the coding for VP02.
    - v. PennDOT elected to create two fields VP02a and VP02b that will be joined for the submission of data to FHWA for SNBI Item B.PS.01.
  - b. VP02b – Posting Condition (SNBI Item B.PS.01 Second Character)
    - i. Location:
      1. BMS2: Posting Screen
      2. iForms: Form K – Load Rating Tab
    - ii. Used to indicate the condition of the posting at a structure (needs action, posted, restricted, needs reduced, missing, or open).
    - iii. The initial population of this field was limited to the active posting record on the structure. The population was generated based off Items VP02, 5E03, ID01 and ID04.
    - iv. This field along with VP02b, combine to populate the coding for VP02.
    - v. PennDOT elected to create two fields VP02a and VP02b that will be joined for the submission of data to FHWA for SNBI Item B.PS.01.
  - c. VP03a – Vehicle Posting Type (SNBI Item B.EP.03)
    - i. Location:
      1. BMS2: Posting Screen
      2. iForms: Form K – Load Rating Tab
    - ii. Used to indicate the type of vehicle and/or lane restriction if present at a bridge.
    - iii. The initial population of this field was completed based on a manual review of bridges with a current coding of VP02 = R.

- iv. PennDOT will not code Options A, D or T. Most PennDOT weight restrictions are code G. In the event a bridge is posted for more than one restriction, use the restriction listed first (closest to the top).
- d. VP11 – Posting Review Recommended
  - i. Location: Load Rating Screen
    - 1. BMS2: Load Rating Screen
    - 2. iForms: Form K – Posting Tab
  - ii. This item was added to allow inspectors to indicate if the posting record needs to be reviewed as part of the inspection. Given the addition of VP02a and VP02b, PennDOT anticipates the coding for some bridges will need to be updated after the next inspection.
  - iii. This field should be accompanied with a text entry in the “Posting Review Notes”, Comment Type #76.
  - iv. All of the VP fields have been added to Form K and Report K to assist with the inspector’s review of the posting recommendation.
- e. Item IR22 – Legal Load Rating Factor (B.EP.02)
  - i. Location:
    - 1. BMS2: Load Rating Detail Screen
    - 2. iForms: Form K – Load Rating Tab
  - ii. This item displays the operating rating factor for the posting vehicles in Pennsylvania (H20, HS20, ML80 and TK527).
    - 1. For non-posting vehicles, the value is left blank.
  - iii. The calculation automatically takes the value from IR21 if present or divides the IR11 value by the vehicle weight to calculate the rating factor.
- f. Item IR23 – Vehicle Posting Value (B.EP.04)
  - i. Location:
    - 1. BMS2: Load Rating Detail Screen
    - 2. iForms: Form K – Load Rating Tab
  - ii. This item displays the vehicle posting value for the posting vehicles in Pennsylvania (H20, HS20, ML80 and TK527) if the bridge is posted for load.
  - iii. For the H20, ML80 and TK527, the value displayed is from Item VP04.
  - iv. For the HS20, the value displayed is from Item VP05.
- g. Item 4A26 – Seismic Vulnerability (B.AP.05)
  - i. Location:
    - 1. BMS2: Ratings & Schedule Screen
    - 2. iForms: Form P – SNBI Tab
  - ii. For all bridges in Pennsylvania, this field was preset to a value of “N – Evaluation not Required”.
  - iii. This field is editable.
- h. Item IU30 – Scour Plan of Action Required? (B.AP.04)
  - i. Location:
    - 1. BMS2: Underwater Screen

- 2. *iForms*: Form P – SNBI Tab
    - ii. This field is automated based on 4A08b. If the value is A, B, C, or D, this field is set to “Yes – Required and Implemented”, otherwise the value is “0 – Not Required.”
  - i. Item 1A15 – NSTM Inspection Condition (B.C.14)
    - i. Location:
      - 1. BMS2: Ratings & Schedule Screen
      - 2. *iForms*: Form P – SNBI Tab
    - ii. This field was initially populated on bridges with an Item 6A44 value less than “5” and set equal to the Item 1A04 – Superstructure condition rating.
    - iii. This coding should be verified in the field to ensure the condition rating is specific to the condition of the non-redundant steel tension members present on a bridge. If a bridge does not have NSTM members as part of the superstructure or substructure, it should be coded as “N – Not Applicable”.
  - j. Item 1A16 – Lowest Condition Rating (B.C.13)
    - i. Location:
      - 1. BMS2: Ratings & Schedule Screen
      - 2. *iForms*: Form P – SNBI Tab
    - ii. This field is automatically populated based on the lowest condition rating amongst the following fields: 1A01 – Deck, 1A02 – Substructure, 1A03 – Culvert and 1A04 – Superstructure.
12. Fixed an issue with the formatting of the NBI submittal file related to the LRS Route ID field.
13. Ran a script to create a posting status record with Item VP02 = “A – Open, no restrictions” on all structures in BMS2 with no posting status record. This affects non-bridge structures and was done because many reports are programmed based on posting status and those structures were not being captured.
14. Fixed an issue where the Scour POA batch job could fail if spreadsheets of document types "Waterway Cross Section" or "Channel Cross Section" were uploaded to the Documents screen.
15. Added table joins to allow validations to be created for load rating data. Bridges will be flagged if they violate the new load rating refresh criteria based on condition and time since last rating.
16. Added previous inspection comments to the XMLGen Process so that they would be accessible to the upcoming BMS3 application.
17. Updated the USERINSP table to update Item IR02 Assigned Rating Approval Date when inspections are assigned.

## ***iForms***

- 3. Refer to the changes covered in detail within the BMS2 section. This applies to Detailed Summaries 1 through 3 and 5 through 8 above.



## **Summary of Key Changes (iForms Version 5.22.1) (3/20/2023)**

### **iForms**

1. A recent change to Windows 11 made iForms non-compatible with the operation system. PennDOT has removed the functionality from iForms that caused the issue.

## **Summary of Key Changes (BMS2 Version 5.59 and iForms Version 5.22.0) (2/7/2023)**

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*Release 81 and subsequent releases will begin to introduce coding items that are required as part of the transition from FHWA's Recording and Coding Guide for the Structure Inventory & Appraisal to the Specification for the National Bridge Inventory. In addition to changes in iForms and BMS2, Publication 100A will be modified and/or appended with the new coding items as needed. Refer to [Appendix N](#) for the newly added fields.*

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### **BMS2**

1. The *Scour Calculator* that determines the value of IU27 and IU28 of each individual subunit within the 500-year flood plain at a bridge and the overall SCBI (IU04) has been updated to accommodate a new coding option in IN15, "D9" or Designed Scour Measure. Previously, PennDOT provided direction to code designed scour measures as "A6" in IN15. With the new direction in the *Specifications for the National Bridge Inventory* (SNBI), PennDOT must be able to differentiate the difference between subunits with A6 streambed material and D9 design scour measures to determine other coding fields. Inspectors should begin applying this coding methodology immediately on open and upcoming bridge inspections. Previously accepted inspections do not need to be modified.
2. Several new fields were added to BMS2 from the SNBI to accommodate required changes to the extended interval inspection policy. These fields are described briefly below with the entire coding guidance provided in Publication 100A. The fields are incorporated by way of addendum and a future release of Publication 100A will incorporate them to be of similar formatting with additional guidance as needed.
  - a. IF07 – Fatigue Details (SNBI Item B.IR.02)
    - i. Location:
      1. BMS2: Fracture Critical Screen, Inspection Information Section
      2. iForms: Form P – SNBI Tab
    - ii. Field is automatically calculated based off the Fracture Critical Members on the bridge, specifically the coding of IF05. If any member listed on the screen has the coding of E or E', this field will be coded as "Y".
    - iii. E or E' details must be documented on the screen, regardless of if the bridge is deemed to be Fracture Critical ( $6A44 < 5$ ).
    - iv. If a bridge has a E or E' detail, the bridge is not eligible for Method 1 extended interval inspections.

- b. IU29 – Scour Vulnerability (SNBI Item B.AP.03)
  - i. Location:
    - 1. BMS2: Underwater Screen, Top Section
    - 2. iForms: Form P – SNBI Tab
  - ii. Field is automatically calculated based off data from Items IU27, IN13, IN05, and IN15. Some bridges will be displayed with a temporary coding value of AB-T until the next inspection because based on the coding criteria from FHWA, we are unable to make an exact conversion and need inspectors to determine if IN15 should be set to D9 before the vulnerability value can be changed from the temporary coding. For bridges not over water, the value was set to N.
  - iii. Only bridges with a value of A, B, or AB-T will be eligible for Method 1 extended interval inspections.
- c. 1A13 – Scour Condition Rating (SNBI Item B.C.11)
  - i. Location:
    - 1. BMS2: Ratings & Schedule Page, Condition Section
    - 2. iForms: Form P – SNBI Tab
  - ii. The initial population of the data for this field was based on the lowest IN05 value of all the subunits for a given bridge. For bridges not over water, the value was set to N.
  - iii. Inspectors should verify the coding reflects the condition descriptions during the next schedule inspection.
  - iv. Bridges with an Item 1A14 Condition Rating < 6 will not be eligible for Method 1 extended interval inspections.
- d. 1A05b – Channel Protection Condition Rating (B.C.10)
  - i. Location:
    - 1. BMS2: Ratings & Schedule Page, Condition Section
    - 2. iForms: Form P – SNBI Tab
  - ii. The initial population of the data for this field was based on the 1A05 – Channel Condition Rating for the bridge. For bridges not over water, the value was set to N.
  - iii. Inspectors should verify the coding reflects the condition descriptions during the next schedule inspection.
  - iv. Bridges with an Item 1A05b Condition Rating < 6 will not be eligible for Method 1 extended interval inspections.
- e. 1A14 – Underwater Inspection Condition (B.C.15)
  - i. Location:
    - 1. BMS2: Ratings & Schedule Page, Condition Section
    - 2. iForms: Form P – SNBI Tab
  - ii. The initial population of the data for this field was based on the lower value of the 1A02 – Substructure Condition Rating or 1A03 – Culvert Condition Rating. For bridges not over water, the value was set to N.

- iii. Future inspection teams should verify the condition rating is reflective of only the substructure units that require an underwater inspection.
  - iv. This field will be used to determine the Underwater inspection interval for Method 1.
  - v. Bridges with an Underwater Condition Rating  $< 6$  will not be eligible for Method 1 extended interval inspections.
- f. 7A21 – Method 1 Extended Interval Eligibility
- i. Location:
    1. BMS2: Ratings & Schedule Page, Extended Interval Inspection Section
    2. iForms: Form P – SNBI Tab
  - ii. The criteria to determine if a bridge is eligible for Method 1 extended interval bridge inspections (48-month routines) for NBIS length bridges after June 6, 2024 is as follows:
    1. State or PTC Owned & Maintained (5A21 – 01 or 31 & 5A20 = 01 or 31)
    2. Deck (1A01), Superstructure (1A04), Substructure (1A02), Culvert (1A03), Scour (1A13), Channel (1A05), and Channel Protection (1A05b) Condition Ratings  $\geq 6$  or N
    3. SCBI (4A08) = 4, 5, 8, 9 or N
    4. Known Foundation Type (IN13  $\neq$  P, X)
    5. Minimum Vertical Clearance Under (4A17)  $\geq 14.5'$
    6. Non-Fracture Critical Bridge (6A44  $\geq 5$ )
    7. Structure Type is not Adjacent Non-Composite Box Beams (6A26-6A29  $\neq$  42107)
    8. Posting Status (VP02) = A (Open, no restrictions)
    9. For NBIS: Load Rating  $\geq$  State Legal Load; HS20 IR  $\geq 36$  tons  
ML80 IR  $\geq 36.6$  tons TK527 IR  $\geq 40$  tons
    10. Bridge has received a First time and one Routine Inspection after year built or year reconstructed or two consecutive Routine Inspections (24 months between said inspections)
    11. Bridge does not have any active or deferred Priority 0 or 1 Maintenance Items
    12. Steel Bridges without E or E' Fatigue Details (IF07 = N)
    13. Structure Material Type is Steel or Concrete (6A26 Main  $\langle \rangle$  5,6,7,9 and 6A26 Approach  $\langle \rangle$  5,6,7,9)
    14. Structure Config Exclusions (6A29 Main  $\neq$  11 thru 21 or 26 and 6A29 Approach  $\neq$  11 thru 21 or 26)
    15. Min Vert Overclearance (4A15)  $\geq 14.5'$
    16. Minimum Vertical Clearance above and below the bridge  $\geq 14.5'$
    17. Scour Vulnerability value of A, B, or AB-T<sup>1</sup>
    18. No substructure units with IN12 Pier/Abut Type = 6 (Stone Masonry), 9 (MSE), 21 (Timber) or 24 (Stone Masonry)

Note 1: AB-T is only a temporary coding and will eventually be removed after one inspection is completed on all bridges in inventory.

- iii. Non-NBIS bridges will continue to use 7A19 to determine the extended interval eligibility.
  - iv. All bridges that are marked as “No” for Item 7A21, need to be in compliance with inspection intervals (not exceeding 24-months since last routine) before June 6, 2024.
3. Modified the extended interval criteria for Item 7A19 to reflect the recent changes to Publication 238 that explicitly states bridges with any active or deferred Priority 0 or Priority 1 maintenance items, regardless of the type, are not eligible for extended interval inspections. These bridges require 6-month interims and a routine inspection interval of 24-months.
4. As indicated in the Technical Bulletin (SOL 483-22-01), additional narrative fields have been added to the Load Rating screen in BMS2 and Form K in *iForms*. These new fields allow the inspector and load rating reviewer to enter comments on why or why not a load rating was performed as part of the inspection. These field should be entered during each inspection and will be carried forward to the next inspection for reference.
5. In addition to narrative fields described above, considerations to help the inspector determine if a new load rating is required have been added. Users can click “Considerations” button in BMS2 or *iForms* to view the list in the application. The considerations are provided below:
  - g. Has the dead load increased (e.g., additional wearing surface has been placed)?
  - h. Has there been new or additional section loss to the main load carrying members in critical areas?
  - i. Has the existing capacity of the bridge been increased (e.g., bridge has been rehabilitated)?
  - j. Has there been a change in the Live Load configuration (e.g., barriers have been installed to restrict vehicles from certain areas)?
  - k. Has the superstructure configuration changed (e.g., the bridge has been widened)?
  - l. Has the substructure or superstructure deteriorated to a condition that may limit or further limit the load carrying capacity of the bridge (e.g., a substructure unit exhibits advanced section loss)?
  - m. Has the condition code or distress level changed on a bridge load rated with the engineering judgement load rating method?
  - n. Has the deck deteriorated to a condition that may limit or further limit the load carrying capacity of the bridge?
  - o. Has there been a change in the condition code of the superstructure or substructure, which would result in the need to apply an SLC factor? Apply 0.8 factor when Super/Sub = 4 (ADTT  $\geq$  500) or  $\leq$  3, 0.9 factor when Super/Sub = 4 (ADTT < 500).
  - p. If the controlling super/culvert condition rating is = 5 for 15 years or more, is the current load rating  $\geq$  15 years old?

- q. If the controlling super/culvert condition rating is  $\leq 4$ , is the current load rating  $\geq 10$  years old?
6. The location of Item IR01a has been changed from a bridge level field to an inspection record field. Previously, the changes to this field were not recorded in perpetuity. By changing to the inspection record, this field will be tied to each individual inspection and allow better tracking of when or when not a load rating was recommended. The field is now stored on the "USERINSP" table.
7. The Standard Inspection Report Generator has been modified to accommodate the additional comment fields described above to indicate why a load rating was or why not a load rating was completed as part of the inspection cycle.
8. To better assist users when reviewing data on the Underwater screen in BMS2, IN16 was added to the summary table on the subunits tab between IN13 and IN18. This will allow users to quickly identified which subunits are impacting the Underwater Condition Rating Field (1A14).
9. The BMS2010 – BMS2Web M1 – NBIS Monthly Compliance Report was updated to accommodate the new fields that impact the determination of the eligibility for extended interval inspections. In addition to adding the display of new fields, additional verification notes have been added to flag NBIS bridges that are no longer eligible for extended interval inspections and require an additional inspection prior to June 6, 2024 to be compliant the Method 1 policy.
10. Updated the Risk Assessment Calculation package to resolve a bug which was not calculating a score for bridges with a BPN (6A19) = H and local bridges with the Submitting Agency (6A06) of P00 to P99.

### ***iForms***

1. Refer to the changes covered in detail within the BMS2 section. This applies to BMS2 Detailed Summaries 1 through 7 and 10 above.

### **Summary of Key Changes (BMS2 Version 5.58.1) (12/7/2022)**

### ***iForms***

1. When the legal statements were updated as part of the *iForms* update in November, it inadvertently reduced some of the comment boxes above it on Report C and not all the text entered into the form was displaying. This issue has been resolved and the report will display the comments properly now.
2. When users attempted to print Form G, a red error message would appear on the form if the user's schema version did not match the *iForms* version. This issue has been resolved without the need for a code and reference to occur.

## **Summary of Key Changes (BMS2 Version 5.58.1) (11/21/2022)**

### **BMS2**

1. A change made during the release for Version 5.58 limited the ability for users to upload inspection data when the inspection record did not have underwater inspection data. This was a result of adding the new field to indicate if a substructure unit is within the 500-year flood plain. This issue has been resolved and users are able to submit inspection records, regardless of if there is data on the underwater inspection screen.

## **Summary of Key Changes (BMS2 Version 5.58 and iForms 5.21.0) (11/16/2022)**

### **BMS2**

1. Following direction from the Office of Chief Counsel, the legal statement at the bottom of the Inspection Report Generator and the Bridge Problem Report has been updated to remove specific references to sections of law and simply indicate “pursuant to federal law”.
2. A new field was added to the Structure Units page and the Underwater page to indicate if a substructure unit is within the 500-year flood plain. A script was run to set this field to being checked for any substructure unit already on the Underwater page. In the future, if a substructure unit is added to the page, the box will automatically be checked. Similarly, when a substructure is deleted, the box will become unchecked on the Structure Units page.
3. Local Bridge owners now have the ability to accept inspections for non-NBIS bridges in BMS2 if they are assigned an Owner Agent business partner role. These structures are in BMS2 to provide local owners with a place to inventory and record conditions of their non-NBIS bridges.
4. The character limit for Item 5C20 – LRS Route ID has been increased from 10 to 20 characters to accommodate data received from HPMS for the new Specification for the National Bridge Inventory (SNBI) coding of the field.
5. The process to add team leader qualifications for bridge and tunnel inspectors on the User Preferences screen has been modified to require qualifications be entered when creating a team leader certification. Previously, users could add their team leader certification without selecting their qualification method.
6. The value for Item 7A08 – Last Inspection Date was not correctly updating in the BMS2 database. At times, the date displayed in BMS2 would not match the date saved in the database. This issue has been resolved.
7. An issue with Item 7A19 – Extended Inspection Interval Eligibility that caused the field to incorrectly determine eligibility for bridges with the NBI vehicle marked as the PHL-93 and reported in rating factors has been resolved. These structures were being flagged as ineligible because the calculation was treating the factor as a tonnage.
8. An issue causing the Item D.2 – Actual Routine Inspection Date to pull from an element inventory type inspection instead of the last routine inspection has been resolved on the NTI submission file.

## **iForms**

1. Following direction from the Office of Chief Counsel, the legal statement at the bottom of every report generated by iForms has been updated to remove specific references to sections of law and simply indicate “pursuant to federal law”.
2. On Form G, a new read-only field was added to the “Sub Units” tab beneath the display of IU28. This field is automatically checked when a subunit is added to Form G and unchecked when a sub unit is removed.
3. An issue on Form B that caused the data in Item IB17 - Bearing Comment to not replicate when a new inspection was started has been resolved. Previously, when a new inspection was started, IB16 would replicate into IB17 and erase the previous IB17 data. Data from the accepted inspection was not compromised but inspectors had to re-enter the data on the new inspection.

## **Summary of Key Changes (BMS2 Version 5.57 and iForms 5.20.3) (9/6/2022)**

### **BMS2**

1. When entering a posting screen record and selecting a value of Item VP02 – Posting Status = B - Open, Posting Recommended, Items VP04 – Posted Weight Limit, VP05 – Posted Weight Limit Combination, and VP06 – Posting Reason are now required to be entered. These values are required because this posting status is to be used after a load rating has been completed and a posting is required but the signs have not yet been installed.
2. The PHL-93 vehicle was removed from the calculation of Item 4B03 – Bridge Posting because the PHL-93 is not a posting vehicle. This field is based off the H-20, HS-20, ML-80, and TK-527.
3. A bug preventing the use of validations for sign structures in BMS2 has been corrected. Validations 346 to 351 and 404 to 407 have been added and are now working properly.
4. Items 4B05 – Operating Rating and 4B07 – Inventory Rating were not properly calculating if the NBI vehicle was reporting values in rating factors instead of tonnages. This issue has been resolved and the value displayed is correct, regardless if the NBI vehicle is reported in tonnage or factors.
5. Item SS09 – Department Structure Type was not updating when changes were made to 6A26-29 or SP07-10. If the value was not correctly populated when the record was created, the value will not display correctly. Now, users will see the value updated based on Items SP07 through SP10 for the corresponding span, which can be updated on the Structure Units page. A script has been run to update SS09 if it did not match up with non-blank SP07-SP10 values. A warning message will appear if SS09 cannot be updated due to blank SP07-SP10 values.

## **iForms**

1. Validations 346 to 351 and 404 to 407 have been added to the configuration file for sign structures and programmed to work in iForms.

## **Summary of Key Changes (BMS2 Version 5.56 and iForms 5.20.2) (6/28/2022)**

### **BMS2**

1. A bug preventing the use of the search function within the BP Assignment screen has been resolved. Previously, when users searched, the screen would turn white and stop working.
2. A new D-491 report has been created on the Reports screen of BMS2. This report (BMS2019 – BMSWeb\_D491\_Preservation\_Rehab) is listed separately at the bottom of the reports page. Due to system limitations, it could not be grouped with the other D-491 reports on the Reports screen. The new report is broken into sections in the same order as the Preservation & Rehab screen.
3. Users are now required to enter a value for SG04 – Relationship when creating a new structure group on the Structure Group screen. This relationship will be tied to the BRKEY the group is created on. This relationship value can be changed on the Structure Group page at a later time if needed. Previously, the initial relationship would always default to “Predecessor” and would have to be changed later.
4. Within the Scour Plan of Action reports in BMS2 (both on the reports screen and the automated reports that run after an inspection has been accepted), the language under Section 8 – Monitoring Log has been updated. The updates clarify when a bridge may need to be closed and who can authorize reopening a structure.
5. A new field from the SNTI, I.11 – LRS Route ID has been added to the Inventory – Tunnel Screen, the D-491 Report and the SNTI Submittal File. Similar to the other tunnel inventory fields, users should refer to the SNTI manual.
6. A bug that would cause changes to the Posting screen to not immediately be displayed has been resolved. Previously, users had to hit “refresh” if a new posting status was added to the Posting screen to see the changes made. Now, the change will be displayed immediately.
7. When using the Inspection Report Generator, an external source to combine the documents was previously used. A recent update to that software disrupted the ability to add PDFs to the generator. That reliance has been removed and the report generator is now working as intended.
8. Element validations have been added to the main Validation screen. These validations have been programmed to match FHWA’s file check on the NBE submittal.
9. Modified the import process on the Preservation & Rehab screen to allow projects without a BRKEY in ECMS to be imported if they have a BMSID.
10. Added “PG-Peregrine Falcon” to the parameter table for Item VI18 Permit Type on the Inspection Planning Screen to track bridges that have been identified as having peregrine falcons nesting there.



11. Changed the corresponding initial assembly number on the brush clearing and clean/flush horizontal surface maintenance items when they are sent to SAP. Brush clearing (IM03 Activity Code 92) was changed from “711-7423-01 Light System Service – Various” to “711-7457-02 Brushing, Tree Removal, etc – Mechanized”. Clean/Flush Horizontal Surfaces (IM03 Activity Code 34) was changed from “711-7431-03 Cleaning/Flush – Open Grid” to “711-7431-02 Cleaning/Flush – Bearing and Super Structure”.

### **iForms**

1. Element validations have been added to iForms as well, similar to other validations that run when a user attempts to submit a record from iForms to BMS2.
2. The “Check for Update” functionality in iForms was previously not working. It has been repaired and is now functioning as designed.

### **Summary of Key Changes (BMS2 Version 5.55 and iForms 5.20.1) (4/12/2022)**

#### **BMS2**

1. Made improvements to the logging file that tracks the transmission of data associated with completed maintenance items from SAP back to BMS2. This data can now be queried by bridge inspection staff for troubleshooting purposes.
2. For non-NBIS bridges and non-bridge structures, the team leader list (Item 7A02) was randomly displaying names out of order. This issue has been corrected so that regardless of structure type, the team leader list will always display alphabetically by last name.
3. After asking inspectors to maintain their certifications in BMS2, it was discovered that some consultant user roles did not have access to the User Preferences screen. Access to that screen has been granted to additional user roles to allow for more input on the screen.
4. On certain screens in BMS2, users would make changes to an item, hit save and after the screen indicated the changes were saved, the old values would still be displayed. If the user hit refresh, the previously saved values would then be displayed. The values were being stored in the database and it was only a display issue.
5. On the BPR screen, users enter comments in bulleted format. Some users reported that when they previewed the PDF report, the comments would sometimes be displayed in a different order than how they were ordered. This issue has been resolved.
6. On the Joints and Bearings screen, users had the ability to enter special characters in note fields. However, if the user attempted to download a bridge with special characters in the notes field, iForms would not allow the bridge to be downloaded. This issue has been resolved and the bridges can be downloaded without issue.
7. To align with changes throughout PennDOT, the links referring to PennDOT’s homepage have been changed to “penndot.pa.gov”.

### **Summary of Key Changes (BMS2 Version 5.53 and iForms 5.20.0) (1/25/2022)**

#### **BMS2**

1. To improve the quality of data in BMS2, the team leaders listed under Item 7A02 have been restricted to those who have self-certified by way of the User Preferences screen in

BMS2. Users should follow the instructions provided in this [email](#) that was sent out to all individuals with access to BMS2. If a user updates their information before 8PM Monday through Saturday, qualified team leaders will appear the following day in iForms in addition to BMS2. If the update occurs after 8PM or anytime on Sunday, it may take up to two (2) days for iForms to update the team leaders list. Users must enter certification expiration dates for their bridge inspection training and/or tunnel inspection training, otherwise, their name will not appear even though they have entered their certification and they qualify as a team leader. If you follow the instructions and still have problems, please send an email to [pd-bomobridgeinspectsection@pa.gov](mailto:pd-bomobridgeinspectsection@pa.gov).

2. The conversion table from Item 6A38 – Bridge Deck Type (PennDOT) to Item 5B01 – Bridge Deck Structure Type (NBI) has been updated. Item 6A38 coding of 16 and 17 will now be converted to an Item 5B01 coding of 6 (previously 4). Existing records have been updated accordingly.
3. The Scour Plan of Action report search criteria has been updated. Users only need to enter one selection criteria. Previously, the user was required to enter a search parameter in each of the criteria to run the report. The report output is now sorted by Scour Category (A, B, C, D) and then by BMS#.
4. Unused fields (FR10, FR12, FR14, FR15) have been removed from the Features Intersected - Railroad screen in BMS2 and the corresponding D491 report. These fields are not used, and their display was removed to avoid confusion.
5. The ability to enter special characters into Items SG02 and SG05 on the Structure Group screen has been added.
6. A bug was identified that Item 7A10 for the NBI and Element date was not being calculated correctly following the updates made in November 2021. This issue has been resolved.
7. Similarly, a bug was reported for Item 7A08, specifically for the Element date. When a user would submit a record from iForms, the date in BMS2 would be cleared out. This issue has been resolved.
8. A bug existed in BMS2 where the unit of measure (UOM) would not display for elements in BMS2. This bug has been resolved and the UOW will update on the screen based upon the element selected.
9. A bug on the Bridge Problem Report (BPR) screen existed when users attempted to copy and paste into BPR text fields. When a user would paste into the field, the character count would not update. This has been resolved and the character count updates immediately after pasting text into the field.

## **iForms**

1. Users reported an issue that they were unable to open iForms after the release on November 9, 2021. The work around was to uninstall iForms and reinstall. This bug repair as part of this release will allow users to open the system without having to uninstall.

Prior changes have been incorporated into Publication 100A. If you need additional information, please reach out to the Bridge Inspection Section ([PD-BridgeInspectSection@pa.gov](mailto:PD-BridgeInspectSection@pa.gov)).