

6-1 General

The purpose of this chapter is to provide consistent procedures for reporting bridge repair needs and following up on bridge repair work performed. FHWA has general reporting requirements related to critical findings (discussed later), but otherwise leaves the tracking of repair and maintenance to the owning agency.

Recommendations for repairs arising from bridge inspections range from preventive maintenance that will preserve the life of the structure by slowing down the processes of deterioration, to routine repairs that correct existing minor problems, to critical repairs that must be undertaken immediately to restore service or safeguard the public. The ability to identify and track bridge repair needs and to follow the status of repairs is a vital element of a quality bridge management program. Bridge program managers rely on accurate, timely information provided by concise reports and thorough procedures. The following sections outline both the reports to use and procedures to follow for various types of repair and maintenance needs.

This chapter is specifically written for the use of state forces conducting inspections on both state and locally owned structures. For inspection work performed by state forces on locally owned structures, it is important for the Local Agency to be aware of the procedures that will be used by the state inspectors. Local Agencies are encouraged to also follow these guidelines but are able to tailor internal procedures to their specific organizational need.

6-2 Critical Finding and Critical Finding Damage Report (CFDR)

The NBIS (23 CFR 650.313(q))/MBE (Chapter 4) make reference to critical findings/deficiencies as a special category of repair need requiring immediate attention of the bridge owner with timely notification to FHWA and subsequent tracking of repair status.

In Washington State, a critical finding is defined as a structural or safety related deficiency that requires immediate action. Judgment must be used in determining whether to categorize a finding as critical. Some examples that may be considered a critical finding are provided in the BIRM. To provide greater clarity, the following examples are expected to result in a critical finding.

- The condition necessitates closing, posting, or restriction of a structure, a portion of a structure, or access under a structure.
- NBI Deck code is downgraded to 2 or less.
- NBI Scour code is downgraded to 2 or less.
- NBI Superstructure, Substructure or Culvert codes are downgraded to 3 or less.
- The condition warrants a structural review to determine the effect on the safety of the structure.

Critical findings can be the result of many factors. Examples include scour, fire, structural deterioration, vehicular impact or extreme events such as floods and earthquakes. A relatively frequent cause is vehicular impact. Short-term closure or restriction of a facility to clean up debris and perform inspections does not qualify as a critical finding incident by itself.

The Bridge Preservation Engineer (BPE) (for State bridges) or the WSDOT Local Programs Bridge Engineer (LPBE) (for Local Agency bridges) is to be notified by phone or email within one working day of identifying structural deficiencies to a structure that will likely result in a critical finding. For an incident on the state system, the BPE shall ensure that relevant WSDOT executives and staff are notified as soon as practical (usually via email). Similarly, for an incident involving a local agency structure, the LPBE shall ensure relevant local agency and WSDOT support staff are notified as soon as practical. In either case, the FHWA Division Bridge Engineer shall be included in the notification for an incident involving an NBI reportable structure. Incident information shall also be entered into the CFDR tracking system within five (5) business days after determination that the event qualifies as a CFDR event.

Initial notification for a critical finding is followed up by completing a Critical Finding Damage Report (CFDR) within BridgeWorks under the CFDR for the identified structure. Initiating and updating the CFDR is necessary to assist in documenting and tracking critical structural and safety related deficiencies on damaged structures.

FHWA will periodically review any generated reports and the tracking system to verify the needed repairs were promptly reported and the recommended repairs were completed within a reasonable period of time. FHWA may also conduct field checks to verify that critical repair work was accomplished.

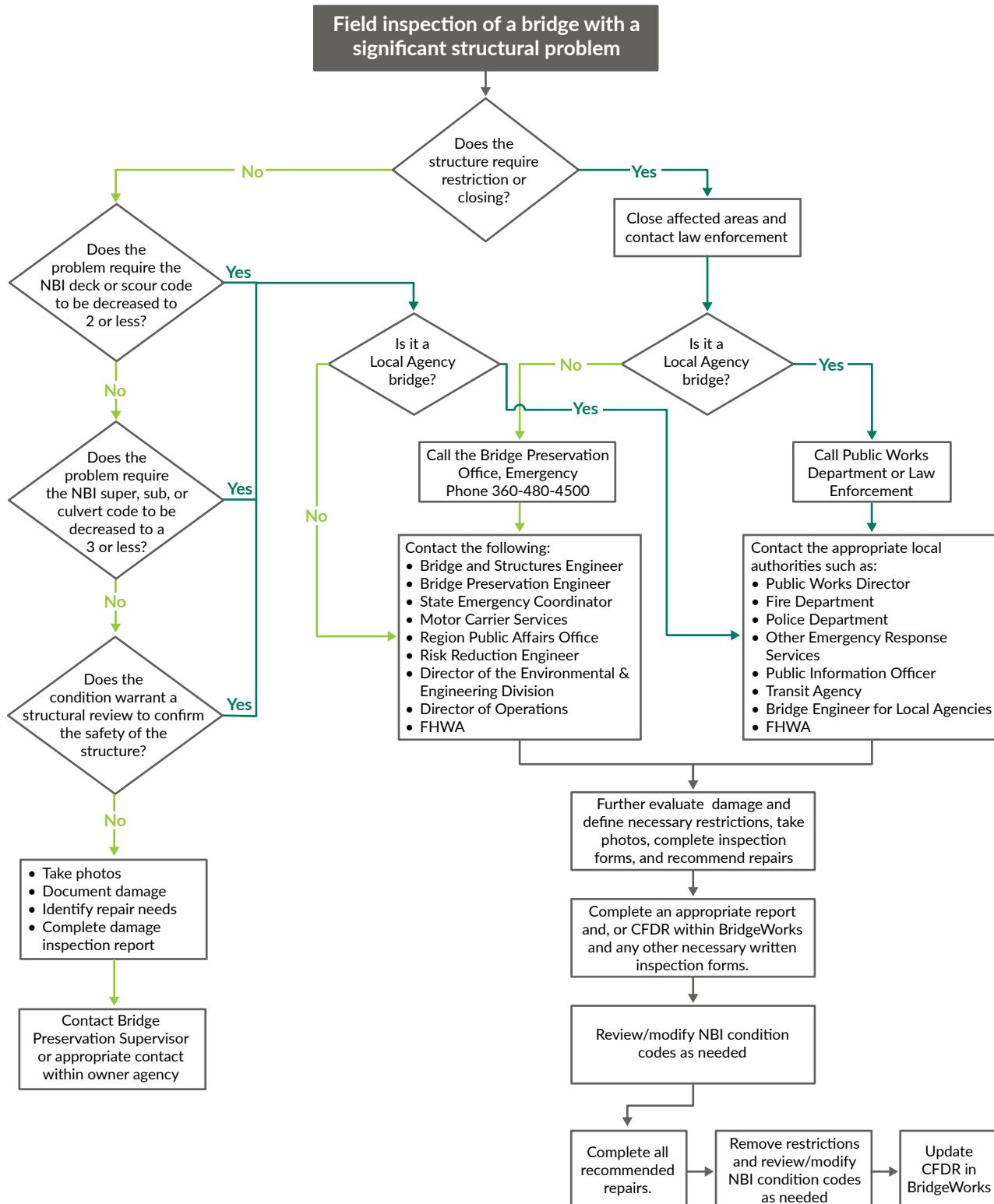
See Exhibit 6-1 for guidance on determining when a CFDR is required.

The CFDR must be filled in as completely as possible, as soon as practical after the post-incident inspection. See [Section 6-2.2](#) for CFDR submittal requirements.

CFDR incidents will be registered in the database by completing a Routine, Damage, or Informational Report within BridgeWorks (BW). These report types are discussed further in Chapter 3. After initializing the CFDR in BridgeWorks attach all supporting materials (photos, sketches, etc.) to the Files Tab. All repair recommendations arising from the Critical Finding should be identified in the report and attached to the Critical Finding entry. Critical Finding repairs that must be completed to allow the lifting of any closure or restriction shall be assigned a priority of "C".

Any time the recommended repairs cannot be accomplished immediately, the applicable NBI and BMS condition codes should be reviewed to ensure that the data accurately reflects the bridge's current condition and status.

Exhibit 6-1 Field Inspection Procedure



The following procedure describes how to fill out the CFDR.

6-2.1 Completing the CFDR

Generally, the author of the Critical Finding Damage Report (CFDR) will be the team leader of the team that inspected the structure and identified the critical finding. On occasion, there may be no inspection associated with the critical finding or an incident may be determined to be a critical finding sometime after the inspection has been completed. In such cases, the Bridge Repair Engineer or Bridge Owner can use an Informational Report type to enter it and shall be responsible to ensure the CFDR is completed and appropriately reported.

When filling out the CFDR within BridgeWorks, keep in mind the purpose of the CFDR entry is to provide a means of generating reports for managers and FHWA to track Critical Findings and their status. Detailed information can be referenced in the reports for the structures.

The author should adhere to the following:

1. Select a unique Critical Finding Number for each new Critical Finding prior to entering additional information.
2. For follow on entries, always select the Critical Finding Number they will be associated with prior to entering additional information.
3. Select the proper entry type. Identified is for the initial entry. A complete process for any Critical Finding will usually include "Identified", "Action Taken", and "Resolved" entries, as well as any "Updates" entered in the process.
4. Always identify the current bridge status with each entry.
5. Estimated Resolution Date should be entered with as an update when it becomes known.
6. Keep descriptions brief, do not repeat, or copy detailed report information into the Critical Finding.
 - **Identified** entries, provide a short executive summary identifying the incident, effected elements and conditions warranting the Critical Finding. Complete and specific details on element condition or damage should be identified within the body of the report.
 - **Actions Taken** entries, provide a description of mitigating measures including temporary closing or restricting the structure, or putting temporary repairs in place while conducting additional evaluations of the structure for solutions to permanently mitigate the deficiencies.
 - **Update** entries can include results of follow up evaluations or inspections, changes in restriction or status, entering estimated resolution dates, or anticipated plans for repair or resolution. Updates can be entered at any step in the process after the Identification entry and as additional information or change in status becomes available.
 - **Resolved** entries close out a Critical Finding and any description should include information on completion of repairs that restore the structure or that a permanent solution has been implemented to completely mitigate the deficiencies and protect public safety. Aside from permanent repair, this could involve, long term closure, or permanent restrictions/barriers put in place pending replacement.
7. Provide the initials for the person entering the information on that line.
8. Go to the Repairs Tab and attach the Critical Finding to the appropriate repair if one has been written.

9. State team leaders are required to send an email to the Bridge Preservation Engineer and the Bridge Preservation Supervisor, with a cc to the Load Rating Engineer and the Bridge Repair Engineers, informing them that the CFDR Initial entry and supporting information is complete and saved within the BridgeWorks program.

See [Appendix 6-A](#) for further CFDR Instructions.

6-2.2 CFDR Tracking and Reporting

1. **CFDR Submittals** – After the Initial entry for a CFDR is completed, the owner agency is responsible for continuing to update status of open (Un-Resolved) Critical Findings until they are Resolved. It is not uncommon that permanent repairs or mitigation of a CFDR event can take an extended time to complete, especially for replacement or substantial rehabilitation. When final repair/replacement is expected to occur at some unidentified future time, Update entries may show the status of the bridge at the time of the update and outline repair/replacement plans to the extent they are known. On a long-term basis, this can be done by the Inspector/Author, Repair Engineer, or other designated Program Engineers with access to BridgeWorks, through the use of open Informational Reports.

For NBI reportable structures, the Bridge Preservation Engineer or the WSDOT Local Programs Bridge Engineer shall ensure that the FHWA Division Bridge Engineer is notified of the event as soon as possible but no later than five (5) business days after determination that the event qualifies as a CFDR event.

To maintain ongoing CFDR status tracking the Bridge Repair Engineers with work with Informational Group, the Bridge Condition Engineer and the WSDOT Local Programs Bridge Engineer, at 6-month intervals (April 30 and October 31) to generate accurate reports, in the FHWA requested format, for submittal to the Bridge Preservation engineer. After review/approval, the reports will be forwarded to the FHWA Division Bridge Engineer within 1 month (June 1 and Dec 1).

Local Agencies may develop their own systems for tracking and reporting CFDR events. CFDR reporting for Local Agency events shall be through the Local Programs Bridge Engineer. Local Agencies are encouraged to submit CFDR tracking reports to FHWA on the same schedule as the state system.

2. **Post Repair Reporting** – As Critical Findings are updated and resolved, accurate and timely information regarding the repairs and resolution must be submitted to program managers and other interested parties, informing them of the resolution and the removal of any traffic restrictions.

The individual who completes the final Resolved entry on a CFDR may have to rely on reports and photos from those who have actually done the repair work. This is understandable and justified, recognizing that those who actually perform the work may not be the same person responsible for the bridge inspection and reporting. It is permissible in certain circumstances to verify the work and complete a post-repair Update or Resolved entry from the office based upon reports received from others. Consult with your supervisor, the Bridge Preservation Supervisor, or the Bridge Preservation Engineer to make the decision and to determine how the information is to be entered into the database (Usually by Informational Report).

However, it remains good and expected practice to have trained team leaders field verify that all the repairs are complete and satisfactory. If changes in condition coding are not anticipated, a Routine or In-Depth Inspection to verify the work should be conducted within six months of completion of the required work. But in cases where NBI/BMS condition codes were reduced due to the incident and may be considered for increase after completion of the repair work, the follow-up inspection work should be conducted as soon as possible following completion of the repair work. When a bridge is being reopened to traffic following closure and extensive rehabilitation or replacement, an Initial Inspection may need to be performed. Chapter 3 provides a description of reports.

After the repair verification is complete (from the office or by field inspection) the Critical Finding Tab shall be updated and with a Resolved entry and any NBI and BMS data will be updated as necessary. An e-mail providing notice of the update should be sent to the Bridge Preservation Engineer for State bridges, or the WSDOT Local Programs Bridge Engineer for Local Agency bridges.

6-3 Other Damage Reports

Most damage inspections do not end up requiring a CFDR. The most common case is related to vehicular impact damage, but other situations (e.g. scour, fire, sudden joint failure) are possible.

For those damage inspections that do not require a CFDR, complete the Damage Inspection Report (DIR) as outlined in Chapter 3. For some cases of minor damage that are not likely to require a structural repair and where the region has not specifically requested our assistance a field inspection may not be required by BPO. Consult with your supervisor, the Bridge Preservation Supervisor, or the Bridge Preservation Engineer for further guidance. For such cases, the DIR may be completed using information provided by the region or other sources. On occasion, a DIR may not be needed at all for vehicular impact incidents requiring nothing more than minor cosmetic repair provided there are no legal, or cost recovery issues involved. Consult BPO management to make the determination.

For all cases involving reported damages to structures, the assigned inspector receiving the report shall refer to the Emergency Phone Procedures and as a minimum provide an e-mail Supervisors and the Bridge Repair Engineers, including:

- Structure ID; Bridge Number; Bridge Name; Bridge Location (MP)
- Date of Incident (if known; note if unknown)
- Description of Incident
- Identity and contact info of the person or office who reported the incident to BPO. (Note if unknown)
- Date the incident was initially reported to BPO.
- Date of BPO Inspection; names of Lead Inspector and Co-inspector (actual date, expected date, or a note if no field inspection is expected)
- Brief description of damage to the structure
- Brief description of anticipated repair recommendations
- Status of inspection/report (for those cases where an inspection is expected)

All inspection related damage photos and sketches shall be uploaded to the Damage Directory on the network (W:\Data\Bridge\BridgeDamage\Year xxxx\[bridge no.] [structure type] [incident date]).

Permission levels for this network location are set such that information can be uploaded to and/or copied from this directory but edits and deletions can only be made by select individuals (Bridge Preservation Supervisor, Bridge Repair Engineer, and QA Engineer). Notify one of these individuals if corrections/deletions are needed.

6-4 Bridge Repairs

6-4.1 New Repair Entries

When a bridge inspection identifies a routine structural or non-structural deficiency, i.e., any deficiency that is not identified as a Critical Finding in [Section 6-2](#), a repair note describing the deficiency and recommended repair should be written in the Bridge Inspection Report (BIR).

1. **BIR Repair Note** – The State utilizes the following guidelines when describing and documenting deficiencies needing repair.
 - Deficiencies that require repairs shall be documented in the body of the BIR with the associated BMS elements.
 - The description of the deficiency should be concise and detailed, including location and size of the defect.
 - Photos of deficiencies requiring repairs shall be taken for proposed and completed repair of any priority. Multiple photographs of a defect, including an overall view along with close-ups, are recommended.
 - A “REPAIR” notation should be put in the individual element note with the appropriate repair number. The repair number is generated by BridgeWorks and is referenced in the “Repairs” tab of the program.

Example: Stringer F in Panel 2 at Floor Beam 2 has a 4-½" long crack at the top cope. See photo #7. REPAIR #12345.

2. **Repair Entry** – Repair entries for deficiencies found during the course of a bridge inspection shall be entered within the “Repairs” tab found in the BridgeWorks program.

The repair entry should include:

- Priority for the repair.
- Repair responsibility for the repair.
- Date when the repair was first noted.
- Accurate description of the repair required.
- Proper identification of specific repair locations. (In addition to notes in the description, consider adding a map and/or spreadsheet to the Files tab to clarify locating a deficiency when a structure layout or terminology may be confusing.)
- Photographs of the damaged area.
- Associate the repair entry to the appropriate BMS elements or condition notes.
- Describe any difference in the bridge orientation (pier numbering) from that in the plan drawings accessible on BEIS.

Repair entries with multiple items similar in nature (same element) are contained within the same repair. Do not put multiple repair items in the same repair note unless they are similar (same element).

Similar – Replace 10 ft. red tagged (RT) timber cap at Pier 2 and 5 ft. RT timber cap at Pier 3.

Not Similar – Replace upper 10 ft. RT timber Pile 5A and entire RT timber cap at Pier 6.

Due to the number of repairs generated for similar components, the WSDOT BPO strives to utilize consistent descriptions for similar types of repairs called the “Repair Protocols” which are located at W:\Data\Bridge\BridgeRepair\Repair Protocols. Contact BPO for examples and additional guidance for the protocols. For any repairs that are likely to require additional repair instructions from the BPO office, advise the Bridge Preservation Supervisor and the Bridge Repair Engineer of that need.

3. **Repair Responsibility** – Repair responsibilities utilized within the BridgeWorks program organizes repairs into separate repair types. The WSDOT BPO utilizes these repair types to assign responsibility to the various entities that will, in most cases, ultimately perform the repair.

It is not the intent of this manual to direct region maintenance staff in their assignment of work. The following merely reflects our understanding of the most likely assignment.

The following repair responsibility codes are utilized by team leaders for the state.

- **B – Bridge Repair**

These repair responsibilities are generally associated with the bridge structure or conditions that impact the bridge and its elements. These may include structural deficiencies, non-scour related erosion or conditions preventing proper inspection. Drift and debris that can cause scour, channel migration, and/or added lateral forces to the structure are to be entered as B repairs but noted in the appropriate scour or channel notes in the BIR (See scour repair below for more detail). Regional bridge crews are typically charged with completing these types of repairs for state structures.

Note: BPO Regional Inspection staff are not expected to conduct in-depth inspection on bridge mounted signs and sign supports, but are expected to stay alert to obvious defects that can be safely observed and that may need further inspection and/or repair. Such defects on bridge mounted signs are to be communicated to the BPO sign bridge team at the first opportunity. They will typically provide repair recommendations via the Sign Bridge Repair List. But for a severe defect, direct communication to the regional bridge maintenance crew can and should be made if the BPO sign bridge crew is not available for quick response. Keep a record of any such communication and provide it to the BPO sign bridge team.

- **V – Vertical Clearance Repair**

This indicates that the bridge has restrictive overhead clearance for vehicular traffic and that no signing or improper signing is in place. Vertical clearance signs are required for measured clearances less than or equal to 15'-3". The policy for the WSDOT is to post clearances at 3" less than the actual measured clearance with a +2" or -1" tolerance when evaluating any existing posting. Measured clearances less than 14'-3" require advanced restrictive height warning signs as defined in the updated MUTCD. State team leaders shall follow the guidelines in Section 3-4.1.J for further instructions on vertical clearance repairs. The Bridge Preservation Office (BPO) Geometry Engineer is tasked with keeping track of vertical clearance issues and repairs for State structures. Regional Sign crews are typically charged with completing these types of repairs for state structures.

- **S – Scour Repair**

This indicates that the bridge site needs to be evaluated for scour mitigation. A description of the condition of concern must be provided in the inspection notes. Repair actions to correct the condition should be included in the repair description. The BPO Scour Engineer, a hydraulics engineer, or other person with knowledge and expertise of the hydraulics at the bridge will review and may revise the recommended repair, the repair priority, or may deactivate the repair altogether after careful review of the bridge site. A note by the reviewer should be added to the inspection report detailing their findings, typically within the note of WSBIS Item 1680 or repair description.

Engineering scour mitigation requires the bridge owner to work closely with environmental agencies to develop the best corrective action plan for all. Erosion caused by runoff from the bridge is not considered a scour repair.

Team leaders for the state shall apply the following guidelines when selecting a Scour repair responsibility.

- For new scour repairs or monitoring, a discussion with the BPO scour engineer regarding the site conditions should take place to determine what mitigation, if any, is needed to include the repair priority. Provide the BPO Bridge Scour Engineer, with all necessary information to include photos, sketches, and any measurements. Update the BMS Scour and Channel Element Notes in accordance with the scour engineer's directions and comments. Typically, all debris/drift removal scour repairs will be assigned to (B) Bridge Repair responsibility. Photos will however be flagged as scour photos.
- For an existing scour related repair (responsibility S) with a previously set priority, leave the existing priority as it is set. If the inspector feels the field conditions justify a change in the current priority, notify the BPO Scour Engineer for review prior to releasing the report.
- When an existing scour related repair responsibility is not S, ensure that the repair (responsibility) is correct and make changes if indicated. Notify the BPO Scour Engineer, including photos, sketches, and any other information. Code BMS Element #361 and describe the change noting the date that the scour engineer was contacted.

- **R – Railroad Repair**

WSDOT conducts limited scope (non-structural and non-mandated) "WSDOT Safety." inspections of railroad owned bridges that cross over state-owned highways. The R repair indicates that a railroad owned bridge crossing over a public highway has a condition that could pose a hazard to the motoring public, such as ballast falling onto the roadway. The repair description should include some indication of the relative urgency of the recommended repair. The inspecting highway agency (WSDOT or local agency) must ensure that all such repair recommendations are communicated to the appropriate department/individual at the correct railroad. For higher priority conditions, consider reducing the inspection interval.

Note: Vertical clearance signage needs on a railroad overcrossing will likely become the responsibility of the region. Assign such repairs the responsibility code V as outlined above.

- **U – Utility Repair**

This indicates that there is a deficiency with a utility (not owned by the bridge owner) mounted to the bridge. The inspecting highway agency (WSDOT or local agency) should ensure that all such repair recommendations are communicated to the appropriate department/individual at the correct utility. If the deficiency poses a safety risk to the traveling public or to bridge inspection and maintenance crews, or if the deficiency is creating a problem for the structural integrity of the bridge, then the repair recommendations must be communicated to the appropriate department/individual at the correct utility. The Risk Reduction Engineer may be able to facilitate the communication in urgent situations.

- **J – Roadway Repair**

This inspection responsibility is used by Local Agencies and may indicate that there is a non-bridge related deficiency in the roadway approach to a bridge. Roadway maintenance crews, separate from bridge crews may typically be charged with completing these types of repairs. WSDOT no longer uses or assigns J repairs.

4. **Repair Priority** – The priority of the required repair establishes the urgency at which the repair shall take place. The priority may evolve into a more urgent priority if repairs are not completed.

- **Emergency/Urgent** – Describe situations presenting an immediate hazard to the traveling public. These situations are independent of repairs and priorities entered into Bridge Inspection Reports. Situations may require prompt action and must be completed as soon as possible to mitigate or remove the immediate hazard.

Emergency or Urgent situations must be communicated directly to the region maintenance staff (or bridge owner) via phone call and follow-up email. Copy the Bridge Preservation Supervisor and the Bridge Repair Engineer on any such communication. Some situations may result in documented repairs in the report once the hazard has been mitigated. Whenever an emergency or urgent situation results in a repair being entered into the BIR, the repair entry must be assigned an appropriate priority from the following listings. This will usually be a Priority 1 or a Priority C when a CFDR event is involved.

- **Priority C** – Priority C is to be assigned to any CFDR related repair entry that must be completed before the bridge may be returned to the level of unrestricted service that existed before the event and/or the associated low NBI codes can be increased.

Priority C is to only be used in conjunction with a CFDR event. Do not use Priority C for repairs that do not directly lead to a lifting of the restrictions imposed as a result of the CFDR event. Completion of a Priority C repair (by maintenance or by contract) will require follow-up by inspectors to verify the repair, review the condition coding, update the CFDR, and disseminate the information to the appropriate individuals. Completion of a Priority C repair must be communicated directly to the Bridge Preservation Supervisor and the Bridge Repair Engineer. See [Section 6-2.2](#) for CFDR reporting requirements.

- **Priority 1** – A Priority 1 repair describes a major deficiency to primary bridge elements or serious conditions that could cause a major impact to the bridge such as closure or load restrictions. This type of deficiency may lead to more extensive and costly structural repairs if not completed in a timely manner.

Priority 1 is the highest priority assigned to a repair which if left uncompleted, could turn into an urgent or emergency situation with little or no warning.

Priorities 1 and C are the highest priorities that can be assigned within the inspection application.

These repairs are top priority to ensure:

- Public Safety
- Reliability of the Transportation System
- Protection of Public Investments
- Maintenance of Legal Federal Mandates

On occasion, the structure inspection interval may need adjustment to monitor that conditions do not deteriorate to urgent or emergency status, that safety of the traveling public does not become compromised, and to verify that repairs have been done in a timely manner. Additionally, the Rating Revision flag (WSBIS Item 2688) may require a "Y" to re-evaluate a bridge load rating.

Examples of deficiencies requiring Priority 1 repairs are as follows:

- Repairing exposure of damaged strands and/or rebar.
- Removing or mitigating any existing potential for material falling from the bridge.
- Repairing significant joint defects that impact the bridge or create traffic hazards such as 'D' spalls in the header with exposed steel.
- Mitigation of significant erosion or scouring that may indicate possible loss of support.
- Trimming or removal of trees, brush or debris that interfere with inspection procedures or equipment access. List the month and year of the next inspection by which this repair needs to be completed.
- **Priority 2** - A Priority 2 repair describes a minor to moderate deficiency to a primary bridge element, a major deficiency to a secondary bridge element or existing conditions that may eventually elevate to a Priority 1. This type of deficiency would not cause major impact to the level of service of the bridge or compromise safety at its current level. However, this type of deficiency may lead to more extensive and costly structural repairs if not completed in a reasonable timeframe.

Priority 2 is different from Priority 1 in that a Priority 2 deficiency does not immediately jeopardize:

- Public Safety
- Reliable Transportation System
- Protection of Public Investments
- Maintenance of Legal Federal Mandates

A Priority 2 repair would not generally be cause for a reduction in inspection interval or a re-evaluation of a bridge's load rating.

Examples of deficiencies requiring Priority 2 repairs are as follows:

- Repair Yellow-tagged (YT) timber members.
- Repair spalling in secondary members.
- Repair spalling in the deck soffit and/or concrete girders. If not excessive, this could be a Priority 3.

- **Priority 3** – A Priority 3 repair is generally a minor nonstructural or “Housekeeping” type of repair that could evolve into a higher priority if not corrected. Examples of deficiencies requiring Priority 3 repairs are as follows:
 - Cleaning of drains, bridge members or deck and sidewalk surfaces.
 - Remove debris from off of pier caps and abutments.
 - Remove garbage, debris, or vegetation from around abutments, piles, or retaining walls.
- Repairs shall be elevated to priority 1 if the material of concern is significantly impeding operation of bridge structural components or is making complete structural inspection of the bridge impossible.
- **Priority M** – Monitor repairs require no action from the region bridge crews, but they should be aware of the condition, since the problem/defect could evolve into a repair. A reduced inspection interval may be necessary in order to monitor the problem/defect. The state utilizes the following guidelines when implementing and administering monitor repairs.
 - Every monitor repair note must be updated at each routine or interim inspection with a clear statement of findings. This update should include the inspection date, inspector initials, and notes on any change in condition, and will be appended to the existing repair note. If the condition is unchanged state “No changes noted” and include the year and initials. This specific instruction applies to monitor repairs only. The “no changes” note is generally not expected for priority C, 1, 2, or 3 repairs.
 - Every monitor repair note must include measurable information about the condition of being monitored, allowing subsequent inspectors to more easily and accurately determine if the condition is changing. Photos, sketches, and/or measurements are among the ways to provide this information, which must also clearly include location and date. It may be appropriate to reference an attached file with historical data in the monitor repair note.
 - Over time, every monitor repair note will provide information on what circumstances warrant repair action and/or eliminate the need for further monitoring. Inspectors will be expected to provide this information, when possible, but it is recognized that this information may require more detailed evaluation and structural analysis beyond the scope of bridge inspection work.
- Some existing monitor repairs may not meet the requirements listed above. In this case, please coordinate with the Bridge Preservation Supervisor to determine if a monitor repair is appropriate.
- **Priority 0** – A Priority 0 repair is no longer used by WSDOT. Existing Priority “0” Repairs should be migrated to Priority 3 as being the lowest priority.

6-4.2 **Modifying Existing Repairs**

When there is need to significantly change or update the verbiage within a repair entry after subsequent inspections, team leaders for the State shall apply the following guidelines when modifying the repair.

- The team leader shall add his/her initials along with a date in parenthesis with a brief description of any changes to an existing repair note, including a priority change.
- Minor edits to repair text (spelling, caps, and minor grammatical changes) should generally be avoided unless something else is being done to the entry.
- Edits to repair priority entries other than priority M need be made only when the conditions/needs change sufficiently to warrant an update.
- If a significant change to a repair is needed, eliminate the original repair entry by entering a date in the "Verified" column. Add a note in parenthesis in the repair description stating reasons for its removal, and then enter a new repair with the original repair date in the "Noted" field. The BridgeWorks application typically enters the "Report Opened Date" in the Noted field when a new repair is created. The Noted date can be changed by the inspector and must be changed in all cases where the contents of a previous repair entry are entered into a new repair entry.)
- Break out and rewrite repairs when dissimilar elements are called out in the same repair as described in [Section 6.4.1.2](#). Date the new repair with the original repair date for the respective elements.

6-4.3 **Repair Verification**

At each routine inspection, the current status of all open (not previously verified) repair entries must be reviewed by the inspection team and field reviewed provided the necessary access equipment is available. If the recommended work has been completed, the repair entry in the BIR shall be verified in accordance with the following guidelines.

- BMS element condition states and notes where the repairs are referenced must be updated to accurately describe the repaired condition after the inspection.
- Any portion of a primary BMS element that has been repaired is typically coded in Condition State 2. Primary members that have been completely replaced should be returned to Condition State 1.
- A completed repair should have before and after photos with the verification date and the repair number referenced in the individual BMS element note. Remove this verification note during the subsequent inspection.

Example: Stringer F in Panel 2 at Floor Beam 2 crack has been stop drilled. REPAIR #12345 verified on 1/20/02. See photos #7 and #9.

- In the "Repairs" tab of BridgeWorks, the team leader should enter the verification date within the "Verified" column and attach the after photos to the "Photo" column.
- Explain in the repair description why verification could not be accomplished and what it will take to do so for the next inspection (equipment, environment, etc.).
- For scour repair verification, follow guidance above AND send communication to the BPO Scour Engineer who will add the structure to the next annual scour review.

Repairs to state structures are most often performed by region bridge maintenance crews. Their work is sometimes reported to BPO via a Maintenance Bridge Repair Report (MBRR) (See also [Section 6-5](#)). When this is done, the BridgeWorks application uses the info entered in the MBRR to enter a Maintenance Date (Maint.).

The Maint. date informs the bridge inspection team that the work specified by the repair entry has been completed. Once the date is entered, the responsible maintenance crew does not see this entry on the Bridge Repair List and typically does not revisit this repair entry. The bridge inspection crew's responsibility at this point is to verify that the reported maintenance satisfactorily completes the recommended repair(s). When a Maintenance date has been entered, consideration should be given to the need to schedule appropriate access equipment prior to heading out to the field. Discuss with your supervisor as needed.

There are, on occasion, repair entries within BridgeWorks that contain inappropriate or unexplained maintenance completion dates. Scenarios include, but are not limited to:

1. The work performed does not complete the full scope of the original repair recommendation.
2. The work performed is not satisfactory.
3. Further deterioration has occurred rendering the work performed inadequate.
4. There is no visual evidence of any work done; (e) the work performed belongs in fact to a different repair entry (i.e., the MBRR was improperly entered).

In cases such as these, correction is needed to ensure that the repair needs continue to be properly communicated back to the region bridge maintenance crews.

The team leader shall apply case-by-case judgment in making these corrections. Two primary options should be considered:

- **Option A** – Add a verified date with photos and/or notes in the repair description (does not have to be both provided there is no question of the intent). Write a new repair entry with appropriate supporting information and noting the changes being made. (Example: A repair entry of large scope has been partially completed. The existing entry could be verified, the description modified to note the portion that was completed, and the new entry would be referenced. The new repair entry would reference the old entry, note the partial completion and would describe the remaining scope. In most cases, the noted date of the new entry should be the same as the original entry.)
- **Option B** – Enter an Override Date in the BridgeWorks application. Modify the repair description to explain the reason for the override and provide the date and initials of the author. (This option may be most appropriate for a case where the Bridge Repair report was incorrectly entered. It could also be appropriate for the case where only a small part of the overall scope of a repair was addressed by the work in the Bridge Repair Report.)

In some extreme and/or complex cases, direct communication with the region bridge maintenance crew to explain the situation may also be advisable.

6-5 Maintenance – Bridge Repair Report (MBRR)

The repair descriptions from the inspection reports for WSDOT-owned bridges are entered into the “Bridge Repair List” (BRL - a state document), which can be viewed on the internal homepage (BEISt) of the WSDOT website. The BRL is updated twice a year. Maintenance crews for the State will review the list and schedule the work to complete selected bridge repairs. When a repair is completed, the maintenance crew may submit a Maintenance – Bridge Repair Report (MBRR) documenting the completed repair. The MBRR is typically submitted electronically via a link provided on the Bridge Repair List website. If submitted electronically, the program inserts a “maintenance date” for that repair into the database.

Entering the maintenance date will automatically remove the repair from the next edition of the printed active “Bridge Repair List”. However, the unverified repair along with the maintenance date will still appear in the next Bridge Inspection Report (BIR). The MBRR is a state document, but it is available to Local Agencies for utilization if they do not have a bridge repair documentation process in place.

An example of a completed Maintenance - Bridge Repair Report can be found at the end of this chapter.

6-6 Appendices

[Appendix 6-A](#) Critical Finding Damage Report Instructions

[Appendix 6-B](#) Maintenance - Bridge Repair Report Example

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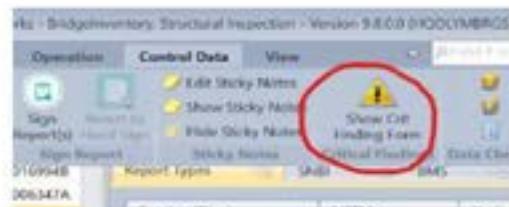
Appendix 6-A

Critical Finding/Damage Report Instructions

Critical Findings will normally be identified and entered as part of a Routine or Damage Inspection entered as described in Chapter 3.

The screenshot shows the 'BridgeInventory Structural Inspection - Version 9.8.0.0 (NOV2019)'. The ribbon at the top has tabs for 'Operations', 'Control Data', and 'View'. The 'Control Data' tab is active, indicated by a yellow background. Below the ribbon, there are several icons: 'Sign In', 'Report Types', 'Report Status', 'Sticky Notes', 'Critical Findings', and 'Extra Checks'. The 'Critical Findings' icon is circled in red. The main area is titled 'Records' and contains columns for 'Bridge ID', 'Comments', 'Crossing', 'Crossing', 'Materials & Types', 'Routine (Enc)', 'NLRM', 'Underwater', 'Damage', 'Geometric (Enc)', and 'Notes'. A checkbox 'Include in Report' is checked, and there are 'Previous' and 'Next' buttons.

The Critical Finding Tab will only be visible if the current structure already has a Critical Finding associated with it. To open the Critical Finding Tab, look under Control Data tools.



The Critical Finding Tab is only a means to identify and track open Critical Findings and their status. It is not an actual report type.

The screenshot shows the 'Critical Findings' table. The columns are: 'Bridge ID', 'Comments', 'Crossing', 'Crossing', 'Materials & Types', 'Routine (Enc)', 'NLRM', 'Underwater', 'Damage', 'Geometric (Enc)', and 'Notes'. A red box highlights the 'Type of Critical Finding' column. The table has one row with data: CF001, E - Flood.

The initial step for every entry must be to select the correct Critical Finding # to associate the entry with. This will be the next available number for newly entered Critical Finding. Failure to select the associated Critical Finding # will prevent the entry from being properly recorded and ordered for reporting.

The screenshot shows a dropdown menu for 'Type of Critical Finding'. The options are: E - Flood, A - Overheight, B - Lateral Friction Monitor, D - Deck, E - Flood, F - Seism, G - Earthquake, H - Bridge Rail, I - Other, and X - None. The 'E - Flood' option is highlighted with a red box.

Select the Type of Critical Finding by type of damage or type of event. The selection shown in the drop down may actually appear differently. After the first entry of a new Critical Finding, the Type should self-populate when that Critical Finding number is selected for follow on entries.

The screenshot shows a dropdown menu for 'Entry Type'. The options are: I - Identified, I - Identified, A - Action Taken, U - Update, and X - Resolved. The 'I - Identified' option is highlighted with a red box.

Select the Entry Type for the entry being made. The first entry for a new Critical Finding should always self-populate as "I - Identified".

The screenshot shows the 'Date of Finding or Entry Date' field. The date '10/31/2023' is entered. A red box highlights this field.

Enter the Date of Finding or the Entry Date for the entry being made. For the initial entry, this should be the Date of Finding. All follow on entries should reflect the Entry Date.

The screenshot shows a dropdown menu for 'Bridge Status'. The options are: Open, Under Construction, Closed, and Detour. The 'Open' option is highlighted with a red box.

Enter the current Bridge Status that reflects the current entry being made. If this is a change in Bridge Status, ensure that the same status is updated within the bridge inventory information. This may require a signed report type to be associated with it.

Critical Finding #	Type of Critical Finding	Entry Type	Date of Finding or Entry Date	Bridge Status	Estimated Resolution Date
CF001	E - Flood	I - Identified	10/31/2023	C - Closed	
					<input checked="" type="button"/> C - Closed <input type="button"/> O - Open <input type="button"/> R - Restricted <input type="button"/> C - Closed

Provide an Estimated Resolution Date when it becomes available. This date may not be identified until more is known or until a later entry date.

Critical Finding #	Type of Critical Finding	Entry Type	Date of Finding or Entry Date	Bridge Status	Estimated Resolution Date	Description	Reported By	Associated Repair
CF001	E - Flood	I - Identified	10/31/2023	C - Closed		Flood overtopped structure on 10/30/23	SOG	15247

Provide a brief Description of the event, or defect as a cause of the finding or reason for the updated entry. Keep in mind this is a brief summary. In-depth details should be entered into the body of the report within the affected BMS elements. Information in the report is supported by any photos or files, but not within this entry.

Critical Finding #	Type of Critical Finding	Entry Type	Date of Finding or Entry Date	Bridge Status	Estimated Resolution Date	Description	Reported By	Associated Repair
CF001	E - Flood	I - Identified	10/31/2023	C - Closed		Flood overtopped structure on 10/30/23	SOG	15247

Enter the initials of the person making the entry and then go to the Repair Tab to attach any associated repair that has been written in relation to the critical finding. There may or may not be a repair identified, but if so, it will usually be a C -Priority Repair. The included box at the end of the entry line, indicates whether or not to include the critical finding within the printed report.

Critical Finding #	Type of Critical Finding	Entry Type	Date of Finding or Entry Date	Bridge Status	Estimated Resolution Date	Description	Reported By	Associated Repair	Inc
CF001	E - Flood	I - Identified	10/31/2023	C - Closed		Flood overtopped structure on 10/30/23	SOG	15247	<input checked="" type="checkbox"/>

Any repair associated with the Critical Finding will identify the associated Photos and BMS Notes.

No	Pr	Rp	Repair Description	Noted	Maint	Override	Verified	<input checked="" type="checkbox"/> Photo	BMS/Notes	Crit Finding
15247	C	E	Remove flood debris and evaluate	15/6/2023				<input checked="" type="checkbox"/> Photo...	1 BMS/Note...	1 Crit Finding...

Appendix 6-B Maintenance - Bridge Repair Report

BEISt - Maintenance Report

Page 1 of 1

To: Bridge Preservation Office
PO Box 47341, Olympia, WA 98504-7341

Maintenance Date 2006-07-18

Structure Identifier 0005090A	10000	
Bridge Number 5/321	Bridge Name CAPITOL LAKE	
Mile Post 104.52	Location 0.5 N JCT US 101	
Repairs Completed By B - Bridge Maintenance		
Origin of Repairs B - Bridge Repair List Repair No S10000 , Priority 1, Dated 2003-12-03		
Repair Description Repair the strip seal at the north abutment. (Verified - repair completed but has failed again; see new repairs 10002-4)		
Type of Materials Used - Suppliers Sand blast and sika-flex with backer rod		
Repair Remarks and Details Cleaned expansion joint by sand blasting and poured sika- flex joint.		
Weather Conditions		
Completed By Steve McIntyre	Posted Date 2006-07-18	Map Repair No

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