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Who to Contact
Please contact the Maintenance and Operations office at (360) 705-7859 with comments, questions, or suggestions for improvement to the Maintenance Manual

Available On-Line
To obtain the Maintenance Manual in its entirety, it is available on the Internet at:
http://www.wsdot.wa.gov/fasc/EngineeringPublications/Manuals/Final%20MM.pdf

Please be aware that this revision is only available electronically.

Instructions:
Page numbers and corresponding sheet-counts are given in the table below to indicate portions of the Maintenance Manual that are to be removed and inserted to accomplish this revision.

Chapter	Remove		Insert	
	Pages		Pages	
Chapter 1	All		1-6	
Chapter 5	All		1-8	

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General Responsibilities

This chapter provides guidance to reduce the vulnerability of the state transportation system from any emergency or disaster by:

1. Establishing capabilities for protecting the transportation system and employees from the effects of emergencies or disasters,
2. Responding efficiently to emergencies and disasters,
3. Assist in recovering in the aftermath of any emergency or disaster.

This chapter also incorporates some of the day-to-day operational procedures that are used in responding to incidents such as small spills, snow/ice removal, traffic accidents, emergencies, disaster events, and recovery efforts. The Washington State Department of Transportation (WSDOT) Disaster Plan and the Emergency Procedures Manual (M30-14) define the details of how the Department responds to these types of events and is included as an Appendix for reference purposes.

An emergency is defined as a situation involving natural phenomena, disasters, casualties, national defense or security measures, etc. and includes response activities that must be taken to prevent the imminent loss of human life or property.

WSDOT will perform the following functions in emergency situations:

- Determine usable portions of the state highway network. Coordinate and control emergency highway traffic regulations in conjunction with the Washington State Patrol.
- Notify your local Washington Department of Fish and Wildlife (WDFW) local habitat biologist that an emergency action needs to be taken and obtain the Hydraulic Project Approval (HPA) as soon as possible after taking the emergency action.
- Notify the "National Marine Fisheries Service and U.S. Fish and Wildlife Service" that maintenance is taking an emergency action that could result in an "after the fact" consultation under the end an gered species act, if the emergency action involves threatened or endangered species' water bodies.
- Follow the memorandum of understanding on "Emergency Actions in Water Courses" with the Washington Department of Fish and Wildlife.
- Meet the conditions of the Washington Department of Fish and Wildlife (HPA) permit if applicable and possible.
- Reconstruct, repair and maintain state highways, bridges, and alter nate routes. Coordinate the mobilization of personnel and equipment required for emergency engineering services.
- Maintain liaison with the Washington State Chapter of the Associated General Contractors of Washington and America, construction, and equipment rental companies.

- Provide initial damage assessment estimates on state and local facilities (both for federal aid eligible roads and non-federal aid eligible roads) and public/private airports as a member of the Prelimi nary Damage Assessment (PDA) Team.
- Participate on Damage Survey/Inspection Report Teams, conducting inspections of federal aid and non-federal aid system highway facili ties damaged by a disaster.
- Coordinate all transportation related missions including, emergency air, marine and rail transportation of personnel and essential supplies.
- Conduct aerial reconnaissance and photographic missions.
- Provide public information support to the Office of the Governor and the Washington Emergency Operations Center during emergency response and recovery operations.

Regional Emergency Response Plans

Each Region shall develop and maintain an Emergency Response Plan that will establish day-to-day operational procedures to cope with routine spills, accidents, etc. Regions will also develop procedures to address their response capabilities for those events that are beyond the normal day-to-day operational mode. Each of these procedures shall clearly define employee roles and responsibilities.

WSDOT Disaster Plan

Concepts of Operations

Governments have the responsibility to make every effort to protect life and property during emergencies. When the emergency exceeds the capability of government to respond, assistance will be requested from the next higher level of government.

For example:

Local government may request state assistance and state government may request federal assistance. However, this plan heavily emphasizes the responsibility and capability of local governments to respond to and accomplish short-term recovery during emergencies/disasters.

The WSDOT Disaster Plan recognizes that emergency functions for groups and individuals should parallel normal day-to-day functions. When this is not possible, managers should attempt to maintain organizational continuity and assign familiar tasks to employees.

Organization and Assignment of Responsibilities

Service Centers and Regional Offices have emergency functions in addition to normal duties. Each Service Center and Regional Office establishes procedures for:

- Operations during emergencies.
- Emergency Personnel Roster.
- Compliance with WSDOT Responsibilities and Authorities.

Administration and Logistics

WSDOT acknowledges that in a time of crisis, some administrative procedures should be suspended, relaxed or made optional. However, it is desirable to foresee and plan for necessary changes in administrative procedures.

Documentation is critical for successful reimbursement of funds or to support liability issues. All actions taken, especially changes to established procedures, shall be documented. This is the responsibility of Maintenance Lead Technicians, Maintenance Supervisors and Superintendents. It is proper in these situations to use all tools that are available in order to provide a clear documentation trail. Maintenance office staff are to be provided the documentation and then are tasked with filling out the proper records and forms to be forwarded to the Regional Maintenance administration.

Plan Development and Maintenance

The WSDOT Disaster Plan is the principal source of documented department emergency management activities. Most Service Centers and Regional Offices are responsible for developing or accomplishing tasks in some part of the plan. This may require simultaneous coordination with local, state and federal agencies. Overall, the Headquarters WSDOT Disaster Plan development, maintenance and coordination is the WSDOT Emergency Management Program Manager's responsibility in cooperation with Service Centers and Regional Offices.

Training and Exercises

WSDOT will periodically provide training and conduct exercises to test the WSDOT Disaster Plan and Procedures to assure maintenance of a readiness mode and reflection of current department operational practices.

Emergency Operating Procedures

General

There are many situations when transportation crews may be exposed to situations requiring emergency action. The most common emergency situations maintenance crews may encounter are vehicle accidents and hazardous material spills.

Hazardous materials are those substances which, when spilled, may make driving on the roadway unsafe, endanger the lives of people in the vicinity, or contaminate the environment. These materials may make the roadway surface slippery, impair visibility, or cause lane and road closures. Materials that may be dangerous in themselves include: explosives, flammables, corrosives, poisons, and radioactive materials. Other materials may not be hazardous but cause hazardous conditions such as fine powder- like materials which create visibility problems or bulky materials which cause lane closure.

WSDOT employees at the scene of an accident or spill will take emergency actions only as required to protect human life and property until the Washington State Patrol has control of the situation. The State Patrol has the responsibility for safety measures at an accident site and for coordination with Department of Ecology for the clean-up of spilled substances. The Washington State Patrol may request assistance from WSDOT for traffic control and to clean up an

ccident site. WSDOT employees must not attempt to clean up any hazardous material spills. In most cases WSDOT Maintenance employee's have not been trained and/or do not have the proper resources to clean up hazardous spills. Clean up is the responsibility of the owner or shipper of the cargo, if they can be identified. If the owner/generator is unknown, the Department of Ecology is responsible for the clean up. In general terms Ecology personnel only respond onsite to spills greater than 50 gallons of hazardous material.

Maintenance Field Personnel

Maintenance employees will take the following actions when encountering a hazardous condition:

- Advise the Area Maintenance Supervisor or Superintendent of the problem, and request aid from the Washington State Patrol.
- Take precautionary actions to protect themselves, maintenance crews, and the traveling public from any exposure.
- Provide traffic control, including closure of the highway if appropri ate, to ensure that no one comes in contact with the hazardous material.
- Survey the situation and report the exact location, cause of the temporary closure, and extent of the closure to the Area or Regional Maintenance Office (or your Maintenance Supervisor or Lead Technician). Notification should also go to the TMC, Traffic Man agement Center, in each Region if they have one in place.
- If the spilled substance is identified and is spreading toward water courses, additional traffic lanes, or likely to cause ground water damage, take appropriate action to absorb or confine the spill. Always use careful judgment and only take actions you know and understand are safe for you to do. Examples of commonly spilled materials include gas, oil and diesel.
- Never take action on an unknown substance or on a known substance that is extremely dangerous to life and property. Examples would include those products with greater harm than gas, oil and diesel. If employee's are not sure what the product is they are to stay clear of the area.
- Some accident scenes include human tissue and blood residues. Contact with these materials is to be avoided. Fire response should wash this residue from the highway or highway feature surfaces. The Washington State Patrol is the incident commander and should assure that the accident scene is ultimately safe.
- Stay on site to safeguard traffic until proper traffic control devices are installed and/or until relieved by your Maintenance Supervisor, Lead Technician, or a Washington State Patrol Trooper.
- Patrol for stranded motorists in isolated areas when traffic has been controlled and when applicable.

Maintenance Superintendent or Supervisor

- Coordinate personnel and equipment to close a highway or restrain traffic from entering a hazardous area.
- Make a complete report of the closure to the Regional Maintenance Engineer/ Manager and Traffic Control Center (TMC).
- Ensure the hazardous section of highway is being monitored, then patrol the area to make sure there are not stranded motorists.
- Provide detours around partial closures when safe to do so. When ever possible, establish detours on existing state routes. Other local roads should only be used after surfaces, bridges, and overhead clearance restrictions have been reviewed and approved by the appropriate local jurisdiction. Detours will be signed and other traffic control devices (e.g., barricades and flashing lights) will be installed. Station flaggers at barricaded points when necessary.
- Arrange to advise the Regional Public Information Office so that announcements of the closure can be made on the WSDOT public service and communications networks.
- If a closure is requested by the Washington State Patrol, and the local Maintenance Superintendent is not available, contact the Regional Maintenance Manager or the Regional Administrator to advise of the request and provide recommendations concerning the need for the proposed temporary closure.
- Reopen the roadway when the physical blockage is eliminated or the hazardous conditions that caused the closure have abated.
- Advise the Area Maintenance Superintendent, Regional Maintenance Manager, or Regional Administrator of the reopening by the fastest means available.
- Arrange to relay notice of the reopening to the Regional Public Information Office to ensure that information on the public service and communications network is current.

Abandoned Cargo

- All cargo spilled on WSDOT property will be removed at the owner's expense if the owner can be identified. A determination that the cargo is hazardous material will necessitate the procedures outlined earlier. State law (RCW 4.24.512) dictates that the responsible party has the responsibility for clean up of hazardous materials.
- If the spilled material is hazardous, stay safely back from the hazard, establish traffic control, and call the Washington State Patrol who in turn will call the Department of Ecology Spill Response Team. The Department of Ecology is responsible for coordinating clean-up of hazardous materials. If dropped material is identified as hazardous but the container is not leaking or severely damaged, it can be re moved to the edge of the shoulder to allow traffic flow if this action must be taken prior to Ecology's arrival at the scene. It should not be taken back to the maintenance facility.

- If dropped material is identified as non-hazardous and is reusable it should be returned to the maintenance facility. After a determination of ownership is made and if the commodity is not reclaimed within (30) days it becomes the property of the department and may be used for its intended purpose, if appropriate.

Clearing the Highway

Open Road Policy

- The February 2002 WSP/WSDOT "Joint Operating Policy State ment"was developed to stress the importance of the Agencies' responsibility to do whatever is reasonable to reduce the delays associated with incidents and collisions. The open roads philosophy of this policy statement is that WSP and WSDOT shall open the roadway as soon as possible on an urgent basis.
- It is a goal of WSDOT to minimize traffic delays caused by vehicle accidents and incidents. WSDOT Maintenance personnel assisting at vehicle accidents will make every reasonable effort to clear the traveled way as quickly as possible.
- First priority -safety: It is the departments' obligation and responsibil ity to provide a safe environment for its employees and the public.
- Second priority- Minimizing traffic delay: Maintenance personnel responding to vehicle accidents which involve lane closures will consider every reasonable measure in coordination with WSP, to clear the lane as quickly as possible. At accident scenes which involve spilled or damaged cargo, the overriding strategy will be to minimize traffic delay. Salvage of the cargo will be secondary and at the convenience and benefit of transportation movement.
  Criteria to be used in making "Open Road" decisions include:
  - crime scene investigation
  - traffic volume
  - time of day
- Lowest priority- The potential salvage of the cargo should be the last consideration in decisions related to minimizing traffic delay.
- <u>Bridges and other transportation structures closed due to structural damage require approval from the Bridge Preservation Engineer before opening.</u>

General

The proper care of structures is vital to the preservation of the highway network and to the safety of the traveling public. This chapter discusses those items in which area maintenance personnel assist in this maintenance effort. Other more comprehensive references are available to the Maintenance Engineer.

For general responsibilities refer to the Transportation Structures Preservation Manual, M23-11. For specific responsibilities for movable bridges, refer to the specific Operation, Inspection, and Maintenance Manual (OIM).

Major Structures

For maintenance purposes, major structures are identified as those bridges included in the Bridge List (M 23-09). The State Bridge and Structures Engineer is the responsible authority for these structures and must be contacted prior to any major maintenance or modifications to them. The designated contact in Olympia is the Bridge Preservation Engineer.

Bridges and other transportation structures closed due to structural damage, require approval from the Bridge Preservation Engineer before opening.

Minor Structures

For maintenance purposes, minor structures are identified as those drainage structures (culverts, etc.), retaining walls, acoustical barriers, cribbing, etc., that are not listed in the Bridge List. The Region Maintenance Engineer is the responsible authority for minor structures.

Any defects or damage to minor structures should be referred to the Area Maintenance Superintendent, who will coordinate the required action.

The structural components of sign bridges, bridge-mounted sign brackets, and high-mast luminaries are inspected and inventoried by the bridge preservation office. Major maintenance or modifications to these structures is to be coordinated through the Bridge Preservation Office. The designated contact in Olympia is the Bridge Preservation Engineer.

Inspection

Federal regulations require that all major highway structures be inspected by a crew under the supervision of a professional engineer, at intervals not exceeding two years. This requirement is met by the WSDOT Headquarters' Bridge Preservation Engineer and staff. Certain bridges, such as steel bridges, untreated timber bridges, bridges having a posted load limit, movable bridges, floating structures and bridges with pending repairs are inspected annually.

A bridge's condition can change in much less than two years. The Bridge Preservation Office relies on Region maintenance personnel to be alert for settlement, washout, collision damage, and other problems, and to notify their superintendent as appropriate.

Area maintenance crews are also expected to maintain or repair minor approach settlements, approach guardrail damage, plugged bridge drains, sweeping of bridge decks, asphalt overlays and other items that are considered part of normal maintenance operations.

Additionally, removal of dirt and debris accumulation on timber caps, timber stringers, steel expansion devices (bearings), lower chords of steel bridges and sign bridge bases are considered routine maintenance activity. However, at times these can become critical to a structure and will be added to the repair list.

Modifications to bridges need to be detailed in drawings and submitted to the Bridge Preservation Engineer for as-built documentation and future reference. All bridge structural as-built information is maintained at the Bridge Preservation Office.

All minor structures, related to bridges, should be inspected at least annually by the designated region maintenance supervisors or crews. Inspect more often if warranted by weather conditions or past experience.

The Bridge Preservation Office distributes a list of scour critical bridges to each region Bridge Maintenance office. These bridges are to be closely monitored during high water events. Scour critical bridges require close monitoring due to a high susceptibility to foundation damage caused by high water events. Area Maintenance Superintendents are responsible for monitoring weather conditions in anticipating high water events for scour critical bridges in planning for advance deployment of crews to monitor each bridge's condition. Scour is the number one cause of bridge failures in Washington.

Region bridge maintenance personnel are responsible to inspect all bridges and designated minor structures annually. Record all deficiencies. Keep the records on file until the deficiencies are corrected.

Review bridge inspection report notes, repairs, and photos to identify items to focus on during inspections.

During inspection, the following items should be checked. Deficiencies should be immediately repaired or scheduled for future work.

Approach Fills. Note any deficiency. Pay particular attention to the pavement seats of the structure. Look for sagging, pot holing, scaling, or spalling.

Asphalt Wearing Surface. Note potholes, scaling, wheel rutting, and general pavement condition.

Concrete Deck. Note scaling, spalling, cracks, and any exposed reinforcing steel.

Grid Decks. Look for and note broken welds or clips, loss of a section due to rust and any bent members.

Curbs and Railings. Note any deterioration, cracking, spalling, or damage.

Paint. Note the general condition of the paint. Look for cracking, peeling, fading, and presence of rust or algae.

Stringers, Caps, and Floor Beams. Note any crushing at bearing points, and any warping, cracking or debris buildup.

Steel Truss Members. Note bent or damaged steel, deflection, cracking, vibration, debris buildup on chord members, and deterioration due to rust. Pay particular attention to pinned joints at hinges, excessive rust, vibration, missing nuts, or loose plates. Immediately inform the designated bridge maintenance representative of any known or suspected problems.

Wood Truss Members. Look for and note damaged or broken members, crushing, cracking, warping, vibration, and deterioration due to rot or boring insects.

Expansion Joints. Note loose, banging, and jammed expansion joints. Also, note the presence and condition of the joint material.

Abutments, Bulkheads, Piers, and Intermediate Bents. Note any type of tilting, bulging, and deterioration. Pay particular attention to the buildup of drift debris and any scouring or undermining due to high water and erosion.

Bridge Drains. Note plugged bridge drains. Check pipe out fall areas to see if soil erosion is occurring. Plugged drains may result in saturation of the bridge approach fills and may explain any unusual erosion or undermining of abutments or bulkheads.

Waterways. Note scour and conditions that could cause log jams or ice jams during high water stages. Look for any logs or other debris jammed against piers, bulkheads, or piling. In the winter check all bridges with piers or bulkheads in the water with a floating debris problem during and after each flooding condition.

General Conditions. Look for accumulation of dirt, excessive bird droppings or debris on the roadway at bearing points and on the caps or lower chords. Pay particular attention to the presence of materials that might pose a fire hazard or

restrict access for maintenance activities. Note any unauthorized attachments such as private fences. Have electrical fences removed from bridge access areas or clearly mark them with warning signs.

Walls and Cribbing. Inspection can be of a cursory nature according to guidelines designated by the Area Maintenance Superintendent. Check walls for tipping, bulging, cracking, spalling, and water runoff over or through wall. Check all weep holes to assure that they are open. If the structure is wooden, check for rot and the presence of fire hazards.

Tunnels. Condition of walls, ceiling, or liner. Look for cracking, spalling or loose overhead hazards. Note increased water seepage, and the condition of wire retention fabrics. Check for tears or failures that may indicate potential structural hazards and impact on portals or overhead members.

Bridge Repair Guidelines

Any major or structural repairs need to be coordinated through and approved by theWSDOT Headquarters Bridge Preservation Engineer. If there is any doubt about the structural significance of a damaged or deteriorated bridge component, notify the WSDOT Headquarters Bridge Preservation Engineer. Generally, bridge repairs are identified on the bridge repair list.

There are six priority definitions in the repair lists. "Emergency" or "Urgent" priorities are intended to recognize the various levels of work accomplished by Bridge Maintenance. As maintained previously, these six repair priorities represent a priority level hierarchy; therefore, repairs that are not completed in a timely manner may be moved to a higher priority. Only four priorities will be published on the repair list since "Emergency" and "Urgent" repair lifecycles will be anticipated to be much shorter than the repair list publication cycle. They will be tracked in the Bridge Preservation Office repair database.

The use of "Emergency" and "Urgent" priorities will be authorized by the Bridge Preservation Engineer. These types of repairs will be reported directly to each region.

The priority definitions are as follows:

- **Emergency** – Repair work requiring immediate action when structures are partially or completely closed.
- **Urgent** – Repair work requiring prompt action that must be com pleted when structural details and bridge crews become available.
- **Priority 1**- Repair work required when damage to primary structural elements directly affects safety, reliability of transportation system, protecting public investment, and maintaining legal mandates. Sec ondary and minor items will qualify for this priority if they pose a hazard to traffic.

- **Priority 2** - Work should be accomplished within regular work schedule or programmed in the biennial work schedule.
- **Priority 3** - Generally a minor nonstructural or 'housekeeping' type of repair, which may evolve into a higher priority if not corrected.
- **Priority 4** - A condition that requires the structure to be monitored primarily by the bridge inspection teams, and may evolve into a higher priority.

TheWSDOT Headquarters Movable Bridge Engineer prepares and updates individual maintenance manuals for all movable bridges. Consult these manuals for both routine and specialized maintenance tasks. Direct any questions to the Movable Bridge Engineer in the Bridge and Structures Office in Olympia.

Minor repairs to railings, curbs, concrete decks, expansion joints, etc., can be performed without the individual approval of the WSDOT Headquarters Bridge and Structures Office. Similarly, drift may be removed, clearance lights changed, etc.

Bridge Information

Bridge information is available to all DOT staff through the Bridge Engineering Information System—BEIST. Go to the Bridge and Structures website for a link to BEIST.

BEIST contains inventory data, bridge plans, inspection reports, the repair list, and related files. Additionally, BEIST contains the Sign Bridge Repair List and Standard Plans.

Environmental Aspects

WSDOT environmental staff will provide Maintenance Engineers, Area Superintendents and Maintenance Supervisors with training and education on which regulations apply to specific maintenance activities and what is the appropriate response to the regulatory process.

In addition to federal regulations, state environmental agencies, tribes and city or county health ordinances may have environmental restrictions on work done on or near bridges.

Before initiating bridge repair activities, the Maintenance Engineer, Superintendent, or Supervisor will confirm if environmental permits are required. They will also review the proposed repair method with the environmental staff to determine whether it is both appropriate and/or environmentally sound. The following list provides some of the environmental concern factors that impact bridge maintenance in some localities. This list is not comprehensive or current because the list of environmental factors to be considered continues to change. However, it does provide some insight into the degree to which maintenance is being held to an increasing level of environmental accountability.

- State or federal list of threatened or endangered species
- Species if high interest to state or federal agencies
- Migratory waterfowl habitat
- Anadromous fish habitat
- Trout and other cold water fish habitat
- Habitat for birds of prey (Must have Bridge and Structures approval to attach platform, boxes or any other structure to any part of a bridge.)
- Wetlands and wetland habitat
- Riparian habitat
- Migratory corridors
- Wintering areas and other critical feeding areas of wildlife
- Important wildlife reproductive habitat
- Public water supplies, including important aquifers
- Islands and other coastal barriers
- Hazardous waste
- Regulatory flood ways and other flood plain areas
- Commercial fish and shellfish production areas
- Important sport fishing areas
- Highly erosional soils
- Listed or proposed wild and scenic rivers
- Navigable waterways
- Significant historic resources
- Natural resource agency holdings or interests (refuges, parks, habitat areas, etc.)

The Bridge and Structures Office is concerned with the placement of temporary or permanent wildlife habitat structures (peregrine falcon platforms, bat boxes, etc.) on state bridges due to their potential negative impact to inspections of all bridges in accordance with the federally-mandated National Bridge Inspection Standards and the potential negative affects to maintain the bridge structure itself. The Bridge and Structures Office discourages the practice of placing these habitat structures on state bridges.

Therefore, all plans to place temporary or permanent wildlife habitat structures on state bridges are to be reviewed by the Bridge Preservation Engineer. This is consistent with the review process for all other attachments to bridges.

Maintenance agreements established with any regulatory agency that includes bridges must have approval from the Bridge and Structures Office. Agreements that define or limit access to a bridge due to the Endangered Species Act, affect inspections and repairs.

Utility Installations

Bridge Maintenance Superintendents need to work directly with region utility engineers to coordinate utility installations to ensure construction inspectors are aware of the utility installation and inspect the construction for proper installation per the franchise agreement and structural details approved by the Bridge and Structures Office. Scaffolding attached to or setting on any portion of the bridge is to be included in the review by the bridge office.

Construction inspectors are to ensure that the utility contractor is following DOT-prescribed construction practice in accordance with WSDOT Standard Specifications.