Transportation Structures Preservation Manual

M 23-11

Washington State Department of Transportation

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From: _____ Date: _____

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To: Environmental and Engineering Service Center
Bridge Preservation Engineer
2680 Mottman Road
Olympia, WA 98504-7341

Subject: Transportation Structures Preservation Manual (M 3006.00) Comment(s)

r Addition r Correction
r Deletion r Other

Comment(s) (marked copies attached):

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Foreword

The department strives for public safety and preservation of its transportation structures by:

A. Maintaining a program of inspections to ensure the structural integrity of all transportation structures. (Where applicable, the National Bridge Inspection Standards (NBIS) are followed.) This program includes:

   1. Structural inspections on all bridges and ferry terminals performed by licensed civil engineers.

   2. Special emphasis on ongoing inspection and maintenance of all floating bridges, movable bridges, suspension bridges, and cable stayed bridges.

B. Performing maintenance inspections on all transportation structures.

C. Performing preventive and corrective maintenance when required.

D. Performing rehabilitation or replacement work when needed.

The purpose of this document to assign responsibilities for the inventory, inspection, rating, maintenance, and damage repair of the department's transportation structures and for the analysis of their structural capacity to support loads. Guidance for the department's responsibilities in the inventory and inspection of local agency-owned bridges; and cooperative inspection, rating and maintenance of bridges between Washington and other states or agencies is also included.

This manual supersedes and replaces the directive D 23-11, "Bridge Inspection Structural Capacity, Rating and Maintenance," dated May 6, 1980.

DON NELSON
Assistant Secretary for Environmental and Engineering Service Center

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Responsibilities

A. Assistant Secretary for Environmental and Engineering Service Center with further assignment/ delegation as follows:

1. Bridge and Structures Engineer

   a. Exercises staff responsibility for the technical engineering aspects of inspection, maintenance, and repair of the department's transportation structures except for geotechnical aspects of tunnels, and major culvert inspection, maintenance and repair.

   b. Maintains an inventory of all transportation structures on the department's and local agency public roads in Washington.

   c. Publishes a listing of all the department's bridges and ferry terminals every two years in M 23-09 "Bridge List."

   d. Maintains a historical file of all the department's bridges and ferry terminals.

   e. Performs structural inspections of all bridges and ferry terminals on the department's transportation system, as required by the National Bridge Inspection Standards. These inspections are intended to verify structural integrity, identify the need for corrective maintenance, and identify the need for reconstruction or replacement; see AASHTO Manual for Maintenance Inspection of Bridges, FHWA Bridge Inspector's Training Manual/90.

   f. Provides routine nondestructive testing services on mechanical components of movable bridges for the region and assists the region in arranging for any outside nondestructive testing required by age and operating conditions.

   g. Performs in-depth mechanical and electrical inspections on a maximum six-year interval or as age and operating conditions require.

   h. Provides recommended repair lists based on structural, mechanical, and electrical inspections.

   i. Develops and maintains operations, inspection and maintenance manuals for movable bridges.

   j. Monitors preventive maintenance activities to ensure compliance with established procedures and schedules.

   k. Provides technical assistance to the region during abnormal conditions or operations.

   l. Assists the region in preparing contract PS&E for bridge repairs and renovations.

   m. Performs random inspections on floating bridges to verify water tightness of the bridge pontoons and the reliability of mechanical and electrical systems.

n. Develops and maintains a rating of the load-carrying capacity of all the department's highway bridges; see AASHTO Manual for Maintenance Inspection of Bridges, AASHTO Guide Specifications for Strength Evaluation of Existing Steel and Concrete Bridges; M 23-50, *Bridge Design Manual*.

o. Develops and maintains an overall preventive and corrective maintenance program for all the department's bridges except major culverts and tunnels.

p. Provides the Regional Administrators, the Chief Maintenance Engineer, and the Director of the Washington State Ferries Division with maintenance recommendations and priorities based on needs identified during structural inspections; furnishes drawings showing recommended repair or strengthening details if needed.

q. Provides technical assistance as requested by the Motor Carrier Services Administrator for the issuance of overlegal weight permits, see M 56-01 "Desk Guide for Overlegal Permits."

r. Performs, or provides technical assistance to Regional Administrators for heat straightening of damaged steel components of bridges.

s. Provides assistance and services related to structural problems as requested by the Director of the Washington State Ferries Division.

t. Provides assistance and services as requested by the Assistant Secretary for TransAid in the structural inspections and load rating of local agency bridges and in the training of local agency bridge inspection personnel.

u. Administers agreements with local agencies for the structural inspection(s) of local agency bridges by the state.

v. Coordinates interdisciplinary evaluation of scour potential at bridges (geotechnical [Materials], hydraulic [Design], and structural [Bridge and Structures]) and performs flood inspections.

2. State Design Engineer

a. Exercises staff responsibility for the technical engineering aspects of major culvert inspection, maintenance, and repair.

b. Develops and maintains an overall preventive and corrective maintenance program for all major culverts.

B. **Assistant Secretary for Field Operations** with further assignment/delegation as follows:

1. State Maintenance Engineer

a. Exercises staff responsibility for implementation of a preventive and corrective maintenance program for the department's transportation structures except ferry terminals.

b. Exercises staff responsibility for the issuance of permits to operate vehicles of a size or weight greater than the legal maximum on the department's highway bridges.

c. Provides guidance and assistance to the regions in preparation of the program and budget for bridge preventive and corrective maintenance.

2. Materials Engineer
   a. Exercises staff responsibility for the geotechnical aspects of tunnel inspection, maintenance, and damage repair.
   b. Develops and maintains an overall preventive and corrective maintenance program for all tunnels.
   c. Provides assistance to the Bridge and Structures Office in the routine inspection of tunnels.
3. Motor Carrier Services Administrator
   a. Exercises staff responsibility for the issuance of permits to operate vehicles of a size or weight greater than the legal maximum on the department's highway bridges.

C. **Director of the Washington State Ferries Division**

1. Develops and implements a preventive and corrective maintenance program and budget for ferry terminals.
2. Develops and maintains a rating of the load carrying capacity of all vehicle transfer spans and holding areas.
3. Performs routine inspections of all electrical, mechanical, and hoist systems for ferry terminals.
4. Performs maintenance inspections on ferry terminals.
5. Performs preventative and corrective maintenance on ferry terminals.
6. Provides assistance to the Bridge and Structures Office as requested for the structural inspection of ferry terminals.

D. **Regional Administrators**

1. Performs maintenance inspections of bridges on the department's transportation system.
2. Performs preventive and corrective maintenance on the department's bridges.
3. Implements a preventive maintenance program for all movable bridges in accordance with the operations, inspection and maintenance manuals or preventive and maintenance manuals.
4. Establishes a schedule to perform inspection, testing, and maintenance as prescribed in the operations, inspection, and maintenance manuals or preventive maintenance manuals for movable bridges.
5. Schedules and performs additional maintenance as required to maintain the operational status of movable spans in compliance with Code of Federal Regulations, Chapter 33, Section 117.
6. Performs monthly trial openings of all movable spans (except those noted in Appendix 4 as "no longer opened for marine traffic") to ensure proper operation. Any traffic opening will satisfy the trial opening requirement.

7. Informs the Bridge and Structures Office promptly of mechanical and/or electrical failure or misoperation, bridge damage, or of any inadequacies or errors in the operation, inspection and maintenance manuals or preventive maintenance manuals.
8. Programs and budgets for preventive and corrective maintenance and rehabilitation or replacement for the department's bridges.
9. Erects and maintains signing for traffic restrictions (loads, vertical clearance, etc.) in accordance with federal "Manual on Uniform Traffic Control Devices for Streets and Highways" (MUTCD) and "Washington State Modifications to MUTCD, M 24-01."
10. Provides traffic control needed during structural inspections performed by the Bridge and Structures Office.
11. Advises the Bridge and Structures Engineer and the State Maintenance Engineer of any transportation structure damaged by vehicles, by ship collisions, or by natural phenomenon.
12. Advises the Bridge and Structures Engineer and the State Maintenance Engineer of significant floods which occur at department highway bridges.
13. Prepares, processes, and administers agreements with other states and local agencies for the cooperative maintenance and operation of bridges and structures of mutual concern and use by the department and such agencies.

E. **Assistant Secretary for TransAid**

1. Exercises the administrative responsibility for local agency compliance with the National Bridge Inspection Standards.
2. Prepares and processes agreements with local agencies for the structural inspection(s) of local agency bridges by the state.
3. Coordinates all local agency use of the Washington State Bridge Inventory System (WSBIS).
4. Provides training to local agency bridge inspection personnel in bridge inspection, load rating, and inventory updates.

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A. **Bridge Inventory and Inspection Rules**

1. The Bridge and Structures Engineer transmits inventory data for all bridges on public highways to the Federal Highway Administration (FHWA) in accordance with the National Bridge Inspection Standards.

2. The Bridge and Structures Engineer performs the following:

   a. Routine inspections on all department-owned bridges in M 23-09, "Bridge List" (except those identified in Appendix 3 as the inspection responsibility of other agencies) at the following maximum intervals:

      (1) Annually

         (a) All bridges having a posted load limit.

         (b) All floating bridges.

         (c) All movable bridges

         (d) All cable stayed bridges.

         (e) All suspension bridges.

         (f) All segmental concrete bridges.

      (2) Every two years

         (a) All highway bridges not identified for annual routine inspection and not approved by FHWA for a four-year inspection interval.

         (b) All major culverts.

         (c) All tunnels.

      (3) Every four years

         (a) All highway bridges meeting criteria approved by the Federal Highway Administration for a four-year inspection interval in accordance with the National Bridge Inspection Standards.

      (4) Every five years

         (a) Small span highway bridges

         (b) All pedestrian bridges.

         (c) All highway lids.

   b. Random inspections on all floating bridges as follows:

      (1) Annual verification of the water tightness of the bridge pontoons.

      (2) Verification of the reliability of mechanical and electrical systems at two-year intervals.

   c. Routine and in-depth inspections of ferry terminals at the following maximum intervals:

      (1) Vehicle transfer spans — Routine inspection annually. In-depth inspection every two years.

(2) All other ferry terminal structures including vehicle holding areas and pedestrian transfer spans, but excluding buildings — Routine inspection annually. In-depth inspection every two years.

d. Inventory inspection on all bridges.

e. Fracture critical inspections as required but at maximum two-year intervals.

f. Underwater inspections as required but at maximum five-year intervals.

g. Scour inspections as required but at maximum two-year intervals.

h. Flood, damage, in-depth, and/or interim inspections as warranted.

i. Private structural inspections of all privately owned transportation structures, crossing over state highways, at maximum five-year intervals.

j. Routine nondestructive testing services on mechanical components of movable bridges for the region and assists the region in arranging for any outside nondestructive testing required by age and operating conditions.

k. In-depth mechanical and electrical inspections on a maximum six-year interval or as age and operating conditions require.

l. Provides recommended repairs based on structural, mechanical, and electrical inspections; furnishes drawings showing recommended repair or strengthening details, if needed.

m. In-depth or special inspections on major bridges as warranted; develops an inspection program for these bridges outlining the procedures for the inspection; supplements the inspection as necessary by analytical, physical, and chemical analysis to verify the adequacy of the structure using state-of-the-art analytical and testing procedures.

3. The Regional Administrator performs the following:

a. Maintenance inspections on bridges.

b. Furnishes traffic control as requested by the Bridge and Structures Office for performing structural inspections, upon receipt of reasonable notice.

c. Establishes a schedule to perform inspection (including testing) and maintenance for movable bridges, floating bridges, and other major transportation structures requiring special inspection and maintenance procedures, as prescribed in the operations, inspection, & maintenance manuals or preventive maintenance manuals.

d. Performs monthly trial openings of all movable spans (except those noted in this document in Appendix 4, “WSDOT Movable Bridges” as “no longer opened for marine traffic”) to ensure proper operation. Any traffic opening will satisfy the trial opening requirement.

4. The Director of the Washington State Ferries Division performs:

a. Annual maintenance inspections on all ferry terminals;

b. Annual routine inspections of all ferry terminal machinery, electrical systems, and hoist systems; and

c. Annual depth soundings in the vicinity of all vehicle transfer spans. A copy of all soundings shall be transmitted to the Bridge and Structures Engineer.

B. **Bridge Rating Rules**

1. The Bridge and Structures Engineer performs the following:

   a. Prepares and maintains a current load rating for all of the department's highway bridges and major culverts;.

   b. Reports all ratings which require load restrictions or reduced overload capacity (including temporary ratings which result from damage or construction activities) to the Motor Carrier Services Administrator and the Regional Administrator.

   c. Advises the regions on the need to post or restrict bridges where necessary.

2. The Regional Administrator erects and maintains load posting signs in accordance with the federal "Manual on Uniform Traffic Control Devices for Streets and Highways" and "Washington State Modifications to MUTCD, M 24-01" on all bridges rated below legal load limits.

3. The Director of the Washington State Ferries Division performs the following:

   a. Prepares and maintains a current load rating for all vehicle transfer spans and holding areas;

   b. Erects and maintains load posting signs in accordance with the federal "Manual on Uniform Traffic Control Devices for Streets and Highways" at all ferry terminals rated below legal load limits.

C. **Rules for Maintenance of Bridges**

1. The Bridge and Structures Engineer performs the following:

   a. Prepares and furnishes to the Regional Administrators and the State Maintenance Engineer, the Director of the Washington State Ferries Division, and local agencies under agreement for inspection services, recommendations for preventive and corrective maintenance of bridges and ferry terminals based on structural inspections.

   b. Develops and maintains operations, inspection and maintenance manuals and preventive maintenance manuals for movable bridges, floating bridges and other major transportation structures requiring special inspection and maintenance procedures.

   c. Monitors preventive maintenance activities to ensure compliance with established procedures and schedules.

2. The Regional Administrator performs the following:

   a. Budgets for programs, and performs required preventive and corrective maintenance identified during maintenance or structural inspections on all the department's transportation structures except ferry terminals.

   b. Upon completion of repairs on bridges, prepares and furnishes maintenance reports to the Bridge and Structures Engineer.

c. Implements a preventive maintenance program for all movable bridges, floating bridges and other major transportation structures requiring special inspection and maintenance procedures, in accordance with the operations, inspection and maintenance manuals or the preventive maintenance manuals.

d. Schedules and performs additional maintenance as required to maintain the operational status of the movable spans in compliance with Code of Federal Regulations, Chapter 33, Section 117.

e. Informs the Bridge and Structures Office promptly of inadequacies or errors in the operations, inspection and maintenance manuals or the preventive maintenance manuals.

3. The Director of the Washington State Ferries Division develops and implements a preventive maintenance program for all ferry terminals; and budgets for, programs, and performs required preventive and corrective maintenance identified during maintenance or structural inspections on ferry terminals.

D. **Bridge Damage/Emergency Repair Rules**

1. The Regional Administrator performs the following:

a. Immediately makes an on-site investigation whenever reports of vehicle or ship collision or other damage to any transportation structure except ferry terminals are received;

b. Takes suitable action to stop or restrict traffic and/or protect a structure when warranted.

c. Notifies the Bridge and Structures Engineer and the Chief Maintenance Engineer promptly of bridge damage, or in the case of movable bridges, mechanical and/or electrical failure or problems (including an accurate and detailed description of the damage and all emergency actions taken).

d. Initiates and acquires programming approval for the work.

e. Makes immediate repairs and institutes traffic restrictions as advised by the Bridge and Structures Engineer and in accordance with D 07-45, “General Emergency Declarations, and Emergency Work”; obtains approval of the Bridge and Structures Engineer for reopening of the bridge and/or removing vehicle restrictions.

f. Immediately advises the Thirteenth U.S. Coast Guard District when a malfunction or accident involving a movable bridge will prevent the bridge from opening for marine traffic.

g. Obtains the necessary information and institutes timely action to recover costs in accordance with D 16-01, “Reporting and Recovering Property Damage Costs.”

h. Furnishes flaggers, welders and additional personnel and equipment to work under the supervision of Bridge Preservation Engineer as required for heat straightening support or Bailey Bridge construction.

i. Disassembles, cleans, paints if necessary, bundles, and returns Bailey Bridge units to storage when use is completed.

j. Administers construction of the repair(s).

2. The Bridge and Structures Engineer performs the following.

   a. Inspects bridge damage and/or mechanical or electrical problems immediately after receiving notice unless it can be positively determined from the region report that the damage is minor; requests that the region post the bridge for restrictive conditions if warranted.

   b. Advises the FHWA Division Bridge Engineer if bridge damage is such that closure or traffic restrictions are required.

   c. Advises the Thirteenth U.S. Coast Guard District when damage to a movable bridge is such that the future passage of marine traffic will be restricted.

   d. Provides the Regional Administrator with an assessment of damage and with recommendations for permanent or temporary repairs; mobilizes and dispatches heat straightening crew if needed; if necessary, initiates the dispatching of Bailey Bridge components and provides assistance in the Bailey Bridge planning, installation, and subsequent removal.

   e. Furnishes the Regional Administrator with plans and specifications for use in ordering any necessary new steel components.

   f. Furnishes drawings showing recommended repair or strengthening details to the Regional Administrator, if needed.

   g. Coordinates a schedule for accomplishing repairs with the Regional Administrator.

   h. Assists the region, as needed, during construction of the repair(s).

   i. Inspects the repair upon completion of construction.

   j. Monitors the integrity of the repair during subsequent inspections.

   k. When damage is beyond repair, prepares the necessary reports to the FHWA for requesting Emergency Bridge Replacement funds.

   l. Advises the FHWA Division Bridge Engineer when a bridge closed or restricted due to damage has been reopened and/or traffic restrictions have been removed.

   m. Advises the Thirteenth U.S. Coast Guard District when marine traffic restrictions have been removed on a movable bridge.

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1. **AASHTO:** American Association of State Highway and Transportation Officials
2. **Bridges:** All of the following: highway bridges, major bridges, movable bridges, pedestrian bridges, railroad bridges; small span highway bridges, highway lids, tunnels, major culverts; a subcategory of transportation structures.
3. **Corrective Maintenance:** Maintenance that is performed to correct an identified deficiency.
4. **Damage Inspection:** Unscheduled inspections to assess structural damage to transportation structures caused by humans or nature; a subcategory of structural inspection.
5. **Department:** Washington State Department of Transportation.
6. **Ferry Terminals:** All facilities operated by the Washington State Ferries Division which transfer highway and pedestrian traffic between ferry vessels and public roads, including vehicle transfer spans, vehicle holding areas, pedestrian transfer spans, and pedestrian ramps; a subcategory of transportation structures.
7. **Flood Inspection:** Inspections performed on all bridges designated as scour potential sites during or after significant floods; a subcategory of structural inspection.
8. **Fracture Critical Structural Element:** Tension member or tension component of members whose failure could result in collapse of the structure.
9. **Fracture Critical Inspection:** A detailed inspection of all fracture critical elements of a bridge; a subcategory of structural inspection.
10. **Highway Bridges:** All structures longer than 20 feet which directly support vehicular traffic; a subcategory of bridges.
11. **Highway Lids:** All structures supporting multipurpose nonvehicular loads over highway traffic; a subcategory of bridges.
12. **Historical File:** All records of a specific transportation structure, including but not limited to design and load rating calculations, geotechnical reports, post-construction reports, as-built plans, inspection and maintenance reports, and accident and damage reports.
13. **In-depth Inspection:** Inspections performed to detect any deficiencies not readily visible during routine inspections; may involve special equipment, non-destructive testing or disassembly of selected structural elements; a subcategory of structural inspection; also known as special inspection.
14. **Interim Inspection:** Inspections performed between routine inspection intervals for the purpose of monitoring and evaluating the condition of: (l) spans or primary members with known or suspected deficiencies, and/or (2) primary members highly susceptible to deterioration; a subcategory of structural inspection.

15. **Inventory:** A list identifying all transportation structures for which the department or local agency is responsible for inspection, rating, and maintenance. The list should include, but not be limited to, structure identification (name and number), location, structure type, critical dimensions, and year built.
16. **Inventory Inspection:** The first inspection of l) a transportation structure as it becomes part of the transportation structure inventory, or of 2) an inventoried transportation structure which has been modified.
17. **Local Agency:** Local jurisdictions within Washington State responsible for the maintenance of transportation structures on public roads.
18. **Maintenance Inspection:** Visual inspections by region maintenance crews primarily to determine the need for routine preventative or corrective maintenance. Generally, these inspections are not intended to identify structural defects.
19. **Major Bridges:** All department highway bridges which both represent a major investment based on its size and have bridge design and/or construction techniques which are complex or unique; major bridges are a subcategory of bridges.
20. **Major Culverts:** All culverts over 20 feet in span measured parallel to the roadway; a subcategory of bridges.
21. **Movable Bridge:** Any bridge with a span or spans that can lift, draw, swing, or rotate in a vertical or horizontal plane to open a clear passage or to provide increased vertical clearance for marine traffic in navigable channels; a subcategory of bridges.
22. **Pedestrian Bridges:** All structures which carry only foot or bicycle traffic; a subcategory of bridges.
23. **Pedestrian Transfer Spans:** All movable bridges which allow passage of foot traffic directly to or from the ferry vessel; a subcategory of ferry terminal.
24. **Preventive Maintenance:** Maintenance that is performed on a predetermined schedule to prevent excessive wear of components through normal use and to prevent deterioration from environmental conditions.
25. **Private Structural Inspection:** Inspections performed on privately owned structures which cross over state highways for the purpose of: (1) ensuring they pose no hazard to the traffic below, and (2) maintaining accurate underclearance measurements; a subcategory of structural inspection.
26. **Railroad Bridges:** All structures which carry railroad traffic only; a subcategory of bridges.
27. **Random Inspection:** An unannounced inspection focusing on verifying the water tightness, and mechanical and electrical system reliability of the department's floating bridges.
28. **Routine Inspection:** A regularly scheduled inspection relying primarily on visual observations of all elements with the use of special inspection equipment to provide access where required; a subcategory of structural inspection.
29. **Scour Inspection:** Inspections performed on all bridges which are vulnerable to damage from waterway scour; a subcategory of structural inspection.

30. **Small Span Highway Bridges:** All structures shorter than 20 feet which support vehicular traffic; a subcategory of bridges.
31. **Special Inspection:** See In-depth Inspection.
32. **Structural Inspection:** Periodic on-site investigation to identify structural condition, to determine the need for preventive and corrective maintenance, to ensure structure safety, and to establish a recommendation for rehabilitation or replacement where appropriate; includes routine inspection, fracture critical inspection, underwater inspection, scour inspection, flood inspection, damage inspection, interim inspection, and in-depth inspection. See also Private Structural Inspection (does not include maintenance inspections).
33. **Transportation Structures:** Bridges and ferry terminals.
34. **Tunnels:** All subterranean structures which carry highway traffic; a subcategory of bridges.
35. **Underwater Inspection:** Inspections performed on those structural elements located in water too deep to allow visual inspection; a subcategory of structural inspection.
36. **Vehicle Holding Areas:** All stationary structures which support vehicle traffic and/or parking; a subcategory of ferry terminal.
37. **Vehicle Transfer Spans:** All movable bridges which allow passage of vehicle traffic directly to or from the ferry vessel; a subcategory of ferry terminal.
38. **WSBIS:** Washington State Bridge Inventory System

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1. Code of Federal Regulations (CFR), Part 650, October 1988, “National Bridge Inspection Standards”
2. “Code of Federal Regulations,” Chapter 33, Section 117.
3. “Manual for Condition Evaluation of Bridges,” American Association of State Highway and Transportation Officials (AASHTO), 1994
4. Federal Highway Administration “Bridge Inspectors Manual for Movable Bridges”
5. Guide Specifications for Strength Evaluation of Existing Steel and Concrete Bridges,” American Association of State Highway and Transportation Officials (AASHTO), 1989
6. M 23-09, “Bridge List”
7. M 23-50, “Bridge Design Manual”
8. M 24-01, “Uniform Traffic Control Devices for Streets and Highways”
9. M 51-01, “Maintenance Manual”
10. “Permits Desk Guide”
11. D 07-45, “General Emergency Declarations and Emergency Work”
12. D 16-01, “Reporting and Recovering Property Damage Costs”
13. Agreement No. AA 7-0515 with City of Seattle re: Park Plaza (Nos.5/549 PN, PS, PW)
14. Agreement No. GM236 (GC 1039B) with Oregon Department of Transportation re: Columbia River Bridge @ Astoria (No.101/1)
15. Agreement No. GC 7435 with Oregon Department of Transportation re: Columbia River Bridges (Nos. 205/1E and 205/1W)
16. Agreement No. GC 8254 with Metro re: Metro OC (No.5/594)
17. Agreement No. GM 20 with City of Seattle re: Montlake Bridge (No.513/12)
18. Agreement No. GM 34 with Idaho Department of Transportation re: Snake River Bridge at Clarkston (No.12/915)
19. Agreement No. GM 395 with Oregon Department of Transportation re: Columbia River Bridges at Vancouver (Bridges 5/1E and 5/1W)
20. Agreement No. GM 772 with Oregon Department of Transportation re: Columbia River Bridge at Longview (No.433/1)
21. Agreement No. GM 781 with Oregon Department of Transportation re: Columbia River Bridge at The Dalles (No.197/1)
22. Agreement No. GM 782 with Oregon Department of Transportation re: Columbia River Bridges at Umatilla (Nos. 82/280N and 82/280S)

23. Agreement No. GM 832 with Oregon Department of Transportation re: Columbia River Bridge at Biggs Rapids (No.97/1)
24. Agreement No. GM 1230 with Washington State Convention and Trade Center re: Washington State Convention and Trade Center (No.5/549 CNC)
25. M 23-32, “Preventive Maintenance Manual,” Snohomish River Bridge (Hewitt Avenue) (No. 2/5S)
26. M 23-19, “Preventative Maintenance Manual,” Wishkah River Bridge (Heron Street) (No. 12/12S)
27. M 23-25, “Preventative Maintenance Manual,” Wishkah River Bridge (No. 12/12N)
28. “Operations, Inspection, and Maintenance Manual,” Snake River Bridge (No. 12/915), June 1996
29. “Operations, Inspection, and Maintenance Manual,” Tacoma Narrows Bridge (No. 16/110), June 1995
30. “Operations, Inspection, and Maintenance Manual,” Lacey V. Murrow Bridge (No. 90/25S), and Homer Hadley “Third Lake Bridge” (No. 90/25N), December 1993
31. “I-90 Mt. Baker Ridge Tunnel Complex - Structural Inspection and Maintenance Manuals,” April 1993
32. “I-90 First Hill Lid, Mercer Island - Structural Inspection and Maintenance Manuals,” April 1993
33. M 23-31, “Preventive Maintenance Manual,” Duwamish River Bridge at 1st Avenue South (No. 99/530)
34. M 23-23 “Preventive Maintenance Manual,” Chehalis River Bridge (No. 101/115)
35. “Operations, Inspection, and Maintenance Manual,” Riverside Bridge (No. 101/125E), June 1997
36. M 23-33 “Preventive Maintenance Manual,” Hoquiam River Bridge at Simpson Avenue (No. 101/125W)
37. “Operations, Inspection, and Maintenance Manual,” Hood Canal Bridge (No. 104/5.1 & 5.2), June 1996
38. M 23-14 “Preventive Maintenance Manual,” City Waterway Bridge at 11th Street (No. 509/5)
39. M 23-30 “Preventive Maintenance Manual,” Montlake Bridge (No. 513/12S)
40. “Operations, Inspection, and Maintenance Manual,” Evergreen Point Bridge (No. 520/8) Volumes I and II, June 1996.
41. M 23-21 “Preventive Maintenance Manual,” Snohomish River Bridge (No. 529/10E)
42. M 23-21, “Preventive Maintenance Manual,” Snohomish River Bridge (No. 529/10W)

43. M 23-28 “Preventive Maintenance Manual,” Steamboat Slough Bridge (No. 529/20E)
44. M 23-28 “Preventive Maintenance Manual,” Steamboat Slough Bridge (No. 529/20W)
45. M 23-29 “Preventive Maintenance Manual,” Ebey Slough Bridge (No. 529/25)

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Bridge Agreements

Bridge Number(s)	Bridge Name	Agreement With	Agreement Number
5/1 E 5/1 W	Columbia River at Vancouver	Oregon DOT[1, 2, 3]	GM 395
5/549 PN, PS, PW	Park Plaza	City of Seattle[2]	AA 7-0515
5/549 CNC	Washington State Convention and Trade Center	Washington State[2] Convention and Trade Center	GM 1230
5/594	Metro OC	Metro[2]	GC 8254
12/915	Snake River at Clarkston	Idaho DOT[3]	GM 34
82/280 N 82/280 S	Columbia River at Umatilla	Oregon DOT[3]	GM 782
97/1	Columbia River at Biggs Rapids	Oregon DOT[3]	GM 832
101/1	Columbia River at Astoria	Oregon DOT[1, 2, 3]	GM 236 (GC 1039-B)
197/1	Columbia River at the Dalles	Oregon DOT[1, 2, 3]	GM 781
205/1E 205/1W	Columbia River	Oregon DOT[1, 2, 3]	GC 7435
433/1	Columbia River at Longview	Oregon DOT[3]	GM 772
513/12	Montlake Bridge	City of Seattle[2]	GM 20

[1]Listed agency has responsibility for performing inventory, inspection and maintenance.

[2]Listed agency has responsibility for operation and maintenance.

[3]Every other inspection to be performed jointly by the two states.

Bridge No.	Bridge Name	Region	**O, I, & M or PM Manual** (Appendix 2 Reference No.)
2/5S	Snohomish River (Hewitt Ave.)	NW	#25
5/1E(1)	Columbia River	SW	None
5/1W(1)	Columbia River	SW	None
12/12S	Wishkah River (Heron St.)	OLYMPIC	#26
12/12N	Wishkah River	OLYMPIC	#27
12/915	Snake River (Clarkston)	SC	#28
99/530E	Duwamish River (lst Ave. S.)	NW	#33
99/530W	Duwamish River (1st Ave S.)	NW	Under Development
101/115	Chehalis River	OLYMPIC	#34
101/125E	Hoquiam River (Riverside)	OLYMPIC	#35
101/125W	Hoquiam River (Simpson Ave.)	OLYMPIC	#36
104/5.1 & 5.2	Hood Canal	OLYMPIC	#37
509/5	Thea Foss Waterway (Formerly City Waterway)	OLYMPIC	#38
513/12(2)	Montlake Bridge	NW	#39
520/8	Evergreen Point	NW	#40
529/10E	Snohomish River	NW	#41
529/10W	Snohomish River	NW	#42
529/20E	Steamboat Slough	NW	#43
529/20W	Steamboat Slough	NW	#44
529/25	Ebey Slough	NW	#45
536/15(3)	Skagit River	NW	None

Notes: (1) Inspected, operated and maintained by ODOT (GM 395).

(2) Operated and maintained by the city of Seattle (GM 20).

(3) No longer opened for marine traffic.