Washington State
Department of Transportation

Ferry Terminal Inspection Procedures Manual

M 3105.07

July 2025

Bridge & Structures
Bridge Preservation Office

ENGLISH

Title VI Notice to Public

It is the Washington State Department of Transportation's (WSDOT) policy to assure that no person shall, on the grounds of race, color, national origin, as provided by Title VI of the Civil Rights Act of 1964, be excluded from participation in, be denied the benefits of, or be otherwise discriminated against under any of its programs and activities. Any person who believes his/her Title VI protection has been violated, may file a complaint with WSDOT's Office of Equity and Civil Rights (OECR). For additional information regarding Title VI complaint procedures and/or information regarding our non-discrimination obligations, please contact OECR's Title VI Coordinator at 360-705-7090.

Americans with Disabilities Act (ADA) Information

This material can be made available in an alternate format by emailing the Office of Equity and Civil Rights at wsdotada@wsdot.wa.gov or by calling toll free, 855-362-4ADA(4232). Persons who are deaf or hard of hearing may make a request by calling the Washington State Relay at 711.

ESPAÑOL

Notificación de Titulo VI al Público

La política del Departamento de Transporte del Estado de Washington (Washington State Department of Transportation, WSDOT) es garantizar que ninguna persona, por motivos de raza, color u origen nacional, según lo dispuesto en el Título VI de la Ley de Derechos Civiles de 1964, sea excluida de la participación, se le nieguen los beneficios o se le discrimine de otro modo en cualquiera de sus programas y actividades. Cualquier persona que considere que se ha violado su protección del Título VI puede presentar una queja ante la Oficina de Equidad y Derechos Civiles (Office of Equity and Civil Rights, OECR) del WSDOT. Para obtener más información sobre los procedimientos de queja del Título VI o información sobre nuestras obligaciones contra la discriminación, comuníquese con el coordinador del Título VI de la OECR al 360-705-7090.

Información de la Ley sobre Estadounidenses con Discapacidades (ADA, por sus siglas en inglés)

Este material puede estar disponible en un formato alternativo al enviar un correo electrónico a la Oficina de Equidad y Derechos Civiles a wsdotada@wsdot.wa.gov o llamando a la línea sin cargo 855-362-4ADA(4232). Personas sordas o con discapacidad auditiva pueden solicitar la misma información llamando al Washington State Relay al 711.

한국어 – KOREAN

제6조 관련 공지사항

워싱턴 주 교통부(WSDOT)는 1964년 민권법 타이틀 VI 규정에 따라, 누구도 인종, 피부색 또는 출신 국가를 근거로 본 부서의 모든 프로그램 및 활동에 대한 참여가 배제되거나 혜택이 거부되거나, 또는 달리 차별받지 않도록 하는 것을 정책으로 하고 있습니다. 타이틀 VI에 따른 그/그녀에 대한 보호 조항이 위반되었다고 생각된다면 누구든지 WSDOT의 평등 및 민권 사무국(OECR)에 민원을 제기할 수 있습니다. 타이틀 VI에 따른 민원 처리 절차에 관한 보다 자세한 정보 및/또는 본 부서의 차별금지 의무에 관한 정보를 원하신다면, 360-705-7090으로 OECR의 타이틀 VI 담당자에게 연락해주십시오.

미국 장애인법(ADA) 정보

본 자료는 또한 평등 및 민권 사무국에 이메일 wsdotada@wsdot.wa.gov 을 보내시거나 무료 전화 855-362-4ADA(4232)로 연락하셔서 대체 형식으로 받아보실 수 있습니다. 청각 장애인은 워싱턴주 중계 711로 전화하여 요청하실 수 있습니다.

русский – RUSSIAN

Раздел VI Общественное заявление

Политика Департамента транспорта штата Вашингтон (WSDOT) заключается в том, чтобы исключить любые случаи дискриминации по признаку расы, цвета кожи или национального происхождения, как это предусмотрено Разделом VI Закона о гражданских правах 1964 года, а также случаи недопущения участия, лишения льгот или другие формы дискриминации в рамках любой из своих программ и мероприятий. Любое лицо, которое считает, что его средства защиты в рамках раздела VI были нарушены, может подать жалобу в Ведомство по вопросам равенства и гражданских прав WSDOT (OECR). Для дополнительной информации о процедуре подачи жалобы на несоблюдение требований раздела VI, а также получения информации о наших обязательствах по борьбе с дискриминацией, пожалуйста, свяжитесь с координатором OECR по разделу VI по телефону 360-705-7090.

Закон США о защите прав граждан с ограниченными возможностями (ADA)

Эту информацию можно получить в альтернативном формате, отправив электронное письмо в Ведомство по вопросам равенства и гражданских прав по адресу wsdotada@wsdot.wa.gov или позвонив по бесплатному телефону 855-362-4ADA(4232). Глухие и слабослышащие лица могут сделать запрос, позвонив в специальную диспетчерскую службу штата Вашингтон по номеру 711.

tiếng Việt – VIETNAMESE

Thông báo Khoản VI dành cho công chúng

Chính sách của Sở Giao Thông Vận Tải Tiểu Bang Washington (WSDOT) là bảo đảm không để cho ai bị loại khỏi sự tham gia, bị từ khước quyền lợi, hoặc bị kỳ thị trong bất cứ chương trình hay hoạt động nào vì lý do chủng tộc, màu da, hoặc nguồn gốc quốc gia, theo như quy định trong Mục VI của Đạo Luật Dân Quyền năm 1964. Bất cứ ai tin rằng quyền bảo vệ trong Mục VI của họ bị vi phạm, đều có thể nộp đơn khiếu nại cho Văn Phòng Bảo Vệ Dân Quyền và Bình Đẳng (OECR) của WSDOT. Muốn biết thêm chi tiết liên quan đến thủ tục khiếu nại Mục VI và/hoặc chi tiết liên quan đến trách nhiệm không kỳ thị của chúng tôi, xin liên lạc với Phối Trí Viên Mục VI của OECR số 360-705-7090.

Thông tin về Đạo luật Người Mỹ tàn tật (Americans with Disabilities Act, ADA)

Tài liệu này có thể thực hiện bằng một hình thức khác bằng cách email cho Văn Phòng Bảo Vệ Dân Quyền và Bình Đẳng wsdotada@wsdot.wa.gov hoặc gọi điện thoại miễn phí số, 855-362-4ADA(4232). Người điếc hoặc khiếm thính có thể yêu cầu bằng cách gọi cho Dịch vụ Tiếp âm Tiểu bang Washington theo số 711.

ARABIC – العَرَبِيّة

العنوان 6 إشعار للجمهور

تتمثل سياسة وزارة النقل في ولاية واشنطن (WSDOT) في ضمان عدم استبعاد أي شخص، على أساس العرق أو اللون أو الأصل القومي من المشاركة في أي من برامجها وأنشطتها أو الحرمان من الفوائد المتاحة بموجبها أو التعرض للتمييز فيها بخلاف ذلك، كما هو منصوص عليه في الباب السادس من قانون الحقوق المدنية لعام 1964. ويمكن لأي شخص يعتقد أنه تم انتهاك حقوقه التي يكفلها الباب السادس تقديم شكوى إلى مكتب المساواة والحقوق المدنية (OECR) التابع لوزارة النقل في ولاية واشنطن. للحصول على معلومات إضافية بشأن إجراءات الشكاوى و/أو بشأن التزاماتنا بعدم التمييز بموجب الباب السادس، يرجى الاتصال بمنسق الباب السادس في مكتب المساواة والحقوق المدنية على الرقم 360-705-7090.

معلومات قانون الأمريكيين ذوي الإعاقة (ADA)

يمكن توفير هذه المواد في تنسيق بديل عن طريق إرسال رسالة بريد إلكتروني إلى مكتب المساواة والحقوق المدنية على wsdotada@wsdot.wa.gov أو عن طريق الاتصال بالرقم المجاني: 855-362-4ADA (4232). يمكن للأشخاص الصم أو ضعاف السمع تقديم طلب عن طريق الاتصال بخدمة Washington State Relay على الرق 711.

中文 – CHINESE

《权利法案》Title VI公告

<華盛頓州交通部(WSDOT)政策規定，按照《1964 年民權法案》第六篇規定，確保無人因種族、膚色或國籍而被排除在WSDOT任何計畫和活動之外，被剝奪相關權益或以其他方式遭到歧視。如任何人認為其第六篇保護權益遭到侵犯，則可向WSDOT的公平和民權辦公室(OECR)提交投訴。如需關於第六篇投訴程式的更多資訊和/或關於我們非歧視義務的資訊，請聯絡OECR的第六篇協調員，電話360-705-7090。

《美国残疾人法案》(ADA)信息

可向公平和民權辦公室發送電子郵件wsdotada@wsdot.wa.gov或撥打免費電話 855-362-4ADA(4232)，以其他格式獲取此資料。听力丧失或听觉障碍人士可拨打711联系Washington州转接站。

Af-soomaaliga – SOMALI

Ciwaanka VI Ogeysiiska Dadweynaha

Waa siyaasada Waaxda Gaadiidka Gobolka Washington (WSDOT) in la xaqiijiyo in aan qofna, ayadoo la cuskanaayo sababo la xariira isir, midab, ama wadanku kasoo jeedo, sida ku qoran Title VI (Qodobka VI) ee Sharciga Xaquuqda Madaniga ah ah oo soo baxay 1964, laga saarin ka qaybgalka, loo diidin faa'iidooyinka, ama si kale loogu takoorin barnaamijyadeeda iyo shaqooyinkeeda. Qof kasta oo aaminsan in difaaciisa Title VI la jebiyay, ayaa cabasho u gudbin kara Xafiiska Sinaanta iyo Xaquuqda Madaniga ah (OECR) ee WSDOT. Si aad u hesho xog dheeraad ah oo ku saabsan hanaannada cabashada Title VI iyo/ama xogta la xariirta waajibaadkeena ka caagan takoorka, fadlan la xariir Iskuduwaha Title VI ee OECR oo aad ka wacayso 360-705-7090.

Macluumaadka Xeerka Naafada Marykanka (ADA)

Agabkaan ayaad ku heli kartaa qaab kale adoo iimeel u diraaya Xafiiska Sinaanta iyo Xaquuqda Madaniga ah oo aad ka helayso wsdotada@wsdot.wa.gov ama adoo wacaaya laynka bilaashka ah, 855-362-4ADA(4232). Dadka naafada maqalka ama maqalku ku adag yahay waxay ku codsan karaan wicitaanka Adeega Gudbinta Gobolka Washington 711.

Contents

Purpose

The purpose of this manual is to document a written procedure to guide Bridge Preservation Inspectors in conducting a structural inspection of Washington State Department of Transportation, Marine Division's State Ferry Terminal Facilities. Included is a general overview of the planning, safety considerations, inspection, and reporting involved in performing the ferry terminal structural inspections, with insights into special procedures, historical knowledge and the needs of Marine Transportation. This is a working document that will require updating as new technology is introduced, experience is gained, and to accommodate the changing needs of Marine Transportation. Changes in the requirements of the Federal Highway Administration for inspection of bridges will also affect the inspection procedures.

This document is used as a guide for inspection of local agency and other state ferry terminals. Local agency ferry terminals include the Whatcom County Ferry crossing between Gooseberry and Lummi Island, Skagit County Ferry crossing between Anacortes and Guemes Island, Wahkiakum Ferry terminal on the Columbia River, and other state ferry terminals like the North and South Keller Ferry Terminals on SR 21.

Memorandum of Agreement For Safety Inspection of Washington State Ferry Terminals

The structural inspections, planning, report and repair listing of the Washington State Ferry Terminal Facilities is done through a Memorandum of Agreement between Washington State Ferries (WSF) Terminal Engineering Office and Washington State Department of Transportation (WSDOT) Bridge Preservation Office (BPO).

The Full text of the agreement is in Appendix XI.

Safety Considerations

Pre-activity Safety Plan (See Appendix XIII for a copy of the PASP)

Safety is of primary concern in conducting ferry terminal inspections. Prior to beginning the inspection a Pre-Activity Safety Plan (PASP) shall be filled out and signed by all members of the inspection team. The plan shall cover, but is not limited to, items such as hazard review, emergency review, hospital locations, required Personal Protective Equipment (PPE), traffic, escape routes, pinch points, slips/trips/falls, protruding nails/spikes and Tower and Bridge Fall Protection. Inspecting personnel shall conduct themselves in a safe manner at all times.

Always be mindful of automobile traffic. Always be aware of the ferries and their prop wash.

Be aware of the schedule for arrival and departure of the ferries; avoid being surprised or causing conflicts with the ferry runs.

Tower and Bridge Fall Protection Plan (DOT Form 750 – 001A)

Prior to climbing the counterweight towers, discuss and complete the Tower and Bridge Fall Protection Plan. All climbers must initial the form, indicating they are familiar with the Plan. All climbers shall have an individual fall protection harness of the correct size that is properly adjusted. If the fall protection system is an arresting cable attached to the tower, the harness shall be used with a cable clamp device that clamps the cable and prevents free falling of the climber. If the arresting cable is not properly anchored it shall not be used.

Personal Protective Equipment WAC 296-800-160

Personal protective equipment (PPE) is required to perform ferry terminal inspections; useful equipment includes but is not limited to the following: personal flotation device, life ring or throw rope, flotation cushions, full body fall protection harness, fall arrest lanyard, cable climber, fixed positioning lanyard, ear plugs, eye protection, hard hat, safety toe boots with non-skid soles, coveralls, safety vest, gloves, raingear. Life vests shall be worn when over water inspecting structures.

Boater Safety

All members of the bridge inspection team shall have completed a Boating Safety Education Program established by Washington State Parks. The Program is approved by the National Association of State Boating Law Administrators and recognized by the U.S. Coast Guard. Any inspection team member operating a powerboat with a motor of 15 horsepower or greater shall have in their possession a Boater Education Card. All personnel in the boat shall have a personal flotation device. The boat shall be equipped with a throw ring or rope. Flotation cushions and oars are also recommended as boat equipment.

Boats and Gear

All members of the bridge inspection team shall be responsible for maintaining the boat, motor and all related equipment necessary to keep the boat and motor in safe and good working order. The equipment includes the gas tanks, battery, wiring, steering gear, oars, ropes, boathook, etc. Maintenance of the trailer shall be included in the scope of this section. Trailer maintenance shall include greasing wheel bearings, checking and maintaining wiring for signal and brake lights. Examine frame and bunks for loose bolts and nuts, grease the tongue jack, and apply dielectric grease to the wiring sockets.

Lockout/Tag Out

Inspectors shall contact the ferry terminal agent upon arrival to the facility to discuss all site specific safety procedures and protocols. The procedures agreed to between the terminal agent and the inspectors shall apply only to the ferry terminal over which that agent has jurisdiction. Lock Out Tag Out (LOTO) and Hazardous Energy Testing procedures are included in Appendix XIV.

Aerial Lifts

Aerial (Genie) lifts are used to gain access to the floor system of the passenger overhead loading trusses and cab. The lifts are rented and delivered to the ferry terminal being inspected as requested by WSF. The lift shall be operated according to requirements of the rental company.

Inspection of the gangplank masts and support arms at the Eagle Harbor Maintenance Facility may be accomplished with a bucket truck.

Summary of Key Personnel

Marine Project Engineer (WSF)

The Terminal Engineering Maintenance Marine Project Engineer has been sub-delegated Program Manager Duties for the federally reportable bridge inventory of Washington State Ferries. These duties are defined in the National Bridge Inspection Standards (NBIS) 23CFR650.307. The Marine Project Engineer, being a Delegated Program Manager, must retain his/her Bridge Inspection certification as outlined in the Washington State *Bridge Inspection Manual* M 36-64 Section 1.04-B. A copy of the Sub-delegation letter is in Appendix XI.

The Marine Project Engineer has responsibility for maintenance of ferry terminal structures. The Marine Project Engineer directs the Eagle Harbor work crews, who perform routine maintenance and urgent repairs or may also have contractors perform maintenance that is beyond the scope of Eagle Harbor forces or their equipment. The Marine Project Engineer (WSF) and the Special Structures Engineer (BPO) shall discuss which terminal facilities will be inspected and the type of inspection that is to be done prior to the beginning of the inspection season.

The Marine Project Engineer will provide guidance as to recent structural problems encountered during maintenance or operation. Terminal Engineering provides BPO a list of all repairs that that have been completed. Maintenance and new construction “As Built’s” that have changed the pile layout are to be provided by Terminal Engineering to BPO for incorporation into the latest report. The Marine Project Engineer may request the BPO inspection team verify repairs completed by state forces or by contract repair.

Members of Terminal Engineering or WSF Design staff may participate in the inspections to view any unsafe structural conditions that require immediate remedy, to review repairs, or to assess the condition of contracted work. WSF staff who are utilized in the role as a co-inspector shall possess a SNBI Bridge Inspector Certification number.

Statewide Program Manager (SPM)

The Statewide Program Manager is the individual in Washington State who leads the bridge inspection organization. This position is held by the Bridge Preservation Engineer, who must ensure that the organization fulfills its NBIS responsibilities.

Terminal Supervisor (WSF)

The Terminal Supervisor has overall responsibility for the operation of the Ferry Terminal and for assuring that the ferries maintain their published schedule. The Supervisor will be notified in advance of inspections, and of any need for access to a slip that is normally in use.

Ferry Crew and Shore Operator (WSF)

The Ferry Captains and Terminal Supervisors shall be informed of the inspectors' presence. The Captains prefer the head frame clear of inspectors during landings, and need to see the inspection skiff in a safe location while approaching, landing or departing.

The transfer span operator has radio voice communications with the Ferry Captain. The Captain and shore operator shall be informed of the inspection team's sequence of conducting the inspection, and stay aware of where the inspectors are working via radio communication. The inspectors shall inform the Captain and Terminal Supervisors when the inspectors leave the ferry terminal at the end of their inspection.

Special Structures Engineer (BPO)

The Special Structures Engineer has overall responsibility to provide staff and equipment for the structural inspections of the WSF Terminal Facilities through the Memorandum of Agreement between WSF Terminal Engineering and the Bridge Preservation Office.

Special Structures Bridge Inspection Team (BPO)

Bridge Preservation provides an inspection team consisting of a senior lead and a co-inspector. The BPO inspection team shall contact WSF, plan and perform the field structural inspections and write reports and repairs for all WSF Terminal Facilities due for inspection. Photographs shall be taken of all recommended repairs and shall take verification photos of repairs that have been completed.

Security Personnel (Washington State Patrol, U.S. Coast Guard, Homeland Security, Alcohol Tobacco & Firearms, etc.)

BPO inspection personnel shall carry a Transportation Workers Identification Card (TWIC) administered by the Transportation Security Administration (TSA). The card allows access to secured areas of port facilities. Several of the Ferry Terminals have Washington State Patrol (WSP) on site. They should be notified of the terminal inspection through the Quick Notice sent out by WSF. Alcohol, Tobacco and Firearms (ATF) agents with bomb sniffing dogs may be on the dock. There are US Coast Guard (UCSG) patrol boats escorting the ferries and patrolling the waters near the terminals. Coast Guard contact phone number for the Puget Sound is 206-217-6002. BPO inspection personnel shall contact the Coast Guard prior to beginning any inspection activities, and also at the end of each inspection day. Inspection personnel shall have their TWIC identification badges and their WSDOT Emergency Responder badge on their person at all times.

Pre-Inspection Planning

Prior to the beginning of the inspection season, the BPO Special Structures Engineer and the WSF Marine Project Engineer shall establish a list of structures and inspection types to be performed for the coming year. A tracking spreadsheet is created and placed on the WSDOT web server. The location of the spreadsheet is W:\Data\Bridge\Special Structures\Common\XXXX Tracker.

Prior Review

Get copies of the previous inspection reports and all attached files (Non Redundant Steel Tension Member report, Non Redundant Steel Tension Member diagram, ultrasonic test results of pins, pile layout, and pile inspection data spreadsheets).

Read through the previous report and note all recommended repairs. Take copies of photos associated with the repair. Note items to be measured for ongoing deterioration such as weld cracks or timber rot. Take copies of the WSBIS sheet for verification of bridge geometric data.

Schedule Inspections

Compile a tentative schedule of inspections showing which ferry terminals are to be inspected during the year. A follow up confirmation of the schedule will be sent to WSF two weeks in advance of the inspections to allow Terminal Engineering the option to schedule one of their personnel to assist Bridge Preservation in the inspections or to review their records for any emergency repairs or maintenance contracting.

Procure Inspection Vehicles

A skiff for inspection of all structures over the water needs to be set up. All safety equipment and personal flotation need to be inventoried and inspected. A shakedown cruise of the skiff shall be conducted to insure the motor and controls are operable. The boat trailer, trailer lights and running gear shall be in safe operating condition.

A four wheel drive (4WD) vehicle capable of pulling the inspection boat needs to be checked out for the duration of the ferry terminal inspection. A 4WD vehicle may be required on boat launch ramps.

A Genie lift for inspection of Pedestrian Overhead Loading structures. Arrangements for the lift are made by WSF for delivery to the terminal on the date of inspection. This request is made by BPO to WSF during the planning stage of the inspection.

Inspection Types

Routine Inspection

A SNBI required inspection of the entire structure. This inspection is performed at a maximum frequency of 24 months. If the superstructure or substructure code has a SNBI rating of 4 or less, the inspection shall be on a 12 month frequency.

Non Redundant Steel Tension Member Inspection

A SNBI required inspection of the Non Redundant Steel Tension Member (NSTM) elements of the bridge. This inspection is performed at a maximum frequency of 24 months. The NSTM inspection should line up with the Routine Inspection.

A NSTM is a steel member in tension, or with a tension element, whose failure would probably cause a portion of or the entire bridge to collapse. Reference: 23 CFR 650.305. Typical Ferry Terminal NSTM's include the steel transfer spans, the lift beam, live load hangers and hanger pins, a two pin apron system, and cable eye clevises.

The NSTM inspection is a visual inspection, and may include other nondestructive test methods such as ultrasonic testing. NSTM inspection of the Passenger Overhead (POH) loading facilities requires the use of a Genie lift arranged by WSF. Though not a SNBI Required Inspection, NSTM inspection of POH facilities is done on a 24 or 48 month frequency, depending on the age and condition of the structure.

Complex Feature Inspection

A SNBI required inspection if WB77-84 is coded anything other than "N". The transfer spans should have a Complex Feature inspection of 6 "Ferry Terminal". This inspection should correspond with the Routine Inspection date and frequency.

Interim Inspection

A SNBI reported inspection and is used as an off year inspection to monitor a special condition or repair. It is commonly used for structures which have a 24 month routine inspection frequency, but a partial inspection on a more frequent basis is warranted. The note box under the "Report Types" file tab should point out that the interim inspection is a "safety" level inspection which should include verification of repairs and a description of specific elements requiring a more frequent inspection.

Underwater Inspection

A SNBI required inspection of all in-water elements. This inspection is performed at a maximum frequency of 60 months. Facilities with Timber Elements are given an Underwater Inspection on a 48 month Frequency.

Terminal Facility Types

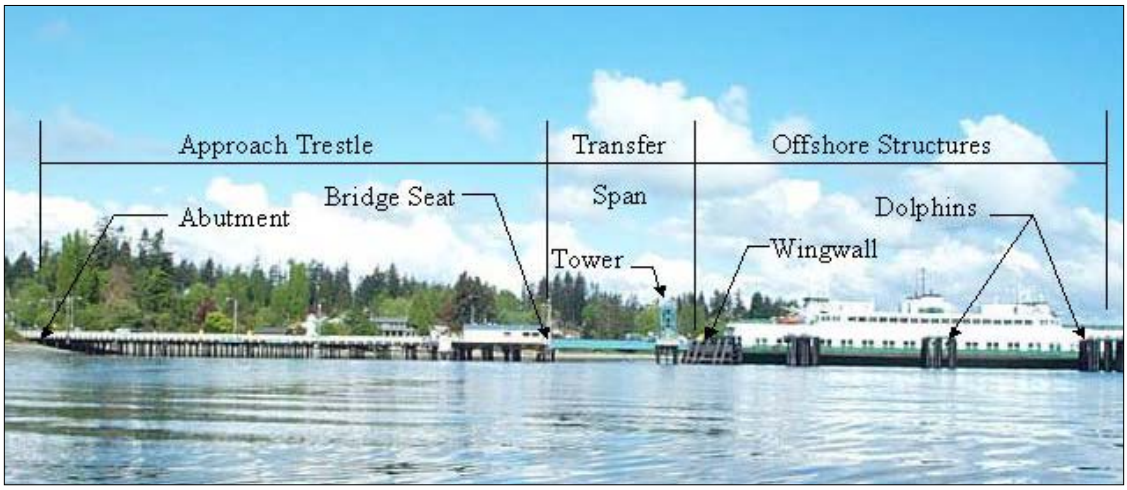
Vehicle Loading Facility

The ferry terminal vehicle loading facilities are inspected structurally under the agreement. Inspected elements typically include abutments, timber or concrete trestle, bridge seat, transfer span, counterweight towers, wing walls and dolphins.

The transfer spans and towers contain mechanical equipment. Ferry personnel shall always be present should there be need to raise or lower the span. Ferry personnel should always be consulted prior to climbing onto the head frame. The main counterweight sheaves and lines are a hazard to pinch body parts as the transfer span is raised or lowered. Likewise when motoring in the area around the bridge seat and the throat of the slip, keep an unobstructed line of sight with the landing or departing vessel pilot house. BPO Inspection team shall have hand held radios that allow them to communicate with WSF Ferry boats and the span operator.

Approach trestles and the steel transfer spans have separate Bridge Names and Structure Identification Numbers.

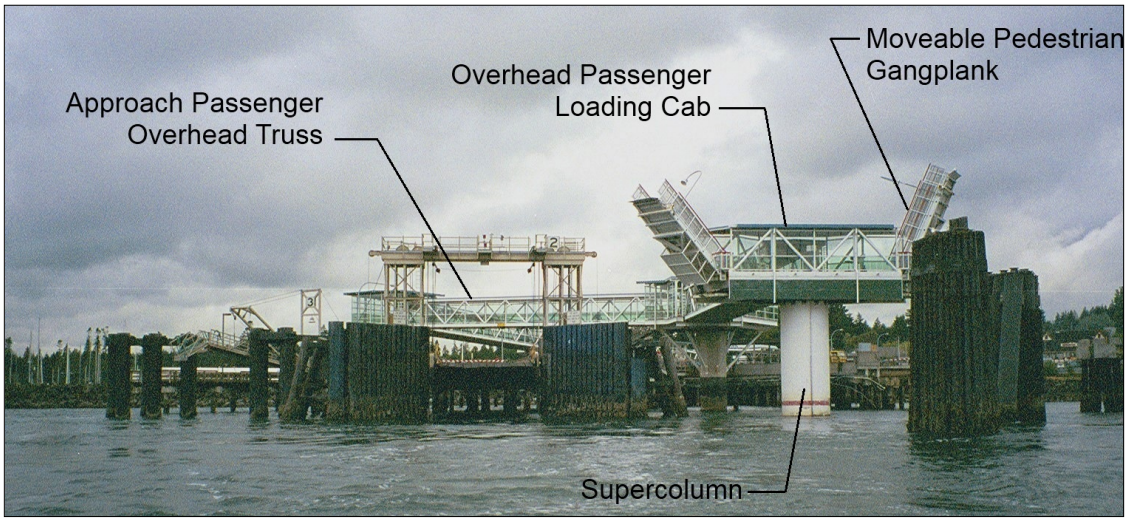
Figure 1 Typical Ferry Terminal Elevation



Passenger Overhead Loading Facility

Overhead loading passages and cab are inspected per the agreement. Passenger overhead loading facilities allow walk on passengers direct access to the passenger seating deck of the ferry, which lies above the car deck. The passageway leads from the ferry terminal building to the loading cab via approach spans and a transfer span and cab. Approach spans are generally steel or aluminum trusses. Cab and transfer span are raised and lowered either by counterweighted hoist and winch system or in the newer designs by hydraulic pistons housed in a concrete "supercolumn".

Figure 2 Typical Passenger Overhead Loading Facility



Express Ferry Facility

There are Express Ferry Facilities in the WSF system at Bremerton, Seattle and Vashon Island. The Express Ferry (Passenger only ferry) lays alongside a concrete or steel pontoon that has a fender system to ward off the ferry. The pontoons are fixed in a horizontal plane and can only move up and down on spud piles and wells. A transfer span steel truss connects the pontoon to the approach trestle. The pontoons being floating structures makes them vulnerable to violent wave action and to extreme tidal fluctuations. The truss bearings on the pontoon have to accommodate fairly large longitudinal and transverse rotational movements caused by pitching and rolling of the pontoon respectively.

Figure 3 Typical Express Ferry Facility

Tie-up Slip

There are vessel Tie-up slips at several ferry terminals. These slips are used to accommodate vessels overnight for early morning departures or to hold for temporary maintenance. The Anacortes terminal has two tie up slips, Bainbridge- Friday Harbor-Kingston-Vashon have one Tie-up Slip. Access to the ferries is by gangplank that is raised and lowered by a winch and hoist attached to a boom crane. Inspection findings for the Tie-up slips typically are included in the report for the Auxiliary slip or Slip 2.

Figure 4 Typical Tie-Up Slip

Maintenance Facility—Eagle Harbor

The Eagle Harbor facility is for long term tie up and maintenance. There are five tie up slips with gangplank access to the ferries and two slips that have maintenance vehicle spans for access. There are also pontoons on spud piles next to the west finger pier (Trask dock). There are carpenter and machine shops in maintenance buildings that are supported on a pier over the water.

Figure 5 Eagle harbor Maintenance Facility (Bainbridge in background right)

Report Format

The Ferry Terminal Inspection Reports are written in a program called “Bridgeworks” and are kept in a “Sequel Server” database, which is maintained by the Bridge Information Section at Bridge Preservation. A current listing of the ferry terminals and the inspection program needs to be provided by this section.

The written report includes:

1. Standards for National Bridge Inventory Section (SNBI) where the structure is rated for federally reportable condition and appraisal coding as defined in the WSBIM.
2. The Bridge Management System (BMS) Section where the structural elements are listed, quantified, and coded with condition states.
3. Notes Section where comments are written about each element. Additional notes regarding Orientation (0 note), NSTM (1 note), Bridge Management (5 note), U/W Dive (9 note), Load Rating (11 note) may be added where pertinent.
4. Repairs Section where the repairs are written and prioritized with photos attached.
5. Photographs for deck and elevation and condition of structural elements.
6. Files Section, where other documents associated with the Inspection are kept. These files may include Non Redundant Steel Tension Member Reports, Bridge and Pile Layout Drawings, Pile Condition Spreadsheets or any other specialty files related to the bridge or bridge inspection
7. Washington State Bridge Inventory System (WSBIS) spread sheet.

Ferry Terminal Elements

In this chapter, the major elements of a typical ferry terminal will be discussed along with notes to the inspector of specific damage to look for.

All defined elements of a ferry terminal are given condition state codes ranging typically from 0 to 4. Because ferry terminals have many features that are unique to moveable marine structures, a separate list of 8000 series elements has been defined and given condition states. A list of these elements is included in Appendix V. The condition state verbiage for ferry terminal BMS elements follow the same general descriptions as do the elements for highway bridges, as documented in the Washington State *Bridge Inspection Manual* M 36-64.

Figure 6 Aerial View of Typical Ferry Terminal

The major sections or divisions of a ferry terminal are the approach trestle, transfer span and the offshore slip structures.

The approach trestle goes from the abutment to the trestle side of the transfer span bridge seat. Abutments are typically constructed of either soldier piling with timber lagging, concrete bulkhead or steel sheet piling. The approach trestles for the holding and off going lanes are usually of treated timber or concrete construction. Timber trestles consist of timber laminated decking supported on stringers (girders) and caps on timber piling. Concrete trestles usually have precast deck panels on cast in place caps supported on prestressed piling.

The moveable bridge transfer spans extend from the bridge seat to the lift beam and live load hangers that are supported by the towers. The transfer spans are steel girders or steel trusses. The transfer span is supported on a fixed bearing at the bridge seat and on a lift beam and dead load counterweighted on towers at the sea end or raised and lowered via hydraulic rams housed inside port or starboard supercolums. There are Live load hangers that transfer vehicle loads from the lift beam onto the towers. There is an apron extending off the sea end of the transfer span that adjusts to the Ferry deck.

Offshore slip structures include the wingwalls and dolphins. The rub rail on the ferry bow lands against and lays on the wingwalls. Wingwalls are either steel frame piling or timber plumb and batter piling with timber walers. Wingwalls have vertical rubbing face timbers with a High Density Plastic (HDPE) fascia. The dolphins lie offshore of the wingwalls and control the ferry from swinging while in the slip. The outer dolphins are often used as turning dolphins when the ferry is leaving the slip.

Dolphins are constructed of timber piles driven in a mass or steel pile frames. The timber piles are wrapped individually into the mass of other piling. The piles are all finished with several high and low outer wraps, see Figure 14. Steel pile frame dolphins consist of steel reaction and fender piles. There are a few different configurations of pile frames. Latest design employs TRELLEX fenders and HDPE/UMHW fender faces see Figure 15.

Abutment and Approach Trestle

Abutment

For all material types of abutments look for breaching of the wall that will result in loss of fill and settlement of the approach road. Note erosion and undermining along the abutment wall base. Note unevenness and potholing in the pavement at the threshold. The following are a few specific items to look for under timber, concrete and steel sheet pile abutments:

Timber

- Rotten or broken backwall timber planks, note any associated voids in backfill.
- Rotten soldier piles.
- Rotten sill caps and sill foundation blocks.
- Steep slopes or low clearance limiting access to the abutment that require special equipment or care.

Concrete

- Holes, spalls and open cracks in the retaining wall , note any associated voids in backfill.
- Spalls and open vertical cracks in abutment caps.
- Exposed rebar; length, depth of exposure and condition of bar corrosion should be documented.

Steel sheet pile

- Corrosion holes through sheet; area and location, note any associated voids in backfill.
- General condition off sheets; look for thin bulging areas and fill spill through.
- Transverse top cap, concrete/steel; note deteriorated conditions.

Trestle

Trestle bents are usually numbered consecutively from Bent 1 at the abutment to the offshore bent at the transfer span bridge seat. Piles in a bent are usually labeled from left to right looking offshore. Exception occurs at Fauntleroy where piles are labeled right to left (dating back to the original construction of the trestle). Note condition and thickness of the asphalt concrete surfacing for all types of material construction. The following are a few specific items to look for under timber, concrete, and steel trestles:

Timber

- Damaged, rotten deck laminations in soffit; document square area and location.
- Water damage and loose deck laminations, particularly around drains.
- Curbs and railings.
- Rot where stringers bear on caps.
- Cracked or splintered stringers. Note notching of stringers at bearing.
- Rot in exterior stringers at drain scuppers, and under curbs.
- Brooming or bulging caps, cap crushing or piles punched into the bottom of caps, cap end rot.
- Rot in pilings. Pay particular attention to the caps and piling at the offshore end of the trestle. Presence of marine borers, especially Toredos (Shipworms) and Limnoria damage.
- Large pieces of flotsam (tree trunks, barrels, etc.) that can damage piles.
- Construction debris nailed to piles (platform, horizontal timbers, etc.).

Concrete

- Deck soffit spalls and exposed reinforcement in precast concrete panels.
- Spalls and exposed reinforcement in caps.
- Concrete curb and metal rail.
- Concrete piles, including evenly spaced ring cracks, longitudinal cracks, exposed rebar or prestressing strands.
- Utility lines and pipe hangers located beneath the soffit. Locate any leaking drain lines and overflowing oil water separation vaults.

Steel

- Steel pile and cap members encountered in the trestle are usually the result of repairs or reconstruction.
- Steel Cap; Document condition and workmanship of cap reinforcement. Note condition of galvanizing or protective system.
- H piles or Round piles. Document failed steel pile protective wrap or coating Note extents of section loss.
- Galvanized channel bracing at many terminals.

Transfer Span

Bridge Seat

The bridge seat can be constructed of treated timber pile and caps or concrete caps on concrete or steel piles.

Treated timber construction is generally pile bents topped with transverse and longitudinal cribbing culminating in a timber cap platform. The transfer span lower bearing plates lay on the platform. The platform caps are sometimes dapped to adjust the base plate to the correct grade. This causes water to pond in the depression in the cap and often leads to softening/rot in the cap at the bearing. Look for tilting of the bridge seat cap caused by crushing of the caps usually on the seaward piles.

Concrete bridge seat cap look for spalling, cracks, or exposed reinforcement.

Bridge Seat Bearings allow the transfer span to rotate while keeping the transfer plan from moving latterly or off the bridge seat. Check tightness of embedded bearing anchor bolts. Look for movement between the concrete cap and bearing masonry plate. Check for wear on the pins or the vertical plates.

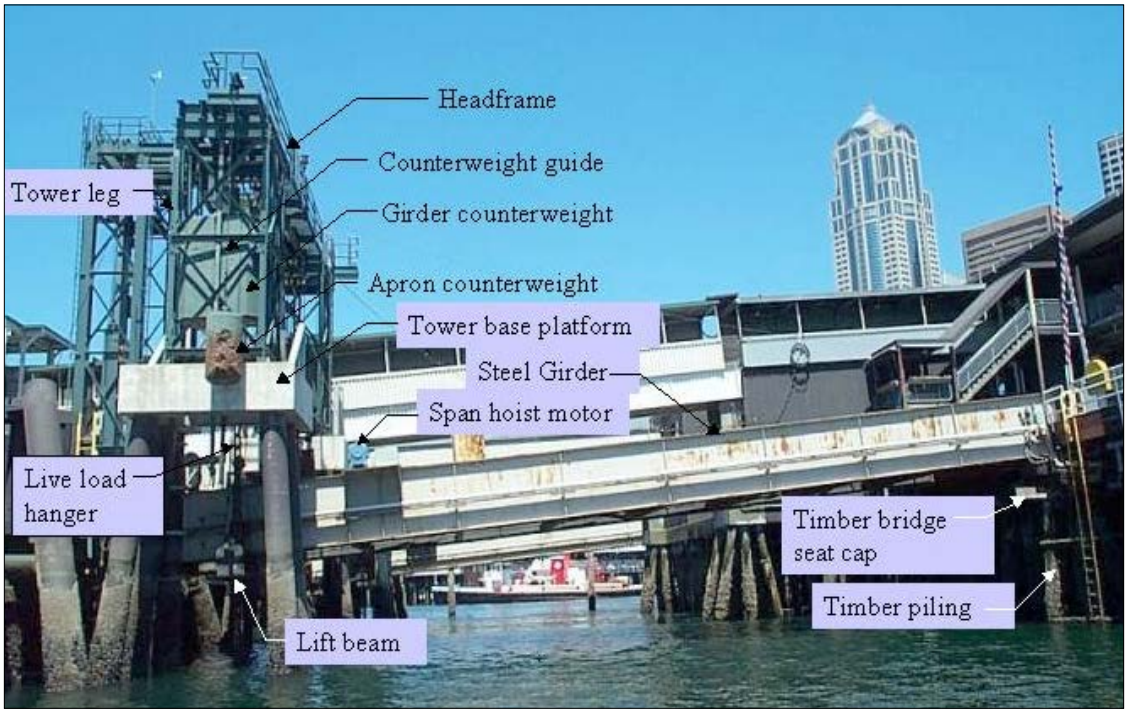
Note any unusual conditions around the bridge seat (large pieces of flotsam, unusual tilt, rotten timber piles, spalled concrete piles or rusty steel piles).

Transfer Span

The transfer span is the moveable bridge that spans between the fixed bearing at the end of the approach trestle and the counterweight towers. The transfer spans are generally through girders either riveted or welded or through trusses. Both types of spans have a steel floor beam and stringer system. Typical problems associated with transfer spans and floor system include:

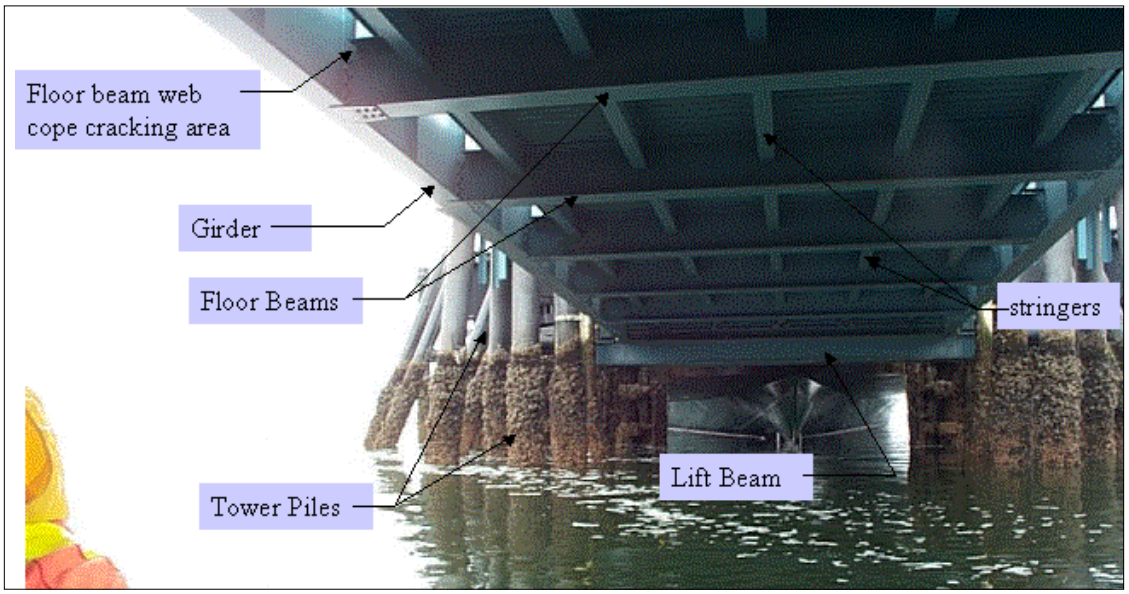
- Fracture prone welding in the tension zones of girders at stiffeners and fittings.
- Section loss on tension flanges of girders or truss tension chords.
- Pack rust/broken welds between girder cover plates or truss splice plates.
- Loss of section on gussets and connections due to corrosion.
- Damage from vehicular or ferry collision.
- Failure of protective systems.
- Cracks in floor beam web copes at girder connections.
- Corrosion of lateral bracing gussets and fasteners at floor beam connections to girders.
- Section loss and severe corrosion on floorbeams, stringers and lift beams.

Figure 7 Typical Welded Girder Transfer Span



Girder transfer spans welded or riveted are fracture critical on the tension flange. Note that the top flange is in tension in the negative moment area over the lift beam. Note location of tack welds that were used during construction/fabrication. Examine the entire girder for cracks, corrosion and section loss, comment on pitting and scalloped areas. Comment on the condition of the paint protective system under the appropriate element.

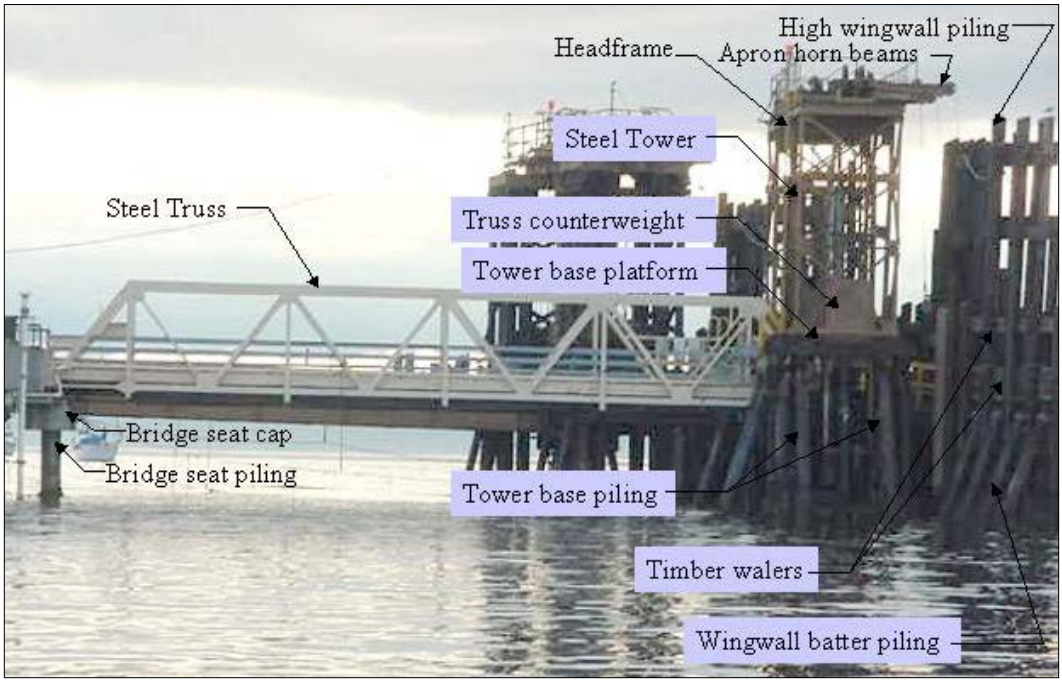
Figure 8 Girder Transfer Span - Floor System Without Bracing



On girder transfer spans there is usually an offshore end floorbeam one stringer bay offshore from the lift beam. The offshore end floorbeam on typical girder spans has the apron hinges attached. Contrast this to truss transfer spans, where the lift beam is under the sea end floorbeam. On the older in service girders and trusses there is substantial corrosion and section loss in the seaward stringers, floorbeams and the lift beam. The lift beam can be lowered to the point of being in salt water from wave action. Look for the following typical problems:

- Fatigue cracks in floorbeams at top flange copes at girder connections.
- Corrosion and section loss on stringers and clip angles.
- Floor system bracing bent and/or gusset plate welds broken by rust pack out.
- Holed through stringer webs at floorbeam connections.
- Damaged bolts or rivets.
- Note floorbeam, stringer and lift beam broken welds and section loss. Use calipers, micrometers or an electronic thickness meter to determine section remaining. Estimate amount of section loss in scalloped areas and note knife edged flanges.
- Lift beam bottom cover plate intermittent welds broken because of rust pack-out.
- Lift beam flange, web and tie plates that have heavy pack rust and section loss.

Figure 9 Typical Steel Truss Transfer Span



For steel welded or riveted through trusses, in general, the bottom chord is in tension. The trusses still in service in the system have the lift beam under the offshore end floorbeam and the Apron hinge pins pivoting off the offshore end floorbeam. There is no negative moment area on the truss and apron combination. Truss items to be closely examined:

- Section loss on chord, vertical and diagonal members.
- Gusset Plate tack weld locations, rust pack out, seam rust, section loss, and broken welds.
- Note condition of paint for inclusion in comments under element 8901 - Protective Coating - Bridge.
- Note vehicle damage to members for inclusion in comments under element 8362 (impact damage).
- Visual inspection of the truss bottom chord at bearing and at the lift beam especially the web of the beam. Also note condition of top bearing plate connection to chord.
- Note floor system beam connection to truss corrosion and rivet section loss.
- Note floorbeam, stringer and lift beam broken welds and section loss. Use calipers, micrometers or an electronic thickness meter to determine section remaining. Estimate amount of section loss in scalloped areas and note knife edged flanges.
- Note number of damaged or broken fasteners in bolted or riveted connections.
- Apron two hinge pin system is a non redundant steel tension member. Visually inspect welds on the apron hinge pin transverse beam and on the pin side plates. Visually inspect the welds of the longitudinal beams/webs to the deck plate. For the apron soffit, comment on the general condition of the paint protective system, abraded or broken transverse tie straps, and sharp creases or gouges, which are areas where cracks can initiate.
- Aprons with multiple pins are not non redundant steel tension members. Check for missing cotter pins and damaged pins or pin plates. Pin plates are often found with pin holes that are oblong in shape. This is typically caused by traffic impact and the hardened pins banging against the softer steel of the pin plates.

Towers

The towers support the offshore end of the transfer span. The span is counterweighted for dead load to reduce the power required of the hoist motor used to raise the span to adjust to the ferry deck as the tides change. The towers also support the live load hanger bars that transfer vehicle loads back to tower piles.

Several terminals in the system have counterweighted aprons and apron hoisting motor. Installations since the 1990's have hydraulic actuators to move the apron up or down into loading position.

Towers are usually constructed of timber or steel. Depending on the configuration steel towers may be set on a timber platform or on a concrete tower base platform. Most of the timber towers are constructed of timber piles full height from mudline to headframe support cribbing. Concrete tower base platforms may be supported on timber, steel or concrete piles.

The towers are topped by a grillage of beams or timber cribbing. Headframes are the transverse beams on top of the grillage that span the two towers. There is a catwalk with safety railing crossing between the towers on top of the headframe. The main counterweight sheaves and upper live load hanger pins are accessed from the headframe. The headframe is typically accessed by ladder with a climbing safety cable.

Figure 10 Typical Steel Tower

Figure 11 Typical Timber Tower

For all towers, review condition of structural items such as piles, pile bracing and caps. Note any leaning of the towers which will cause interference with movement of the counterweights. Specifically note:

- Deterioration and condition of counterweights and guides.
- Condition of the cable protective system and the lubricant.
- Examine main sheave anchor bolts for tightness.
- Headframe steel beams note any corroded or broken welds.

Note damage to the counterweights and guides (main and apron). Note condition of the cable clevis plates embedded in the counterweights and spalling of concrete around steel punching's embedded in the counterweight concrete. Note that counterweight adjusting blocks/ingots are adequately secured. Ask WSF shore operator if the span is operating smoothly up and down and have them run it through a full cycle to verify that the cable spools smoothly. If the cable jumps or binds report this in the inspection.

The purpose of the apron horn cable is to insure that the apron raises and lowers at the same rate as the main counterweights. Check for damage to the attachment of the apron horn beam to the headframe.

Note if the tower is out of plumb and the condition of the counterweight guide grease.

If the tower is leaning or wracked the counterweights will bind and cause problems when raising and lowering the transfer span. Monitor and measure the out of plumb condition.

Offshore Structures

Offshore structures are comprised of wingwalls and dolphins that the ferries dock against. Dolphins also hold the ferries in the slip against currents and wind and are used to turn the ferry as it leaves the slip.

The wingwalls are usually constructed of treated timber or steel pile frames. Dolphins are timber mass of piles wire roped together or steel pile frame construction.

Wingwalls

Wingwalls have a rubbing face of vertical timbers armored with high density plastic. Make note of missing section of HDPE and write repairs if causing timbers to abrade. There are old timber wingwalls in the system that have been reinforced with steel H-piles. The older timber wingwalls have rotten rubbing face timbers. The rot usually starts at the bolting holes where the vertical timbers are attached to the horizontal walers. Rot occurs at the end of walers often where they have been cut off and received a field anti-fouling treatment.

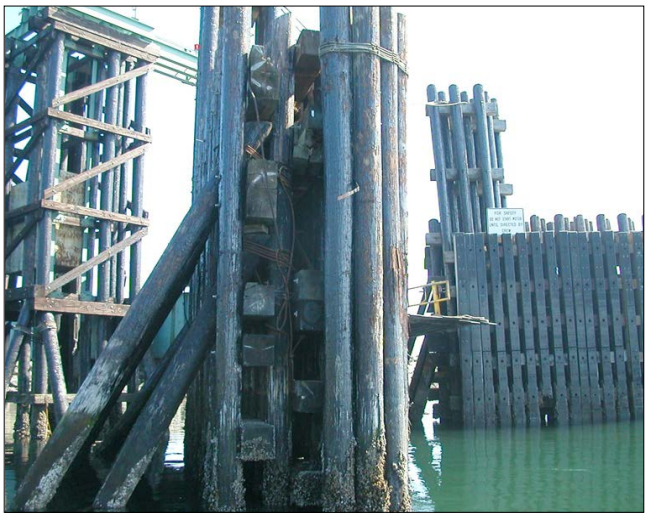
Walers are often crushed or splintered and no longer effective as connective members between vertical timbers/piles.

Steel pile frames have on occasion sustained damage on the outboard end. Report cracked welds and document for future inspection any conditions to be monitored.

Generally the worst condition on the steel pile frame is the breakdown of the protective system. Rusting usually begins around welded joints in the pipe or walers.

Figure 12 Typical Steel Wingwall

Figure 13 Typical Timber Wingwalls



Dolphins

Dolphin inspection is primarily the responsibility of WSF Terminal engineering. BPO will perform a cursory “boat level” safety inspection of the dolphins and report any findings that will impact operations to the Terminal Engineer. Dolphins and wingwalls are considered pier protection for the facility, and as such, their condition does not affect any of the standard appraisal codes.

Timber Pile Dolphins

There are timber pile, steel pile frame, timber floating and concrete pontoon dolphins. Dolphins are usually called out as inner, intermediate and outer for location going offshore and left and right of slip centerline. The older dolphins in the system are timber piles that are wrapped together that act as a timber mass driven into the bottom to resist the overturning moment of the ferry boat contact force. Timber dolphins are sized from 30 to 100 piles. Comment on timber dolphins that have rotten piles and condition of lower cable wraps. Note deficiencies in the HDPE plastics or composite piles.

Figure 14 Typical Timber Dolphin

Figure 15 Shared Steel Pile Frame Dolphins

Steel Pile Frame Dolphin

Steel pile frame dolphins have various design configurations but almost all employ a set of fender piles backed by reaction piles. The number of piles total in these steel pile frame dolphins ranges from 6 piles to 25 piles. The fender piles are attached to the reaction piles by a Trellex fender attached to the top platform that caps the reaction piles. The reaction piles are drilled shafts 24-30 inches diameter. Fender piles have a fender face armored with UHMW sheets attached to a built up backing plate that is clamped to the pile. Damage occurs on the Trellex Fender at the attaching frame and bolting plates. The Trellex will tear or the bolts will pull out of the Trellex. The Trellex will be severely deformed in a step down configuration indicative of permanent set or tearing of the Trellex. When this happens, the collar on the fender pile is not on the same level as the other fender piles. Comment on the general condition of the fender faces and Trellex shock absorbers.

Figure 16 Failed Trellex

Figure 17 Cracked Reaction Pile

Floating Concrete Pontoon Dolphins

Floating concrete pontoon dolphins have been installed at several facilities. These dolphins are retained by means of anchor chains attached to large seabed anchors. All floating Dolphins have rubbing timber with UHMW pads.

Figure 18 Concrete Floating Pontoon Dolphin (Seattle)

Figure 19 Concrete Floating Pontoon Dolphin (Lopez)

Note any listing of the pontoon. Note general condition of the rubbing faces. Note if pontoon fails to maintain position in the slip.

Appendix I NBI Report Form

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
NBI STRUCTURE INVENTORY AND APPRAISAL REPORT (ENGLISH UNITS)

DATE 2/25/2013

	IDENTIFICATION	
(1)	STATE NAME - WASHINGTON	530
(8)	STRUCTURE NUMBER	# 0013663A0000000
(5)	INVENTORY ROUTE (ON/UNDER) - On	1 3 1 00304
(2)	HIGHWAY AGENCY DISTRICT - OL Region	03
(3)	COUNTY CODE 35 - Kitsap County	(4) PLACE CODE 00000
(6)	FEATURES INTERSECTED	SINCLAIR INLET
(7)	FACILITY CARRIED	SR 304
(9)	LOCATION	0.4 E JCT SR 303
(11)	MILEPOINT	3.51
(12)	BASE HIGHWAY NETWORK - Part of network	1
(13)	LRS INV ROUTE AND SUB ROUTE	000000030400
(16)	LATITUDE	47 Deg 33 Min 43.32 Sec
(17)	LONGITUDE	122 Deg 37 Min 30.60 Sec
(98)	BORDER BRIDGE STATE CODE - Not a border bridge	
(99)	BORDER BRIDGE STRUCTURE NO. - Not a border bridge	
	STRUCTURE TYPE AND MATERIAL	
(43)	STRUCTURE TYPE MAIN: MATERIAL - Steel DESIGN - Movable - lift	315
(44)	STRUCTURE TYPE APPR: MATERIAL - Other DESIGN - Other	000
(45)	NO. OF SPANS IN MAIN UNIT	1
(46)	NO. OF APPROACH SPANS	0
(107)	DECK STRUCT TYPE - St. grating - conc	4
(108)	WEARING SURFACE / PROTECTIVE SYSTEM:	
(A)	TYPE OF WEARING SURFACE - Bituminous	6
(B)	TYPE OF MEMBRANE - None	0
(C)	TYPE OF DECK PROTECTION - None	0
	AGE AND SERVICE	
(27)	YEAR BUILT	1990
(106)	YEAR RECONSTRUCTED	0000
(42)	TYPE OF SERVICE ON - Highway UNDER - Waterway	1 5
(28)	LANES: ON STRUCTURE 2	UNDER STRUCTURE 0
(29)	AVERAGE DAILY TRAFFIC	3600
(30)	YEAR OF ADT 2010	(109) TRUCK ADT 1%
(19)	BYPASS, DETOUR LENGTH	000
	GEOMETRIC DATA	
(48)	LENGTH OF MAXIMUM SPAN	80 ft
(49)	STRUCTURE LENGTH	105 ft
(50)	CURB OR SIDEWALK: LEFT 1.5 ft	RIGHT 1.5 ft
(51)	BRIDGE ROADWAY WIDTH CURB TO CURB	20.0 ft
(52)	DECK WIDTH OUT TO OUT	25.0 ft
(32)	APPROACH ROADWAY WIDTH (W/SHOULDERS)	24 ft
(33)	BRIDGE MEDIAN - No median	0
(34)	SKEW 0 Deg	(35) STRUCTURE FLARED No 0
(10)	INVENTORY ROUTE MIN VERT CLEAR	16 ft 00 in
(47)	INVENTORY ROUTE TOTAL HORIZ CLEAR	20 ft 00 in
(53)	MIN VERT CLEAR OVER BRIDGE RDW	16 ft 00 in
(54)	MIN VERT UNDERCLEAR	0 ft 00 in
(55)	MIN LAT UNDERCLEAR RT	0.0 ft
(56)	MIN LAT UNDERCLEAR LT	0.0 ft
	NAVIGATION DATA	
(38)	NAVIGATION CONTROL - No nav control	0
(111)	PIER PROTECTION -	1
(39)	NAVIGATION VERTICAL CLEARANCE	000 ft
(116)	VERT-LIFT BRIDGE NAV MIN VERT CLR	
(40)	NAVIGATION HORIZONTAL CLR	0000 ft

	WSBIS DATA	
	BRIDGE NUMBER	304/18FT
	BRIDGE NAME	BREMERTON SLIP 1
	CUSTODIAN	Washington State
	CROSSING DESC	BREMERTON SLIP 1
	CROSSING KEY	00304 00 00351 36 M Y
	SUFFICIENCY RATING	73.72 Not SD or FO
	CLASSIFICATION	
(112)	NBIS BRIDGE LENGTH	Y
(104)	HIGHWAY SYSTEM - On the NHS	1
(26)	FUNCTIONAL CLASS - Other Principal Arterial	14
(100)	DEFENSE HIGHWAY - Not a STRAHNET route	0
(101)	PARALLEL STRUCTURE - Not a parallel bridge	N
(102)	DIRECTION OF TRAFFIC - 1-way traffic	1
(103)	TEMPORARY STRUCTURE - Not Applicable	
(105)	FEDERAL LANDS HIGHWAY - Not Applicable	0
(110)	DESIGNATED NATIONAL NETWORK - Part of network	1
(20)	TOLL - Toll bridge	1
(21)	MAINTAIN - State Highway Agency	1
(22)	OWNER - State Highway Agency	1
(37)	HISTORICAL SIGNIFICANCE - Not determined	4
	CONDITION	
(58)	DECK	7
(59)	SUPERSTRUCTURE	7
(60)	SUBSTRUCTURE	7
(61)	CHANNEL AND CHANNEL PROTECTION	8
(62)	CULVERTS	N
	LOAD RATING AND POSTING	
(31)	DESIGN LOAD - HS 20	5
(63)	OPERATING RATING METHOD - Load Factor (LFR), tons, HS20	1
(64)	OPERATING RATING	46 T
(65)	INVENTORY RATING METHOD - Load Factor (LFR), tons, HS20	1
(66)	INVENTORY RATING	28 T
(70)	BRIDGE POSTING - Equal or above legal loads	5
(41)	STRUCT OPEN, POSTED, CLOSED - Open, no restrictions	A
	APPRAISAL	
(67)	STRUCTURAL EVALUATION	6
(68)	DECK GEOMETRY	8
(69)	UNDERCLEARANCES, VERTICAL & HORIZONTAL	N
(71)	WATERWAY ADEQUACY	8
(72)	APPROACH ROADWAY ALIGNMENT	8
(36)	TRAFFIC SAFETY FEATURES	NNNN
(113)	SCOUR CRITICAL BRIDGE	3
	PROPOSED IMPROVEMENTS	
(75)	TYPE OF WORK - Rehab By contract	351
(76)	LENGTH OF STRUCTURE IMPROVEMENT	155.0 ft
(94)	BRIDGE IMPROVEMENT COST	$2,728,000
(95)	ROADWAY IMPROVEMENT COST	$546,000
(96)	TOTAL PROJECT COST	$5,456,000
(97)	YEAR OF IMPROVEMENT COST ESTIMATE	2010
(114)	FUTURE ADT	4320
(115)	YEAR OF FUTURE ADT	2031
	INSPECTIONS	
(90)	INSPECTION DATE 05/11	(91) FREQUENCY 24 MO
(92)	CRITICAL FEATURE INSPECTION:	(93) CFI DATE
	(A) FRACTURE CRIT DETAIL - YES -	24 Month (A) 05/11
	(B) UNDERWATER INSP - YES -	60 Month (B) 04/11
	(C) OTHER SPECIAL INSP - YES -	24 Month (C) 05/11

WSBIS Bridge Inventory Report

20/102FT - COUPEVILLE FERRY TERM

Built 1979

Carrying: SR 20 Route On: 00020 Milepost: 12.88

Intersecting: KEYSTONE HARBOR Route Under: Milepost:

Agency: State Ferries

Program Manager: Tom E. Castor

CD Status: Work

CD Guid: 526bb392-8ea4-4f1e-9c7e-f438b53bd9f8

Printed On: 7/17/2025

Approved		
Revised		
RFC		
AAN		
Not Reviewed		

Structure No: **20/102FT**

Soundings:

Clearance:

Revise Rating:

Photos:

Rdside Hdwr:

QA:

Bridge ID and Location

		Last Recorded	Updated
Structure Number	(WID02)	20/102FT	
Structure ID	(BID01)	0001697A	
Previous Structure ID	(BID03)	0	
Structure Type	(WID01)	1 - Bridges and culverts carrying public roadways	
Structure Sort Number	(WID03)	020102FT	
Structure Name	(BID02)	COUPEVILLE FERRY TERM	
Owner	(BCL01)	S22 - State Ferries	
Maintenance Responsibility	(BCL02)	S22 - State Ferries	
County	(BL02)	15 - Island County	
City	(WL05)	0 - UNINCORPORATED	
Place Code	(BL03)	00000 - UNINCORPORATED	
Highway Agency District	(BL04)	NW - Northwest	
Metro Planning Org	(BL12)	N	

Section	(WL06)	22		Toll	(BCL05)	1	
Township	(WL07)	31		Hist. Significance (NRHP)	(BCL04)	N	
Range	(WL08)	01E		Hist. Significance (HAER)	(WCL04)		
Obsolete Flag	(WID05)			Special Structures Flag	(WID04)	Y	
Border Structure ID	(BL07)	N					

Geometry

		Last Rec.	Updated			Last Rec.	Updated
NBIS Br Length	(BG01)	100.0		Sidewalk/Curb L	(BG07)	1.5	
Total Structure Len	(BG02)	105.0		Sidewalk/Curb R	(BG08)	1.5	
Max Span Length	(BG03)	100.0		Aprch Rdwy Width	(BG09)	22.0	
Min Span Length	(BG04)	100.0		Median Code	(BG10)	0	
Out-to-Out (NBI Disc)	(1360)	24.0		Skew (NBI Disc)	(1310)	0	
Out-to-Out	(BG05)	32.0		Skew	(BG11)	0	
Curb-to-Curb (NBI Disc)	(1356)	20.0		Curved Bridge	(BG12)	N	
Curb-to-Curb	(BG06)	20.0		Max Br Height	(BG13)	6	
Irr. Deck Area	(BG15)			Sidehill Bridge	(BG14)	N	
Calc. Deck Area	(BG16)	3360.0					
Min Vert Clrnc Over	(WH12)	16' 00"					
Min Vert Under Br	(WH13)	00' 00"					

Inspections Performed

Report Type	Subtype	Risk Mth	Begin Date	Comp Date	Freq	Hours	Inspector	Cert No	Co-Insp
Routine Bridge		**1**	**6/24/25**	**6/24/25**	**24**	**1.0**	**CRT**	**G1325**	**SMT**
NSTM		**1**	**6/24/25**	**6/24/25**	**24**		**CRT**	**G1325**	**SMT**
Underwater		1	10/16/23	10/16/23	48	3.0	RMP	G1215	JRWH
Complex Feature	**6**	**N**	**6/24/25**	**6/24/25**	**24**	**1.0**	**CRT**	**G1325**	**SMT**
UW Interim		N	11/7/24	11/7/24	12	1.5	RMP	G1215	JRWH

Features

Feature Designation	Feature Type	Feature Location	Feature Name	Program Manager
H01	H - Highway	C - Carried on bridge	SR 20	Tom E. Castor
Max Vert Clrnc Route (1499)	16' 00"		Max Vert Cl Reverse (2501)	
Min Vert Clrnc Route (2500)	14' 09"		Min Vert Cl Rerverse (2502)	
W01	W - Waterway	B - Below bridge	KEYSTONE HARBOR	Tom E. Castor

Work Events

Year	Work Performed

Appendix III Typical NSTM Report Forms

Washington State Department of Transportation

VISUAL NSTM INSPECTION REPORT

Bridge Name:	ANACORTES SLIP 1	**Date:**	8/12/2024
Bridge No:	20/208FT1	**Hours:**	1.0
Structure ID:	0008985A	**Inspector ID #:**	G1325
Structure Type:	SG TTC	**Lead Inspector Initials:**	CRT
Agency:	WSDOT	**Co-Inspector Initials:**	SMT
Milepost:	55.67		

Inspected Items and Procedures:

Riveted Two Girder System

1. As required, use mirrors or other equipment to check inside surfaces of NSTM's.
2. Check for loose or unevenly loaded member sub-elements.
3. Check all rivets at connection plates, with emphasis on first row. The first row is the row closest to the edge of the connection or gusset plate.
4. Check for any welds, including plug, tack, or repair welds. Record location of welds, regardless of condition, and document weld type and category.
5. Check NSTM's and associated connection or gusset plates for areas of heavy or pitted corrosion, nicks, gouges, sharp bends, and collision damage. Record location of all these conditions and estimated section loss, if applicable.
6. Check all heat straightened or repaired areas. Record location of these areas, regardless of condition.

Pins and Anchor Bolts

1. As required, use mirrors or other equipment to check inside surfaces of NSTM's.
2. Check for pitting, laminar rust, surface deformation, and pack rust. It is important to check the pin, pin nuts, and all members surrounding the pin for this kind of steel deterioration.
3. Check for mobility and noise of pin and surrounding members. If the pin is physically "frozen" it is important to note this because the added stress can affect other members in the structure.
4. Observe and record abnormalities like; alignment, pin wear, loose pin nuts, and amount of nut engagement. It's important to note that full nut engagement is when the nut is flush with the pin or the pin is extending past the nut.
5. Check for paint system failure on pin nuts, pin, and surrounding members.

NSTM Location	NSTM Type	NSTM Per Girder or Truss Line	'Beist' Server Plans		
			Sh. No.	Contr.	Sh. Name
Main Span	Riveted Girder	1	T1	N/A	Trans. Elev.
			T2	N/A	Long. Elev.
Lift Beam	LL Hanger Pins	2	N/A	N/A	N/A
Headframe Grillage	Rolled Beams	2	N/A	N/A	N/A

Note: NSTM = Non-Redundant Steel Tension Member

Washington State Department of Transportation

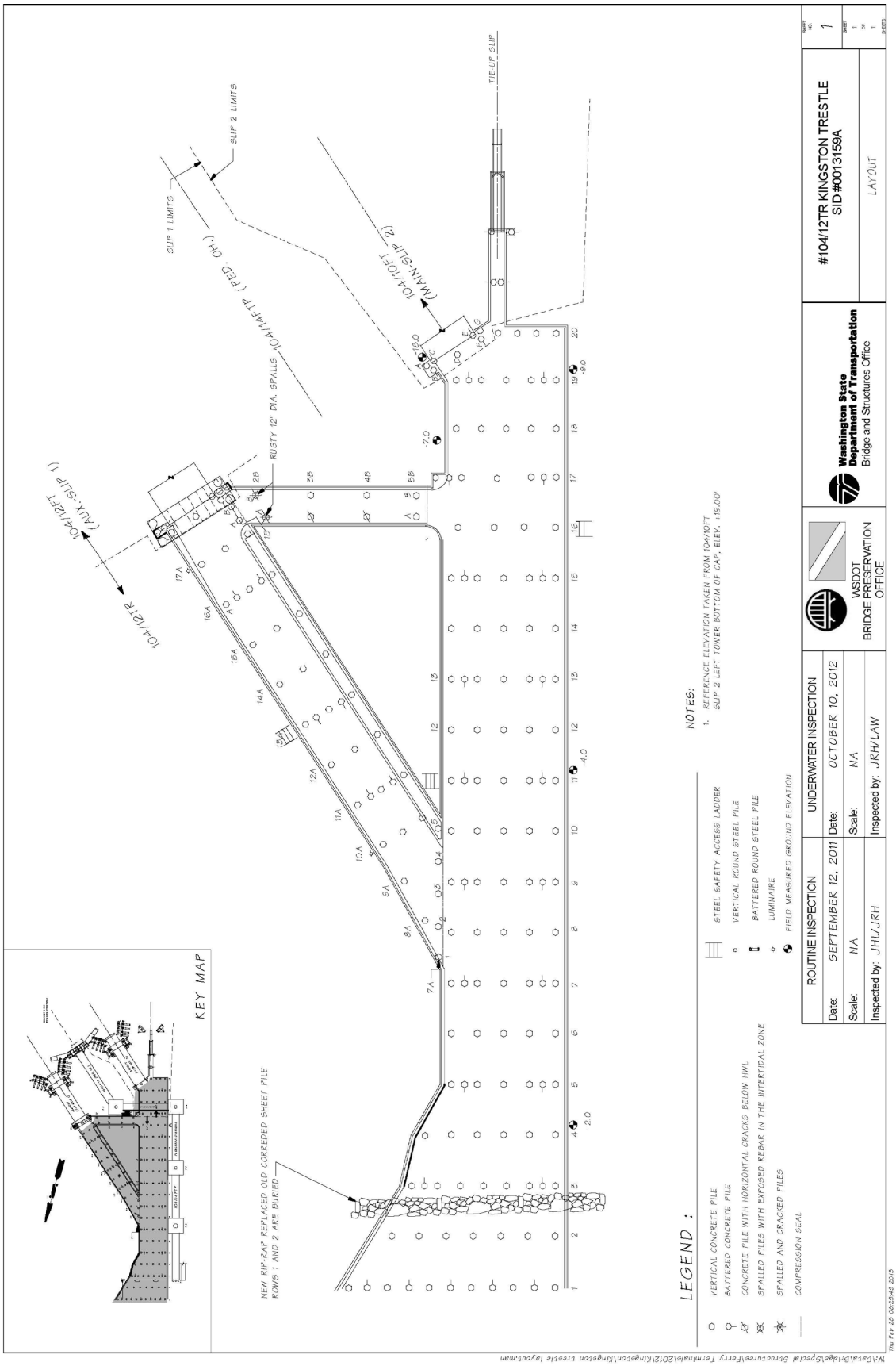
VISUAL NSTM INSPECTION REPORT

Bridge Name:	ANACORTES SLIP 1	**Date:**	8/12/2024
Bridge No.:	20/208FT1	**Hours:**	1.0
Structure ID:	0008985A	**Inspector ID #:**	G1325
Structure Type:	SG TTC	**Lead Inspector:**	CRT
Agency:	WSDOT	**Co-Inspector:**	SMT
Milepost:	55.67		

Truss / Girder	Span	Location	Feature Inspected	Detail Description	Remarks
Left	1	Girder	Welds	Flange, Web, and Stiffeners in Tension	Bottom flange has 1/8" pack rust along the doubler seams and up to 1/2" thick pack rust at the ends of the doubler plate (10 LF CS3) (photo #137). Near liftbeam exterior bottom flange has 3' of laminar rust with 1/16" section loss (CS1).
Left	1	Lift Beam	Pin	Bottom LL Hanger Pin	Hollow hydraulic pin.
Left	1	Tower	Pin	Top Live Load Hanger Pin	Fretting corrosion is present. Pins are not greased.
Left	1	Tower	Hanger	Live Load Hanger Link	No defects noted.
Left	1	Tower	Grillage Bms.	Rolled Steel Beam Tension Flg.	No defects noted.
Right	1	Girder	Welds	Flange, Web and Stiffeners in Tension	Bottom flange has 1/8" pack rust along the doubler seams and up to 1/2" thick pack rust at the ends of the doubler plate (10 LF CS3) (photo #137). Bottom flange notched near FB6 (small; 1/4" or less). Bottom flange doubler plate has laminar rust for 6" between FB7 and FB8 (1 LF CS3) (photo #130). Ladder bracket has been attached to the girder top flange near the span lift block. Bracket is welded transverse to the top flange in a tension zone. Rivets removed for bracket work have been replaced with bolts (photo #132).
Right	1	Lift Beam	Pin	Bottom LL Hanger Pin	Hollow hydraulic pin.
Right	1	Tower	Pin	Top Live Load Hanger Pin	Fretting corrosion is present. Pins are not greased.
Right	1	Tower	Hanger	Live Load Hanger Link	No defects noted.
Right	1	Tower	Grillage Bms.	Rolled Steel Beam Tension Flg.	No defects noted.
Lift Beam	1	Lift Beam	Welds	Flange, Web and Stiffeners in Tension	Light laminar rust on cover plate has been cleaned and painted over during most recent paint contract.

2024 Visual NSTM Workbook -Visual Report Printed 10/28/2024

Appendix IV Typical Terminal Pile Layout



Appendix V Ferry Terminal Elements Index

Ferry Terminal BMS Elements Index 2025

Abutments

8090	Steel Rolled Girder
8101	Steel Sheet Pile Abutment
8102	Concrete Abutment
8103	Abutment Timber Bulkhead

Substructure

8123	Timber Column
8124	Timber Pile
8125	Concrete Column
8126	Prestress Concrete Pile
8127	Steel Column
8128	Steel Pile
8129	Transfer Span/OHL Supercolumn
8130	Steel Pier Cap/Crossbeam
8131	Timber Pier Cap
8132	Concrete Pier Cap/Crossbeam
8136	Concrete Submerged Pile Cap/Footing

Superstructure

8108	Prestressed Concrete Bulb-T Girder
8109	Prestressed Conc. Multiple Web Girder
8110	Concrete Girder
8111	Prestressed Concrete Girder
8112	Timber Sawn Girder
8114	Timber Laminated Girder
8150	Prestressed Concrete Slab w/Uncoated Bars
8151	Prestressed Precast Concrete Slab w/ Coated Bars
8200	Steel Box Girder NSTM
8201	Steel Open Girder NSTM
8204	Steel Through Truss NSTM
8206	Steel Floor Beam
8209	Steel Stringer
8210	Truss Gusset Plates

Deck

8213	Bridge Deck Surface
8216	Concrete Deck Soffit
8217	Concrete Deck
8218	Steel Deck Open Grid
8219	Steel Grid Deck Concrete Filled
8221	Timber Deck
8222	Deck Corrugated Orthotropic/ Other Steel System

Overlays

8223	Asphalt Concrete (AC) Overlay
8224	Thin Polymer Overlay less than 0.5” thick
8225	Non-skid Metal Surfacing

Sidewalk & Supports

8261	Steel Grid Concrete Filled Sidewalk & Support
8262	Corrugated Orthotropic/Other Sys. Sdwlk. & Suppt.
8263	Steel Open Grid Sidewalk w/Cover Plate & Support
8264	Timber Sidewalk & Support
8265	Fiber Reinforced Polymer (FRP) Sidewalk & Suppt.
8266	Concrete Sidewalk & Support

Apron

8301	Apron Steel Orthotropic Deck
8305	Apron Hinge Multi-Pin & Plate
8307	Apron Lips & Pins

Apron and Span Moveable System

8310	Apron Hoist/Cables/Spool/Platform/ Supports/Rigging
8312	Span Apron/Cab Gangplank Pivot/Raise/ Rams/Fittings
8341	Lift Beam NSTM
8342	Live Load Hanger Bars NSTM
8343	Apron Two Hinge Pin System/Live Load Hanger Pins NSTM
8348	Span Hoist/Cables/Spool/Platform/ Supports/Rigging

Bearings

8390 Fixed Bearing
8391 Moveable Bearing (roller, sliding, etc.)

Joints

8404 Compression Seal / Concrete Header
8406 Compression Seal / Steel Header
8407 Steel Angle Header
8408 Steel Sliding Plate Joint

Smart Flags

8355 Damaged Bolts or Rivets
8356 Steel Cracking
8357 Pack Rust
8359 Bridge Impact
8360 Bridge Settle / Movement
8361 Scour
8362 Impact Damage
8375 Cathodic Protection
8376 Concrete Deck Delamination Testing
8705 Bridge Luminaire Pole and Base

Towers & Headframe

8413 Steel Tower
8414 Timber Tower
8415 Steel Headframe
8416 Timber Headframe
8417 Tower Base Platform

Counterweights

8418 Counterweight Guides
8419 Concrete Counterweights
8420 CTWT Sheaves/Shafts (NSTM)/Bearings/ Anchor Blts.
8421 Counterweight Cable Protective Systems
8423 Steel Counterweights

Wingwalls & Dolphins

8450 Timber Wingwalls
8451 Steel Pile Frame Wingwalls
8460 Timber Pile Dolphins
8462 Steel Pile Frame Dolphins
8463 Timber Floating Dolphin
8464 Concrete Floating Dolphin

Passenger Overhead Loading

8640 Moveable Pedestrian Gangplank
8650 Overhead Passenger Loading Cab
8653 Passenger Cab Floor System and Lift Beam NSTM

Floating Pontoons and Dolphins

8701 Ferry Concrete Floating Pontoon
8702 Ferry Steel Floating Pontoon
8703 Spud Piling & Wells
8704 Pontoon Anchors & Anchor Chain/Cables & Clamps

Rail & Ladders

8810 Metal Bridge Railing
8811 Concrete Bridge Railing
8812 Timber Bridge Railing
8813 Other Bridge Railing
8815 Metal Pedestrian Railing
8816 Concrete Pedestrian Railing
8817 Timber Pedestrian Railing
8818 Other Pedestrian Railing
8910 Safety Access Ladders
8911 Safety Railing & Catwalks

Paint Systems

8901 Protective Coating - Bridge
8902 Protective Coating Piling
8907 Galvanizing

Seismic Restrainers

8370 Seismic - Longitudinal Restrainer
8371 Seismic - Transverse Restrainer

Appendix VI List of Elements with Condition States

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8090	Steel Rolled Girder	LF	This element defines a girder unit of structural steel that has an integral web and flanges and was fabricated in a steel mill by the rolling process. This element may have bolted, riveted or welded cover plates. This element directly supports the bridge deck and is part of a two or more longitudinal girder system. The element quantity should equal the length of each girder multiplied by the number of girders.	1-4	See WSBIM Element 107A condition state definitions.
8101	Steel Sheet Pile Abutment	LF	This element defines an abutment constructed of structural steel. Quantity should equal the bridge out-to-out, unless otherwise described in the bridge inspection report.	1-4	See WSBIM Element 219 condition state definitions.
8102	Concrete Abutment	LF	This element defines an abutment constructed of reinforced concrete. Quantity should equal the bridge out-to-out, unless otherwise described in the bridge inspection report.	1-4	See WSBIM Element 215 condition state definitions.
8103	Abutment Timber Bulkhead	LF	This element defines an abutment constructed of timber that has members that retain the backfill behind the abutment. Normally, if there are soldier piles with pier cap in front of the timber lagging, the abutment pier cap defects are recorded in the timber pier cap element 8131, and the pile defects are recorded in the timber pile element 8124.	1-4	See WSBIM Element 216 condition state definitions.
8108	Prestressed Concrete Bulb-T Girder	LF	This element defines a precast prestressed concrete Bulb-T girder. Structural deficiencies of the edge and bottom surface are addressed in the condition states. The element quantity should equal the length of each girder multiplied by the number of girders. This element also gets an element 8213 (Bridge Deck Surface).	1-4	See WSBIM Element 109E condition state definitions.
8109	Prestressed Concrete Multiple Web Girder Units	LF	This element defines a precast prestressed concrete girder without a traditional deck. Structural deficiencies of the edge and bottom surface are addressed in the condition states. The element quantity should equal the length of each girder multiplied by the number of girders. This element also gets an element 8213 (Bridge Deck Surface).	1-4	See WSBIM Element 109F condition state definitions.
8110	Concrete Girder	LF	This element defines a girder (including cast in place T-Beams) of reinforced concrete. The element quantity should equal the length of each girder multiplied by the number of girders.	1-4	See WSBIM Element 110A condition state definitions.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8111	Prestressed Concrete Girder	LF	This element defines a girder constructed of precast prestressed concrete that supports the bridge deck. The element quantity should equal the length of each girder multiplied by the number of girders.	1-4	See WSBIM Element 109A condition state definitions.
8112	Timber Sawn Girder	LF	This element defines a girder constructed of sawn timber that directly supports the bridge deck. The element quantity should equal the length of each girder multiplied by the number of girders.	1-4	See WSBIM Element 111B condition state definitions.
8114	Timber Laminated Girder	LF	This element defines a girder unit constructed of glue-lam timber. This element directly supports the bridge deck. The element quantity should equal the length of each girder multiplied by the number of girders.	1-4	See WSBIM Element 111A condition state definitions.
8123	Timber Column	EA	This element defines a column that is constructed of timber. Report the condition state of each column.	1-4	See WSBIM Element 206 condition state definitions.
8124	Timber Pile	EA	This element defines a pile that is constructed of timber. Exposure of the pile may be intentional or caused by scour. Report the condition state of each pile.	1-2	See WSBIM Element 228 condition state definitions.
8124	Timber Pile	EA	This element defines a pile that is constructed of timber. Exposure of the pile may be intentional or caused by scour. Report the condition state of each pile.	3	Number of piles with structural defects which do not significantly affect structural capacity. Deficiencies do not warrant analysis but may require repairs. Piles rated at 75% remaining have less than 25% loss of section. Piles rated at 50% remaining have between 50% and 75% remaining section. Piles rated at 50% which have discrete, measurable damage are marked with a YELLOW TAG. Yellow Tagged piles receive a Priority 2 Repair.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8124	Timber Pile	EA	This element defines a pile that is constructed of timber. Exposure of the pile may be intentional or caused by scour. Report the condition state of each pile.	4	Piles rated at 25% remaining have between 25% and 49% remaining section. These piles are YELLOW TAGGED if there is still a good “shell” to the pile. If the pile damage is asymmetrical (damage predominately on one side of the pile) the Pile will be RED TAGGED. Piles rated at 0% remaining have less than 25% remaining section and are considered destroyed. These pile are RED TAGGED. All red-tagged piles shall get a physical “RED TAG” at the defect location, and also at the top of the pile. These piles shall also have a repair written to replace the pile. The following information shall be collected and included in the pile data spreadsheet: • Damage fully described. Damage location is based on “clock position” with 12:00 being offshore. • Damage location measured either below the cap, or up from mudline Pile circumference measured at mudline, or at the defect location if the mudline is not accessible • Pile length from cap to mudline • The distance between the damaged pile and the adjoining piles on either side • Location of any cap splices • Measure from the edge of deck to the damaged pile • A photo of the defect and a photo of the top of the pile connection to the cap Non-Bearing piles are not RED TAGGED but are listed in the Pile Data Sheets as zero percent remaining, with comments about the actual condition of the pile in the pile notes. A repair to have the pile shimmed shall be written.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8125	Concrete Column	EA	This element defines a column that is constructed of reinforced concrete. The exposure may be intentional or caused by scour.	1-4	See WSBIM Element 205A condition state definitions.
8126	Prestress Concrete Pile	EA	This element defines a pile that is constructed of prestressed concrete. Exposure may be intentional or caused by scour.	1-4	See WSBIM Element 226A condition state definitions.
8127	Steel Column	EA	This element defines a column that is constructed of steel. The exposure may be intentional or caused by scour.	1-4	See WSBIM Element 202 condition state definitions.
8128	Steel Pile	EA	This element defines a pile that is constructed of steel. The exposure may be intentional or caused by scour.	1-4	See WSBIM Element 225 condition state definitions.
8129	Transfer Span/OHL Supercolumn	EA	This element defines a concrete filled drilled shaft that contains a drywell and a hydraulic cylinder for raising or lowering the span or cab to the ferry deck to adjust for tidal changes.	1	Defects are superficial and have no effect on the structural capacity of the element.
8129	Transfer Span/OHL Supercolumn	EA	This element defines a concrete filled drilled shaft that contains a drywell and a hydraulic cylinder for raising or lowering the span or cab to the ferry deck to adjust for tidal changes.	2	Supercolumn or attachments with minor defects or effective repairs that are in place and functioning as intended. Corrosion and superficial pack rust may have initiated with no measurable section loss. Any cracking has been effectively arrested or self-arrested. Any noted distortion in the member does not require repair or monitoring. Connections are functioning as intended but may have loose fasteners. Bolts/rivets may have been replaced
8129	Transfer Span/OHL Supercolumn	EA	This element defines a concrete filled drilled shaft that contains a drywell and a hydraulic cylinder for raising or lowering the span or cab to the ferry deck to adjust for tidal changes.	3	Medium deterioration. Some delaminations and/or spalls may be present and some reinforcing may be exposed. Corrosion of rebar may be present but loss of section is incidental and does not significantly affect the strength and/or serviceability of either the element or the bridge. The outside wrap may have some tears or loose fabric. The dry well may have some puddled water but the cracks in the concrete are tight and the well walls are tight. Hydraulic pump unit supports may be in need of repairs. Structural analysis is not necessary but repairs may be needed.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8129	Transfer Span/OHL Supercolumn	EA	This element defines a concrete filled drilled shaft that contains a drywell and a hydraulic cylinder for raising or lowering the span or cab to the ferry deck to adjust for tidal changes.	4	Advanced deterioration. Corrosion of reinforcement and/or loss of concrete section is sufficient to warrant analysis to ascertain the impact on the strength and/or serviceability of either the element or the bridge. The outside shroud may be torn or shredded in large sections. There may be excess puddled water in the well. Hydraulic pump unit supports are in need of repairs. Structural analysis is necessary repairs are warranted.
8130	Steel Pier Cap/ Crossbeam	LF	This element defines a pier cap or crossbeam that is constructed of structural steel.	1-4	See WSBIM Element 231A condition state definitions
8131	Timber Pier Cap	LF	This element defines a pier cap that is constructed of timber and directly supports the superstructure.	1-4	See WSBIM Element 235 condition state definitions
8132	Concrete Pier Cap/ Crossbeam	LF	This element defines a pier cap or crossbeam that is constructed of reinforced concrete and directly supports the superstructure. Integral pier caps with girders framed directly into the crossbeam are also included in this element. This element may be attached to a submerged or non-submerged substructure element, such as a pile.	1-4	See WSBIM Element 234 condition state definitions
8136	Concrete Submerged Pile Cap/ Footing	LF	This element defines a reinforced concrete pile cap or footing that is visible for inspection. The pile cap or footing may be always or seasonally covered by water. The exposure may be intentional or caused by scour.	1-4	See WSBIM Element 220 condition state definitions
8150	Prestressed Concrete Slab w/Uncoated Bars	SF	This element defines a concrete slab bridge that has been constructed with prestressed concrete and uncoated steel reinforcement. Structural deficiencies of the edge and bottom surface are addressed in the condition states. The slab quantity is considered the area between the curbs. This element also gets an element 8213 (Bridge Deck Surface).	1-4	See WSBIM Element 39A condition state definitions

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8151	Prestressed Precast Concrete Slab w/Coated Bars	SF	This element defines a precast concrete slab bridge that has been constructed with prestressed concrete and coated steel reinforcement (epoxy, etc.). This element may be solid or have built in voids. Structural deficiencies of the edge and bottom surface are addressed in the condition states. The slab quantity is considered the area between the curbs. This element also gets an element 8213 (Bridge Deck Surface).	1	See WSBIM Element 39C condition state definitions
8200	Steel Box Girder (NSTM)	LF	This element defines a box girder unit constructed with structural steel. This element directly supports the bridge deck. The element quantity should equal the length of each girder multiplied by the number of girders.	1-4	See WSBIM Element 102 condition state definitions
8201	Steel Open Girder (NSTM)	LF	This element defines an open girder unit that is constructed of structural steel. An open or through girder is part of a two girder system with stringer and floor beam elements that support a bridge deck and sidewalk. Open girders are located on the outside of the bridge. The element quantity should equal the length of each girder multiplied by the number of girders.	1-4	See WSBIM Element 107E condition state definitions
8204	Steel Thru Truss (NSTM)	LF	This element includes all bolted/riveted or welded structural steel truss members. Code this element for through and pony trusses only. The truss quantity should equal the sum of each truss length, which is two times the truss span length.	1-4	See WSBIM Element 120A condition state definitions
8206	Steel Floor Beam	LF	This element defines a floorbeam constructed of riveted/bolted, welded or rolled structural steel that supports stringers in a stringer-floorbeam system. Floorbeams are load carrying elements located transversely to the general bridge alignment. Floorbeams transmit the loads from the deck and/or stringers to the outside open girders or to the bottom chord of a truss bridge. The element quantity should equal the length of each floorbeam multiplied by the number of floor beams.	1-4	See WSBIM Element 152 condition state definitions

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8209	Steel Stringer	LF	This element defines a stringer constructed of rolled steel shapes, riveted or welded structural steel that supports the deck in a stringer-floor beam system. A stringer is connected to a floor beam and directly supports a bridge deck. A steel stringer and floor beam combination is commonly used in steel truss and steel open girder bridges. The element quantity should equal the length of each stringer multiplied by the number of stringers.	1-4	See WSBIM Element 113 condition state definitions
8210	Truss Gusset Plates	EA	This element documents structural defects on gusset plates at the panel points of a truss element. Gusset plates are defined as any plate attached to primary members that transfer primary or secondary load at the panel joint. Significant defects should be considered when they are within the stress zones of the gusset. The total quantity for a truss is the total number of upper and lower panel points of all trusses.	1-4	See WSBIM Element 162 condition state definitions
8213	Bridge Deck Surface	SF	This element defines a surface of a bridge deck that consists of a slab or girder without a traditional deck. Usually there is a deck protection system (overlay) present, but in some cases, traffic may be driving directly on the girder or slab. The Bridge Deck Surface consists of precast or prestressed girders with no span between the flanges. This element is generally used with superstructure elements 8108, 8109, 8150 and 8151. The quantity should equal the “deck” curb-to-curb width times the length.	1-4	See WSBIM Element 16 condition state definitions
8216	Concrete Deck Soffit	SF	This element defines the bottom (or undersurface) and edge of a “traditional” concrete deck (element 8217). The quantity should match the quantity of Concrete Deck.	1-4	See WSBIM Element 35 condition state definitions
8217	Concrete Deck	SF	This element defines a “traditional” concrete bridge deck constructed with reinforced concrete, with or without coated reinforcement. The quantity should equal the deck’s curb-to-curb width times the length. This element also gets an element 8216 (Concrete Deck Soffit).	1-4	See WSBIM Element 12A condition state definitions
8218	Steel Deck Open Grid	SF	This element defines a bridge deck constructed of steel grids that are open and unfilled. The quantity should equal the deck curb-to-curb width times the length.	1-4	See WSBIM Element 28 condition state definitions

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8219	Steel Grid Deck Concrete Filled	SF	This element defines a bridge deck constructed of steel grids with either all of the openings or just those in the wheel lines filled with concrete. The quantity should equal the deck curb-to-curb width times the length.	1-4	See WSBIM Element 29 condition state definitions
8221	Timber Deck	SF	This element defines a bridge deck constructed of timber. The deck may be longitudinally or transversely laminated or of planks or a transverse slab. The deck may have an overlay or may be constructed with runners of metal or timber. The quantity should equal the decks curb to curb width times the length.	1-4	See WSBIM Element 31 condition state definitions. Note on CS3: If the timber deck is covered by ACP (element 8223), then all CS2 and CS3 ACP quantities shall be considered CS3 for the timber deck as ACP patching and failure is considered indicative of rot in timber deck surface.
8222	Deck Corrugated orthotropic/ Other Steel system	SF	This element generally defines a bridge decks constructed of corrugated metal filled with Portland cement concrete or asphaltic concrete. This element may also be used to identify other non-standard steel and orthotropic decks. The quantity should equal the decks curb-to-curb width times the length.	1-4	See WSBIM Element 30B condition state definitions.
8223	Asphalt Concrete (AC) Overlay	SF	This element defines an Asphalt Concrete (AC) bridge deck overlay, with or without a Bituminous Surface Treatment (BST). The quantity should equal the overlays width times the length.	1-3	See WSBIM Element 510A condition state definitions.
8224	Thin Polymer Overlay < 0.5” Thick	SF	This element defines a thin polymer bridge deck overlay that is less than or equal to 0.5 inches in thickness (i.e., epoxy, methyl-methacrylate, etc.). The quantity should equal the overlays width times the length.	1-3	See WSBIM Element 510C condition state definitions.
8225	Non-skid Metal Surfacing	SF	This element defines tacky or gritty finished surface that is applied to the apron and gangplank surfaces to enhance the traction of vehicles or pedestrian.	1	Defects are superficial. The deck surfaces have no peeling or delaminations or previous repairs.
8225	Non-skid Metal Surfacing	SF	This element defines tacky or gritty finished surface that is applied to the apron and gangplank surfaces to enhance the traction of vehicles or pedestrian.	2	Total area of Repairs.
8225	Non-skid Metal Surfacing	SF	This element defines tacky or gritty finished surface that is applied to the apron and gangplank surfaces to enhance the traction of vehicles or pedestrian.	3	The surfacing has advanced deterioration. There may be large worn away areas. Edges and corners may be loose. The surface is not providing the traction for which it is designed and should be replaced.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8225	Non-skid Metal Surfacing	SF	This element defines tacky or gritty finished surface that is applied to the apron and gangplank surfaces to enhance the traction of vehicles or pedestrian.	4	NULL
8261	Steel Grid Concrete Filled Sidewalk & Supports	SF	This element defines a sidewalk constructed of steel grids that have been filled with concrete. This element also includes the members used to provide support like stringers and braces. The total quantity should equal the width of the sidewalk times its length.	1-4	See WSBIM Element 261 condition state definitions.
8262	Corrugated Orthotropic/ Other Sys. Sdwlk. & Suppt.	SF	This element defines a sidewalk constructed of corrugated metal filled with Portland cement concrete or asphaltic concrete or has an orthotropic steel deck that is designed for pedestrian loadings or is physically separated from the vehicle traveled Deck by more than a simple curb or rail. This element also includes the members used to provide support like stringers and braces. The total quantity should equal the width of the sidewalk times its length.	1-4	See WSBIM Element 262 condition state definitions.
8263	Steel Open Grid Sidewalk w/Cover Plate & Suppt.	SF	This element defines a sidewalk constructed of steel grids that are open and unfilled but the grid is covered with tread plate that is designed for pedestrian loadings or is physically separated from the vehicle traveled Open Grid Deck by more than a simple curb or rail. This element also includes the members used to provide support like stringers and braces. The total quantity should equal the width of the sidewalk times its length.	1-4	See WSBIM Element 260 condition state definitions.
8264	Timber Sidewalk & Support	SF	This element defines a sidewalk constructed of timber that is designed for pedestrian loadings or is physically separated from the vehicle traveled Timber Deck by more than a simple timber curb or rail. This element also includes the members used to provide support like stringers and braces. The total quantity should equal the width of the sidewalk times its length.	1-4	See WSBIM Element 264 condition state definitions.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8265	Fiber Reinforced Polymer (FRP) Sidewalk & Support	SF	This element defines a sidewalk constructed of fiber- reinforced polymer that is designed for pedestrian loadings or is physically separated from the vehicle traveled fiber-reinforced polymer Deck by more than a simple timber curb or rail. This element also includes the members used to provide support like stringers and braces. The total quantity should equal the width of the sidewalk times its length.	1-4	See WSBIM Element 267 condition state definitions.
8266	Concrete Sidewalk & Support	SF	This element defines a sidewalk constructed of reinforced concrete that is designed for pedestrian loadings or is physically separated from the vehicle traveled Reinforced Concrete Deck by more than a simple timber curb or rail. This element also includes the members used to provide support like stringers and braces. The total quantity should equal the width of the sidewalk times its length.	1-4	See WSBIM Element 266 condition state definitions.
8301	Apron Steel Orthotropic Deck	SF	This element defines a bridge deck constructed of a flat deck plate stiffened with longitudinal beams. The Apron deck acts as a beam to carry live loads from the Ferry Deck to the Transfer span.	1	Investigation indicates no deterioration. The connectors (welds, etc.) are functioning as designed.
8301	Apron Steel Orthotropic Deck	SF	This element defines a bridge deck constructed of a flat deck plate stiffened with longitudinal beams. The Apron deck acts as a beam to carry live loads from the Ferry Deck to the Transfer span.	2	Deck area that has been repaired, replaced, patched, or plated. Stiffening beams damage that has been repaired. Minor defects not yet in need of repair.
8301	Apron Steel Orthotropic Deck	SF	This element defines a bridge deck constructed of a flat deck plate stiffened with longitudinal beams. The Apron deck acts as a beam to carry live loads from the Ferry Deck to the Transfer span.	3	The connectors (weld, rivets, etc.) are failing. There is significant steel section loss. The strength or serviceability of the deck section is not yet affected. Analysis is not warranted but repairs may be necessary.
8301	Apron Steel Orthotropic Deck	SF	This element defines a bridge deck constructed of a flat deck plate stiffened with longitudinal beams. The Apron deck acts as a beam to carry live loads from the Ferry Deck to the Transfer span.	4	Steel section loss and/or connector failure is sufficient to warrant analysis or it has been determined that repairs are essential to restore the full capacity of the element.
8305	Apron Hinge Multi-Pin & Plate	EA	This element defines the apron hinge connection to the transfer span using more than two hinge pins.	1	Number of pins and associated connection plates are in good condition. Visual Inspection: There may be minor rust, rust powder or shallow surface deformations on the exposed pin surfaces. Paint damage may be present suggesting minor pin rotation in place. No pack rust is present between associated connection plates.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8305	Apron Hinge Multi-Pin & Plate	EA	This element defines the apron hinge connection to the transfer span using more than two hinge pins.	2	Number of pins or pin plates with repairs: such as repaired welds or replaced pins and pin plates. Minor damage not yet in need of repair.
8305	Apron Hinge Multi-Pin & Plate	EA	This element defines the apron hinge connection to the transfer span using more than two hinge pins.	3	Number of pins and associated connection plates which have defects that may affect the strength or serviceability of the hinge. Significant corrosion may be present, suggesting that pin is frozen in place. Significant abnormalities may be observed in alignment, pin wear, or deck joint movement. Pack rust may be present between connection plates that place a jacking force against the pin end cotter pin. The connection may have significant amounts of rust powder and/or make noise under loading. Repairs may be warranted.
8305	Apron Hinge Multi-Pin & Plate	EA	This element defines the apron hinge connection to the transfer span using more than two hinge pins.	4	Number of pins and associated connection plates which have defects that are judged to affect the strength or serviceability of the hinge. There may be frozen pins designed for free rotation as part of normal bridge movement. Pack rust may be present between connection plates that are causing distortion/ displacement of plates or pins. Repairs are required.
8307	Apron Lips & Pins	EA	This element defines the stiffened transition plates that are hinged to the offshore end of the Apron.	1	Investigation indicates no deterioration. The connectors (welds, fasteners, etc.) are functioning as designed.
8307	Apron Lips & Pins	EA	This element defines the stiffened transition plates that are hinged to the offshore end of the Apron.	2	Number of lips that has been repaired, replaced or plated. Number of pins or pin plates with repairs: such as repaired welds or replaced pins. Minor damage not yet in need of repair.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8307	Apron Lips & Pins	EA	This element defines the stiffened transition plates that are hinged to the offshore end of the Apron.	3	The connectors (weld, rivets, etc.) are failing. There is significant steel section loss. The strength or serviceability of the lip section is not yet affected but may warrant repair. Significant corrosion may be present, suggesting that pins are frozen in place. Significant abnormalities may be observed in alignment, pin wear, or deck joint movement. Pack rust may be present between connection plates that place a jacking force between the pin retainer plates. The connection may have significant amounts of rust powder and/or make noise under loading.
8307	Apron Lips & Pins	EA	This element defines the stiffened transition plates that are hinged to the offshore end of the Apron.	4	Steel section loss and/or connector failure is substantial. Number of pins and associated connection plates have defects that are judged to affect the strength or serviceability of the apron. There may be frozen pins designed for free rotation as part of normal bridge movement. Pack rust may be present between connection plates that are causing distortion/displacement of plates or pins. Deterioration is sufficient to warrant analysis or it has been determined that repairs are essential to restore the full capacity of the element.
8310	Apron Hoist/ Cables/Spool/ Platform/ Supports/ Rigging	EA	This element defines the hoist motor, hoisting cables, winch, platform, supports, sheaves and blocks used to keep the apron cable aligned and anchored to the headframe and the apron.	1	Investigation indicates no deterioration. The welds, fasteners and brackets are functioning as designed. There is no corrosion. The rigging and brackets pivot freely about their anchor points and allow the cables to run without binding. Hoist cables spool smoothly. Place new cables in this condition state.
8310	Apron Hoist/ Cables/Spool/ Platform/ Supports/ Rigging	EA	This element defines the hoist motor, hoisting cables, winch, platform, supports, sheaves and blocks used to keep the apron cable aligned and anchored to the headframe and the apron.	2	Winch and hoist motor have repairs. Cable fittings or end treatments have been repaired or replaced. Minor damage not yet in need of repair.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8310	Apron Hoist/ Cables/Spool/ Platform/ Supports/ Rigging	EA	This element defines the hoist motor, hoisting cables, winch, platform, supports, sheaves and blocks used to keep the apron cable aligned and anchored to the headframe and the apron.	3	Winch and hoist motor do not run smoothly and cable does not spool evenly. The rigging and brackets do not pivot freely about their anchor points and the cables may bind or twist as they run through the sheaves. Cables may show signs of wear.
8310	Apron Hoist/ Cables/Spool/ Platform/ Supports/ Rigging	EA	This element defines the hoist motor, hoisting cables, winch, platform, supports, sheaves and blocks used to keep the apron cable aligned and anchored to the headframe and the apron.	4	Winch and hoist motor bind. Cable jumps on the spool. Advanced section loss; hoist platform, platform attachments, spool or blocks and sheaves have section loss that is sufficient to warrant analysis to ascertain the impact on the ultimate strength and/or serviceability of the hoisting system. The rigging and brackets do not pivot freely about their anchor points and the cables are binding or twisting as they run through the sheaves.
8312	Span Apron/Cab Gangplank Pivot/Raise/ Rams/Fittings	EA	This element defines the hydraulic ram actuated straight or elbow shaped tubular metal arm that moves the vehicle apron up or down. This Element also includes the Overhead Loading Cab Apron pivot, lift and extension rams and end fittings. Quantity should equal the number of end fittings.	1	The hydraulic rams work without binding. Cap screws, bolts and nuts on end fittings are tight and welds have no flaws. Ram end pivot pins are greased and retainer bars or cotter pins are in place.
8312	Span Apron/Cab Gangplank Pivot/Raise/ Rams/Fittings	EA	This element defines the hydraulic ram actuated straight or elbow shaped tubular metal arm that moves the vehicle apron up or down. This Element also includes the Overhead Loading Cab Apron pivot, lift and extension rams and end fittings. Quantity should equal the number of end fittings.	2	Number of ram end fitting welds repaired. Retainer bars or cotter pins that have been replaced and worn sockets for ball joints have been replaced or tightened. Hydraulic rams that have leaking seals replaced. Minor damage not yet in need of repair.
8312	Span Apron/Cab Gangplank Pivot/Raise/ Rams/Fittings	EA	This element defines the hydraulic ram actuated straight or elbow shaped tubular metal arm that moves the vehicle apron up or down. This Element also includes the Overhead Loading Cab Apron pivot, lift and extension rams and end fittings. Quantity should equal the number of end fittings.	3	Damage is moderate. Surface pitting/scalloping is present but section remaining is greater than 90% of the total thickness of original cast metal. Close inspection may reveal surface defects in welds and there may be loose bolts/cap screws. Ram end retainer bars or cotter pins may be missing. Repairs or replacements may be necessary.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8312	Span Apron/Cab Gangplank Pivot/Raise/ Rams/Fittings	EA	This element defines the hydraulic ram actuated straight or elbow shaped tubular metal arm that moves the vehicle apron up or down. This Element also includes the Overhead Loading Cab Apron pivot, lift and extension rams and end fittings. Quantity should equal the number of end fittings.	4	Damage is significant. Corrosion surface pitting/scalloping and laminar rust leaves 90% or less of section remaining. There are surface defects/cracks in welds and there are loose bolts/cap screws. Ram end pivot pins are dry and retainer bars or cotter pins are missing. Hydraulic ram seals are leaking. Repairs are required.
8341	Lift Beam (NSTM)	LF	This element defines the support beam near the offshore end of the transfer span. Built up of two I-Beams joined by flange and web tie plates and a steel cover plate. Live load hanger loads and counter weight cable loads are transferred from the span to the lift beam into the towers.	1-4	See WSBIM Element 152 condition state definitions and code in accordance with Steel Floor Beam definitions while paying special not to defects which relate to the web tie plates and pin plates.
8342	Live Load Hanger Bars (NSTM)	EA	This element defines the slotted hanger bars that are pin connected to the headframe at the top and pin connected to the lift beam at the bottom. These bars carry the vehicle live loads from the span to the tower headframes.	1	Defects are superficial and have no effect on the structural capacity of the element. Place replacement live load hanger bars length in this condition state.
8342	Live Load Hanger Bars (NSTM)	EA	This element defines the slotted hanger bars that are pin connected to the headframe at the top and pin connected to the lift beam at the bottom. These bars carry the vehicle live loads from the span to the tower headframes.	2	Steel hangers with repairs such as: Bars may have been straightened, bolts or rivets have been replaced; replaced bottom stops. Lower section of bar of hydraulic operated live load pins system have pin plate repairs or replaced fixed pins. Minor defects which do not yet require repair.
8342	Live Load Hanger Bars (NSTM)	EA	This element defines the slotted hanger bars that are pin connected to the headframe at the top and pin connected to the lift beam at the bottom. These bars carry the vehicle live loads from the span to the tower headframes.	3	Steel hangers with structural defects. Bars may have significant bowing up to 8 inches in 18 ft. The defects do not significantly affect structural capacity. Deficiencies do not warrant analysis, but may require repairs. Structural deficiencies are not limited to impact damage, cracks, broken bolts, sharp edges or measurable section loss due to corrosion (note the location and depth). Structural deficiencies shall be noted on the NSTMReport. Repairs May be warranted.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8342	Live Load Hanger Bars (NSTM)	EA	This element defines the slotted hanger bars that are pin connected to the headframe at the top and pin connected to the lift beam at the bottom. These bars carry the vehicle live loads from the span to the tower headframes.	4	Steel hangers with damage in significant locations or quantity which has reduced the structural capacity of the element or the bridge. Structural analysis is warranted or it has been determined that repairs are essential to restore the full capacity of the element. Repairs are required.
8343	Apron Two Hinge Pin System/LL Hanger Pins (NSTM)	EA	This element defines the pins used in a two hinge pin system between the transfer span and the apron. Also the live load hanger locking pins and the top pins that transfer vehicle live loads from the lift beam to the hanger bars and the bar to the headframe and towers. The quantity should equal the total number of NSTMpins on the bridge. Zero force and construction pins are not included in the quantity. Pins in bearing elements are not included unless they have uplift loadings.	1	Number of pins and associated connection plates that are in good condition. There may be minor rust or shallow surface deformations on the exposed pin surfaces. Minor amounts of rust powder or paint damage may be present suggesting minor pin rotation in place. No pack rust is present between associated connection plates. There is no noise associated with the pin connection. Apron and Live Load pins are effectively inspected by visual means. When UT is possible, it can be used as a vehicle to downgrade a pin due to indications. Pins that cannot be U.T'd because of geometry can still be in CS1.
8343	Apron Two Hinge Pin System/LL Hanger Pins (NSTM)	EA	This element defines the pins used in a two hinge pin system between the transfer span and the apron. Also the live load hanger locking pins and the top pins that transfer vehicle live loads from the lift beam to the hanger bars and the bar to the headframe and towers. The quantity should equal the total number of NSTMpins on the bridge. Zero force and construction pins are not included in the quantity. Pins in bearing elements are not included unless they have uplift loadings.	2	Number of live load hanger pins that have throw mechanism repairs. Number of hinge pins that have plate repairs, replaced keeper bars or cotter pins. Ultrasonic Testing: Pins with indications less than 10% of the far shoulder reflection height. Minor defects which do not yet require repair.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8343	Apron Two Hinge Pin System/LL Hanger Pins (NSTM)	EA	This element defines the pins used in a two hinge pin system between the transfer span and the apron. Also the live load hanger locking pins and the top pins that transfer vehicle live loads from the lift beam to the hanger bars and the bar to the headframe and towers. The quantity should equal the total number of NSTMpins on the bridge. Zero force and construction pins are not included in the quantity. Pins in bearing elements are not included unless they have uplift loadings.	3	Number of pins and associated connection plates that have defects that may affect the strength or serviceability of the bridge. Significant corrosion may be present, suggesting that pins are frozen in place. Significant abnormalities may be observed in alignment, pin wear, or deck joint movement. Pack rust may be present between connection plates that place a jacking force between the plates and pin nuts. The connection may have significant amounts of rust powder and/or make noise under loading. Pins that can be UT inspected have indications between 10 and 30 percent of the far shoulder reflection height.
8343	Apron Two Hinge Pin System/LL Hanger Pins (NSTM)	EA	This element defines the pins used in a two hinge pin system between the transfer span and the apron. Also the live load hanger locking pins and the top pins that transfer vehicle live loads from the lift beam to the hanger bars and the bar to the headframe and towers. The quantity should equal the total number of NSTMpins on the bridge. Zero force and construction pins are not included in the quantity. Pins in bearing elements are not included unless they have uplift loadings.	4	Number of pins and associated connection plates that have defects that are judged to affect the strength or serviceability of the bridge. There are frozen pins designed for free rotation as part of normal bridge movement. Pack rust is present between connection plates that is causing distortion/displacement of plates or pins. Pins that can be UT inspected have indications greater than 30 percent of the far shoulder reflection height. Pin replacement is required.
8348	Span Hoist/ Cables/Spool/ Platform/ Supports/ Rigging	EA	This element defines the hoist motor, hoisting cables, the winch platform and supports and the sheaves and blocks used to keep the transfer span cable aligned and anchored to the headframe and span.	1	Investigation indicates no deterioration. The welds, fasteners and brackets are functioning as designed. There is no corrosion. The rigging and brackets pivot freely about their anchor points and allow the cables to run without binding. Hoist cables spool smoothly. Place new cables in this condition state.
8348	Span Hoist/ Cables/Spool/ Platform/ Supports/ Rigging	EA	This element defines the hoist motor, hoisting cables, the winch platform and supports and the sheaves and blocks used to keep the transfer span cable aligned and anchored to the headframe and span.	2	Winch and hoist motor have repairs. Cable fittings or end treatments have been repaired or replaced. Minor defects which do not yet require repair.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8348	Span Hoist/ Cables/Spool/ Platform/ Supports/ Rigging	EA	This element defines the hoist motor, hoisting cables, the winch platform and supports and the sheaves and blocks used to keep the transfer span cable aligned and anchored to the headframe and span.	3	Winch and hoist motor do not run smoothly and cable does not spool evenly. The rigging and brackets do not pivot freely about their anchor points and the cables may bind or twist as they run through the sheaves. Cables may show signs of wear. Corrosion section loss is present.
8348	Span Hoist/ Cables/Spool/ Platform/ Supports/ Rigging	EA	This element defines the hoist motor, hoisting cables, the winch platform and supports and the sheaves and blocks used to keep the transfer span cable aligned and anchored to the headframe and span.	4	Winch and hoist motor bind. Cable jumps on the spool. Advanced section loss; hoist platform, platform attachments, spool or blocks and sheaves have section loss that is sufficient to warrant analysis to ascertain the impact on the ultimate strength and/or serviceability of the hoisting system. The rigging and brackets do not pivot freely about their anchor points and the cables are binding or twisting as they run through the sheaves.
8355	Damaged Bolts or Rivets	EA	This smart flag is used to identify superstructure steel elements that have broken or missing bolts/rivets. Report a quantity of one unit in the appropriate condition states identified, but no more than one unit per condition state total.	1-2	See WSBIM Element 355 condition state definitions.
8356	Steel Cracking	EA	This smart flag is used to identify superstructure steel elements with cracks. Report a quantity of one unit in the appropriate condition states identified, but no more than one unit per condition state total.	1-4	See WSBIM Element 356 condition state definitions.
8357	Pack Rust	EA	The primary purpose of this smart flag is to quantify steel connections where rust expansion is visually deflecting steel plates and should be addressed when the bridge is painted. Structural impacts to rust pack overstressing are recorded in the steel elements. Report a quantity of one unit in the appropriate condition states identified, but no more than one unit per condition state total.	1-2	See WSBIM Element 357 condition state definitions.
8359	Bridge Impact	EA	This flag documents an increase to the bridge live load, or impact due to hammering or dynamic response of the bridge from trucks passing on to the bridge.	1-4	See WSBIM Element 322 condition state definitions.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8360	Bridge Settlement/ Movement	EA	The primary purpose of this smart flag is to identify structural movement that is causing significant distress to the bridge. Movements may be horizontal, vertical, or rotational. Evidence of movement should be documented (photo) in such a way that future measurements can determine if the structure is still moving or has stabilized.	1-3	See WSBIM Element 360 condition state definitions.
8361	Scour	EA	This smart flag is used to identify foundation scour for bridges crossing waterways as observed during inspections. Its primary purpose is to identify bridge piers or abutments that are experiencing scour and to provide some measure of the magnitude of that scour. Scour may be due to ferry propeller wash. The scour quantity is the number of Pier Bents in the water. The two lift towers are collectively considered a quantity of 1.	1-4	See WSBIM Element 361 condition state definitions.
8362	Impact Damage	EA	This is a smart flag used to identify damage caused by impact from traffic or other causes such as flood debris. A maximum of 1 unit can be coded in each condition state.	1	Impact damage has occurred. None of the prestressed system is exposed. Repair, patching, or heat straightening is not required.
8362	Impact Damage	EA	This is a smart flag used to identify damage caused by impact from traffic or other causes such as flood debris. A maximum of 1 unit can be coded in each condition state.	2	Impact damage has been repaired or patched. Any damage to a prestressed system has been repaired and patched. Steel elements have been repaired and painted.
8362	Impact Damage	EA	This is a smart flag used to identify damage caused by impact from traffic or other causes such as flood debris. A maximum of 1 unit can be coded in each condition state.	3	Impact damage has occurred. Any prestressed system exposure is due to a traffic impact, but is not impaired. Patching concrete or heat straightening of steel is needed.
8362	Impact Damage	EA	This is a smart flag used to identify damage caused by impact from traffic or other causes such as flood debris. A maximum of 1 unit can be coded in each condition state.	4	Impact damage has occurred and strength of the member is impaired. Analysis is warranted to ascertain if the member can be repaired or needs to be replaced.
8370	Seismic - Longitudinal Restrainer	EA	This element is used to identify longitudinal seismic restrainers. When an in-span hinge separates two structures, the joint, bearing, and seismic restrainers at the hinge will be documented in the dependent (or supported) structure only. The quantity should equal the total number of longitudinal restrainers on the bridge.	1-3	See WSBIM Element 370 condition state definitions.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8371	Seismic - Transverse Restrainer	EA	This element is used to identify transverse seismic restrainers. When an in-span hinge separates two structures, the joint, bearing, and seismic restrainers at the hinge will be documented in the dependent (or supported) structure only. The quantity should equal the total number of transverse restrainers on the bridge.	1-3	See WSBIM Element 371 condition state definitions.
8375	Cathodic Protection	EA	This is a smart flag used to identify a cathodic protection system used on a bridge. The quantity should equal the total number of cathodic protection systems on the bridge.	1	Code 1 if the cathodic protection system is functioning as designed.
8375	Cathodic Protection	EA	This is a smart flag used to identify a cathodic protection system used on a bridge. The quantity should equal the total number of cathodic protection systems on the bridge.	2	Code 1 if the cathodic system is no longer functioning as designed.
8375	Cathodic Protection	EA	This is a smart flag used to identify a cathodic protection system used on a bridge. The quantity should equal the total number of cathodic protection systems on the bridge.	3	NULL
8375	Cathodic Protection	EA	This is a smart flag used to identify a cathodic protection system used on a bridge. The quantity should equal the total number of cathodic protection systems on the bridge.	4	NULL
8376	Concrete Deck Delamination Testing	SF	This is a smart flag used to identify the results of concrete deck delamination testing.	1-4	See WSBIM Element 376 condition state definitions.
8390	Fixed Bearing	EA	This element defines those bridge bearings that provide for rotation only.	1-4	See WSBIM Element 313 condition state definitions.
8391	Moveable Bearing (roller, sliding, etc.)	EA	This element defines those bridge bearings that provide for both deflection and longitudinal movement by means of roller, rocker or sliding mechanisms. Report the condition state of each bearing.	1-4	See WSBIM Element 311 condition state definitions.
8404	Compression Seal/Concrete Header	LF	This element defines a joint with concrete headers formed during the original construction of the bridge. The joint is filled with a pre-formed compression type seal. The quantity should equal the length measured along the expansion joint.	1-3	See WSBIM Element 302A condition state definitions.
8406	Compression Seal/Steel Header	LF	This element defines a joint with steel angle plate headers that have a pre-formed compression type seal. The quantity should equal the length measured along the expansion joint.	1-3	See WSBIM Element 302C condition state definitions.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8407	Steel Angle Header	LF	This element defines an open joint with steel angle plate headers. The quantity should equal the length measured along the expansion joint.	1-3	See WSBIM Element 304C condition state definitions.
8408	Steel Sliding Plate Joint	LF	This element defines a joint with steel sliding plates. The quantity should equal the length measured along the expansion joint. Measure joint gap between top sliding plate and stop plate.	1-3	See WSBIM Element 305A condition state definitions.
8413	Steel Tower/A-Frame	EA	This element defines the structural steel columns and members used to support the transfer span. This element defines the steel towers including caps/grillage. Towers are bolted to a tower base platform. There are two towers per ferry slip.	1-4	See WSBIM Element 207A condition state definitions.
8414	Timber Tower	EA	This element defines the timber towers that do not have a tower base platform. The tower consists of full height piles, brace piles, mid height piles and sway bracing. Piles will be individually rated in the Pile Data Spreadsheet. Comment about the timber cap grillage on top of the tower piles in element 8416, Timber Headframe.	1-4	See WSBIM Element 208 condition state definitions.
8415	Steel Headframe	LF	This element defines the steel beams spanning between towers and includes the steel grillage beams on top of the tower. Quantity is the sum of the beam lengths spanning between the towers.	1-4	See WSBIM Element 231A condition state definitions.
8416	Timber Headframe	LF	This element defines the timber beams spanning between towers including any timber grillage that may be present. Quantity is the sum of the beam lengths spanning between the towers.	1-4	See WSBIM Element 235 condition state definitions.
8417	Tower Base Platform	SF	This element defines the foundation platform for the steel tower. The platform generally consists of a concrete perimeter cap with integrally cast concrete struts which forms a open area for the counterweights to pass through.	1-4	See WSBIM Element 234 condition state definitions. Grout pad and anchor bolt condition should be noted in this element as well.
8418	Counterweight Guides	EA	This element defines the main counterweight guides which are usually made up of a steel angle frame attached to the inside of the towers. The vertical members may be greased. Quantity should equal the number of vertical guides.	1	Defects are superficial and have no effect on the structural capacity of the element.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8418	Counterweight Guides	EA	This element defines the main counterweight guides which are usually made up of a steel angle frame attached to the inside of the towers. The vertical members may be greased. Quantity should equal the number of vertical guides.	2	Number of guides that have repairs or have been members that have been replaced. Minor defects which do not yet require repair.
8418	Counterweight Guides	EA	This element defines the main counterweight guides which are usually made up of a steel angle frame attached to the inside of the towers. The vertical members may be greased. Quantity should equal the number of vertical guides.	3	There is misalignment of the steel angles that results in uneven movement of the counterweights. The guide support structure attachment to the towers may have cracks. Repair may be warranted.
8418	Counterweight Guides	EA	This element defines the main counterweight guides which are usually made up of a steel angle frame attached to the inside of the towers. The vertical members may be greased. Quantity should equal the number of vertical guides.	4	There is damage to the guide steel angles or severe misalignment of the guides that has resulted in the counterweights binding in the frames during operation of the transfer span lift. The guides and support attachments shall be repaired
8419	Concrete Counterweights	EA	This element defines the Transfer Span and Apron Concrete Counterweights. Quantity is the total number of counterweights.	1	Defects are superficial and have no effect on the structural capacity of the element.
8419	Concrete Counterweights	EA	This element defines the Transfer Span and Apron Concrete Counterweights. Quantity is the total number of counterweights.	2	Number of counterweights that have repairs. Supplemental weight has been added to replace spalled concrete. Minor defects which do not yet require repair.
8419	Concrete Counterweights	EA	This element defines the Transfer Span and Apron Concrete Counterweights. Quantity is the total number of counterweights.	3	Spalls/delaminations exist that may eventually affect the counterbalancing ability of the counterweight. Exposed reinforcing may exist due to spalls or delaminations. Repairs may be warranted.
8419	Concrete Counterweights	EA	This element defines the Transfer Span and Apron Concrete Counterweights. Quantity is the total number of counterweights.	4	Advanced deterioration. Spalls/ delaminations exist and have caused loss of weight that is making the counterweight lose effectiveness as a counterbalance. Exposed reinforcing may exist. There are broken sections around the bin walls. Repairs are warranted.
8420	CTWT Sheaves/ Shafts(NSTM)/ Bearings/ Anchor Blts.	EA	This element includes the counterweight sheaves, the shaft, bearings and anchor bolts that support the counterweight cables. Quantity is the number of sheaves on the head frame.	1	Defects are superficial and have no effect on the structural capacity of the element.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8420	CTWT Sheaves/ Shafts(NSTM)/ Bearings/ Anchor Blts.	EA	This element includes the counterweight sheaves, the shaft, bearings and anchor bolts that support the counterweight cables. Quantity is the number of sheaves on the head frame.	2	Number of sheaves with shafts, bearings and anchor bolts that have repairs or have been replaced. Minor defects which do not yet require repair.
8420	CTWT Sheaves/ Shafts(NSTM)/ Bearings/ Anchor Blts.	EA	This element includes the counterweight sheaves, the shaft, bearings and anchor bolts that support the counterweight cables. Quantity is the number of sheaves on the head frame.	3	Number of sheaves or bearing housings that have casting flaws, shafts, bearings and anchors have minor flaws, anchor bolts are loose. Sheave operation is not affected but repairs may be warranted.
8420	CTWT Sheaves/ Shafts(NSTM)/ Bearings/ Anchor Blts.	EA	This element includes the counterweight sheaves, the shaft, bearings and anchor bolts that support the counterweight cables. Quantity is the number of sheaves on the head frame.	4	Number of sheaves or bearing housings that have casting flaws or cracks, bearings are worn, anchor bolts are missing or nuts are gone. Sheave, sheave shaft, bearings and anchor bolts operation are affected and repairs are warranted.
8421	Counterweight Cable Protective Systems	LF	This element defines protective system on the wire rope. A cursory inspection of the cables is done by Bridge Preservation and comments are included in the report to alert WSF of adverse conditions.	1	Defects are superficial and have no effect on the structural capacity of the element.
8421	Counterweight Cable Protective Systems	LF	This element defines protective system on the wire rope. A cursory inspection of the cables is done by Bridge Preservation and comments are included in the report to alert WSF of adverse conditions.	2	Lineal feet of cable that have repairs to the protective system. Minor defects which do not yet require repair.
8421	Counterweight Cable Protective Systems	LF	This element defines protective system on the wire rope. A cursory inspection of the cables is done by Bridge Preservation and comments are included in the report to alert WSF of adverse conditions.	3	The cable protective coating is failing and there may be some rust on the strands under the coating. Cable grease coating may not fill the grease groove fully. Sections of the cable are not greased and are rusty. The cable may be chaffing on the sides of the sheave groove. There may be misalignment and twisting of the cable as it feeds to the counterweight or the hoist. Cables operate but repairs may be warranted.
8421	Counterweight Cable Protective Systems	LF	This element defines protective system on the wire rope. A cursory inspection of the cables is done by Bridge Preservation and comments are included in the report to alert WSF of adverse conditions.	4	The cable protective system has failed. The protective coating of grease has failed. The cables wire strands are corroded and damaged. Cable coating repairs are warranted.
8423	Steel Counterweights	EA	This element defines the transfer span and apron steel counterweights. The counterweights are steel plate boxes open at the top filled with steel punchings or lead ingots. Quantity is the total number of counterweights.	1	Defects are superficial and have no effect on the structural capacity of the element.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8423	Steel Counterweights	EA	This element defines the transfer span and apron steel counterweights. The counterweights are steel plate boxes open at the top filled with steel punchings or lead ingots. Quantity is the total number of counterweights.	2	Repairs have been made to the steel boxes or the cable attachment plates. Minor defects which do not yet require repair.
8423	Steel Counterweights	EA	This element defines the transfer span and apron steel counterweights. The counterweights are steel plate boxes open at the top filled with steel punchings or lead ingots. Quantity is the total number of counterweights.	3	The steel box is corroding but corrosion does not affect the ability to hold steel punchings. Plate welds are corroded. Paint has failed and visual detection of cracks in welds is difficult. Repairs may be warranted.
8423	Steel Counterweights	EA	This element defines the transfer span and apron steel counterweights. The counterweights are steel plate boxes open at the top filled with steel punchings or lead ingots. Quantity is the total number of counterweights.	4	The steel box is corroding. There are plates that are holed through. Corrosion affects the ability to hold steel punchings. Plate welds are corroded and there may be cracks in the seams or welds. Repairs are warranted.
8450	Timber Wingwalls	LF	This element defines timber wingwalls that are installed just offshore of the transfer span apron. They are installed to provide an impact absorbing structure for ferry landings. Wingwalls consist of batter piling, plumb piling, walers, wire rope wrapping, vertical rubbing face timbers and plastic rubbing face sheets. Bridge Preservation performs a cursory inspection above water, and a full inspection of the piles under water. Quantity is in lineal feet along the rubbing face. The quantity of piling are NOT included in the submerged pile element, but are still tracked in the pile data spreadsheet.	1	Defects are superficial and have no effect on the structural capacity of the element. Decay, insect infestation, cracks, splits, or checks may exist.
8450	Timber Wingwalls	LF	This element defines timber wingwalls that are installed just offshore of the transfer span apron. They are installed to provide an impact absorbing structure for ferry landings. Wingwalls consist of batter piling, plumb piling, walers, wire rope wrapping, vertical rubbing face timbers and plastic rubbing face sheets. Bridge Preservation performs a cursory inspection above water, and a full inspection of the piles under water. Quantity is in lineal feet along the rubbing face. The quantity of piling are NOT included in the submerged pile element, but are still tracked in the pile data spreadsheet.	2	Length of wingwall with repairs, plates, or splices. Damaged rubbing Timbers may have been cut away.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8450	Timber Wingwalls	LF	This element defines timber wingwalls that are installed just offshore of the transfer span apron. They are installed to provide an impact absorbing structure for ferry landings. Wingwalls consist of batter piling, plumb piling, walers, wire rope wrapping, vertical rubbing face timbers and plastic rubbing face sheets. Bridge Preservation performs a cursory inspection above water, and a full inspection of the piles under water. Quantity is in lineal feet along the rubbing face. The quantity of piling are NOT included in the submerged pile element, but are still tracked in the pile data spreadsheet.	3	Length of wingwall with structural defects. The defects do not significantly affect structural capacity or energy absorbing ability. Deficiencies do not warrant analysis, but may require repairs.
8450	Timber Wingwalls	LF	This element defines timber wingwalls that are installed just offshore of the transfer span apron. They are installed to provide an impact absorbing structure for ferry landings. Wingwalls consist of batter piling, plumb piling, walers, wire rope wrapping, vertical rubbing face timbers and plastic rubbing face sheets. Bridge Preservation performs a cursory inspection above water, and a full inspection of the piles under water. Quantity is in lineal feet along the rubbing face. The quantity of piling are NOT included in the submerged pile element, but are still tracked in the pile data spreadsheet.	4	Length of wingwall with damage in significant locations or quantity and has reduced the structural capacity or energy absorbing ability of the element. Structural analysis is warranted or it has been determined that repairs are essential to restore the full capacity of the element.
8451	Steel Pile Frame Wingwalls	LF	This element defines the Wingwalls that utilize steel pile frames and energy absorbing bumpers to protect the counterweight towers and guide ferries into the slip. Bridge Preservation performs a cursory inspection above water, and a full inspection of the piles under water. Quantity is in lineal feet along the rubbing face.	1	Steel piling and/or rock anchors are in place and functioning as designed. Rubbing face defects are superficial and have no effect on the structural capacity of the element.
8451	Steel Pile Frame Wingwalls	LF	This element defines the Wingwalls that utilize steel pile frames and energy absorbing bumpers to protect the counterweight towers and guide ferries into the slip. Bridge Preservation performs a cursory inspection above water, and a full inspection of the piles under water. Quantity is in lineal feet along the rubbing face.	2	Length of wingwall with repairs. Corresponding length of pontoon or walers that have been repaired. Pile frame, anchor shoes or chains that have been repaired.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8451	Steel Pile Frame Wingwalls	LF	This element defines the Wingwalls that utilize steel pile frames and energy absorbing bumpers to protect the counterweight towers and guide ferries into the slip. Bridge Preservation performs a cursory inspection above water, and a full inspection of the piles under water. Quantity is in lineal feet along the rubbing face.	3	Length of wingwall and associated pile frames with moderate structural defects. The defects do not significantly affect structural capacity or energy absorbing ability of the wingwall. Deficiencies do not warrant analysis, but may require repairs. There is coating failure in the steel pile frames. Rubbing face timbers and plastic covers may be damaged and protruding and prone to further damage. Trellex bumpers may be torn or loose from anchor bolts. Structural deficiencies are not limited to impact damage, cracks, broken bolts, or measurable section loss due to corrosion (note the location and depth). Repairs may be warranted.
8451	Steel Pile Frame Wingwalls	LF	This element defines the Wingwalls that utilize steel pile frames and energy absorbing bumpers to protect the counterweight towers and guide ferries into the slip. Bridge Preservation performs a cursory inspection above water, and a full inspection of the piles under water. Quantity is in lineal feet along the rubbing face.	4	Length of wingwall and associated pile frames with damage in significant locations or quantity and has reduced the structural capacity or energy absorbing ability of the element. Structural analysis is warranted or it has been determined that repairs are essential to restore the full capacity of the element. There is severe section loss on the steel pile and walers. There are a number of failed rock anchors. The rubbing face timbers and rubbing plastic are broken or missing. Repairs are required.
8460	Timber Pile Dolphins	EA	This element defines solid timber pile dolphins used to hold a vessel in place against side forces and may be used to lay against when turning the vessel into or out of the Ferry Slip. Piling have wire rope wraps around the outer layer near the top and at elevation -1.0. The slip side piling may be plastic faced or steel core with an outer plastic shell. Bridge Preservation performs a cursory inspection above water, and a full inspection of the piles under water. Callout the number of piling in the dolphin.	1	Defects are superficial and have no effect on the structural capacity of the element. Decay, insect infestation, cracks, splits, or checks may exist. Wire rope may be corroded.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8460	Timber Pile Dolphins	EA	This element defines solid timber pile dolphins used to hold a vessel in place against side forces and may be used to lay against when turning the vessel into or out of the Ferry Slip. Piling have wire rope wraps around the outer layer near the top and at elevation -1.0. The slip side piling may be plastic faced or steel core with an outer plastic shell. Bridge Preservation performs a cursory inspection above water, and a full inspection of the piles under water. Callout the number of piling in the dolphin.	2	Piling that have been replaced. Plastic fascia has been replaced. Steel cable wraps repaired.
8460	Timber Pile Dolphins	EA	This element defines solid timber pile dolphins used to hold a vessel in place against side forces and may be used to lay against when turning the vessel into or out of the Ferry Slip. Piling have wire rope wraps around the outer layer near the top and at elevation -1.0. The slip side piling may be plastic faced or steel core with an outer plastic shell. Bridge Preservation performs a cursory inspection above water, and a full inspection of the piles under water. Callout the number of piling in the dolphin.	3	A few of the piling may be crushed or have large visible decayed holes. The outer wraps are rusty, the wraps are loose and staples are missing. Sheathing may be loose. Attaching hardware for sheathing may be broken, bent or protruding and galvanizing is failing. The dolphin is out of plumb up to 5 degrees. The dolphin may require repair.
8460	Timber Pile Dolphins	EA	This element defines solid timber pile dolphins used to hold a vessel in place against side forces and may be used to lay against when turning the vessel into or out of the Ferry Slip. Piling have wire rope wraps around the outer layer near the top and at elevation -1.0. The slip side piling may be plastic faced or steel core with an outer plastic shell. Bridge Preservation performs a cursory inspection above water, and a full inspection of the piles under water. Callout the number of piling in the dolphin.	4	Several of the piling may be crushed or rotten through. The wraps are corroded away and staples are missing. Wraps may be broken and piles may be loose and floating. Sheathed or plastic piling are crushed and sheathing may be loose and protruding. Attaching hardware for sheathing is broken or bent and galvanizing is failed. The dolphin is out of plumb more than 5 degrees. Repairs are warranted.
8462	Steel Pile Frame Dolphins	EA	This element defines those offshore structures made of several steel piling of 24” to 42” dia. The dolphin piles are either reaction piles or fender piles. The reaction piles are tied together with a steel frame or concrete cap. Bridge Preservation performs a cursory inspection above water, and a full inspection of the piles under water.	1	Defects are superficial and have no effect on the structural capacity of the element.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8462	Steel Pile Frame Dolphins	EA	BPO performs a cursory inspection of this element looking specifically for obvious damage. WSF also inspects these elements. This element defines those offshore structures made of several steel piling of 24” to 42” dia. The dolphin piles are either reaction piles or fender piles. The reaction piles are tied together with a steel frame or concrete cap. Bridge Preservation performs a cursory inspection above water, and a full inspection of the piles under water.	2	Number of dolphins that have repairs or replacement of fenders, Trellex bumpers, chain hardware or pile collars.
8462	Steel Pile Frame Dolphins	EA	This element defines those offshore structures made of several steel piling of 24” to 42” dia. The dolphin piles are either reaction piles or fender piles. The reaction piles are tied together with a steel frame or concrete cap. Bridge Preservation performs a cursory inspection above water, and a full inspection of the piles under water.	3	Shock absorbing Trellex bumpers may be torn or have permanent set. The rubbing face has damaged plastic or backer plates. There is broken attaching hardware. Corrosion has caused section loss. The section loss is not sufficient to warrant analysis to ascertain the impact on the ultimate strength and/or serviceability of either the rubbing face supports or the reaction piling. Piling are out of plumb. Repairs may be warranted.
8462	Steel Pile Frame Dolphins	EA	This element defines those offshore structures made of several steel piling of 24” to 42” dia. The dolphin piles are either reaction piles or fender piles. The reaction piles are tied together with a steel frame or concrete cap. Bridge Preservation performs a cursory inspection above water, and a full inspection of the piles under water.	4	Shock absorbing Trellex bumpers have failed. The rubbing face has displaced and protruding elements. There is broken attaching hardware. Corrosion has caused advanced section loss. The section loss is sufficient to warrant analysis to ascertain the impact on the ultimate strength and/or serviceability of either the rubbing face supports or the reaction piling. Piling are out of plumb. Repairs are warranted.
8463	Timber Floating Dolphin	LF	This element defines a floating offshore timber structure used to hold the vessel in place against a current or the effects of wind. The floating dolphins are held in position with anchors and chains. Bridge Preservation performs a cursory inspection above water, and a full inspection of the anchor chains under water. Examine all superstructure timbers on the rubbing face, caps and struts. Quantity is in lineal feet along the rubbing face. Use element 8704 to capture the condition of anchor chains.	1	Defects are superficial and have no effect on the structural capacity of the element. Decay, insect infestation, cracks, splits, or checks may exist.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8463	Timber Floating Dolphin	LF	This element defines a floating offshore timber structure used to hold the vessel in place against a current or the effects of wind. The floating dolphins are held in position with anchors and chains. Bridge Preservation performs a cursory inspection above water, and a full inspection of the anchor chains under water. Examine all superstructure timbers on the rubbing face, caps and struts. Quantity is in lineal feet along the rubbing face. Use element 8704 to capture the condition of anchor chains.	2	Number of lineal feet of rubbing face that have associated timber bracing replaced or flotation tanks repaired. Lineal feet of rubbing face repaired. Steel cable wraps are replaced or repaired.
8463	Timber Floating Dolphin	LF	This element defines a floating offshore timber structure used to hold the vessel in place against a current or the effects of wind. The floating dolphins are held in position with anchors and chains. Bridge Preservation performs a cursory inspection above water, and a full inspection of the anchor chains under water. Examine all superstructure timbers on the rubbing face, caps and struts. Quantity is in lineal feet along the rubbing face. Use element 8704 to capture the condition of anchor chains.	3	Length of rubbing face and associated timber framing with structural defects. The defects do not significantly affect structural capacity or ability to perform function as designed. Deficiencies do not warrant analysis, but may require repairs.
8463	Timber Floating Dolphin	LF	This element defines a floating offshore timber structure used to hold the vessel in place against a current or the effects of wind. The floating dolphins are held in position with anchors and chains. Examine all superstructure timbers on the rubbing face, caps and struts. Quantity is in lineal feet along the rubbing face. Use element 8704 to capture the condition of anchor chains. Bridge Preservation performs a cursory inspection above water, and a full inspection of the anchor chains under water.	4	The rubbing face is listing at the top and the entire line of lower timber caps is under water on one or both sides. Length of rubbing face and associated timber framing with damage in significant locations or quantity which has reduced the structural capacity or ability to perform design function of the element. Structural analysis is warranted or it has been determined that repairs are essential to restore the full capacity of the element.
8464	Concrete Pontoon Floating Dolphin	LF	This element defines a floating offshore concrete pontoon used to hold the vessel in place against a current or the effects of wind. The floating dolphins are held in position with anchors and chains. Bridge Preservation performs a cursory inspection above water, and a full inspection of the anchor chains under water. Examine all superstructure timbers on the rubbing face, caps and struts. Quantity is in lineal feet along the rubbing face. Use element 8704 to capture the condition of anchor chains.	1	Defects are superficial and are insignificant to structural capacity or buoyancy.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8464	Concrete Pontoon Floating Dolphin	LF	This element defines a floating offshore concrete pontoon used to hold the vessel in place against a current or the effects of wind. The floating dolphins are held in position with anchors and chains. Bridge Preservation performs a cursory inspection above water, and a full inspection of the anchor chains under water. Examine all superstructure timbers on the rubbing face, caps and struts. Quantity is in lineal feet along the rubbing face. Use element 8704 to capture the condition of anchor chains.	2	Fender face timbers, Trellex shock absorbers, and chains and hardware have repairs that are functioning as designed. Length of pontoon cells with concrete repairs, patches or injected cracks.
8464	Concrete Pontoon Floating Dolphin	LF	This element defines a floating offshore concrete pontoon used to hold the vessel in place against a current or the effects of wind. The floating dolphins are held in position with anchors and chains. Bridge Preservation performs a cursory inspection above water, and a full inspection of the anchor chains under water. Examine all superstructure timbers on the rubbing face, caps and struts. Quantity is in lineal feet along the rubbing face. Use element 8704 to capture the condition of anchor chains.	3	Length of rubbing face and associated framing with structural defects. Shock absorbing Trellex bumpers may be torn or have permanent set. The rubbing face has damaged plastic or backer plates. There is broken attaching hardware. Corrosion has caused section loss. The defects do not significantly affect structural capacity or ability to perform function as designed. Deficiencies do not warrant analysis, but may require repairs.
8464	Concrete Pontoon Floating Dolphin	LF	This element defines a floating offshore concrete pontoon used to hold the vessel in place against a current or the effects of wind. The floating dolphins are held in position with anchors and chains. Bridge Preservation performs a cursory inspection above water, and a full inspection of the anchor chains under water. Examine all superstructure timbers on the rubbing face, caps and struts. Quantity is in lineal feet along the rubbing face. Use element 8704 to capture the condition of anchor chains.	4	Shock absorbing Trellex bumpers have failed. The rubbing face has displaced and protruding elements. There is broken attaching hardware. Corrosion has caused advanced section loss. The section loss is sufficient to warrant analysis to ascertain the impact on the ultimate strength and/or serviceability of either the rubbing face supports or the reaction piling. The rubbing face is listing at the top greater than 5 degrees. Repairs are warranted.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8640	Moveable Pedestrian Gangplank	LF	This element defines the moveable gangplank that spans the gap between the Ferry deck and the end of the overhead passenger loading cab, but can also be used for the stand alone movable gangplanks which are chain hoisted off the end of the overhead pedestrian apron, or are hinged off a mast used for tie-up slip access. This element if often used in conjunction with Element 8312 (Span Apron/Cab Gangplank Pivot/ Raise/Rams/Fittings). All of the individual elements making up the Gangplank I.E., Deck, Floor Beams, Stringers, Lips and Hinge Pins are included in the element and not itemized separately.	1	Defects are superficial and have no effect on the structural capacity of the element.
8640	Moveable Pedestrian Gangplank	LF	This element defines the moveable gangplank that spans the gap between the Ferry deck and the end of the overhead passenger loading cab, but can also be used for the stand alone movable gangplanks which are chain hoisted off the end of the overhead pedestrian apron, or are hinged off a mast used for tie-up slip access. This element if often used in conjunction with Element 8312 (Span Apron/Cab Gangplank Pivot/ Raise/Rams/Fittings). All of the individual elements making up the Gangplank I.E., Deck, Floor Beams, Stringers, Lips and Hinge Pins are included in the element and not itemized separately.	2	Repairs have been made to the main support girders, floorbeams and connections. Metal tread surfaces have patches. The tread surfaces, some bent members on the rails and gangplank lips have been repaired or replaced.
8640	Moveable Pedestrian Gangplank	LF	This element defines the moveable gangplank that spans the gap between the Ferry deck and the end of the overhead passenger loading cab, but can also be used for the stand alone movable gangplanks which are chain hoisted off the end of the overhead pedestrian apron, or are hinged off a mast used for tie-up slip access. This element if often used in conjunction with Element 8312 (Span Apron/Cab Gangplank Pivot/ Raise/Rams/Fittings). All of the individual elements making up the Gangplank I.E., Deck, Floor Beams, Stringers, Lips and Hinge Pins are included in the element and not itemized separately.	3	There may be pitting on the surface with some areas of scalloping, but any section loss does not affect the capacity of the member or require structural analysis; however, repairs may be warranted. The main support girders and all connecting hardware or welds may have defects that do not affect the capacity or serviceability of the element. The extension mechanisms and rails may bind and are noisy. Safety rails and plank lips may be damaged or loose but are serviceable. Repairs are warranted to prevent further deterioration of the elements.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8640	Moveable Pedestrian Gangplank	LF	This element defines the moveable gangplank that spans the gap between the Ferry deck and the end of the overhead passenger loading cab, but can also be used for the stand alone movable gangplanks which are chain hoisted off the end of the overhead pedestrian apron, or are hinged off a mast used for tie-up slip access. This element if often used in conjunction with Element 8312 (Span Apron/Cab Gangplank Pivot/ Raise/Rams/Fittings). All of the individual elements making up the Gangplank I.E., Deck, Floor Beams, Stringers, Lips and Hinge Pins are included in the element and not itemized separately.	4	Deck and beam elements are holed through or knife edged and have cracks. Welds and mechanical connections are broken or heavily corroded. Section loss is sufficient to warrant analysis to ascertain the impact on the ultimate strength. Safety rails and plank lips are damaged and unsafe. Floor system connections to the main girders have broken or damaged connections or cracked welds. Deck plates are warped and have protruding edges and metal tread surfaces are damaged. The extension mechanisms and rails bind. Apron lips and hinges do not work. Repair or replacement of parts is required.
8650	Overhead Passenger Loading Cab	SF	This element is the Overhead Passenger Loading Cab located at the end of the passenger overhead loading corridor. This element is the enclosed structure that connects to the passenger transfer span on one side of the passage and to the gangplank to the ferry on the other side. The cab has bolt down floor plates that are supported on the cab floor system. This element is usually used in conjunction with element 8653 (Passenger Cab Floor System. . .)	1	Defects are superficial and have no effect on the structural capacity or operational ability of the element.
8650	Overhead Passenger Loading Cab	SF	This element is the Overhead Passenger Loading Cab located at the end of the passenger overhead loading corridor. This element is the enclosed structure that connects to the passenger transfer span on one side of the passage and to the gangplank to the ferry on the other side. The cab has bolt down floor plates that are supported on the cab floor system. This element is usually used in conjunction with element 8653 (Passenger Cab Floor System. . .)	2	Repairs have been made to flaws in welds or loose nuts on connections. Bearings and rest pads have been repaired. Floor plates bolts or screws are replaced. Safety railings have repaired sections. Broken windows have been replaced.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8650	Overhead Passenger Loading Cab	SF	This element is the Overhead Passenger Loading Cab located at the end of the passenger overhead loading corridor. This element is the enclosed structure that connects to the passenger transfer span on one side of the passage and to the gangplank to the ferry on the other side. The cab has bolt down floor plates that are supported on the cab floor system. This element is usually used in conjunction with element 8653 (Passenger Cab Floor System. . .)	3	There may be pitting/scalloping of the metal elements but section loss does not effect the serviceability of the Cab. The walls and roof framing have some flaws in welds or loose nuts on connections. Hinges may be rusty or in need of lubrication. Bearings and rest pads may be deformed. Locking mechanisms may have looseness. Floor cover plates are loose and have loose fasteners. Windows may be cracked. The hydraulic ram fitting back-up structures may have warped plates and moderate corrosion. If a hoist cable and counterweighted system is used the hoist, counterweight, wire rope and all end fittings are worn but operable. Wire ropes may need grease. Safety railings may have bends or creases. The control console and operators work area may have damage/ wear to the floor or walls and roof. Hinges and hydraulics may require maintenance. Repairs may be warranted.
8650	Overhead Passenger Loading Cab	SF	This element is the Overhead Passenger Loading Cab located at the end of the passenger overhead loading corridor. This element is the enclosed structure that connects to the passenger transfer span on one side of the passage and to the gangplank to the ferry on the other side. The cab has bolt down floor plates that are supported on the cab floor system. This element is usually used in conjunction with element 8653 (Passenger Cab Floor System. . .)	4	There is severe corrosion and section loss of the cab wall, roof and floor panels. There is pitting/ scalloping of the metal elements with section loss that may warrant analysis to ascertain its effect on the serviceability of the Cab. Paint/ protective system is failed. Beams have severe corrosion. The walls and roof framing structural steel shapes have significant section loss and there are flaws in welds or missing fasteners on connections. Hinges are distressed. Bearings and rest pads are badly deformed. Locking mechanisms are not functioning properly. Floor coverings have stripped threads on hold down screws or protruding corners. The hydraulic ram fitting back-up structure may have severely warped plates and heavy corrosion. Safety railings have sharp bends or creases. The control console and operator’s work area has water damage/wear to the floor or walls and roof. Repairs are required.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8653	Passenger Cab Floor System and Lift Beam(NSTM)	LF	This element is the rolled sections, standard steel shapes or a built up members that supports the floor of the passenger overhead loading cab. The Fracture Critical beams are lifted by the hydraulic supercolumn or by the counterweighted hoist. This element is usually used in conjunction with element 8650 (Overhead passenger Loading Cab).	1	Defects are superficial and have no effect on the structural capacity of the element.
8653	Passenger Cab Floor System and Lift Beam(NSTM)	LF	This element is the rolled sections, standard steel shapes or a built up members that supports the floor of the passenger overhead loading cab. The Fracture Critical beams are lifted by the hydraulic supercolumn or by the counterweighted hoist. This element is usually used in conjunction with element 8650 (Overhead passenger Loading Cab).	2	Repairs have been made to flaws in welds or loose nuts on connections. Beam web or flange corrosion has been plated. Minor defects which do not yet require repair.
8653	Passenger Cab Floor System and Lift Beam(NSTM)	LF	This element is the rolled sections, standard steel shapes or a built up members that supports the floor of the passenger overhead loading cab. The Fracture Critical beams are lifted by the hydraulic supercolumn or by the counterweighted hoist. This element is usually used in conjunction with element 8650 (Overhead passenger Loading Cab).	3	Surface pitting/local scalloping is present but any section loss is less than 10% of the total thickness. Structural analysis is not required to determine load carrying capacity, but repairs may be required. Welds on truss gusset plates and end treatments have minor section loss. Welds are flaking with surface rust. Protective coating requires touch-up. Welds and nuts are tight and serviceable.
8653	Passenger Cab Floor System and Lift Beam(NSTM)	LF	This element is the rolled sections, standard steel shapes or a built up members that supports the floor of the passenger overhead loading cab. The Fracture Critical beams are lifted by the hydraulic supercolumn or by the counterweighted hoist. This element is usually used in conjunction with element 8650 (Overhead passenger Loading Cab).	4	Advanced deterioration on welds and connection fasteners. Corrosion has caused advanced section loss. The section loss is greater than 10% of the original section and is sufficient to warrant analysis to ascertain the impact on the ultimate strength and/or serviceability of either the element or the bridge. New protective coating is required after repair to reestablish original section. Retain the quantity of the element reported in CS4 if the element is repainted but not repaired.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8701	Ferry Concrete Floating Pontoon	CELL	This element is defined by the bottom, sides, and top surface of a concrete floating pontoon. The total element quantity should equal the total number of cells in the pontoon. Use element 8704 to capture the condition of anchor chains. Bridge Preservation performs a cursory inspection above water, and a full inspection of the anchor chains under water.	1	Defects are superficial and are insignificant to structural capacity or buoyancy. Insignificant amounts of water may be present due to ballasting, condensation or when a deck hatch is opened.
8701	Ferry Concrete Floating Pontoon	CELL	This element is defined by the bottom, sides, and top surface of a concrete floating pontoon. The total element quantity should equal the total number of cells in the pontoon. Use element 8704 to capture the condition of anchor chains. Bridge Preservation performs a cursory inspection above water, and a full inspection of the anchor chains under water.	2	Number of pontoon cells with concrete repairs, patches or injected cracks.
8701	Ferry Concrete Floating Pontoon	CELL	This element is defined by the bottom, sides, and top surface of a concrete floating pontoon. The total element quantity should equal the total number of cells in the pontoon. Use element 8704 to capture the condition of anchor chains.	3	Number of pontoon cells with structural defects. The defects do not threaten structural capacity or buoyancy of the cell. Water is present in the cell and remains unchanged from year to year and pumping is not required.
8701	Ferry Concrete Floating Pontoon	CELL	This element is defined by the bottom, sides, and top surface of a concrete floating pontoon. The total element quantity should equal the total number of cells in the pontoon. Use element 8704 to capture the condition of anchor chains. Bridge Preservation performs a cursory inspection above water, and a full inspection of the anchor chains under water.	4	Number of pontoon cells with structural damage that threatens structural capacity or buoyancy of the pontoon. Water is accumulating in a cell from a known or unknown source and requires pumping. A cell with visually leaking cracks.
8702	Ferry Steel Floating Pontoon	CELL	This element is defined by the bottom, sides, and interior cell walls of a steel floating pontoon. The total element quantity should equal the total number of pontoon cells. Use element 8704 to capture the condition of anchor chains. Bridge Preservation performs a cursory inspection above water, and a full inspection of the anchor chains under water.	1	Defects are superficial and are insignificant to structural capacity or buoyancy. Insignificant amounts of water may be present due to ballasting, condensation or when a deck hatch is opened.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8702	Ferry Steel Floating Pontoon	CELL	This element is defined by the bottom, sides, and interior cell walls of a steel floating pontoon. The total element quantity should equal the total number of pontoon cells. Use element 8704 to capture the condition of anchor chains. Bridge Preservation performs a cursory inspection above water, and a full inspection of the anchor chains under water.	2	Number of pontoon cells with repairs, patches or patched cracks.
8702	Ferry Steel Floating Pontoon	CELL	This element is defined by the bottom, sides, and interior cell walls of a steel floating pontoon. The total element quantity should equal the total number of pontoon cells. Use element 8704 to capture the condition of anchor chains. Bridge Preservation performs a cursory inspection above water, and a full inspection of the anchor chains under water.	3	Number of pontoon cells with structural defects. The defects do not threaten structural capacity or buoyancy of the cell. Water is present in the cell and remains unchanged from year to year and pumping is not required.
8702	Ferry Steel Floating Pontoon	CELL	This element is defined by the bottom, sides, and interior cell walls of a steel floating pontoon. The total element quantity should equal the total number of pontoon cells. Use element 8704 to capture the condition of anchor chains. Bridge Preservation performs a cursory inspection above water, and a full inspection of the anchor chains under water.	4	Number of pontoon cells with structural damage that threatens structural capacity or buoyancy of the pontoon. Water is accumulating in a cell from a known or unknown source and requires pumping.
8703	Spud Piling & Wells	EA	This Element defines piling that have been set to hold a pontoon in position and the well is the system of guides and rollers that act as a collar to the hold the pontoon in position.	1	Defects are superficial.
8703	Spud Piling & Wells	EA	This Element defines piling that have been set to hold a pontoon in position and the well is the system of guides and rollers that act as a collar to the hold the pontoon in position.	2	Number of spud piling and wells that have repairs or have been replaced and are performing as designed.
8703	Spud Piling & Wells	EA	This Element defines piling that have been set to hold a pontoon in position and the well is the system of guides and rollers that act as a collar to the hold the pontoon in position.	3	Number of spud piles and wells with structural defects. The defects do not threaten performance of the of the pontoon positioning system.
8703	Spud Piling & Wells	EA	This Element defines piling that have been set to hold a pontoon in position and the well is the system of guides and rollers that act as a collar to the hold the pontoon in position.	4	Number of spud piles and wells with damage that threatens performance during an extreme event. All pontoon cells, Element 8701 and 8702, threatened by the damaged spud and wells are to be coded CS4.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8704	Pontoon Anchors, Anchor Chain/ Cables/Clamps	EA	This Element defines the anchors, anchor chain and or cables and the end clamps that are set to hold the pontoon in position.	1	Defects are superficial.
8704	Pontoon Anchors, Anchor Chain/ Cables/Clamps	EA	This Element defines the anchors, anchor chain and or cables and the end clamps that are set to hold the pontoon in position.	2	Number of anchors, chains, cables, clamps and end fittings that have repairs or have been replaced and are performing as designed.
8704	Pontoon Anchors, Anchor Chain/ Cables/Clamps	EA	This Element defines the anchors, anchor chain and or cables and the end clamps that are set to hold the pontoon in position.	3	Number of anchors, chains, cables, clamps and end fittings with structural defects. The defects do not threaten performance of the of the pontoon positioning system.
8704	Pontoon Anchors, Anchor Chain/ Cables/Clamps	EA	This Element defines the anchors, anchor chain and or cables and the end clamps that are set to hold the pontoon in position.	4	Number of anchors, chains, cables, clamps and end fittings with damage that threatens performance during an extreme event or during the time a Ferry is in the Slip. All pontoon cells, Element 8701 and 8702, threatened by damaged Anchor Chain are to be coded CS4.
8705	Bridge Luminaire Pole and Base	EA	This element is defined by a light pole and anchor system attached to a bridge. It does not include the mast arm or other types of lights that may be attached to the bridge. The condition states describe the structural condition of the pole, anchor bolts, and support. The total element quantity should equal the number of luminaire poles attached to the bridge.	1-4	See WSBIM Element 705 condition state definitions.
8810	Metal Bridge Railing	LF	This element defines all types and shapes of metal bridge railing aluminum, metal beam, rolled shapes, etc. The quantity should equal the total length measured along each bridge rail.	1-4	See WSBIM Element 330 condition state definitions.
8811	Concrete Bridge Railing	LF	This element defines all types and shapes of reinforced concrete bridge railing. The quantity should equal the total length measured along each bridge rail.	1-4	See WSBIM Element 331 condition state definitions.
8812	Timber Bridge Railing	LF	This element defines all types and shapes of timber railing. The quantity should equal the total length measured along each bridge rail.	1-4	See WSBIM Element 332 condition state definitions.
8813	Other Bridge Railing	LF	This element defines all types and shapes of bridge railing except those defined as METAL, CONCRETE or TIMBER. This element will include cable rails, and combinations of materials. The quantity should equal the total length measured along each bridge rail.	1-4	See WSBIM Element 333 condition state definitions.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8815	Metal Pedestrian Railing	LF	This element defines all types and shapes of metal pedestrian railing including steel, weathering steel, aluminum, metal beam, rolled shapes, etc.. The quantity should equal the total length measured along each bridge rail.	1-4	See WSBIM Element 340 condition state definitions.
8816	Concrete Pedestrian Railing	LF	This element defines all types and shapes of reinforced concrete pedestrian bridge railing. The quantity should equal the total length measured along each bridge rail.	1-4	See WSBIM Element 341 condition state definitions.
8817	Timber Pedestrian Railing	LF	This element defines all types and shapes of pedestrian timber railing. The quantity should equal the total length measured along each pedestrian bridge rail.	1-4	See WSBIM Element 342 condition state definitions.
8818	Other Pedestrian Railing	LF	This element defines all types and shapes of bridge railing except those defined as METAL, CONCRETE or TIMBER. This element will include cable rails, and combinations of materials. The quantity should equal the total length measured along each bridge rail.	1-4	See WSBIM Element 343 condition state definitions.
8901	Protective Coating- Bridge	SF	This paint protection system incorporates the variety of paint systems that may be present on all ferry terminal elements not including piling. Approximate area Quantities: Steel rolled/plate girder: 110 sf per ton. Steel truss: 160 sf per ton	1	The paint system is sound and functioning as intended to protect the metal surface.
8901	Protective Coating- Bridge	SF	This paint protection system incorporates the variety of paint systems that may be present on all ferry terminal elements not including piling. Approximate area Quantities: Steel rolled/plate girder: 110 sf per ton. Steel truss: 160 sf per ton	2	Protection system area that has been painted by maintenance.
8901	Protective Coating- Bridge	SF	This paint protection system incorporates the variety of paint systems that may be present on all ferry terminal elements not including piling. Approximate area Quantities: Steel rolled/plate girder: 110 sf per ton. Steel truss: 160 sf per ton	3	The paint system may be chalking, peeling, curling or showing other early evidence of paint system distress but there is no exposure of metal. On areas deteriorated, damaged or repaired structure paint has been touched up.
8901	Protective Coating- Bridge	SF	This paint protection system incorporates the variety of paint systems that may be present on all ferry terminal elements not including piling. Approximate area Quantities: Steel rolled/plate girder: 110 sf per ton. Steel truss: 160 sf per ton	4	The paint system is no longer effective. The metal substrate is exposed.
8902	Protective Coating - Piling	SF	This paint protection system incorporates the variety of paint system elements that may be present on steel piling, wingwalls, dolphins and other offshore structures. Approximate area Quantities: 110 sf per ton.	1	The paint system is sound and functioning as intended to protect the metal surface.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8902	Protective Coating - Piling	SF	This paint protection system incorporates the variety of paint system elements that may be present on steel piling, wingwalls, dolphins and other offshore structures. Approximate area Quantities: 110 sf per ton.	2	Protection system area that has been painted by maintenance.
8902	Protective Coating - Piling	SF	This paint protection system incorporates the variety of paint system elements that may be present on steel piling, wingwalls, dolphins and other offshore structures. Approximate area Quantities: 110 sf per ton.	3	The paint system may be chalking, peeling, curling or showing other early evidence of paint system distress but there is no exposure of metal. On areas deteriorated, damaged or repaired structure paint has been touched up.
8902	Protective Coating - Piling	SF	This paint protection system incorporates the variety of paint system elements that may be present on steel piling, wingwalls, dolphins and other offshore structures. Approximate area Quantities: 110 sf per ton.	4	The paint system is no longer effective. The metal substrate is exposed.
8907	Galvanizing	SF	This protection system consists of zinc applied to steel in a variety of methods. Report the condition of each square foot of the galvanized steel.	1-4	See WSBIM Element 515G condition state definitions.
8910	Safety Access Ladders	EA	This element defines all of the ladders installed at the facility to access the trestle, bridge, wingwalls or dolphins.	1	There are no significant structural defects in the ladder or support. Ladders or supports that have been replaced are coded in this condition state.
8910	Safety Access Ladders	EA	This element defines all of the ladders installed at the facility to access the trestle, bridge, wingwalls or dolphins.	2	Number of ladders that have repairs or have repaired supports or attachments.
8910	Safety Access Ladders	EA	This element defines all of the ladders installed at the facility to access the trestle, bridge, wingwalls or dolphins.	3	Ladders have structural defects, they may have collision damage or corrosion. The defects do not significantly affect structural capacity. Deficiencies do not warrant analysis, but may require repairs.
8910	Safety Access Ladders	EA	This element defines all of the ladders installed at the facility to access the trestle, bridge, wingwalls or dolphins.	4	Advanced deterioration or damage which has caused a reduction in the load carrying ability of the element. Deficiencies warrant analysis, or repairs are required to restore the full capacity of the element.
8911	Safety Railing & Catwalks	LF	This element defines all railings installed around work platforms and catwalks that are more than 10’ above ground. Quantity for railings is Lineal feet and damaged catwalks are associated with the lineal foot of rail. Place each element length in the appropriate condition state.	1	There are no significant structural defects in the railing or platform and support. Supports that have been replaced are coded in this condition state.

ID	Element Name	Unit	Element Description	Cond. State	Condition State Definition
8911	Safety Railing & Catwalks	LF	This element defines all railings installed around work platforms and catwalks that are more than 10’ above ground. Quantity for railings is Lineal feet and damaged catwalks are associated with the lineal foot of rail. Place each element length in the appropriate condition state.	2	Lineal feet of railing or length of platform that has repairs or has repaired supports or attachments.
8911	Safety Railing & Catwalks	LF	This element defines all railings installed around work platforms and catwalks that are more than 10’ above ground. Quantity for railings is Lineal feet and damaged catwalks are associated with the lineal foot of rail. Place each element length in the appropriate condition state.	3	Platform deck and supports have structural defects. Safety rail length with structural defects. The defects do not significantly affect structural capacity. Deficiencies do not warrant analysis, but may require repairs. Structural deficiencies are not limited to impact damage, cracks, broken bolts, measurable section loss due to corrosion, decay, or spalling.
8911	Safety Railing & Catwalks	LF	This element defines all railings installed around work platforms and catwalks that are more than 10’ above ground. Quantity for railings is Lineal feet and damaged catwalks are associated with the lineal foot of rail. Place each element length in the appropriate condition state.	4	Advanced deterioration. Corrosion has caused advanced section loss. The rails, posts and platform may be severely damaged or corroded and unable to carry the rated load. The attachment or supports may be badly damaged or may be torn loose. Deficiencies warrant analysis and may have determined that repairs are required. Replacement or repair is warranted.

Appendix VII List of Reference Publications

The most current editions of the following:

1. U.S. Department of Transportation, Federal Highway Administration, Bridge Inspectors Reference Manuals Vol.1, Vol.1A, Vol.2 and Vol. 2A
2. Washington State *Bridge Inspection Manual* M 36-64
3. Seismic Design Applications: PART TWO Publication No, FHWA-SA-97-018
4. FHWA-RD-94-052 *Seismic Retrofitting Manual for Highway Bridges*
5. NHI Course #130078 Fracture Critical Inspection Techniques for Steel Bridges. Publication No. FHWA-NHI-09-121
6. Fracture Critical Inspection Techniques for Steel Bridges Participant Workbook
7. FHWA-HRT-04-042 *Guidelines for Ultrasonic Inspection of Hanger Pins*

Appendix VIII List of Boat Launches

Ferry Terminal	Launch Location
Anacortes	Shannon Pt. County Park. Ramp drops off and gravel bottom is rutted and difficult at minus tides. $7.00 Parking fee.
Bainbridge	Eagle Harbor City of Bainbridge boat launch. No tidal restrictions. $5.00 fee.
Bremerton	Evergreen Park boat launch end of 14th St. west shore of Washington Narrows, S. of Warren ave br. 3 blks east of SR 303. Free launch.
Clinton	Boat across from the Mukilteo boat ramp. $10.00 ramp and parking fee. Credit card accepted.
Eagle Harbor Maint	Eagle Harbor City of Bainbridge boat launch. No tidal restrictions. $5.00 fee.
Edmonds	Port of Edmonds sling launch $21.00 launch + $5.00 parking + Tx . = $27.87 credit card accepted. Can kick down from Mukilteo, if calm seas 20 minutes, save $.
Fauntleroy	Don Armani boat launch on Elliott Bay then boat around Alki Pt. To Fauntleroy. Parking and launch $10.00 cash. Rough water after Alki.
Friday Harbor	“Boat launch located at Friday Harbor Shipyard Cove Marina west of Jensen Boat works. $5.00 in and out each way, including parking. Jackson beach is a free option 1.7 miles south of the terminal.”
Keystone	Keystone Harbor ramp. Washington State Parks. $7.00 cash fee.
Kingston	Marina ramp $4.00. Place cash in parking lot numbered box.
Lopez	County Park ramp opposite side of Upright Head from ferry terminal. Ramp concrete logs covered with sand. Free launch.
Mukilteo	City of Mukilteo ramp and parking. $10.00 fee. Credit card accepted.
Orcas	Use Lopez or Friday Harbor ramp.
Point Defiance	Point Defiance Marina boat ramp. Free launch.
Port Townsend	Marina ramp $5.00. Office doesn’t open until 8:00 am.
Seattle	Don Armeni boat launch on Elliott Bay then boat across to ferry terminal. Parking and launch $10.00 cash.
Shaw	Use Lopez or Friday Harbor ramp.
Southworth	Manchester ramp. Kitsap county facility. Difficult launch/recovery at low tides elev. +1.0. $5.00 launch fee.
Tahlequah	Use Point Defiance Marina boat ramp. Boat across from Pt. Defiance.

Vashon	Manchester ramp. Kitsap county facility. Difficult launch/recovery at low tides elev. +1.0. $5.00 launch fee.
Keller Ferry N & S	Routine or wet/drysuit inspection. Ride the ferryboat to the North terminal.

Guemes Island (Skagit Co.)
Motor across from Anacortes.

Anacortes (Skagit Co.)
Shannon Pt. County Park. Ramp drops off and gravel bottom is rutted and difficult at minus tides. $7.00 Parking fee.

Gooseberry (Whatcom Co.)
Launch at the ramp near the Terminal commercial boat park. Free launch.

Lummi Island (Whatcom Co.)
Motor across from Gooseberry.

Appendix IX Typical Pile Data Spreadsheet

Legend and Notes

All elevations have been referenced to “Chart Datum”, (MLLW = 0.00, North American Datum 1983 / WGS 1984)

Abbreviation	Word / Phrase	Abbreviation	Word / Phrase
BANK	Bankia	MHW	Mean high water
br	Brace pile	MLW	Mean low water
CHK	Checks	MLLW	Mean lower low water
CMP	Corrugated pipe	N	North
Concr	Concrete	S	South
Dn	Down	SC	Scour
Drum	Drum / punky sound	SK	Shake; ring split
E	East	SPL	Splash zone
F	Full height	SPT	Split
ITZ	Inter-tidal zone	Strap	Strapped to cap
LIM	Limnoria	TP	Top
MBC	Marine borer cavity	Up	up
MDL	Mudline	W	West
Mech	Mechanical	XX	Abandoned pile

Washington State Department of Transportation

ANACORTES SLIP 1
SID #0008985A 20/208FT1
PILE INSPECTION DATA REPORT

Underwater	6/14/2022	Lead:	DON	Co:	MBS
Routine	8/12/2024	Lead:	CRT	Co:	SMT

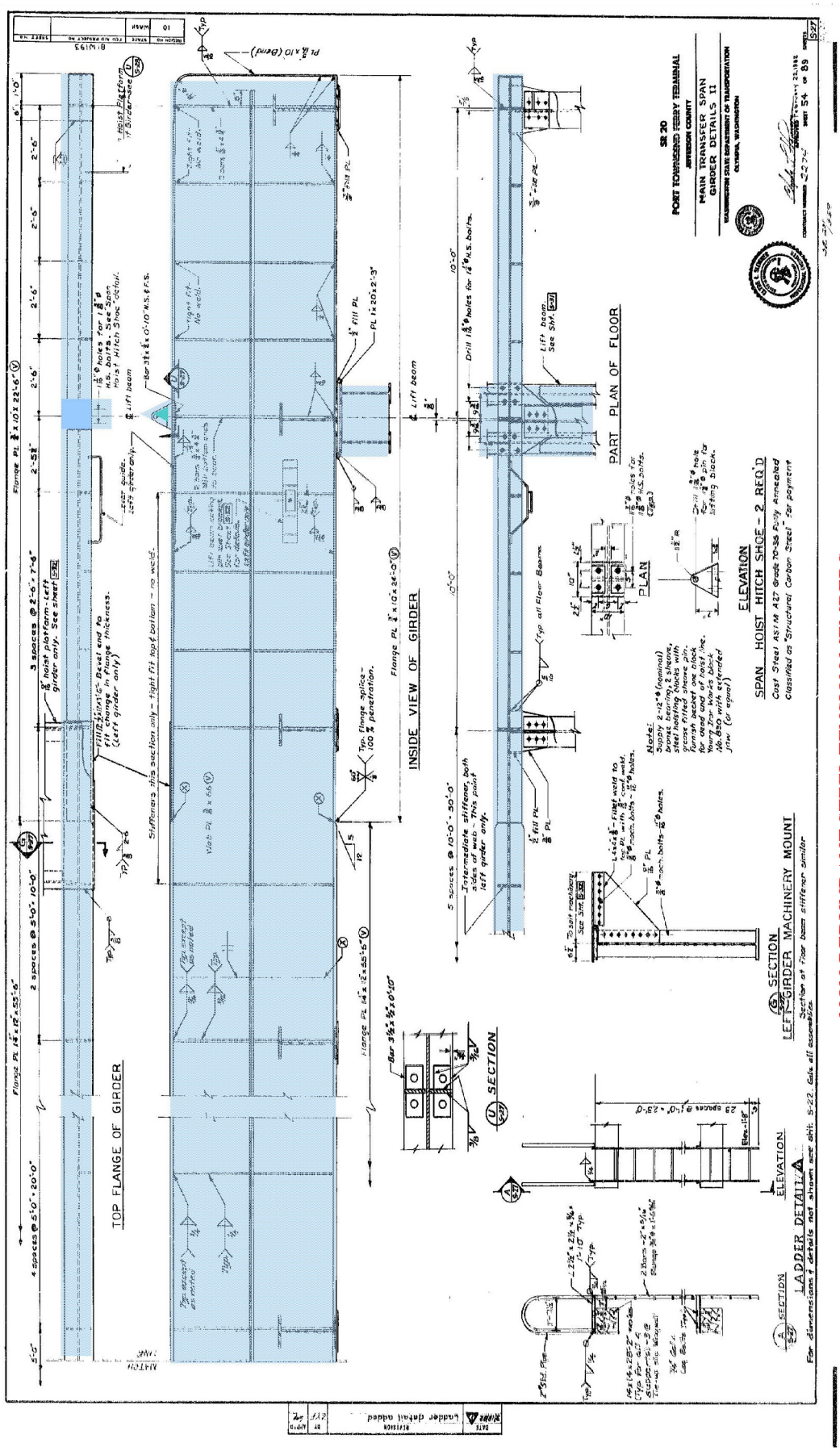
Pile Location		Condition/Damage (Blue text is most recent updates)					
Bent	Pile	Pile Type	Condition State	Nominal Thickness (inches)	Mudline Elevation (MLLW)	Defect Location	Details/Remarks (Red text is photograph numbers)
Bridge Seat - BS Piles are in CS3 due to corrosion above the water surface, see the inspection report Element 8128 note.							
1	A	SRP	3	0.500	-16.5	>ITZ MDL MDL	20% coating failure Measured thickness 0.485" (2014) Measured thickness 0.475" (2018)
	B	SRP	3	0.500	-17.7	ITZ MDL	20% coating failure Measured thickness 0.485" (2006)
	C	SRP	3	0.500		>ITZ	20% coating failure
	D	SRP	3	0.500	-18.5	>ITZ MDL	20% coating failure Measured thickness 0.450" (2018)
2	A	SRP	3	0.500	-21.5	>ITZ	20% coating failure
	B	SRP	3	0.500		>ITZ	20% coating failure
	C	SRP	3	0.500	-20.0	>ITZ MDL	20% coating failure Measured thickness 0.475"
	D	SRP	3	0.500	-21.5	ITZ MDL	40% coating failure Measured thickness 0.480" (2006)
Tower Left - TL							
1	A	SRP	1	0.500	-31.2	ITZ MDL MDL	10% coating failure above ITZ 4' band 90% coating failure with light freckled rust (photo UW-1) Measured thickness 0.480" (2018)
	B	SRP	1	0.500	-30.3	ITZ MDL	10% coating failure above ITZ Measured thickness 0.470" (2018)
	C	SRP	1	0.500	-25.2	ITZ MDL - ITZ	20% coating failure 10% coating failure underwater

LEGEND AND NOTES

All elevations have been referenced to "Chart Datum", (MLLW = 0.00, North American Datum 1983 / WGS 1984)

Abbreviation	Word / Phrase	Abbreviation	Word / Phrase
BANK	Bankia	MHW	Mean high water
br	Brace pile	MLW	Mean low water
CHK	Checks	MLLW	Mean lower low water
CMP	Corrugated pipe	N	North
Concr	Concrete	S	South
Dn	Down	SC	Scour
Drum	Drum / punky sound	SK	Shake; ring split
E	East	SPL	Splash zone
F	Full height	SPT	Split
ITZ	Inter-tidal zone	Strap	Strapped to cap
LIM	Limnoria	TP	Top
MBC	Marine borer cavity	Up	Up
MDL	Mudline	W	West
Mech	Mechanical	XX	Abandoned pile
T	Timber	SRP	Steel Reinforced Pile
C	Concrete		

Appendix X Typical NSTM Drawing



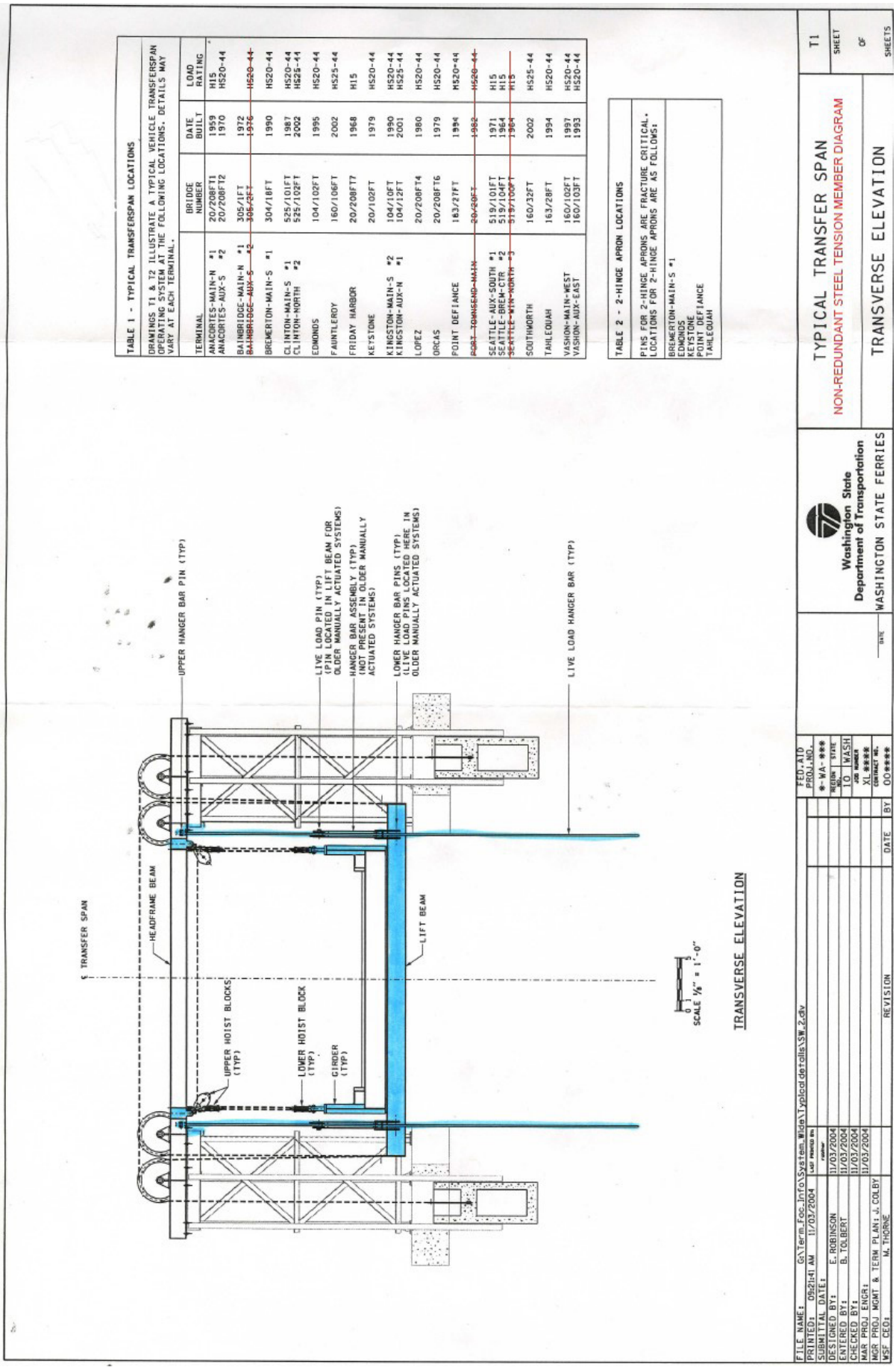


TABLE 1 - TYPICAL TRANSFERSPAN LOCATIONS
DRAWINGS T1 & T2 ILLUSTRATE A TYPICAL VEHICLE TRANSFERSPAN OPERATING SYSTEM AT THE FOLLOWING LOCATIONS. DETAILS MAY VARY AT EACH TERMINAL.
TERMINAL | BRIDGE NUMBER | DATE BUILT | LOAD RATING
ANACORTES-MAIN-N #1 | 20/206FT1 | 1959 | H15
ANACORTES-MAIN-N #2 | 20/206FT2 | 1970 | HS20-44
ANACORTES-AUX-S | | | HS20-44
BAINBRIDGE-MAIN-N #1 | 305/1FT | 1972 | HS20-44
BAINBRIDGE-AUX-S #2 | 305/2FT | 1976 | HS20-44
BREMERTON-MAIN-S #1 | 304/18FT | 1990 | HS20-44
CLINTON-MAIN-S #1 | 525/101FT | 1987 | HS20-44
CLINTON-NORTH #2 | 525/102FT | 2002 | HS25-44
EDMONDS | 104/102FT | 1995 | HS20-44
FAUNTLEROY | 160/106FT | 2002 | HS25-44
FRIDAY HARBOR | 20/208FT7 | 1968 | H15
KEYSTONE | 20/102FT | 1979 | HS20-44
KINGSTON-MAIN-S #2 | 104/10FT | 1990 | HS20-44
KINGSTON-AUX-N #1 | 104/12FT | 2001 | HS25-44
LOPEZ | 20/208FT4 | 1980 | HS20-44
ORCAS | 20/208FT6 | 1979 | HS20-44
POINT DEFIANCE | 163/2FT | 1994 | HS20-44
PORT TOWNSEND-MAIN | 20/20F? | 1982 | HS20-44
SEATTLE-AUX-SOUTH #1 | 519/101FT | 1971 | H15
SEATTLE-BREM-CTR #2 | 519/104FT | 1964 | H15
SEATTLE-WIN-NORTH #3 | 519/100FT | 1964 | H15
SOUTHWORTH | 160/32FT | 2002 | HS25-44
TAHLEQUAH | 163/28FT | 1994 | HS20-44
VASHON-MAIN-WEST | 160/102FT | 1997 | HS20-44
VASHON-AUX-EAST | 160/103FT | 1993 | HS20-44
TABLE 2 - 2-HINGE APRON LOCATIONS
PINS FOR 2-HINGE APRONS ARE FRACTURE CRITICAL. LOCATIONS FOR 2-HINGE APRONS ARE AS FOLLOWS:
BREMERTON-MAIN-S #1
EDMONDS
KEYSTONE
POINT DEFIANCE
TAHLEQUAH
UPPER HANGER BAR PIN (TYP)
LIVE LOAD PIN (TYP) (PIN LOCATED IN LIFT BEAM FOR OLDER MANUALLY ACTUATED SYSTEMS)
HANGER BAR ASSEMBLY (TYP) (NOT PRESENT IN OLDER MANUALLY ACTUATED SYSTEMS)
LOWER HANGER BAR PINS (TYP) (LIVE LOAD PINS LOCATED HERE IN OLDER MANUALLY ACTUATED SYSTEMS)
LIVE LOAD HANGER BAR (TYP)
℄ TRANSFER SPAN
HEADFRAME BEAM
LIFT BEAM
UPPER HOIST BLOCKS (TYP)
LOWER HOIST BLOCK (TYP)
GIRDER (TYP)
SCALE ⅛" = 1'-0"
TRANSVERSE ELEVATION
Washington State Department of Transportation
WASHINGTON STATE FERRIES
TYPICAL TRANSFER SPAN
NON-REDUNDANT STEEL TENSION MEMBER DIAGRAM
TRANSVERSE ELEVATION
T1
SHEET
OF
SHEETS
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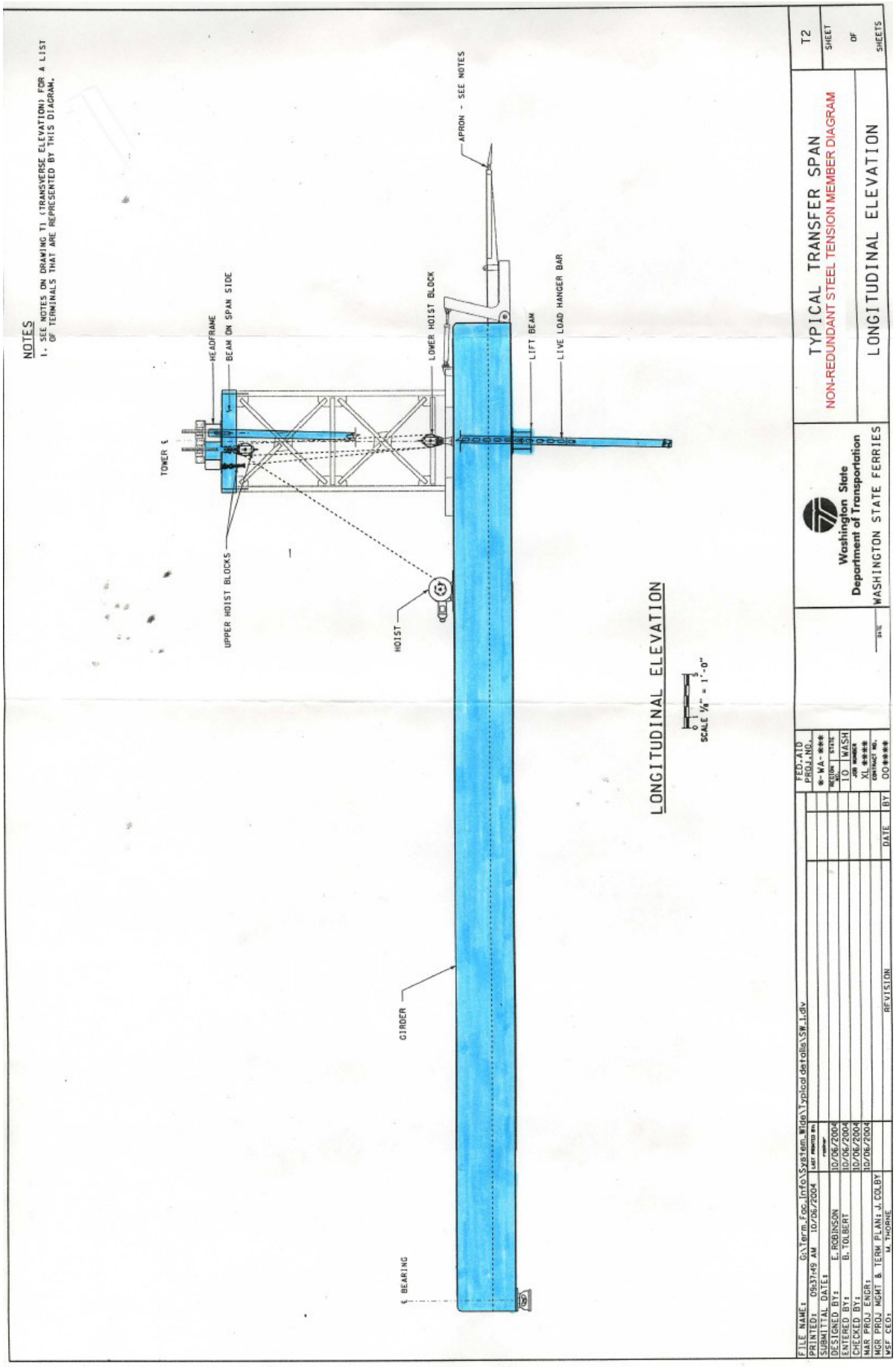
PRINTED: 09:21:41 AM 11/03/2004
SUBMITTAL DATE:
DESIGNED BY: E. ROBINSON
ENTERED BY: B. TOLBERT
CHECKED BY:
MAR PROJ ENGR:
MGR PROJ MGMT & TERM PLAN: J. COLBY
WSF CEO: M. THORNE
REVISION
DATE
BY
FED.AID PROJ.NO.
*-WA-***
REGION STATE
10 WASH
JOB NUMBER
XL****
CONTRACT NO.
00****


NOTES
1. SEE NOTES ON DRAWING T1 (TRANSVERSE ELEVATION) FOR A LIST OF TERMINALS THAT ARE REPRESENTED BY THIS DIAGRAM.
APRON - SEE NOTES
HEADFRAME
BEAM ON SPAN SIDE
LOWER HOIST BLOCK
LIFT BEAM
LIVE LOAD HANGER BAR
TOWER ℄
UPPER HOIST BLOCKS
HOIST
GIRDER
℄ BEARING
LONGITUDINAL ELEVATION
SCALE 1/8" = 1'-0"
TYPICAL TRANSFER SPAN
NON-REDUNDANT STEEL TENSION MEMBER DIAGRAM
LONGITUDINAL ELEVATION
Washington State Department of Transportation
WASHINGTON STATE FERRIES
T2
SHEET
OF
SHEETS
FED.AID PROJ.NO.
STATE WA
REGION
10
JOB NUMBER
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CONTRACT NO.
00####
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SUBMITTAL DATE:
DESIGNED BY: E. ROBINSON 10/06/2004
ENTERED BY: B. TOLBERT 10/06/2004
CHECKED BY: 10/06/2004
MAR PROJ ENGR:
MGR PROJ MGMT & TERM PLANS: J. COLBY 10/06/2004
WSF CEO: M. THORNE
REVISION
DATE
BY

Appendix XI Memorandum of Agreement

Washington State Ferries

Memorandum

Date: January 2023

Memorandum of Agreement
for Condition Inspection of
Washington State Ferry Terminals

Purpose of MOA

The purpose of this MOU is to clarify roles and responsibilities between WSDOT Bridge Preservation (BPO) and Washington State Ferries (WSF) Terminal Engineering for the structural inspection, report writing, and data submission to the Federal Government for WSF terminal facilities.

Item No. 1: Scope of Work and Responsibility

A. In accordance with the National Bridge Inspection Standards (NBIS) 23CFR650, subpart C, all structures carrying vehicular traffic shall be inspected. Inspections shall comply with all of the requirements of this standard. BPO will submit electronic records to the NBI as a part of the Statewide NBI data "Inspect and write reports". BPO will also keep electronic copies of the reports on their "Beist" computer server. For compliance with Federal Regulations for records retention, the "Beist" server above water inspection report copy for a Ferry Terminal Structure will be the officially retained record. For any inspection reports or supporting documents which need to be part of the retained structure record, and for which there is need to maintain a paper copy, WSF is the owner and retainer of all these Official Bridge Inspection files. Bridge Preservation retains copies of some files to aid in inspection planning. The original documents are kept with WSF at the Terminal Engineering Library.

B. The Bridge and Structures Office (Bridge Preservation) will perform the structural above water inspections of all vehicle and pedestrian approach trestles, transfer spans, bridge seats, aprons, towers, head frames, wing walls and tie-up slips. Offshore landing aids will receive a cursory above water inspection looking for deficiencies that pose an immediate hazard to the vessel or adversely affect the functional purpose of the landing aid. Repairs shall not be written for above water findings to landing aids offshore of the wing walls. Bridge Preservation will notify Terminal

Engineering when reports are uploaded to "Beist" computer server. Updated 11x17 drawing layout pdf files will be made available through "Beist" for each completed inspection. In some cases, underwater and above water inspections may occur sufficiently close in schedule such that on update of layout is made for both inspection types.

C. The Bridge and Structures Office (Bridge Preservation) will perform the underwater inspection of all Ferry Terminal submerged elements. At the mutual agreement between Bridge Preservation and Terminal Engineering, contract divers may be utilized to perform underwater inspection, providing they meet the requirements of bridge inspectors according to the standard, as well as meeting the requirements as a Team Leader in Washington State. WSF Terminal Engineering will administer the agreement and direct the work. Bridge Preservation may be used as requested in a review capacity. Completed underwater inspection reports are hand signed, and the signed copy is kept by Terminal Engineering. Bridge Preservation will notify Terminal Engineering when these reports are being sent.

D. Terminal Engineering will inspect the mechanical, electrical, landing aid (wingwalls, dolphins) building superstructure and paving systems. Terminal Engineering will perform and maintain the sounding and fathometric measurements at all facilities.

Item No. 2: Frequency of Inspection

A. Inspection frequencies will follow the requirements as set forth in the NBIS and also state policy as described in the Washington State Bridge Inspection Manual (WSBIM). Under this standard, all above water elements shall be inspected at least once every two years. Inspection frequencies may be less than two years if mutually agreed upon by Bridge Preservation and Terminal Engineering.

B. Underwater inspection of all facilities shall be on a five-year frequency as required by the standard. Frequencies can be shortened as agreed upon between Bridge Preservation and Terminal Engineering. As agreed upon, all facilities with timber elements in either the approach trestle, bridge seat or head frame shall be inspected on a 4 year frequency

C. At the request of Terminal Engineering, an inspector from Terminal Engineering may accompany the Bridge Preservation inspection team during inspection or may be used in the capacity of co-inspector. WSF Terminal Engineering staff may perform NBI qualifying inspections in the capacity

of Lead Inspector provided they are qualified as Lead Bridge Inspectors as defined in the standard, as well as being recognized as a Lead Bridge Inspector within Washington State.

D. The inspection of mechanical and electrical systems will be conducted on a three-year frequency and will be performed by Terminal Engineering. These inspections follow the criteria per the AASHTO "Moveable Bridge Inspection, Evaluation, and Maintenance Manual".

The slip soundings and landing aid inspections will be conducted on a one-year frequency and will be performed by Terminal Engineering. Terminal Engineering will maintain the records of these inspections.

Item No. 3: Other Special Inspections

Eagle Harbor Inspection: The Eagle Harbor Repair Facility does not carry public traffic. Bridge Preservation will inspect bridge seats, transfer spans, aprons, towers, head frames, tie-up slips, gangways, building support members, timber trestles and trestle pile caps at this facility on a two year frequency. Underwater inspection of this facility will be performed every four years. The reports generated are:

305/8BLDG	Building Trestle
305/8TRMB	Finger Pier
305/8FTMB	Slip B
305/8FTME	Slip E
305/FTMF	Slip F
305/8TRAS	Trask Trestle

Seattle Passenger Only Float The float and span connecting the float to the span is owned and operated by King County and not subject to inspection. The passenger only building foundation is part of the 519/100TR South Concrete Trestle and part of shared use and shall be inspected.

Seattle Building Foundation Inspection: As part of the Seattle Ferry Terminal (Colman Dock) inspection of the 519/102TR North Concrete Trestle. The redesigned facility incorporates the trestle foundation to support the building above the car deck. A over roadway safety inspection should be part of the North Concrete Trestle.

Item No. 4: Preparation of Contract Documents

The preparation of all working drawings and PS&E documentation shall remain the responsibility of Terminal Engineering.

Item No. 5: Load Rating

Guidelines for rating will be established by the Bridge and Structures Office according to the provisions of the WSBIM and Bridge Design manual. Washington State Ferries shall be responsible for rating all marine structures for load carrying capacity. A copy of the one page rating summary shall be sent to the Bridge Preservation Engineer, with WSF maintaining all the original calculations.

The Bridge and Structures Branch may assist WSF personnel in special analysis upon request.

Item No. 6: Scour Evaluations

Washington State Ferries shall be responsible for performing scour evaluations on all marine structures, and develop scour mitigation plans where required by analysis. A one-page summary of the scour code and POA shall be sent to the Bridge Preservation Special Structures Engineer.

Item No. 7: Recommended Repairs

A. Routine repairs shall be incorporated into the inspection reports. Terminal Engineering will be notified by phone and e-mail communication for deficiencies that present an immediate hazard to the traveling public.

B. Repairs are given a numeric priority with the following definitions:

Priority 1:
Damage to primary structural elements which directly affect Public Safety, Reliability of Transportation System, Protecting Public Investments and Maintaining Legal Federal Mandates

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 M:
A condition that requires the structure to be monitored primarily by the bridge inspection teams, and may evolve into a physical repair need.

C. Routine maintenance items, such as 1) cleaning and repair of bridge drainage systems; 2) cleaning of dirt and debris accumulation off timber caps, timber stringers, and expansion devices; 3) flushing of lower chords of steel bridges; 4) greasing of cable systems; and 5) above water repairs to landing aids, are not included in the recommended repair listing but should be in Terminal Engineering's maintenance work plan.

Item No. 8: Quality Control and Quality Assessment of Ferry Terminal Inspections

A. Quality control for ferry terminal inspection reports covered under this MOA will be the responsibility of the BPO Special Structures Engineer. Special Structures Engineer or their authorized delegate shall review all completed inspection reports for coding consistency and completeness.

B. Quality assessment for inspection practice and procedures is responsibility of Terminal Engineering. Assessment is carried out by way of annual observation of a random sample of inspections being carried out in the field in addition to review of a sample of above water and underwater inspection reports for compliance with procedures and expectations.

Item No. 9: Positions of contact for various aspects of Ferry Terminal Condition Inspection

A. The Terminal Engineering Maintenance Marine Project Engineer has been sub-delegated Program Manager Duties for the federally reportable bridge inventory of Washington State Ferries. These duties are defined in the National Bridge Inspection Standards (NBIS) 23CFR650.307. A copy of the sub-delegation memorandum is included in Appendix C. All of Terminal Engineering inspection records and procedures are subject to review by the Statewide Program Manager and FHWA.

B. Major deficiencies that present an immediate hazard to the traveling public found during the inspection: Immediately notify the Marine Project Engineer (Tom Castor), (206) 515-3727. A follow-up e-mail shall be prepared and transmitted immediately to formally notify Terminal

Engineering of the deficiency.

C. For inspection scheduling, Bridge Preservation will notify Terminal Engineering two weeks in advance of the intended inspection. The contact at WSF is the Marine Project Engineer (Tom Castor), (206) 515-3727.

D. Bridge Preservation shall send out a Terminal Access Request Form two business days prior to the scheduled inspection.

E. The inspection team shall notify the terminal agent upon arrival at, and departure from the terminal.

Item No. 10: Reimbursement for Ferry Terminal structural and Underwater Inspections

A. At the beginning of each year, the BPO Special Structures Engineer and the WSF Marine Project Engineer shall meet and agree on all of the inspections which will be performed. Additional work may be added at any time throughout the year as agreed upon by both parties.

B. WSF shall pay for all labor and equipment required to perform inspections and write inspection reports. BPO Labor shall be charged to WSF through the states' time sheet program, with hours charged against a WSF work order (determined by WSF at the beginning of each Biennium). All labor (both regular and overtime) will be cross-org charged to WSF Organization code 362220. TEFF equipment shall be charged against this same work order.

C. For all inspections performed by consultants, WSF shall pay all invoices directly to the consultant.

Appendix A - Scope of Work for Ferry Terminal Underwater Inspections
Appendix B - WSF Dive and Workboat Safety Requirements 4_1_2019
Appendix C – Sub-delegation of Bridge Inspection Program Manager Memorandum

Please indicate your concurrence below and return the original copy to the Bridge and Structures Office.

Memorandum of Agreement
Condition Inspection of WSF Terminals
January 2023
Page 7

David Sowers Date: 1/27/2023

David Sowers PE
Director, WSF Terminal Engineering

Roman G Peralta Date: 1/30/23

Roman G. Peralta, PE
Bridge Preservation Engineer

Appendix XIa Scope of Work for Ferry Terminal Underwater Inspections

Appendix A

Scope of Work for Ferry Terminal Underwater Inspections

(January 2023)

Inspection shall include all underwater components of ferry terminals including tie-up slips. All structures are to be inspected by divers from the water surface down to the mudline.
Note the tidal elevation at the beginning and end of each dive, relative to the top of the bridge seat pile cap. If terminal has multiple slips, note the slip number of the bridge seat used as the benchmark.

Inspect the following structures and components:

1. Trestles and transfer span towers: Inspect all piling and bracing. Plumb and batter piling may be timber, steel or concrete. Bracing may be timber or steel. Inspect cross bracing piece by piece, noting all damage and deterioration. Inspection report should include location and condition of individual bracing members as well as of individual piling.

2. Wingwalls and dolphins: Construction may be of timber or steel.

   a) Timber: Perform "swim-by" inspection. Note collision damage, marine borer attack, condition of wales, lashings, and bolted connections. Look for evidence of gross displacement, instability and scour. Inspection report should note general condition; a pile-by-pile inventory report is not required.

   b) Steel wingwalls and dolphins have considerably fewer piles than their timber counterparts. For the purpose of establishing a baseline for future "swim-by" inspections, it is necessary to perform a detailed inspection if that has not been done. Note collision damage, coating failure, corrosion, condition of welded and bolted connections. Look for evidence of gross displacement, instability and scour. Prepare a pile-by-pile inspection report.

3. Floating structures, including dolphins, wingwalls (floating wingwalls are at Lopez Island terminal only), and foot ferry loading floats. Floating structures may be timber, steel or concrete, and may be moored by chain, cable or piles. Inspect floating structure hull for general condition, including condition of any coating, and note all damage. Inspect mooring chain or cable from hawse to mudline, and note position and condition of anchor or mooring stake if visible. If moored by piles, inspect piles to mudline, noting any damage including damage caused by spud wells. Note condition of spud wells and bearing material.

4. Mono-columns at passenger overhead loading structures: Inspect steel casing for coating failure and signs of corrosion.

5. Note extent of propeller-wash scour in and around slips.

Appendix A
January 2023
Ferry Terminal Dive Scope.doc

Appendix Xlb Diving and Work Boat Safety Plan

1-07.1.OPT3.DT9 (This provision is part of WSF Contracts and incorporated into the MOA with Bridge Preservation Office and WSF)

(WSF April 1, 2019)

Diving and Workboat Safety Requirements

The Contractor shall comply with the requirements of WAC 296-37 "Standards for Commercial Diving Operations" and the requirements contained herein as applicable. The Contractor shall give the Engineer 24 hours advance notice of any planned diving or workboat activity.

General Requirements for Communications and Safety

The following requirements shall be followed whenever diving or workboat activity is performed at the ferry terminal:

- Prior to diving and workboat activity, the Contractor shall obtain approval from the Engineer.
- Notification shall be made no less than one hour prior to the Diver entering the water.
- The Engineer or designee will be responsible for notifying each vessel of the upcoming day's diving or workboat activity.
- The Engineer will request that the vessels depart under low power (slow bell) unless otherwise necessary due to weather conditions.
- The diving team and workboat operations shall not disrupt the ferry service schedule.
- Communications between the Diver and the Diver's Tender shall be maintained at all times.
- The Engineer and Masters shall be notified at the completion of diving and workboat activity each day.

Slip-Specific Diving Requirements

The following safety rules shall be followed when diving activities are performed within the diving envelope of the ferry slip. The diving envelope is defined as occurring in an active ferry slip being used for vessel operations:

- It includes the area around all of the slip landing aid structures.
- A 50-yard by 50-yard box which is bisected by the centerline of the slip and runs from the off-shore portion of the apron toward shore.

A three-member minimum diving team will be required when diving within the diving envelope. The duties of the team members shall include:

- One member shall be diving.
- One member shall be in a skiff, on the trestle or on the transfer span acting as the Diver's Tender. The Diver's Tender shall maintain communication with the Diver, and the Safety Technician, at all times. In addition, the Diver's Tender shall ensure that the diver has safely surfaced and cleared the diving area five minutes prior to the vessel landing, unless the Diver is outside the envelope.
- One member shall act as a Safety Technician. The Safety Technician shall be in a skiff or on shore and shall maintain constant communication with the Diver's Tender.

MOU Appendix B Dive and Workboat Safety Requirements

Upon completion of diving activity, the Safety Technician shall notify the Engineer and Masters. Once the diver has cleared the diving area, the Safety Technician shall directly radio the Master on each arriving vessel and relay the message "DIVER CLEAR". The Engineer will provide the Safety Technician a hand-held radio for this purpose.

Slip-Specific Workboat Requirements

The following safety rules shall be followed when operating workboats at the ferry terminal:

- The workboat shall not pass in front of a ferry vessel when it is closer than 500 yards from the terminal on approach. (33 CFR 165.1317).
- While the ferry vessel is making the landing approach to the ferry terminal, workboats shall maintain a 100-yard distance unless moored to a larger anchored vessel or to a landing structure for other than the active slip. (33 CFR 165.1317).
- Workboats shall maintain a 25-yard distance from any ferry vessel while ferry vessels are moored at the ferry terminal unless approved by the vessel Master. (33 CFR 165.1317).
- Operators of workboats shall be aware of the slip and any vessels that are or will be using the slip.
- Operators of workboats shall be aware of the ferry schedule and when ferry vessels will be departing so that they can position their workboat in a safe operating location in compliance with the requirements noted above.
- The workboat **shall not** cross under the active occupied slip unless the Master has been notified and agrees.
- Workboats shall be moored in locations that will provide visibility to vessel approaches and/or protection from any prop wash that may occur by ferry vessel approaches and departures.

Payment

All costs to comply with this Special Provision covering diver and workboat safety shall be included in related items of Work.

MOU Appendix B Dive and Workboat Safety Requirements

Appendix Xlc Sub-delegation of Bridge Inspection Program Manager for Local Agencies

Washington State Department of Transportation

Memorandum

August 1, 2022

TO: Tom Castor, P.E.
Marine Project Engineer
MS: TB-32

FROM: Roman G. Peralta, P.E. RGP
Bridge Preservation Engineer
MS: 47340

SUBJECT: Sub-delegation of Bridge Inspection Program Manager for Local Agencies

By authority granted to me as the Bridge Preservation Engineer and Statewide Bridge Program Manager, I am sub-delegating to you as the Washington State Ferry's Marine Project Engineer, Program Manager Duties for the federally reportable bridge inventory of the Washington Ferries. These duties are defined in the National Bridge Inspection Standards (NBIS) 23 CFR 650.307(e), §650.307(c) (1), and §650.307(c) (2) for all the agency bridge inspection programs.

You may further sub-delegate these duties; however, I do not expect that you will have a need to do so.

Please note, that the overall bridge inspection program responsibility must remain with the Bridge Preservation Engineer as the Statewide Program Manager in accordance with 23 CFR 650.307(d).

RGP:tms

Cc (email): Mark Gaines, Development Division Director and State Design Engineer
Evan Grimm, State Bridge and Structures Engineer
George Comstock, Coding & Appraisal Engineer
Loren Wilson, FHWA Washington Division Bridge Engineer
David Sowers, Director of Terminal Engineering
Bryant Bullamore, Construction Engineering Manager

DOT Form 700-008 EF
Revised 5/99

Appendix XII Ferry Terminal Inspection Pre-Activity Safety Plan

Ferry Terminal Inspection Pre-Activity Safety Plan

WEEK OF _____ TO _____.

LOCATION: _____. _____.

LEAD INSPECTOR SIGNATURE_____DATE_____
CO-INSPECTOR SIGNATURE_____DATE_____

Ferry Terminal Inspection Pre-Activity Safety Plan

Goal: The Washington State Department of Transportation (WSDOT) is committed to providing a healthy and safe workplace for all personnel; zero injuries, accidents, exposures, and the control of occupational hazards are key components of the goal.

Purpose: Ferry terminals have many different hazards that may be encountered during inspection. There are two methods of inspection that generally occur; Above water and in water. Above water inspection entails an inspection of all the areas that can be accessed from solid ground, including headframes, which may or may not require special equipment such as a Genie lift of bucket truck. In water consist of inspecting all elements or parts of elements the require a boat for access.

Typical Procedure: Inspectors arrive via boat or vehicle depending on the facility and the inspection plan. Upon arrival the inspectors notifying the terminal agent of their arrival and inspection plan. The inspector will have with them at all times a WSF radio maintaining contact with the terminal agents and boat captains. The inspections are to be completed without interrupting ferry boat and vehicle traffic. Upon completion of their inspection the inspectors will notify WSF staff of their departure.

Personnel are highly trained in the performance of their field activities. This PASP addresses inspections that may occur on any ferry terminal throughout the state.

1

Tasks, Hazards, and Controls:

TASK	HAZARDS	CONTROL
WSF Inspection	Noise	Wear hearing protection.
	Traffic	If accident occurs, dial 911. If joint measurements are required, one inspector watches traffic to ensure the other can safely measure joints.
	Needles/feces	Stay alert for these and avoid. See Appendix B for further instruction.
	Pigeon guano	Avoid disturbance of guano
	Transients	Avoid transients and travel in pairs using the buddy system. Announce presence to transients.
	Weather	Not inspecting during thunderstorms and icy conditions.
	Walking the deck (moving Traffic)	Walk in a direction facing oncoming traffic. Be aware of escape routes in case of emergency.
	Hazardous Materials	Review MSDS for all hazardous materials being used or expected to be encountered.
	Snake and spider bites	Keep hospital list (Appendix C) present and drive to hospital if bitten
	Struck by falling objects	Avoid walking and working under suspended loads. Hard hats must be worn when working around heavy equipment
	Weather related illness	Take extra precautions to prevent heat and cold stress when working in extremely hot or cold temperatures.

WSF Inspection	Hazardous marine life	Identify and avoid. If injury occurs, provide first aid and seek medical attention.
	Strains and sprains due to Lifting	Proper lifting techniques shall be used. Get help or use lifting/hoisting equipment if necessary.
	Slips trips and falls	Be aware of loose materials, excavation drop-off, tripping hazards and other obstructions. Keep walk spaces and work areas free from loose materials or tools.
EQUIPMENT/ TOOLS	**POTENTIAL HAZARDS**	**MITIGATION/CONTROLS**
Work Boat	Boating accident	Remain alert to other vessels. Use qualified operators. If accident occurs, dial 911 or use VHF radio to contact emergency services/USCG.
	Falling into water / drowning	Wear PFD.
	Crushing, pinch points, struck by	Use caution when opening/closing cabinets. Be aware of moving equipment/pinch points. Be alert when boat is near fixed objects. Use caution when surfacing or working near boat.
	Equipment failure	Perform pre-operational safety checks.
Boat trailer / towed equipment	Backing up	Remain aware of people/objects. Use spotter.
	Crushing, pinch points, struck by	Be aware of moving equipment/pinch points. Be alert when acting as spotter.
	Equipment failure	Perform pre-operational safety checks.
Bucket truck or manlift inspection.	The hazards present are the same for UBIT inspection except that this equipment is often rented.	Careful inspection of manlift equipment before use.

Hand Tools (Power and Manual)	Cuts, pinches and debris in eyes.	Follow operating instructions. Use appropriate PPEs.
Fences	Falling, strains and cuts	Use fence climber tool. Cut fence if required. Attempt to find alternate route.
Ladders	Falling from ladder.	Find stable footing for ladder. Have co-inspector help with anchoring ladder base.

Appendix XIII Control of Hazardous Energy (Lockout/Tagout)

Uncontrolled Document

LOTO SAFE 0010

Control of Hazardous Energy (Lockout/Tagout)

Policy

Washington State Ferries shall provide a place of employment free from recognized hazards that cause or are likely to cause death or serious physical harm or injury to employees or to the public. Therefore, all energized machines, equipment and systems shall be locked out and/or tagged out before any maintenance, or servicing is performed.

Objective

To provide guidance for the implementation of methods that isolate machines and equipment from energy sources to permit maintenance and repair of those machines, equipment, and systems by WSF employees.

Note: This Lockout/Tagout policy does not apply to project-specific testing or inspections of equipment that require systems to be operational. The policy for testing/inspection of operational equipment not requiring lockout/tagout is defined in Control of Hazardous Energy - Testing and Inspection (LOTO SAFE 0020). All applicable safety and operating protocols shall be followed accordingly.

Responsibility

Management-level personnel, vessel/terminal/Eagle Harbor command-level personnel and/or their designees, Safety Officers, authorized, affected, or qualified maintenance personnel.

Procedure

Scope and Applicability

This policy has been developed for control of hazardous energy (lockout/tagout or LOTO) using U.S. Department of Labor Occupational Safety and Health Administration (OSHA) and Washington Administrative Code (WAC) citations referenced at the end of this policy.

This safety policy affects employees who service, maintain, and operate equipment and machines. Uncontrolled energy is a hazard to operators and other employees in the area of the machinery, equipment, or processes. Those who service and maintain machinery or equipment are especially vulnerable because the machinery or equipment might become energized while being serviced or stored energy might be unexpectedly released.

Definitions

Affected Employee: An employee required to work or be present in an area or location where servicing or maintenance is being performed under LOTO procedures.

Authorized Employee: An employee designated herein who has overall responsibility for meeting the requirements of the lockout/tagout procedures.

- Chief Engineer - The vessel Chief Engineer is responsible for authorization and execution of all LOTO as needed on board their vessel.
- Terminal Engineering Job Supervisors.
- Eagle Harbor Shop Supervisors.

Employee: For the purposes of this procedure, the term "Employee" shall apply to both WSF employees and the employees of contracted parties.

Energized: Connected to an energy source or containing residual or stored energy.

Energy-Isolating Device: A mechanical device that physically prevents transmitting or releasing of all forms of energy. This includes, but is not limited to: manually operated electrical circuit breakers, disconnect switches, air or fluid line valves, blocks, manually operated switches that disconnect the conductors of a circuit from all ungrounded supply conductors if no pole of the switch can be operated independently, or similar devices used to block or isolate energy.
Note: Push buttons, selector switches, and other control circuit type devices are not energy isolating devices.

Energy Source: Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy including gravity.

Lockout: Placing a lockout device on an energy-isolating device using an established procedure to ensure the machine or equipment cannot be operated until the lockout device is removed.

Lockout Device: A device that utilizes a positive means such as a lock, either key or combination type, to hold an energy isolating device in a "safe" or "off" position to prevent energizing a machine or piece of equipment. This includes blank flanges and bolted slip blinds.

LOTO Logbook: A working document used to record/track individual LOTO activities and actions at specific locations (vessel engine rooms, terminal facilities, Eagle Harbor, etc.). The LOTO logbook is intended to provide adequate communication between parties involved in the LOTO process.

Qualified Employee: A designated employee who possesses a documented training record, an appropriate level of technical expertise, knowledge, or training, and is authorized by management to perform lock out or tag out on machines, equipment, or systems in order to perform service or maintenance. Typically a technician or watchstander.

Safety Organization: WSF Headquarters Safety or Eagle Harbor Safety Office.

Service and Maintenance: Activities such as constructing, installing, setting up, adjusting, operational inspections, modifying, maintaining, and servicing machines or equipment. It also includes lubricating, cleaning, un-jamming, and making tool changes.

Tagout: The placement of a tagout device or an energy-isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

Tagout Device: A prominent warning device, such as a tag and a means of attachment. The tagout device must be securely fastened to an energy-isolating device in accordance with procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

WSF Lockout/Tagout Checklist: A WSF standardized safety checklist to be filled out and posted by primary Authorized/Qualified employees prior to LOTO processes. This form should be retained by the specific originating department upon completion of the LOTO process.

Roles and Responsibilities

The following employees, by their positions, have responsibility for actions and/or supervision of actions associated with the lockout/tagout program per OSHA and WAC standards referenced at the end of this policy.

Senior Port Engineers, Terminal Engineers, Port Engineers, and Eagle Harbor General Managers shall:

- Ensure that site managers, supervisors, and other authorized site personnel have the required experience to perform assessments and identify all LOTO applications at sites under their control.
- Ensure/provide accurate and up-to-date technical information for all applicable machinery that may require a LOTO process. (This material may be provided by the manufacturer or by terminal or vessel engineering departments.)
- Provide or replace LOTO equipment as required to perform work in compliance with this policy.
- Review this policy at least annually to ensure compliance with the procedures and requirements of this standard.

Staff Chief Engineers, Chief Engineers and Eagle Harbor Shop Supervisors shall:

- Ensure that all precautions required by this safety procedure are observed.
- Ensure that this safety procedure is implemented in their areas.
- Ensure that an adequate supply of locks, tags, and other safety equipment is available and are utilized in accordance with this safety procedure.
- Ensure records are maintained.
- If needed, provide up-to-date LOTO project notes to each oncoming watch/shift.

- Perform periodic audits (at least quarterly) of retained WSF LOTO checklists related to LOTO work requests.
- Perform periodic audits (at least annually) of employee training related to LOTO. Review discrepancies and incorporate into training procedures.

Authorized Employees shall:

- Ensure that all precautions required by this procedure are performed.
- Observe actions required under the "*Energy Control Involving More Than One Person*" section in this policy.
- Report to their supervisors any changes in the machinery, equipment or systems that would require a change in the lockout/tagout procedure.
- Notify affected employees before beginning a lockout/tagout procedure on a piece of equipment or machinery.
- Locate the equipment- or system-specific version of Form SAFE 1. Fill it out completely, including the date the source was secured, details, lock number, authorized employee, date cleared, initials, and equipment status/comments. Add any sources that may not be called out in the system/equipment-specific form to ensure the equipment has been isolated from all energy sources.
    - The pre-printed forms for specific systems/equipment are meant to be used as a guide. Employees shall follow all lockout/tagout procedures identified within this manual when locking out equipment to ensure all energy sources have been isolated. When locking out equipment that doesn't have a specific pre-printed form, use a blank form.

Qualified Employees shall:

- Follow WSF's lockout/tagout procedures and utilize the WSF Lockout/Tagout checklist before commencing any maintenance or service activities requiring LOTO.
- Receive documented training and up-to-date information if new equipment is introduced or changes occur to existing equipment.

Affected Employees shall:

- Follow all precautions required by this safety procedure.
- Report to their supervisors any changes in the machinery, equipment or systems that would require a change in the lockout/tagout procedure.

Safety Officers (2901 Bldg. and Eagle Harbor) shall:

- Provide prompt assistance to managers/unit heads, supervisors, or others as necessary on any matter concerning this safety procedure.
- Assist in developing or securing required training.
- Monitor the lockout/tagout program and any changes in the machinery, equipment and systems that may require modification of the program.
- Provide consultative assistance to ensure effective implementation of this safety procedure.

- In the event of a LOTO incident, document and initiate investigation measures per SMSM SAFE 0100 Accident, Injury and Incident Investigation.
- Perform an annual audit of the program and provide audit results in coordination with the Safety Management System Annual Internal Audit.

Lockout/Tagout of Energized Equipment

Before an Authorized Employee performs any servicing, or maintenance on machinery, equipment, or systems where the unexpected energizing, start-up, or release of stored energy could occur and cause injury, the machine, equipment, or system shall be isolated from its energy source and rendered inoperative.

If an energy-isolating device is capable of being locked out, the Authorized Employee shall utilize lockout unless it can be demonstrated that the utilization of a tagout system will provide full employee protection.

When a tagout device is used on an energy-isolating device, the tagout device shall be attached at the same location that the lockout device would have been attached. The Qualified Employee shall demonstrate that the tagout will provide an equivalent level of safety to that obtained by using a lockout program. This includes the implementation of additional safety measures such as a tagout at the location where the equipment is normally operated, the removal of an isolating circuit element, blocking a controlling switch, opening of an extra disconnecting device, or the removal of a valve handle to reduce the likelihood of inadvertent operation.

All energy control activities shall be recorded in the LOTO Logbook. In the event of interrupted or continuing work, up-to-date handover notes related to any active LOTO projects shall be provided to oncoming watches/shifts (see Change of Shifts section in this policy).

Recommended Sequence of Lockout

1. Notify all affected employees that servicing or maintenance is required on a machine or equipment and that the machine or equipment must be shut down and locked out to perform the servicing or maintenance.
2. The qualified employee shall fill out the WSF Lockout/Tagout Checklist and refer to wiring diagrams, piping plans, manufacturer's technical publications and procedures for maintenance or service. Additionally, the qualified employee shall understand the hazards of the energy and know the methods to control the energy.
3. Obtain approval for the job and signed checklist from the appropriate Authorized Employee.
4. If the machine or equipment is operating, shut it down by the normal stopping procedure (depress stop button, open switch, close valve, etc.).
5. Deactivate the energy isolating device(s) so that the machine or equipment is isolated from the energy source(s).
6. Lock out the energy isolating device(s) with individual lock(s). Locks shall have name and contact information on them. Record information in the LOTO manual.

7. Stored or residual energy (such as that in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc.) must be dissipated or restrained by methods such as grounding, repositioning, blocking, bleeding down, etc.
8. Ensure that the equipment is disconnected from the energy source(s) by first checking that no personnel are exposed, then verify the isolation of the equipment by operating the push button or other normal operating control(s), or by testing to make certain the equipment will not operate. ***Caution***: Return operating control(s) to neutral or "off" position after verifying the isolation of the equipment.
9. The machine or equipment is now locked out.

Recommended Sequence of Restoring Equipment to Service

When the servicing or maintenance is completed and the machine or equipment is ready to return to normal operating condition, the following steps shall be taken:

1. Obtain approval from the Authorized Employee for restoring service.
2. Check the machine or equipment and the immediate area around the machine or equipment to ensure that nonessential items have been removed and that the machine or equipment components are operationally intact.
3. Check the work area to ensure that all employees have been safely positioned or removed from the area.
4. Verify that the controls are in neutral.
5. Remove the lockout devices and reenergize the machine or equipment. The qualified person that placed the lock shall be the only person who removes the lock, unless an emergency exists, in which case emergency lock removal procedures shall be followed.
   Note: The removal of some forms of blocking may require re-energizing of the machine before safe removal.
6. Notify affected employees that the servicing or maintenance is completed and the machine or equipment is ready for use. Record information in the LOTO Logbook.

Energy Control Involving More Than One Person

In the preceding steps, if more than one individual is required to lockout or tagout equipment, (concurrent maintenance requirements, for example) each authorized person shall place his or her own personal lockout device or tagout device on the energy isolating device(s).

A Primary Authorized Employee shall be assigned who:

- Has overall responsibility for the service or maintenance.
- Attaches their lock or tag to the energy isolating device before work begins.
- Is the last person to remove their lockout or tagout device when the repair or maintenance is complete.

When an energy-isolating device cannot accept multiple locks or tags, a multiple lockout or tagout device (gang box or hasp) may be used.

If lockout is used, a single lock may be used to lockout the machine or equipment with the key being placed in a lockout box or cabinet, which allows the use of multiple locks to secure it. Each employee will then use his or her own lock to secure the box or cabinet. As each person no longer needs to maintain his or her lockout protection, that person will remove his or her lock from the box or cabinet.

Lockout/Tagout Training

WSF shall adhere to applicable WAC and OSHA Control of Hazardous Energy training standards referenced at the end of this policy.

The established training administrator shall conduct the initial basic LOTO testing and inspection training, and shall communicate awareness of the procedures and skills that employees are required to possess. This process will identify authorized employees.

The established training administrator shall document any/all training (i.e., that employee training has been completed and kept up to date, including the employee's name and the training date). The training program shall be reviewed on a semi-annual basis.

Prior to installation or use of new equipment, or issuance of any new equipment to the end users, WSF representatives must undergo manufacturer-provided and/or recommended training on the new equipment in a timely manner, and conduct manufacturer-recommended training for all authorized and affected employees as needed.

WSF will train employees to make sure they:

- Understand the purpose and function of the energy control program.
- Have the knowledge and skills necessary to carry out their program responsibilities.
- Understand the prohibition against attempting to restart or reenergize a machine or equipment that is locked or tagged out.

Each Authorized Employee and Qualified Employee receives training in:

- The recognition of applicable hazardous energy sources.
- The type and magnitude of the energy available in the workplace.
- The methods and means necessary for energy isolation and control.

Each Affected Employee shall be instructed in the purpose and application of the energy control procedure.

All other employees shall be instructed when work operations are in an area where energy control procedures are used.

Additional Training for Tagout Devices

Tags are warning devices and do not provide the same level of physical restraint as a lock.

- When attached to energy-isolating devices, tags shall not be removed without the approval of the authorized person responsible for it or bypassed, ignored, or otherwise defeated.
- Tags need to be legible and understandable to be effective.
- Tags may evoke a false sense of security.
- The meaning of tags needs to be understood as part of the overall energy control program. Tags must be securely attached to energy-isolating devices so they cannot be inadvertently or accidentally detached and they must be made of materials that will withstand the environmental conditions to which they will be exposed.

Employee Retraining

Authorized and affected employees shall be retrained to introduce new or revised control methods and procedures when there is a change in any of the following:

- Job assignments.
- Machines, equipment, or processes that present a new hazard.
- Energy control procedures.

Employees shall be retrained to re-establish proficiency when:

- A periodic review shows an employee deviates from, or has inadequate knowledge of the energy control procedures, or the employer has reason to believe retraining is necessary.

Personal Protective Equipment

Determination of PPE to be worn shall be made after a job hazard analysis of the work task and shall be in compliance with OSHA and WAC standards.

Minimum Required Lockout Equipment

The lockout stations will contain the lockout devices, lockout/tagout record book, training records, and the emergency lock and tag removal worksheets. The following minimum items shall be available for use from the lockout station:

Description	Commodity Code
Ganged Lockout Box	1202312075
Danger Tags	1202312712
Safety Lockout Device	4505552601
Group Lockout Device	1202312083
Black Cable Ties (14” x 1/4”)	4504128565

Lockout/Tagout Equipment Stations

The lockout equipment and LOTO Logbook shall be maintained in an area accessible to all authorized employees.

The chief engineer maintains vessel lockout stations in the Engineer's Operating Station (EOS).

Shoreside lockout stations are found in the Terminal Gas Lockers, except as listed below:

Terminal	Station Location
Eagle Harbor	Facility Tool Room
Tahlequah	Electric Control Panel Cabinet

Special Considerations

Energized Systems – Testing and Inspection

As noted previously, there are certain situations where it is necessary for employees to work on energized machinery, equipment, or systems. In such situations, Terminal, Engineering, Vessel, and Eagle Harbor Supervisors will assign only trained (documented) employees qualified to work on energized circuits or equipment. Notify all affected and authorized employees of the work and implement the necessary safety precautions to protect workers. Whenever possible, secure all applicable energy sources for equipment through LOTO procedures. The policy for testing/inspection of operational equipment not requiring lockout/tagout is defined in Control of Hazardous Energy - Testing and Inspection (LOTO SAFE 0020).

Redundant Energy Sources

It is vital that authorized personnel understand the dangers associated with redundant energy systems. Additional planning is necessary to determine and secure redundant energy sources to prevent employee injuries due to exposure to or contact with redundant energy systems.

Outside Vendors/Contractors Working at WSF Locations

Before working on WSF vessels or facilities, outside vendors/contractors are required to review WSF Lockout/Tagout procedures and to comply with all applicable Federal, State, and Local regulations regarding hazardous energy control.

The vessel Chief Engineer is responsible for authorization and execution of all LOTO as needed on board their vessel. Outside vendors, crew members and Eagle Harbor personnel will check-in and communicate with the vessel Chief Engineer before any LOTO actions.

Terminal or facility LOTO situations differ in that often the outside vendor/contractor will perform LOTO as prescribed in contract language, purchase orders, or pre-arranged job plans. WSF Job Supervisors will maintain records of any LOTO activities in the applicable location-specific LOTO Logbook.

It is important to note that each LOTO situation is unique and project requirements will vary depending upon type of work, location, time, etc. Instances of WSF Chief Engineer- or WSF Job Supervisor-approved work on board WSF vessels or at WSF facilities may occur with or without direct supervision from WSF staff. Contractors on board vessels or at WSF facilities shall provide equipment and job status updates as needed and provide a service record upon job completion.

Working Aloft While the Vessel Is in Service (Working on Radar/Radio Equipment)

WAC 296-304-06009 states that service of a vessel's radar and communication systems must be in accordance with WAC 296-304-06016, Control of Hazardous Energy standards, and requires that each vessel's radar and communication system be secured so it is incapable of energizing or emitting radiation before any employee or contractor begins work.

Any work on the radar or radio equipment requiring LOTO shall be communicated to the vessel's Chief Engineer or designee, and shall be recorded in the Pilothouse Vessel Logbook and Engine Room Lockout/Tagout Logbook.

When WSF deck or engine personnel are going aloft for the purpose of routine watch activities, the radar must be placed in the "standby" position or the scanner switched to "off" and the power to the HF radios (800 MHz) secured so that it cannot transmit. The Master or Mate shall ensure that all pilothouse personnel are aware that a crew member is aloft.

Change of Shifts, Interrupted, and Continuing Work

When equipment or systems need to remain de-energized longer than one shift and the work has been interrupted, is continuing, or has ceased for the day, all employees and contractors shall communicate the operational status to the Authorized Employee (Chief Engineer, Job-Site Manager, Eagle Harbor Foreperson, etc.). The Authorized Person's locks and tags shall remain on the appliance, machinery, equipment, or system. The required information shall be recorded in the appropriate LOTO Logbook and up-to-date handover information shall be provided to any oncoming watch/shift. It is incumbent upon the oncoming watch/shift to be aware of any ongoing LOTO procedures that continue or are on hold when the watch begins. The Port/Terminal Engineer's Office and Operations Center Watch Supervisor shall be informed of any resulting impact upon vessel service.

Questions regarding the operational status of any appliance, machinery, or equipment that has been locked or tagged shall be directed to the respective Engineering Department.

Emergency Lock Removal

In case of an emergency, the special lock/tag removal procedure shall be used to remove a lock.

An emergency exists if equipment or systems require re-energizing to prevent injury to personnel, or to enable secured equipment to obtain minimum operating conditions.

Every effort shall be made to use normal procedures prior to emergency removal and every effort must be made to contact the Authorized Person involved and clarify the situation.

The Authorized Person requiring removal of the lock must personally inspect the work site to ensure that work is no longer in progress and the equipment is safe to operate. The concerned parties shall complete the Special Lock and Tag Removal Worksheet. Management approval is required before the lock or tag is removed. Only one such approval is required and may be authorized via telephone, provided that such information is documented on the worksheet. The removal worksheet shall be retained in the Lockout/Tagout Logbook for reference and pertinent information recorded at the lock/tag entry.

Control of Hazardous Energy Reference Listing

U.S. Department of Labor Occupational Safety and Health Administration (OSHA)

- 29 CFR-1910.147 – *Control of Hazardous Energy (Lockout/Tagout).*
- 29 CFR-1910.332 – *Training.*
- 29 CFR-1915 – *Shipyard Employment.*
- 29 CFR-1917 – *Marine Terminal Operations.*

Washington Administrative Code (WAC)

- WAC 296-800 – Safety and Health Core Rules.
- WAC 296-24-980 – Safeguards for Personnel Protection.
- WAC 296-56 – Longshore, Stevedore and Waterfront Related Operations.
- WAC 296-304 – Safety Standards for Ship Repairing, Shipbuilding and Shipbreaking.
- WAC 296-304-06016 – Control of Hazardous Energy (lockout/tags-plus).

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Appendix XIV Control of Hazardous Energy (Testing and Inspection)

Uncontrolled Document

LOTO SAFE 0020

Control of Hazardous Energy (Testing and Inspection)

Policy

Washington State Ferries shall provide a place of employment free from recognized hazards that cause or are likely to cause death or serious physical harm or injury to employees or to the public. Therefore, only qualified persons must work on equipment or systems that have not been deenergized under standard Lockout/Tagout (LOTO) protocols.

Objective

To provide guidance for testing and inspection of energized or operational equipment and systems by WSF employees. This policy is intended to augment LOTO SAFE 0010 to cover work where equipment needs to be energized and in working order for testing and inspection purposes.

Responsibility

Management-level personnel; vessel/terminal/Eagle Harbor command-level personnel and/or their designees; Safety Officers; Authorized, affected or qualified maintenance personnel.

Scope and Applicability

This policy has been developed for work on energized equipment or systems using the U.S. Department of Labor Occupational Safety and Health Administration (OSHA) Washington Administrative Code (WAC) regulations referenced in LOTO SAFE 0010 as guidance.

This safety policy affects employees who service, maintain, and operate equipment and machines. Uncontrolled energy is a hazard to operators and other employees in the area of the machinery, equipment, or processes.

There may be certain situations where it is necessary for employees to work on energized machinery, equipment or systems (for example, when testing or troubleshooting a particular piece of equipment or system). In such situations, only trained employees qualified to work on energized circuits or equipment are assigned these tasks. Such persons must be capable of working safely on energized circuits and must be familiar with the proper use of special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools.

Definitions, Roles and Responsibilities

For the purposes of this policy, WSF will adhere to all appropriate terminology, definitions, personnel roles, and responsibilities as defined in LOTO SAFE 0010.

Testing and Inspection on Energized Equipment

Before a Qualifed Employee (see "*Definitions*" LOTO SAFE 0010) performs any testing or inspection of equipment or systems where the unexpected energizing, start up, or release of stored energy could occur and cause injury, a determination shall be made whether work can proceed or if LOTO is required. If the work requires that energy be kept in service to perform the task then proceed using appropriate safety protocols.

Notify all Affected and Authorized employees of any work performed on exposed live parts (involving either direct contact or contact by means of tools or materials) or near enough to them to be exposed to any hazard they present. Implement all necessary safety precautions to protect workers.

Recommended sequence prior to servicing, maintenance, testing, or inspection:

1. Obtain approval for the job from the appropriate Authorized Employee.
2. Notify all Affected Employees that servicing, maintenance, testing, or inspection is required on a machine or equipment and that the machine or equipment is not to be operated unless everyone is aware in the area of the equipment.
3. The Qualified Employee shall refer to wiring diagrams, piping plans, manufacturer's technical publications and procedures for maintenance or service. Additionally, the employee shall understand the hazards of the energy and know the methods to control the energy.
4. If the machine or equipment is operating, shut it down by the normal stopping procedure (depress stop button, open switch, close valve, etc.).
5. Someone is to be stationed at the control panel or energy source during the testing and inspection work to prevent unauthorized operation or a cover must be placed over this area indicating that testing and inspection is occurring and the equipment is out of normal service. When personnel are in an area where they can not readily be seen by someone operating the equipment, an authorized person shall be stationed at the control source and prevent operation of the equipment.

Recommended sequence of restoring equipment to service:

When the servicing, maintenance, testing, or inspection is completed and the machine or equipment is ready to return to normal operating condition, the following steps shall be taken:

1. Check the machine or equipment and the immediate area around the machine or equipment to ensure that nonessential items have been removed and that the machine or equipment components are operationally intact.
2. Check the work area to ensure that all employees have been safely positioned or removed from the area.
3. Verify that the controls are in neutral.

Testing and Inspection Training

WSF shall adhere to applicable OSHA and WAC Control of Hazardous Energy training standards referenced in LOTO SAFE 0010.

The established training administrator shall conduct the initial basic LOTO testing and inspection training, and shall communicate awareness of the procedures and skills that employees are required to possess. This process will identify Qualified Employees.

The established training administrator shall document any/all training (i.e, that employee training has been completed and kept up-to-date, including the employee's name and the training date). The training program shall be reviewed on a semi-annual basis.

Prior to installation or use of new equipment, or issuance of any new equipment to the end users, WSF representatives must undergo manufacturer-provided and/or recommended training on the new equipment in a timely manner, and conduct manufacturer-recommended training for all authorized and affected employees as needed

WSF will train employees to make sure they:

- Understand the purpose and function of the energy control program.
- Have the knowledge and skills necessary to carry out their program responsibilities.
- Understand the prohibition against attempting to restart or reenergize a machine or equipment that is locked or tagged out.

Each Authorized Employee and Qualified Employee (see "*Definitions*" in LOTO SAFE 0010) receives training in:

- The recognition of applicable hazardous energy sources.
- The type and magnitude of the energy available in the workplace.
- The methods and means necessary for energy isolation and control.

Each Affected Employee shall be instructed in the purpose and application of the energy control procedure.

All other employees shall be instructed when work operations are in an area where energy control procedures are used.

Employee Retraining

Authorized, Qualified and Affected employees shall be retrained to introduce new or revised control methods and procedures when there is a change in **any** of the following:

- Job assignments;
- Machines, equipment, or processes that present a new hazard; and
- Energy control procedures.

Employees shall be retrained to re-establish proficiency when:

- A periodic review shows an employee deviates from, or has inadequate knowledge of the energy control procedures or the employer has reason to believe retraining is necessary.

Personal Protective Equipment (PPE)

Determination of PPE to be worn shall be made after a job hazard analysis of the work task and shall be in compliance with OSHA and WAC standards.

Special Considerations

Energized Systems - Testing and Inspection

Whenever possible, secure all applicable energy sources for equipment under the LOTO policy. If energized equipment is needed for testing or inspection purposes, only trained employees qualified to work on energized circuits or equipment are assigned such tasks. Notify all affected and authorized employees of the work and implement the necessary safety precautions to protect workers.

Redundant Energy Sources

It is vital that Authorized/Qualified personnel understand the dangers associated with redundant energy systems. Additional planning is necessary to determine and secure redundant energy sources to prevent employee injuries due to exposure to or contact with redundant energy systems.

Outside Vendors/Contractors Working at WSF Locations

Before working on WSF vessels or facilities, outside vendors/contractors are required to review the WSF *Lockout/Tagout* and *Testing and Inspection* policies, and to comply with all applicable Federal, State, and Local regulations regarding hazardous energy control.

The vessel Chief Engineer is responsible for authorization and execution of all LOTO as needed on board their vessel. Outside vendors, crewmembers and Eagle Harbor personnel will check-in and communicate with the vessel Chief Engineer before any LOTO actions.

Terminal or facility LOTO/testing/inspection situations differ in that often the outside vendor/contractor will perform LOTO/testing/inspection as prescribed in contract language, purchase orders, or pre-arranged job plans. WSF Job Supervisors will maintain records of any LOTO/testing/inspection activities in the applicable location-specific LOTO Logbook.

It is important to note that each LOTO/testing/inspection situation is unique and project requirements will vary depending upon type of work, location, time, etc. Instances of WSF Chief Engineer- or WSF Job Supervisor-approved work on board WSF vessels or at WSF facilities may occur with or without direct supervision from WSF staff. Contractors on board vessels or at WSF facilities shall provide equipment and job status updates as needed and provide a service record upon job completion.

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Any work on the radar or radio equipment requiring LOTO or testing and inspection shall be communicated to the vessel's Chief Engineer or designee, and shall be recorded in the Pilothouse Vessel Logbook and Engine Room Lockout/Tagout Logbook.

When WSF deck or engine personnel are going aloft for the purpose of routine watch activities, the radar must be placed in the "standby" position or the scanner switched to "off" and the power to the HF radios (800 MHz) secured so that it cannot transmit. The Master or Mate shall ensure that all pilothouse personnel are aware that a crewmember is aloft.

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