2013
BRIDGE INSPECTION FINDINGS
REPORT OF ROAD BRIDGE CONDITIONS
MASON COUNTY, WASHINGTON

MASSON COUNTY PUBLIC WORKS DEPARTMENT

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I. INTRODUCTION

As required by WAC 136-20-060 each County Engineer in Washington State must submit a written résumé of findings to the legislative body concerning the county's bridge inspection effort by June 1 of each year. We have complied a variety of information in the annual update of the Bridge Report. This summary is the résumé for 2013 as required by the WAC.

Before adoption of the annual budget, the Board of County Commissioners is required to adopt a Six-Year Plan for Transportation Improvements. WAC136-20-060 also requires that the resolution adopting the Six-Year Plan state that this Engineer's summary with respect to deficient bridges was available to the Board during preparation of the Plan.

Each bridge on the county road system is required by the CRAB Standards of Good Practice to be inspected at no less than the following frequency:

In depth inspection .................... 5 years
Intermediate inspections .......... 2 years

Mason County Public Works department's policy has been to inspect and rate each bridge at a minimum frequency between inspections of two years, with certain bridges being inspected more frequently. The more frequent inspection and evaluation schedule is established on aging bridges or those felt to be in need of more frequent review due to their history or environmental exposure. This program has served the citizens of Mason County well because maintenance needs have been identified sufficiently early so that repair costs remained economical. The more timely inspection program is believed to be the major reason that our bridges in need of replacement have been identified as early candidates for the bridge replacement program.

This report summarizes the County's 2012-2013 bridge program. This program forms an integrated and comprehensive strategy to maintain and preserve the county's bridges and road network continuity. The three main goals of the bridge program are:

➢ Keep the bridges open and safe for public use.

➢ Preserve the bridge infrastructure by having a formal bridge report for each bridge which contains: inspections history documentation, condition evaluation, bridge summary data used to maximize bridge life span via maintenance and rehabilitation.

➢ Replace bridges with reliable new structures when repair and/or rehabilitation are not economical or physically feasible.
The Bridge Inventory for 2012-2013 is included with this report contains additional information concerning the county's bridge system. Each bridge listed has been submitted to the State Department of Transportation for the State of Washington Inventory of Bridge Systems.

II. BRIDGE INVENTORY

Mason County Public Works inspects and inventories 59 roadway bridges located within Mason County. These bridges consist of:

- 58 bridges are wholly owned by Mason County.
- 1 bridge is owned by the City of Shelton.

Classified by substructures, the bridges inspected by Mason County are categorized as follows:

- 43 Concrete Bridges.
- 5 Timber
- 5 Timber Composite Bridges
- 5 Culverts (Steel – classified as bridges)
- 1 Concrete Bridge (City of Shelton)
III. BRIDGE INSPECTIONS AND FINDINGS

A. Routine Bridge Inspections

The National Bridge Inspection Standards (NBIS) has been established by the FHWA. The NBIS mandates that public agencies inspect and report on all bridges at least once every two years. Under these standards, the county is required to document and report the current condition of each bridge, determine the degree of wear and deterioration, and recommend repairs or required service.

A total of 29 routine bridge inspections were conducted in 2012-2013, including two in depth inspections utilizing the Washington State Department of Transportation’s (WSDOT) UBIT (Under Bridge Inspection Truck) and one underwater inspection of the Harstine Island Bridge by the WSDOT underwater inspection dive team. During these bridge inspections, inspectors made an in-depth condition evaluation of the bridge structure and document any observable defects. In addition, bridge maintenance crews observed, reported, and suggest repairs to all bridges.

Updated inspection results are forwarded to the Washington State Department of Transportation’s Highway and Local Programs Division, which in turn verifies compliance with the NBIS and reports to the Federal Highway Administration (FHWA).

B. Inspection Findings - Repairs

Every year, new bridge deficiencies are found during routine inspections, and work items are identified and sent to Mason County Operations & Maintenance group. Some work items are urgent and are repaired quickly, while others are prioritized lower as longer-term maintenance items that will help extend the bridge’s service life. County Operations & Maintenance crews concentrate on repairs that will help preserve the service life of the inventory, with an emphasis on safety.

Finch Creek Guardrail Retrofit - 2013
C. Bridge Inventory Data

A measure that helps provide a condition overview of the inventory is a rating factor known as the Sufficiency Rating (SR). The SR for the entire inventory provides a comparative look at the health of the inventory from one year to next. The SR is a score calculated for each bridge based on a multitude of ratings the inspector assigns to the bridge based on the condition of the various components of the bridge. The geometric layout, safety, and importance of the bridge to the traveling public are also factored into the SR. The SR ranges from zero (a bridge that is closed and cannot carry traffic loads) to 100 (a new bridge with no deficiencies).

![MASON COUNTY BRIDGE SUFFICIENCY CONDITIONS 2008 - 2012](image)

**Note:**

The remaining critical bridge Hunter Creek Bridge is scheduled for replacement in 2014 utilizing federal bridge replacement funds.

**Recommendations:**

Replacement of the Hunter Creek Bridge in 2014 will reduce our load restricted bridges to none. The remaining four bridges that require restrictions (per resolution 78-11, attached) are functionally obsolete due to their width. We do not recommend replacement at this time nor would we qualify for available funding.
D. Present and Future Construction

Weaver Creek 1 Bridge / Skokomish Valley Road

WEAVER CREEK BRIDGE 1- BEFORE
The Weaver Creek Bridge replacement was completed in May 2012. The existing structure was rated structurally deficient (critical) because of unknown piling depths, and piling material composition.

WEAVER CREEK BRIDGE 1- AFTER
The new bridge is 70' long 34' wide concrete bulb tee Girder Bridge. The project final cost approximately was $782,000 with 80% of the cost utilizing Federal Bridge Replace Funds.
Hunter Creek Bridge / Skokomish Valley Road

The Hunter Creek Bridge replacement project is scheduled for construction in 2014. The existing structure is rated structurally deficient (critical) because of unknown piling depths, extensive concrete cracking at the pile cap systems and exposed steel rebar in the deck soffit. Due to the critical condition of the bridge it is limited to one-way traffic. The project is now in the design, right of way, and permitting phase.

This project estimated to cost approximately $2.0 million with 80% of the cost utilizing Federal Bridge Replace Funds.

EXPOSED REBAR AT DECK SOFFIT

CRACKS AT PIER CAP

ONE WAY TRAFFIC WITH TEMPORARY SIGNAL TO AVOID LOAD RESTRICTIONS
**Eddy Evers Bridge**

The primary structural element of this bridge is a Timber Arch. Since its construction the timber arch is beginning to experience rot due to its exposure to the elements. Mason County was successful in securing Federal (BRAC) funds to rehabilitate the timber arch system to extend the bridge's life function as is. The areas of rot in the arch need to be sealed and the rest of the arch would receive a new wood protective coating to prevent future potential problems.

The estimated repair is scheduled for 2013 with costs estimated to be $250,000 to $300,000, with federal funds covering 80% of the project cost.
Elfendahl Pass Road Bridge

During the December 2007 event, flood waters overtopped the roadway at the 10-foot diameter culvert on Elfendahl Pass Road resulting in severe damage to the roadway pavement, subgrade and embankment.

In order to comply with hydraulic, sediment, and environmental issues the existing culvert will be replaced with a single span, cast-in-place concrete 3-sided slab bridge, 38 feet long 26 feet wide.

Construction is scheduled for 2013, with FEMA funding covering the $600,000 project costs.
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