

Bridge & Structures

Strategic Directions 15-17

Bridge Asset Management

| DeWayne Wilson | | 2015 | | | 2016 | | | | | | 2017 | | | | | | | | | | | | | | |
|----------------|--|-------------|-----|-----|-------------|-----|-----|-------------|-----|-----|-------------|-----|-----|-------------|-----|-----|-------------|-----|-----|-------------|-----|-----|-------------|-----|-----|
| Task | Description | 1st Quarter | | | 2nd Quarter | | | 3rd Quarter | | | 4th Quarter | | | 5th Quarter | | | 6th Quarter | | | 7th Quarter | | | 8th Quarter | | |
| | | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun |
| 1 | Develop Bridge Asset Computer system that is integrated with other systems such as: BPO, Maintenance (MPET), CCIS etc. | | | | | | | | | | | 0% | | | | | | | | | | | | | |
| 2 | Develop a database that records the year every BMS element was constructed. | | | | | | | | | | | 33% | | | | | | | | | | | | | |
| 3 | Prioritize tasks in the Action plan in response to the 2014 JLARK on Bridge Asset Management. | | | | | | | | | | | 20% | | | | | | | | | | | | | |
| 4 | Provide reliable Future bridge preservation forecasts for 10 and 20 year periods. | | | | | | | | | | | 50% | | | | | | | | | | | | | |

| Task | Description |
|------|--|
| 1 | <p>Develop Bridge Asset Computer system that is integrated with other systems such as: BPO, Maintenance (MPET), CCIS etc.</p> <p>Status: Some progress has been made to learn the new version of MPET used by Region and HQ Bridge Maintenance to track their bridge repairs. HQ Maintenance has a pilot study to use BMS bridge elements in MPET to begin forecasting Preventative Bridge Maintenance needs. This strategic item cannot integrate the different databases without management buy in and additional funding for this task. DW 1/4/2016 Jeff Carpenter gave approval to purchase the AASHTO BrM Bridge Asset Management Software. Plan to order it in June and then begin an evaluation. DW 04/06/16 No progress made on this item. Additional funding is needed for a full time staff person that can develop a software that will integrate data from different sources. DW 07/01/2016</p> |

Bridge & Structures

Strategic Directions 15-17

Bridge Asset Management

| | |
|---|---|
| 2 | <p>Develop a database that records the year every BMS element was constructed.</p> <p>Status: Craig Boone has been working on this task. He has created an Access database with all the WSDOT bridges and their elements. He has identified the year installed for Expansion Joint, Deck, Paint and Timber elements to date. DW 1/4/2016 No change since the last quarter's report. DW 04/06/16 No change DW 07/01/2016</p> |
| 3 | <p>Prioritize tasks in the Action plan in response to the 2014 JLARK on Bridge Asset Management.</p> <p>Status: Tom Baker developed a memo with near term (1 to 2 years) and Longer term (2 to 4 years) tasks. The Near Term plan has 12 task items. Some progress has been made to review WSDOT BMS data to determine deterioration rates for the 160+ WSDOT BMS Elements. A presentation to the joint Leg Transportation Committee was made by Tom Baker in November 2015. Management approval and additional funds are needed to purchase an AASHTO BrM software license before having discussions with other states on their Bridge Asset Management processes. DW 1/4/2016 Jeff Carpenter gave approval to purchase the AASHTO BrM Bridge Asset Management Software. Plan to order it in June and then begin an evaluation. DW 04/06/16 AASHTO Software was not ordered. The Bridge Office did not get additional funds to make the purchase. The Brm software will not receive the needed updates until the end of 2016. DW 07/01/2016</p> |
| 4 | <p>Provide reliable Future bridge preservation forecasts for 10 and 20 year periods.</p> <p>Status: Border Bridges - ODOT/WSDOT meeting in 2015 to identify the next 10 years of preservation needs. Scour - Craig is reviewing BPO scour data to determine if any new candidates should be added to the current list. Bridge Repairs by contract - Some progress has been made identify the year each bridge element was installed. Some progress has been made to determine a service life for the 160+ WSDOT BMS elements. Need to develop repair and replacement costs for each of the WSDOT BMS elements. Movable Bridges - Need to coordinate with Duane Stone on current needs. Steel Br Painting - Bridge Inspection data has been reviewed. Paint database has been updated. Bridges have been prioritized. Need to update spreadsheet and word document that summarizes the statewide needs. Need to create a summary web page. Concrete Deck Rehabilitation - Bridge Inspection data has been reviewed. Bridges have been prioritized. Bruce Thill is reviewing scope for each bridge. Need to update spreadsheet and word document that summarizes the statewide needs. Need to create a summary web page. Bridge Replacement - Need to review statewide candidates and prioritize. Need to summarize the WSDOT Timber bridge inventory. Misc. Structures - Need to review BPO data and determine statewide needs. DW 1/4/2016 Continue to refine and document priorities. Craig working on the Bridge Repairs category. DW 04/06/16 No change DW 07/01/2016</p> |

Bridge & Structures
Strategic Directions 15-17
Bridge Design

| Bijan Khaleghi | | 2015 | | | 2016 | | | | | | 2017 | | | | | | | | | | | | | | | |
|-----------------------|--|--------------------|------------|------------|--------------------|------------|------------|--------------------|------------|------------|--------------------|------------|------------|--------------------|------------|------------|--------------------|------------|------------|--------------------|------------|------------|--------------------|------------|------------|--|
| Task | Description | 1st Quarter | | | 2nd Quarter | | | 3rd Quarter | | | 4th Quarter | | | 5th Quarter | | | 6th Quarter | | | 7th Quarter | | | 8th Quarter | | | |
| | | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | |
| 1 | Promote the use of innovative materials such as shape memory alloy (SMA), engineered cementitious concrete (ECC), ultra high performance concrete (UHPC), fiber reinforced polymer (FRP), etc. | | | | | | | | | | 75% | | | | | | | | | | | | | | | |
| 2 | Promote accelerate and innovative bridge design and construction - bridge construction methods with minimal disruption to the traveling public. | | | | | | | | | | 25% | | | | | | | | | | | | | | | |
| 3 | Adopting Performance Based Specification for all concretes beyond bridge decks. Develop appropriate performance measure for each application. | | | | | | | | | | 10% | | | | | | | | | | | | | | | |
| 4 | Expand the Bridge Office design services to state agencies such as: WSF, State Parks, Sound Transit, etc. | | | | | | | | | | 50% | | | | | | | | | | | | | | | |

Bridge & Structures
Strategic Directions 15-17
Bridge Design

| | | | | | | | | | |
|---|---|--|--|--|-----|--|--|--|--|
| 5 | Modernize Bridge Office functions with IT capabilities in the field of: project scheduling, PMRS/P6, archiving, project reports, etc. | | | | 50% | | | | |
|---|---|--|--|--|-----|--|--|--|--|

Bridge & Structures
Strategic Directions 15-17
Bridge Design

| Task | Description | 1st Quarter | | | 2nd Quarter | | | 3rd Quarter | | | 4th Quarter | | | 5th Quarter | | | 6th Quarter | | | 7th Quarter | | | 8th Quarter | | | |
|------|--|-------------|-----|-----|-------------|-----|-----|-------------|-----|-----|-------------|-----|-----|-------------|-----|-----|-------------|-----|-----|-------------|-----|-----|-------------|-----|-----|--|
| | | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | |
| 6 | Promote practical designs by implementing WSDOT research project outcome such as HFL-ABC, CFT-RCFT, UHPC, etc. | | | | | | | | | | 75% | | | | | | | | | | | | | | | |
| 7 | Promoting research projects to improve the safety of WSDOT bridges - Retrofit of hollow core columns. Vertical clearance of truss bridges. | | | | | | | | | | 50% | | | | | | | | | | | | | | | |
| 8 | Implementation of new national and agency design standards such as sign bridge specifications, fall protection, retaining walls. | | | | | | | | | | 25% | | | | | | | | | | | | | | | |

Bridge & Structures

Strategic Directions 15-17

Bridge Design

| Task | Description |
|------|---|
| 1 | <p>Promote the use of innovative materials such as shape memory alloy (SMA), engineered cementitious concrete (ECC), ultra high performance concrete (UHPC), fiber reinforced polymer (FRP), etc.</p> <p>Status: UHPC research is in progress - WSU completing their part and UW starting their part. AWW - SMA ECC bridge is moving to construction phase, Provided FHWA UHPC Workshop. BK 01/15/16 UHPC research is in progress - WSU completed the materials testing and UW started structural testing. BK 07/01/2016</p> |
| 2 | <p>Promote accelerate and innovative bridge design and construction. Bridge construction methods with minimal disruption to the traveling public.</p> <p>Status: BDM chapter has been completed. ABC methods have been presented to national and statewide conferences. BK 01/15/16 New BDM was published in June 2016.</p> |
| 3 | <p>Adopting Performance Based Specification for all concretes beyond bridge decks. Develop appropriate performance measure for each application.</p> <p>Status: This is work in progress and discussed at the BCM communication meeting. Completed BDM chapter on ABC. Provided presentations at WSDOT construction conference. BK 01/15/16</p> |
| 4 | <p>Expand bridge office design services to state agencies such as: WSF, State Parks, Sound Transit, etc.</p> <p>Status: Our service have been offered to other agencies and we are involved with WSF and ST projects. Continue working with WSF. Assisting ST with their projects. BK 01/15/16 Expanding Bridge Technical Committee to consultants and others. BK 07/01/16</p> |
| 5 | <p>Modernize bridge office functions with IT capabilities in the field of: projects scheduling, PMRS/P6, archiving, project reports, etc.</p> <p>Status: Bridge Design Office IT improvement list has been developed and submitted for budget. No budget to move on at this time. Discussion with BPO and IT is in progress. IH funding could be used. BK 01/15/16</p> |
| 6 | <p>Promote practical designs by implementing WSDOT research project outcome such as HFL-ABC, CFT-RCFT, UHPC, etc.</p> <p>Status: Work in progress as project opportunity arises. Assist consultants with practical design. CFT-RCFT research project has been completed - BDM revision is in progress. BK 01/15/16 June 16, 2016 ABC Center webinar with UW. BK 07/01/16</p> |
| | <p>Promoting research projects to improve the safety of WSDOT bridges - Retrofit of hollow core columns, Vertical clearance of truss bridges.</p> |

Bridge & Structures

Strategic Directions 15-17

Bridge Design

7 **Status:** Work in progress and looking for research funding for hollow core column retrofit funding. Developed research statement for hollow core column - UW is providing the initial study. BK 01/15/16 Research workshop June, 2016. BK 07/01/16

Bridge & Structures

Strategic Directions 15-17

Bridge Design

| | |
|--|--|
| 8 | <p>Implementation of new national and agency design standards such as sign bridge specifications, fall protection, retaining walls.</p> <p>Status: Have requested for budget and waiting for approval. Some fall protection and wall standard plans update is in progress - meet with Design Office on the scope of work. BK 01/15/16</p> |
| Strategic Goals Requiring Collective Effort | |
| 1 | <p>Be in the top leading states (5) in innovation in design, in materials, and in methods of construction.</p> <p>Status: Our staff participates in statewide and national events to acquire latest and greatest knowledge. Ongoing work on design policies per latest technology development. BK 04/15/16 Participated in national conferences and committees. BK 07/01/2016</p> |
| 2 | <p>Maintain and Enhance a Knowledgeable Workforce - Focus on continuity of operation, add new members and training as needed.</p> <p>Status: Need approval for new hiring to maintain COOP and sustainability. BK 04/15/16</p> |
| 3 | <p>Be strong "owner" regarding structural matters, WSDOT will need a robust bridge design capability, with a healthy core level of staff, and up-to-the-minute design skills.</p> <p>Status: Need approval for new hiring to maintain COOP and sustainability. We have approval for hiring new staff - In-Training program to be approved by management. BK 04/15/16</p> |
| 4 | <p>Maintain and Enhance the BDM and other bridge manuals - Contribute to National Policy</p> <p>Status: Work in progress - a new round of BDM update started in January for June 2016 completion. New BDM is scheduled for June 2016. BK 04/15/16 New BDM was published in June, 2016. BK 07/01/2016</p> |
| 5 | <p>Maintain design staff capable to accommodate all project delivery systems such as:DBB, DB, GCCM, etc.</p> <p>Status: We rotate staff participation in different project delivery methods. Currently assisting with few DB projects involving different staff to expand expertise with the BDO design staff. BK 04/15/16</p> |

Bridge & Structures

Strategic Directions 15-17

Bridge Preservation

| Task | Description |
|------|---|
| 1 | <p>Develop a single bridge inspection database to incorporate local agency data commensurate to Federal Bridge Inspection Regulations.</p> <p>Status: Database software development is 95% and in beta testing. Deployment scheduled for April 2016. Local Agency data migration has yet to begin. WSBIS application development is completed and it will be deployed to both BPO and local agencies on April 28, 2016. Local Agencies will start migrating to the new system by the first week in May, and should be complete by the end of the year. HC 01/15/16</p> |
| 2 | <p>Report all Bridge Inspection data error free.</p> <p>Status: October data submittal did not have any reportable data errors. No data submitted in this quarter. Next submittal is April 1, 2016. HC 01/15/16</p> |
| 3 | <p>Complete all SHV group I load ratings by 2017.</p> <p>Status: 61 of the 380 bridges that are required by FHWA to be rated by December 31, 2017 have been completed. The only source for engineers is within load rating group. 0 engineers have been added out of the requested 10 engineers needed. The request to Linea Laird for 5 Project Bridge Load Rating Engineers was denied. Bridge Design has dropped their support of 5 bridge engineers for load rating. HC 01/15/16</p> |
| 4 | <p>Complete all SHV group II load ratings by 2022.</p> <p>Status: 41 of the remaining 2361 bridges that are required to be rated by December 31, 2022 have been completed. The only source for engineers is within load rating group. 0 engineers have been added out of the requested 10 engineers needed. The request to Linea Laird for 5 Project Bridge Load Rating Engineers was denied. Bridge Design has dropped their support of 5 bridge engineers for load rating. HC 01/15/16</p> |
| 5 | <p>Complete all Sign Bridge Inspection on a 60 month inspection frequency.</p> <p>Status: There is one sign bridge inspection team. Our request for 3 more inspection teams and equipment has not had a response. Apparently denied. Expect the biennium total to be 20-35%; BPO target is to inspect 300+ structures, of the 2452 total this biennium. HC 01/15/16 $157/2459 \times 100 = 6\%$ HC 0727/16</p> |