

# *Roadway Alternatives Analysis Memo*

## **Willamette River (Van Buren) Bridge Bridge No. 02728 Benton County, Oregon**

October 9, 2019



***A DOWL LLC Company***

OBEC Consulting Engineers, a DOWL LLC Company

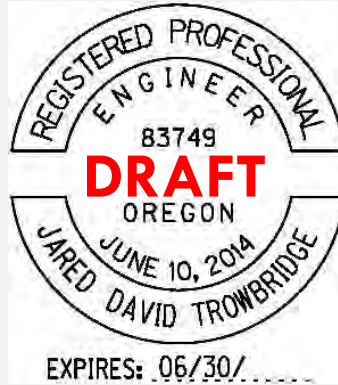
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## Project Background

### *Project Location*

The Van Buren Bridge is adjacent to downtown Corvallis, Oregon. The bridge carries one-way traffic headed east out of Corvallis onto Oregon Highway 34 and is a visual landmark known to travelers that frequent the area.



Figure 1 - Project Location

### *Project Purpose and Need*

The purpose of the Van Buren Bridge project is to replace the existing weight restricted bridge that is functionally obsolete and seismically vulnerable. The existing Van Buren bridge crossing was built in 1913, is vulnerable to seismic events and has weight and size restrictions for freight loads causing an approximate 5 mile out of direction travel for southbound OR99W loads leaving town to the east.

### **Summary of Proposed Project**

The Van Buren Bridge has carried traffic across the Willamette River for more than 100 years. Built in 1913, the four-span steel structure is the oldest swing-span pin-connected swing-span truss roadway bridge west of the Mississippi River and one of a handful that remain in the United States. The bridge is fracture critical and seismically vulnerable.

The Oregon Department of Transportation (ODOT) has secured \$69M from a mix of Bridge Fix-It and House Bill 2017 Bridge Seismic Funding to construct a new highway bridge over the Willamette River. ODOT has retained OBEC Consulting Engineers, a DOWL LLC Company, (OBEC) to serve as prime consultant for the new bridge design.

Final design is scheduled to be complete in September 2021 with construction occurring from 2022 to 2024.

This **Roadway Alternatives Analysis Memo** evaluates nine alternatives to determine a recommendation for Federal Highway Administration consideration under the federal regulation of Section 4(f). All alternatives were previously evaluated in the Bridge and Roadway Alternatives Concepts Report, produced by David Evans and Associates in 2005. This document aims to revalidate the alternatives based upon most current information and further detailed assessment.

### **2005 Revalidation**

The following three 2005 alternatives were re-evaluated to confirm the past decision to not forward them as a preferred alternative is still accurate today. These three were set aside early in the 2005 planning effort and this aims to reconfirm that decision:

- 1) widening the Harrison Boulevard Bridge to four lanes to accommodate two lanes in each direction;
- 2) constructing a new roadway and bridge over the Willamette River one block south of Van Buren at Jackson Avenue; and
- 3) rehabilitating, including seismically retrofitting, the existing Van Buren Bridge to maintain one lane of vehicular traffic and the existing walkway.

### **Harrison Boulevard Bridge Widening**

#### **Existing Conditions**

The existing Harrison Boulevard Bridge was built in 1964 and carries one-way traffic from OR34 westbound into downtown Corvallis across the Willamette River. It is not currently retrofitted to seismic standards. The roadway section consists of two 11' travel lanes, one 3' shoulder, one 5' bike lane, one 5' sidewalk and one 18" curb. The superstructure of the bridge consists of four reinforced concrete slab spans on the west approach, three steel girder spans over the river and three prestressed concrete girder spans on the east approach. The substructure consists of concrete crossbeams and concrete columns founded on timber piling and a concrete pile cap.

#### **Widening Concept**

The concept for widening the Harrison Boulevard Bridge would be to widen the structure symmetrically on both sides. This would be done for two primary reasons; 1) meeting current seismic design criteria; and 2) optimizing the alignment to tie into the existing street grid and existing right of way (ROW).

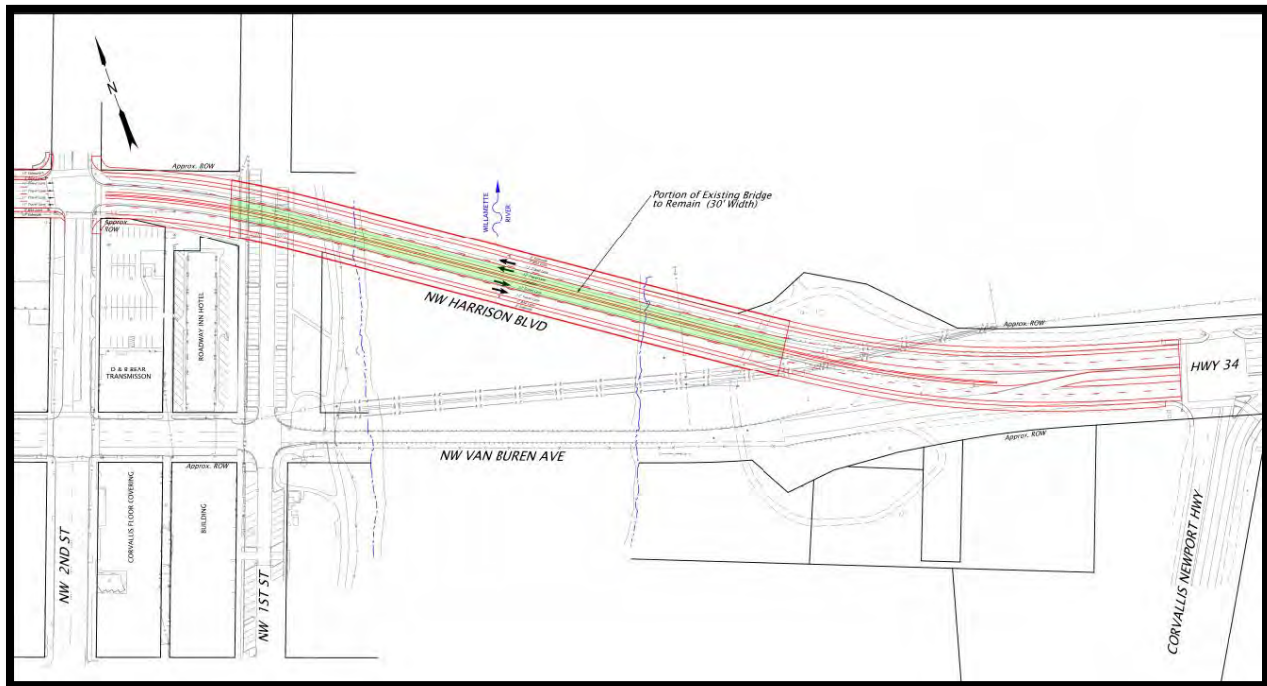


Figure 2- Harrison Blvd. Bridge Widening Concept

An initial assessment of the existing Harrison Boulevard bridge plans revealed three significant seismic vulnerabilities that would require Phase II seismic retrofits; under-reinforced columns and caps, and timber piling foundations. New substructures would be designed to carry the new widened structure as well as strengthen the existing bridge foundations so that seismic forces do not destroy the existing substructure elements. In addition to the Phase II retrofits, additional Phase 1 retrofits may include addressing the insufficient beam seat length with pier cap widening or seismic restraints and replacing the unstable rocker bearings. These seismic retrofits would make the bridge seismically resilient to current standards.

The roadway section would be widened to include four 12' travel lanes, a 10' median, two 5' bike lanes and two 8' sidewalks. This section would be carried to the Harrison and 2<sup>nd</sup> Street Intersection. By holding the centerline of the widened bridge to the current centerline, this would minimize ROW impacts in the block between 1<sup>st</sup> and 2<sup>nd</sup> Street. It is likely that retaining walls on each side of Harrison would be needed to carry the widened cross section. A conceptual plan view can be seen in Appendix A, Figure 5.

### **Traffic Impacts**

Harrison Boulevard is currently a one-way street carrying traffic west bound. Widening the Harrison Boulevard bridge to carry two directions of traffic would require reconfiguring the downtown traffic grid. This would require constructing new ADA sidewalk ramps, installing new signals, grinding and repaving and restriping.



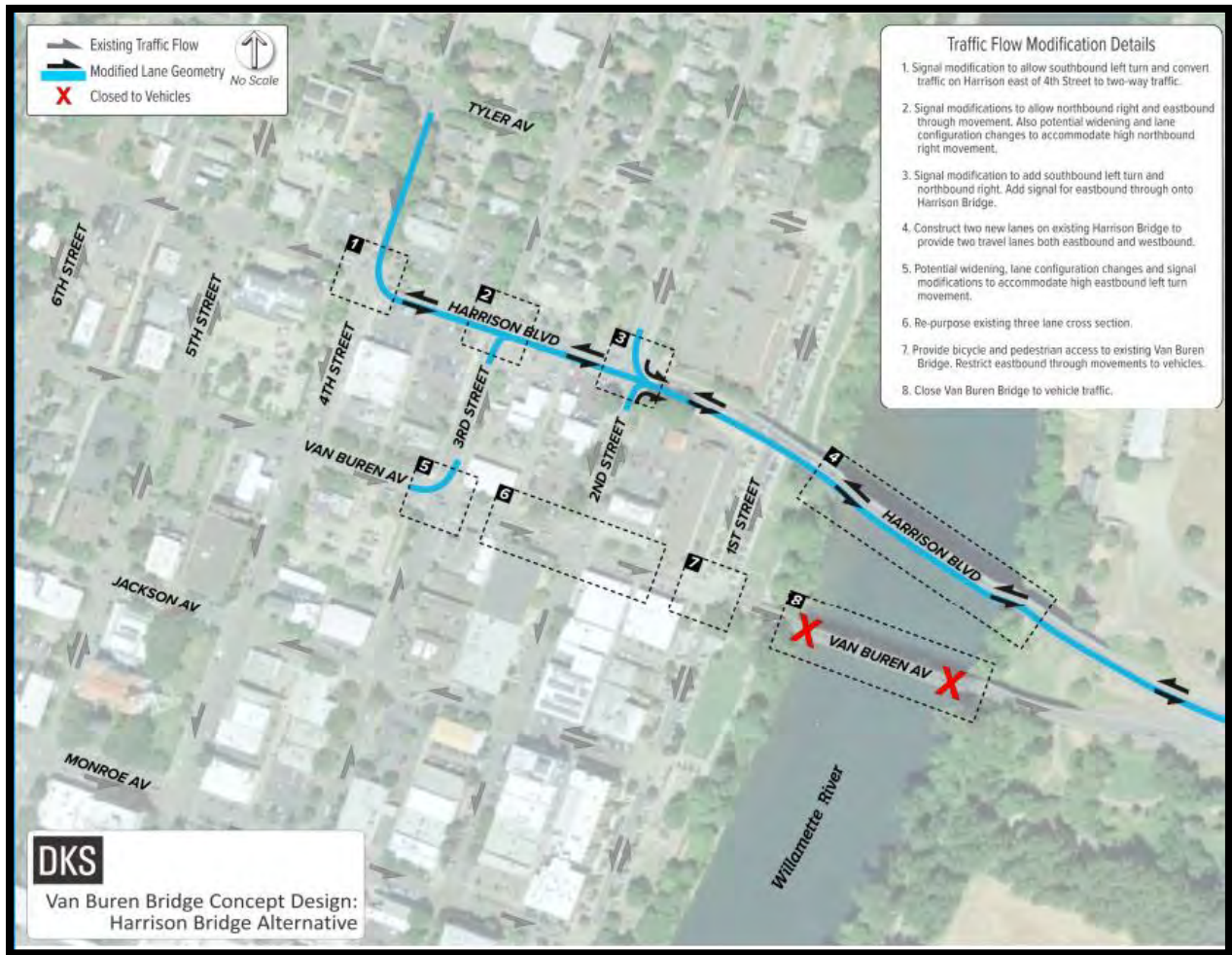


Figure 3 - Harrison Blvd. Bridge Alternative Traffic Grid

This alternative would require signal modification at four traffic signals and would require adding a fourth lane to the existing three-lane cross section of Harrison Boulevard to support two-way traffic. Since there is not currently sufficient curb-to-curb width on Harrison between 1<sup>st</sup> Street and 4<sup>th</sup> Street to accommodate four travel lanes and a 10' median, significant street widening, along with the associated ROW acquisition, would be needed to support this alternative.

Additionally, depending on the lane configurations required to meet mobility targets at each intersection, this alternative could have significant impacts on certain downtown properties where additional turn lanes or curb radius modifications would be required to accommodate large vehicle movements along 3<sup>rd</sup> Street (OR-99W).

There are three key potential traffic flow issues with this alternative:

- Long delays and queuing for southbound vehicles turning left onto Harrison Boulevard from 4<sup>th</sup> Street (OR-99W) and 2<sup>nd</sup> Street (US-20), where the existing queues are already significant.
- Eastbound queuing from Harrison Boulevard Bridge traffic would extend onto 3<sup>rd</sup> Street, impacting flow, capacity, and delays on this major northbound corridor (state highway OR-99W).

- Significant eastbound volumes turning left on 3<sup>rd</sup> Street (OR-99W) from Van Buren and then right on Harrison Boulevard within a very short distance would introduce further challenges related to traffic flow, weaving, merging, and lane use.

A proposed traffic grid reconfiguration is included in Appendix A.

### **Conclusion**

The Harrison Boulevard Bridge widening is estimated to cost \$81.4M. A detailed cost estimate can be found in Appendix A. The impact to the Corvallis traffic grid affecting non-ODOT facilities make this alternative more difficult to construct with complicated traffic staging to change the downtown traffic grid. Permanent revision of the City street grid would need to be examined for capacity if this alternative is selected. Staged construction on both sides of an existing bridge adds time and additional costs to construct this alternative. ODOT has stated project funding to address Harrison Boulevard Bridge seismic vulnerabilities is not available and these issues will be addressed as part of a future project to address this corridor. Due to the lack of available funding and potential for community disruption, this alternative appears to be challenged, not prudent, and is not recommended for further consideration.

### **Jackson Avenue Bridge**

#### **Existing Conditions**

Jackson Avenue currently serves two directions of traffic in the block between 1<sup>st</sup> and 2<sup>nd</sup> Street and is then one way west bound west of 2<sup>nd</sup> Street. Jackson Avenue currently comes to a stop at 1<sup>st</sup> street where a fountain exists at the terminus in the Riverfront Commemorative Park. This is also in the middle of the Corvallis Farmer's Market as seen in Figure 2. The Farmer's Market is a popular Saturday event in the park during the spring and summer months in Corvallis.



*Figure 4 - Jackson Avenue Fountain and Corvallis Farmer's Market*

On the northeast corner of Jackson Avenue and 2<sup>nd</sup> Street the building has been identified as an eligible historic resource. On the southwest corner of Jackson Avenue, a multiuse building has recently been constructed with businesses on the ground level and apartments on the upper levels. There is also an entrance for a parking lot along Jackson which could have access restrictions with a change in traffic grid.

In addition, there are sensitive archaeological sites throughout these areas which would require additional archaeological exploration to clear the area and may lead to a longer bridge to reduce impacts to the area.

### New Bridge Concept

The new bridge at Jackson Avenue is assumed to connect at 1<sup>st</sup> street to avoid ROW impacts, including limiting alley access, to the businesses along Jackson. The roadway section on the bridge would consist of two 12' travel lanes, one 3' shoulder, one 7' bike lane, and a 14' multi-use path. A conceptual plan view can be seen below and full size in Appendix B, Figure 6.

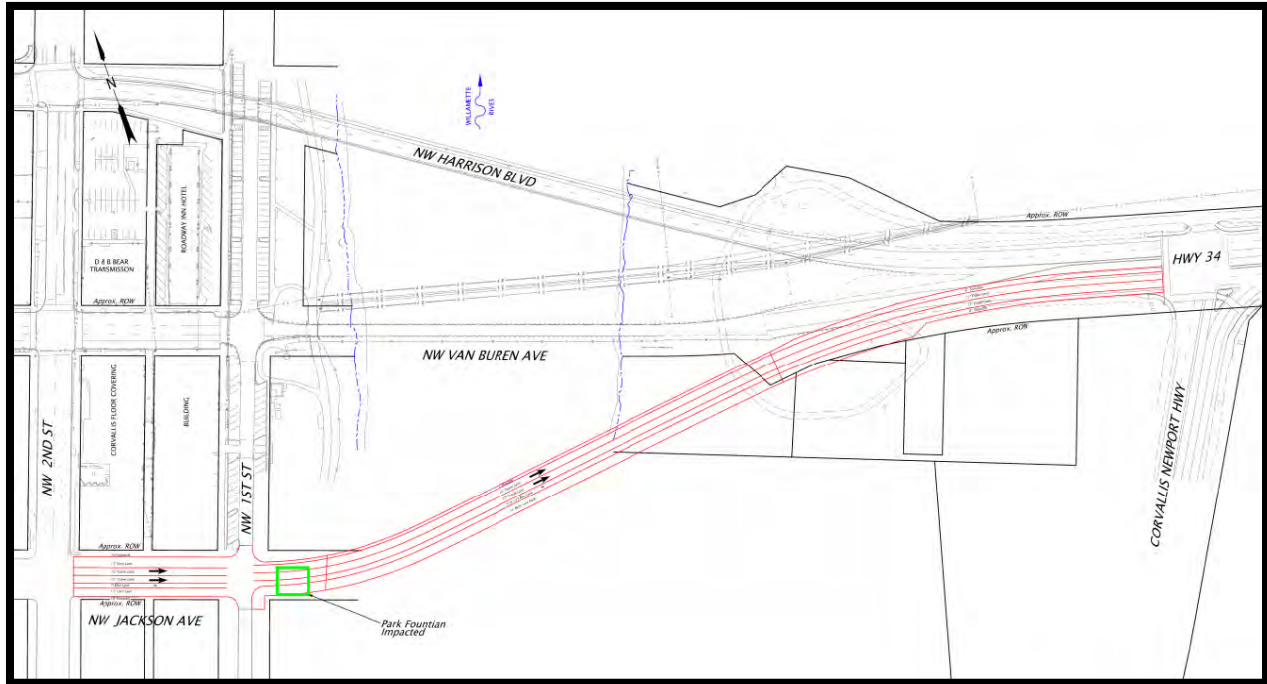


Figure 5 - Jackson Ave. Bridge

To connect into 1<sup>st</sup> street, a new bridge facility would impact the Jackson Avenue Fountain in the Riverfront Park. This impact would require a public vote per the City of Corvallis Charter where the City has indicated they would not be supportive of amending their Transportation System Plan or allow park impacts for this improvement.

### Traffic Impacts

Jackson Avenue currently carries two-way traffic between 1<sup>st</sup> and 2<sup>nd</sup> Streets and switches to one-way westbound west of 2<sup>nd</sup> Street. Constructing a new bridge to carry two lanes eastbound would require reconfiguring the downtown traffic grid. This would include constructing new ADA sidewalk ramps, installing new signals, grinding, and repaving and restriping.

This alternative would require modifications to five existing traffic signals and installing one new traffic signal. It is also recommended that Van Buren Avenue be re-purposed for two-way traffic since there will no longer be a river crossing.

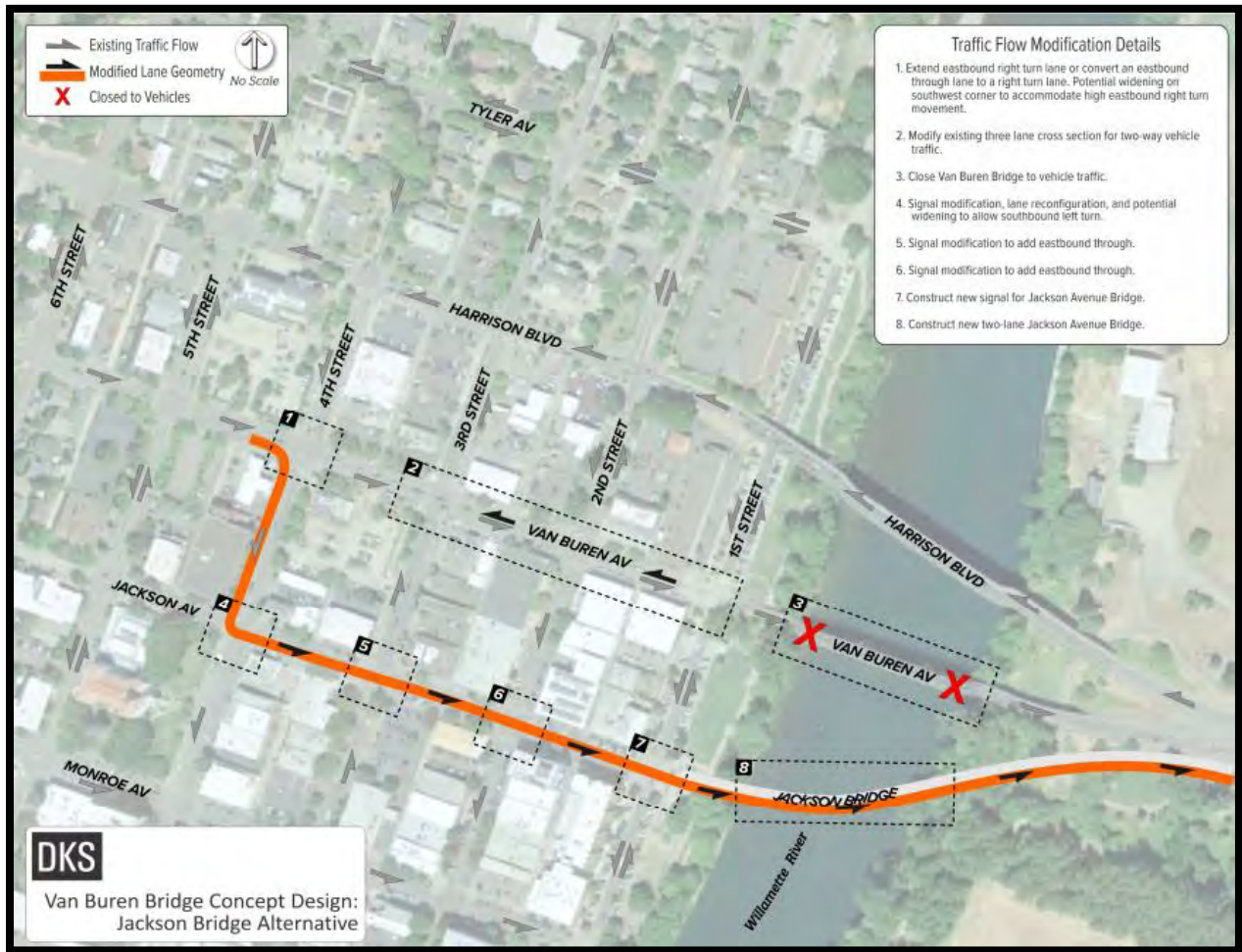


Figure 6 - Jackson Bridge Alternative Traffic Grid

Depending on the lane configurations required to meet mobility targets at each intersection, this alternative could have significant impacts on certain downtown properties where additional turn lanes or curb radius modifications would be required to accommodate large truck turning movements along 4<sup>th</sup> Street (OR-99W). Permanent revision of the City street grid would need to be examined for capacity if this alternative is selected.

There are three key potential traffic flow issues with this alternative:

- Eastbound queuing from Jackson Avenue bridge traffic would extend onto 4<sup>th</sup> Street (OR-99W), impacting flow, capacity, and delays on this major southbound corridor (state highway OR-99W).
- Eastbound vehicles turning right from Van Buren Avenue to 4<sup>th</sup> Street (OR-99W) would lead to large queues. The current ADT for this movement is 3,300 vehicles. This alternative would potentially increase the ADT to 11,500. The existing 55' storage lane for this movement would not have enough storage and dual right turns would be required.
- Significant eastbound Van Buren Avenue traffic turning right on 4<sup>th</sup> Street (OR-99W) and then left on Jackson Avenue within a very short distance would introduce further challenges related to traffic flow, weaving, merging, and lane use.

A proposed traffic grid reconfiguration is included in Appendix B.

## **Conclusion**

The Jackson Avenue bridge is estimated to cost \$52.6M. A detailed cost estimate can be found in Appendix B. This alternative could also land at 2<sup>nd</sup> Street for approximately \$13M more. The impact to the Corvallis traffic grid affecting City of Corvallis transportation facilities make this alternative more difficult to construct with complicated traffic staging to change the downtown traffic grid. Given the significant traffic, park, and ROW impacts, this alternative appears to be challenged, not prudent, and is not recommended for further consideration.

## **Van Buren Bridge Rehabilitation**

### **Existing Conditions**

The existing Van Buren Avenue roadway carries one-way traffic from the Corvallis downtown area across the Willamette River to Highway 34. The roadway section in the downtown area consists of one 12' travel lane which leads onto the bridge and two 12' turn lanes which lead onto 1<sup>st</sup> street northbound and southbound. During peak afternoon traffic, the public uses all three lanes to cross the 2<sup>nd</sup> Street intersection and merges into the center through lane in the short distance between 1<sup>st</sup> and 2<sup>nd</sup> Street. Public comments expressed during a project open house held on June 27, 2019 indicate a perception that this merging activity may contribute to lowering the efficiency of the existing facility for carrying traffic east over the river as well increasing the frustration experienced by the roadway users. This section of Van Buren Avenue also has parking on both sides of the street. Due to the traffic merging from three lanes to a single lane, the bridge is a constriction that presents safety concerns.

On the existing bridge, Van Buren Avenue consists of one 12' travel lane with 5'+ shoulders and a 4'-6" sidewalk at the pinch points separated by guardrail. To the east of the bridge the roadway widens to two 12' travel lanes with 8' wide shoulders as it approaches the intersection with the Corvallis-Newport Highway.

The existing alignment is tangent from the downtown section and across the bridge. The vertical profile has a maximum grade of 5.39% and contains vertical curves which meet a design speed of 25 mph. In a closed state, this profile does not meet current Coast Guard Clearances as the bridge contains a swing span intended to open if needed.

The bridge was originally permitted by the United States Coast Guard (USCG) in 1911. The permit requires the bridge to open within seven days' notice. The opening mechanism has been removed and the bridge has been welded shut since 1960 (as noted in the 2013 Oregon's Historic Bridge Field Guide). The USCG has indicated that this would classify the bridge one that cannot meet current permit requirements and is subject to a \$30,000 per day fine if the bridge can't be opened within seven days notice. No such requests have been made since the bridge was permanently closed.

Further discussion of the existing bridge's condition can be found in the Repurposing Study submitted previously and can be found at the [VanBurenBridge.com](http://VanBurenBridge.com) webpage.

### **Rehabilitation Concept**

This alternative would rehabilitate the existing bridge to current standards for vehicular traffic. This includes increasing the structure's usable life another 75 to 100 years by replacing the timber stringers with steel stringers and the vehicular and pedestrian timber decking with reinforced concrete. Additionally, all fatigue members will be replaced with similarly shaped eye-bars, the bottom and top chord members will be strengthened as determined by future analysis and increasing the size and/or number of members to reduce the number of fracture critical members.

A fracture-critical member is any tension member whose failure would cause a cascading and catastrophic failure of the entire bridge. Vehicular traffic barriers would be upgraded to crash-rated systems and a pedestrian railing would need to meet the geometric and capacity required by current design standards. These changes could affect the historic appearance of the bridge trusses with over 50% of the members being replaced or strengthened.

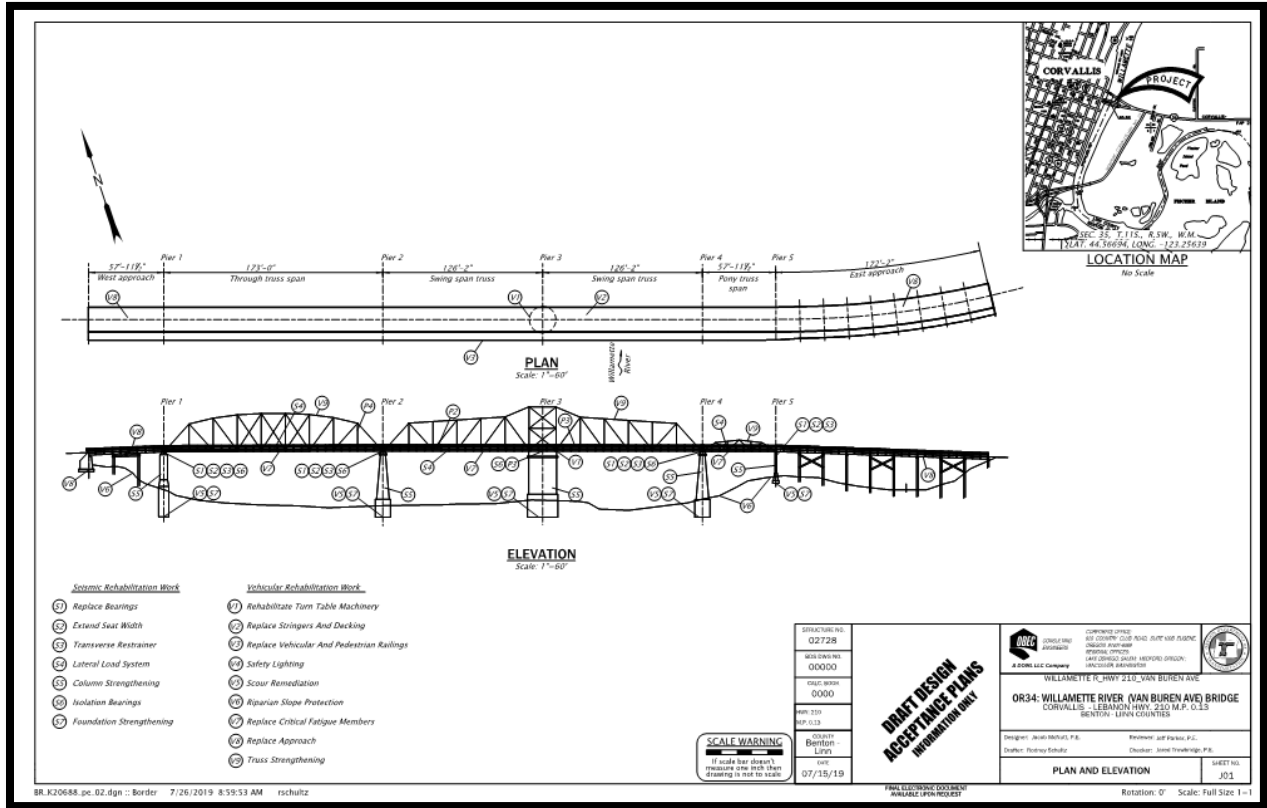


Figure 7- Rehab Concept

The existing USCG permit requires the bridge to open on seven days' notice. To stay in compliance the turntable machinery of the cantilever swing span would need to be refurbished or replaced to meet the passage of tall watercraft or ODOT would need to complete a navigational study to modify the permit for permanent closure.

In order to continue to provide vehicular service under the proposed funding, the bridge must be retrofitted to AASHTO and ODOT standards including seismic and scour requirements. This would include both Phase I and Phase II Seismic retrofits. A conceptual rehabilitation plan sheet can be seen in Appendix C.

**Conclusion**

The Van Buren Bridge Rehabilitation is estimated to cost \$42.9M. A detailed cost estimate can be found in Appendix C. This alternative may avoid an adverse effect to the historic resource by leaving it in place, however, the necessary modifications to meet the project purpose and need could negatively impact the historic character of the structure if sensitive design considerations cannot be utilized. Additionally, this would maintain a narrow, sub-standard width, one-lane bridge exiting downtown Corvallis which currently has queuing of up to nine blocks during the peak traffic hours. The City of Corvallis Transportation System Plan and the traffic planning for the future North Bypass project both indicate that a two-lane Van Buren bridge would be needed to facilitate traffic

movements. Leaving a one lane bridge would negatively impact the functionality of the future North Bypass project. All other alternatives presented in this report provide a two-lane bridge with future compatibility with the North Bypass capacity improvements.

The cost to rehabilitate the existing single lane bridge with a substandard walk that does not accommodate separated bicycle and pedestrian traffic, is approximately 105% of the cost to replace it with a new two-lane seismically resilient bridge. Typically, when the costs to repair or rehabilitate a structure are over 50% of the replacement cost, replacement is the recommended alternative. Additionally, typically for a bridge to be eligible for rehabilitation funds the project would have to increase the sufficiency rating to at least 80. Due to the very high cost and the limited functionality, this alternative appears to be challenged, is not prudent, and is not recommended for further consideration.

### **2005 Revalidation Conclusion**

Three alternatives were explored to confirm if the decision to set them aside in 2005 was still accurate today: widening the existing Harrison Boulevard Bridge to four lanes; constructing a new bridge connecting one block south at Jackson Avenue; and rehabilitating the existing Van Buren Bridge to meet current standards. The design team has revalidated the 2005 conclusion to not pursue these alternatives for the following reasons:

- Widening Harrison Boulevard Bridge:
  - Cost exceeds project budget and does not align with ODOT's prioritized timing for seismic resiliency
  - Impacts to City and State traffic grid
  - Complicated staging
- New Bridge at Jackson Avenue:
  - Impacts to City and State traffic grid
  - Archaeological impacts
  - 4(f) impacts to City Park
- Rehabilitate Existing Historic Van Buren Avenue Bridge
  - Cost of rehabilitation for one lane of eastbound traffic without a multi-use path is 105% of the cost of replacement for a two-lane bridge including a 14' wide separated multi-use path
  - Bridge remains functionally obsolete for sub-standard roadway and sidewalk widths
  - Structural work could negatively affect historic nature of the existing bridge
  - Risks functionality of North Bypass project

The design team confirms the prior 2005 recommendation to not pursue these options.

### **Development of the 2005 Preferred Alternative**

The remainder of this memo evaluates the remaining six alternatives, and discusses the concept design development of the 2005 preferred alignment, a new bridge located just to the north of the existing Van Buren Bridge. It also includes variations of an alignment that would require the existing bridge be removed or relocated. This memo will evaluate roadway alignment and tie-in locations against various design criteria to help ODOT select the preferred roadway alignment and landing location.

## Design Criteria

The roadway design criteria for this section of Van Buren Avenue are based on the Oregon Department of Transportation (ODOT) *Highway Design Manual, 2012*; American Association of State Highway Transportation Officials (AASHTO) *A Policy on Geometric Design of Highways and Streets, 2011*; and AASHTO *Guide for the Development of Bicycle Facilities, 2012*. The project shall meet ODOT 4R standards. The Average Daily Traffic (ADT) in 2017 was 10,800. The projected 20-year design ADT is 16,460 for 2041 based on a 1.77% growth rate provided from the 2005 analysis.

Van Buren Avenue is classified as an Urban Other Principal Arterial – Special Transportation Area from the downtown district to mile post 1.6, east of the Willamette River. It has a posted speed of 25 mph. A design speed of 25 mph will be used to reduce impacts to adjacent properties.

The roadway east of MP 1.6 is classified as a Rural Other Principal Arterial. The posted speed is 45 mph and will be designed using a 50 mph design speed.

The cross section for the new bridge includes two 12' travel lanes, one 3' shoulder, one 7' buffered bike lane, and a 14' multi-use path.

The proposed roadway section will also carry a second lane across the bridge where only one exists today. The existing turn lanes between 1<sup>st</sup> and 2<sup>nd</sup> Street will be maintained in all alternatives, however, the width will be restricted in the alternatives which land at 2<sup>nd</sup> Street as retaining walls will be constructed to carry the travel lanes up and over 1<sup>st</sup> Street and onto the new bridge. The existing parking spaces will be eliminated to accommodate the retaining walls and shoulders for the travel lanes.

## Alternatives

Three proposed horizontal alignments have been created and analyzed for the new Van Buren Bridge.

Alternative 1 (see Figure 1 in Appendix D), will construct the new bridge north of and roughly parallel to the existing bridge with minimal staging of the approach span on the west end of the bridge. This alternative will maintain one lane of traffic on the existing alignment during construction, save a short duration closure to direct traffic from the existing bridge onto the newly constructed one. The connection on the east end is improved with this alternative and would require one flat curve to match the tangent alignment approaching the intersection with Hwy 34.

Alternative 2 (see Figure 2, in Appendix D), will locate the new bridge slightly south of Alternative 1, closer to the existing alignment. This alignment also uses reversing curves and avoids the Roadway Inn ROW impact. The new bridge would overlap with the existing bridge, which will require staged construction of the new bridge and a short duration closure to shift traffic.

Alternative 3 (see Figure 3, in Appendix D), approximately occupies the existing bridge location with minor refinements to improve roadway geometry and assumes the ultimate decision for the existing bridge will be to demolish it or move it to another location.

The project team also explored moving the existing trusses to be used as a detour bridge with the potential for permanent relocation. Due to the construction schedule and cost risk during moving of the truss as well as structural capacity and future maintenance concerns, this variant of Alternative



3 appears to be challenged, is not prudent, and is not recommended for further consideration. This variant will be differentiated in the report where it differs from a standard temporary detour bridge.

Regardless of the horizontal location of the alignment alternatives, including the 2005 alternatives previously studied, soil on both banks have liquefaction potential, are vulnerable to seismic induced settlement, and lateral spreading which may require ground improvements to mitigate. This understanding will be refined as the final geotechnical recommendations are developed.

## **Vertical Alignment**

Two vertical profiles were evaluated for all horizontal alignment alternatives: 1) connect at 1<sup>st</sup> Street (Profile 1); and 2) cross over 1<sup>st</sup> Street and connect at 2<sup>nd</sup> Street (Profile 2). The existing bridge currently connects at 1<sup>st</sup> Street providing an at grade intersection.

Profile 1 will be similar to the existing profile at the intersection. In order to meet USCG clearances, the proposed profile will be approximately 19-feet higher over the river at the high point resulting in an 8% grade heading east out of town. By using this profile, Van Buren Avenue may not need full reconstruction between 1<sup>st</sup> and 2<sup>nd</sup> streets. For Alternatives 2 and 3 using Profile 1, the existing intersection would only need minor reconfiguration. For Alternative 1, the intersection would need to be complexly reconstructed. Because the west end of the bridge would be nearer to the park elevation than Profile 2, the multi-use path connection would be shorter and much more user friendly.

Profile 2 will cross over 1<sup>st</sup> Street and provide 16' of vertical clearance. This profile is similar to the one at Harrison Boulevard Bridge to the north. The biggest advantage of this profile is that it will eliminate the at grade intersection with 1<sup>st</sup> Street which would provide free flow for vehicular traffic and pedestrians to cross north and south on 1<sup>st</sup> Street and eliminate disruption of through traffic on Van Buren heading out of town on the highway. This would be a significant safety improvement for vehicular, pedestrian, and bicycle traffic. Another advantage would be a less obstructed and open view in the park, looking north or south, with the bridge in this section raised to a higher elevation. Disadvantages of this profile include the need for large retaining walls on both sides of Van Buren Avenue between 1<sup>st</sup> and 2<sup>nd</sup> Street, which partially obstruct the turning movements into or out of the mid-block alleys and eliminate street side parking. In addition, more utility relocation is required, 1<sup>st</sup> Street would need to be lowered approximately 3-feet to provide vertical clearance, and a more expensive and less user friendly multi-use path connection is required from the new bridge to the park path.

Both vertical profiles will meet the design criteria for 25 mph and 50 mph design speeds and provide for USCG clearances and freeboard requirements. The profile which lands at 2<sup>nd</sup> street provides 16' minimum vertical clearance at 1<sup>st</sup> Street. The maximum grade used is 8% for both profiles.

Conceptual profile views for these Alternatives can be seen in Figure 4 in Appendix D.

## **Design Exceptions**

The design exceptions identified at this time will be for sidewalk width, turn lane shy distance width, and missing one horizontal spiral.

Existing sidewalks between 1<sup>st</sup> and 2<sup>nd</sup> Street are approximately 9.8' wide, design standard is 10' wide and proposed width is 9.5'. Proposed turn lanes between 1<sup>st</sup> and 2<sup>nd</sup> Street are designed with the appropriate width for the turn lane, however, a shy distance of 2' from the retaining walls

should be added. Due to the proximity of the buildings, the available width is constrained, and the project team prioritized the widths for the sidewalks to travel lanes as the volume of traffic on the turn lanes will be very low. In addition, 1' of shy distance has been included for the curb side of the turn lanes.

Design exceptions for sidewalk width and shy distance apply to all three alternatives with Profile 2.

To eliminate impacting existing buildings north of Van Buren Avenue, a design exception will be requested to eliminate the entrance spiral on the first horizontal curve. This design exception effects only Alternative 2.

## Evaluation Criteria

The Roadway Alternatives Analysis will evaluate the three proposed horizontal alignment alternatives each with 1<sup>st</sup> or 2<sup>nd</sup> Street profile variations for a total of six combinations against the following criteria:

- Existing bridge disposition
- Access control
- Intersection layout/signals
- Lighting
- Right of way
- Environmental impacts and mitigation
- Utilities
- Hazardous materials
- Stormwater management
- Trail connectivity
- Park impacts
- Constructability
- Construction costs.

## Alternative 1

Alternative 1 will construct the new bridge north of and roughly parallel to the existing bridge with minimal staging of the approach span on the west end of the bridge.

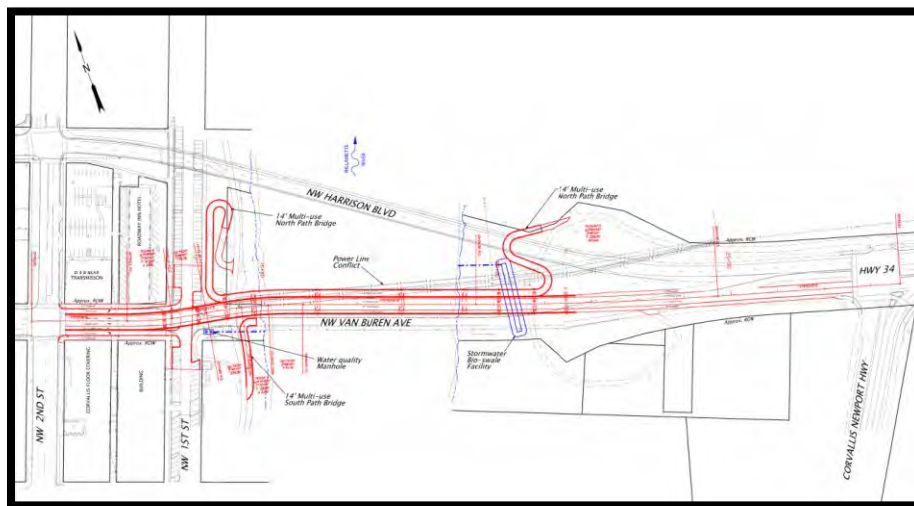


Figure 8 - Alternative 1 Plan View



Figure 9 - Alternative 1 Overhead



Figure 10 - Alternative 1 Section View

### **Horizontal Alignment**

Alternative 1 assumes reversing curves will be used to match the existing tangent between 1<sup>st</sup> and 2<sup>nd</sup> Streets. The reversing curves will require 2.5% super elevation cross slopes. To avoid the ROW impact to the Roadway Inn, the multiuse path would be on the north side of the bridge which allows much less offset of the travel lanes. This alternative would allow the existing Van Buren bridge to remain in its current location, although USCG permit compliance would still need to be addressed by raising or relocating it.

### **Existing Bridge Disposition**

Design and construction of the new bridge is funded, in part, by federal funds. The project must address all requirements for use of this funding including compliance with 23 CFR 774, known as Section 4(f), which regulates impacts to parks and historic sites. The Bridge Repurposing Study, submitted under a separate cover, investigates and addresses the need for a new bridge and possible dispositions for the existing bridge which has been determined eligible for the National Register of Historic Places.

The alternatives presented in the Repurposing Study are intended to provide guidance to the City of Corvallis or other prospective bridge owners concerning potential costs to reuse the existing bridge. The three alternatives studied are (1) rehabilitation to serve non-motorized traffic over the Willamette River at its existing location, (2) relocating the historic steel truss segments to serve as a public display installation or an over-land pedestrian facility, and (3) removing and disposal of the existing bridge.

The existing bridge disposition has been determined to have no impact on the decision to land the bridge at 1<sup>st</sup> or 2<sup>nd</sup> Street however it does impact the decision on the horizontal alignments.

The Alternative 1 horizontal alignment is designed to allow the existing bridge to carry traffic while the new bridge is constructed. Traffic would then be shifted onto the new bridge while the west approach is re-constructed and construction of the new bridge would be completed. The disposition of the existing bridge steel truss spans does not affect Alternative 1. In other words, Alternative 1 allows the existing bridge steel truss spans to remain indefinitely, provided a new bridge owner assumes responsibility for them and the bridge is raised or relocated to meet Coast Guard clearances.

### **Access Control**

For all alternatives, the major differences in impacts are between the vertical profiles landing at either 1<sup>st</sup> or 2<sup>nd</sup> Street. Profile 2 will have a greater impact to access for the existing businesses. This profile would require retaining walls to eliminate fill slopes, parking would be eliminated, and new sidewalks would be constructed. Due to the addition of retaining walls, entrance and exit movements to the alleys will be constrained, especially on the south side as this alley is constrained in width by the two existing buildings. Turning movements have been created and only passenger vehicles will be able to make the turns into and out of the alleys. An advantage of this profile, with respect to access, would be the elimination of the at-grade intersection with 1<sup>st</sup> Street. This would allow for a safer north/south connection providing greater access to the park and downtown area. The turn lanes onto 1<sup>st</sup> Street would be maintained.

Profile 1 would also eliminate some parking between 1<sup>st</sup> and 2<sup>nd</sup>, however, the impacts associated with retaining walls would be eliminated as they would not be required. Bike and pedestrian access to the bridge would be improved over Profile 2 as the bridge would be much lower at the multi-use trail connection point.

### ***Intersection Layout/Signals***

In all alternatives, the intersection at 2<sup>nd</sup> Street would be minimally impacted and the existing sidewalks between 1<sup>st</sup> and 2<sup>nd</sup> would remain as is. Profile 2 would require a complete re-build of the existing 1<sup>st</sup> Street intersection. Profile 1 would require less reconstruction of the intersection depending on which horizontal alignment alternative is selected. Alternative 1 would have the greatest impacts to the 1<sup>st</sup> Street intersection.

Based on the design team's preliminary assessment, traffic volumes at 1<sup>st</sup> Street do not warrant a signalized intersection with Van Buren. However, the existing at grade intersection currently has safety concerns that should be considered when evaluating whether to land at 1<sup>st</sup> or 2<sup>nd</sup> Street. Collision analysis was reviewed for the intersection. From 2013 to 2017 there were 28 collisions, five of which involved pedestrians or bicyclists. Based on the 75-year design life of the new bridge, approximately 60 accidents involving pedestrians or bicyclists might be expected in that span.

From a safety standpoint, a grade separated intersection at 1<sup>st</sup> and Van Buren, with a landing at 2<sup>nd</sup> Street, would provide a safety benefit over the existing intersection and any profiles landing at 1<sup>st</sup> Street.

### ***Lighting***

For the purposes of this alternatives analysis, the design team is assuming that illumination will be required on the bridge across the river. For cost estimating purposes, ornamental lighting is assumed on the bridge until it lands on the east side of the river where more conventional cobra head luminaires would be used. Ornamental lighting is assumed to match the existing lighting in the Corvallis downtown district and Riverfront Park.

There is no differentiating factor for the horizontal alignments concerning lighting.

The vertical profile alternatives and landing at 1<sup>st</sup> or 2<sup>nd</sup> Street have slight differences. If the bridge lands at 1<sup>st</sup> Street, the existing ornamental lights at the Van Buren and 1<sup>st</sup> Street intersection would be reconstructed in kind. The 2<sup>nd</sup> Street landing requires more new lighting to be installed. Security lighting would be needed in the alleys created by the retaining walls and the existing ornamental lights would be constructed shorter to illuminate under the bridge at the intersection, similar to the illumination at 1<sup>st</sup> Street beneath the Harrison Boulevard Bridge.

The project team does not view the lighting aspects of the project to be a differentiator in the selection of a horizontal alignment or vertical profile.

### ***Right of Way***

The Right of Way (ROW) evaluation will look at both temporary construction easements and permanent ROW acquisition. It is the design team's understanding that any permanent change of use in the City Park would result in a public vote to approve of the change in use. This is considered a major risk to the project and this will carry significant influence in selection of the preferred alternative.

All horizontal alignments will require some ROW be acquired to accommodate the pedestrian trail connection path as previously described. Additionally, all horizontal alignments could potentially require a ROW swap with the City described below.

Alternative 1 will have the largest temporary ROW impacts due to the offset alignment and access required for the work bridges. It should not be assumed that ODOT and the City could swap ROW from the existing alignment to the new alignment without the need for a public vote due to the change in park use. This Alternative is highly vulnerable to ROW needs.

The landing location appears to be a clear differentiator for ROW. If the new bridge lands at 1<sup>st</sup> Street, as in Alternatives 1 and 2, there is the potential that park area would be reduced or require exchanging ROW with the City to maintain the same park area. The exchanging of park right of way may still trigger a public vote.

Profile 2 has the potential to add more area to the park. Where the existing bridge lands currently could be restored as park area and more green space under the bridge could be created. The potential for reaching de minimis for park impacts is greatly improved over Profile 1. The pedestrian path would have to be longer to accommodate ADA grades while tying into the new bridge at a higher elevation than Profile 1. This is not considered a change of use of the park but would require more ROW to be purchased than Profile 1, assuming ODOT would maintain ownership of the pedestrian connection structure from the new bridge to the existing walk on grade within the park.

### ***Environmental Impacts and Mitigation***

The environmental impacts and mitigation evaluation criteria span over multiple sub-criteria including noise, tree, and permitting impacts.

### ***Noise Impacts***

All alternatives add an additional lane to the bridge traffic heading east and will increase the noise generated from the bridge traffic at nearby noise sensitive land uses, which is common for each alternative. Alternative 1 shifts the noise generating environment away from the existing alignment and can be assumed as having the most negative impact to surrounding noise sensitive land uses.

The landing location (Profile 1 or 2) appears to be more of a factor regarding noise impacts. If the new bridge lands at 1st Street, the grade tying into 1st Street is within three feet of the existing grade. The deck elevation over the river will be higher which will change the line-of-sight at nearby noise sensitive land uses, however due to no noise sensitive land uses on the east landing, noise impact is assumed to be negligible.

If the new bridge were to land at 2nd Street, the bridge deck would be approximately 16 feet higher at the 1st Street intersection than the existing roadway. This change in vertical alignment will change the noise environment and could increase noise levels at nearby noise sensitive land uses. At a higher elevation sound could resonate farther affecting more noise sensitive land uses than the existing conditions. This presents an increased risk for potential noise mitigation.

The noise effects of the preferred alternative will be evaluated further as the project moves towards the draft design acceptance package.

### ***Tree Impacts***

All horizontal alignment alternatives will result in tree removal. The design team has determined that the landing location is not a differentiating factor. There are two additional trees near 2<sup>nd</sup>

Street that would be removed should the bridge land at 2<sup>nd</sup>. The horizontal alignments have some slight differences.

Alternative 1 is the most offset from the existing alignment. Due to this it would result in the most tree removal of the three alignments.

### ***Environmental and Permitting Impacts***

The horizontal alignments and landing locations do have significant environmental differentiators in themselves but there are other considerations as they relate discussed below.

For Alternative 1 this evaluation assumes that the existing bridge remains in its current location. This scenario would have the largest impact on the environmental permitting process for the project. If the existing bridge remains, this may prevent the project from pursuing the use of the Federal Aid Highway Program (FAHP) programmatic biological opinion. This would require a complete biological assessment to be prepared and submitted to cover project impacts on listed fish species. This permitting process could delay the overall project schedule and could require state funds to be used for any ROW needs. Two work bridges would need to be permitted, but no detour bridge would be required. There is no differentiator for landing at 1<sup>st</sup> Street or 2<sup>nd</sup> Street for Alternative 1.

### ***Utilities***

The design team has determined that regardless of the horizontal alignment chosen, the overhead transmission lines, located just north of the existing bridge, are in conflict and will need to be relocated. The utility is not reimbursable for this relocation.

The design team sees one differentiating factor for the three alternatives. If Alternative 1 is selected it may result in reimbursable utility impacts if City utilities are affected outside of the ODOT ROW. This is not considered a large impact but is different among the three alternatives.

The vertical profile and landing at 1<sup>st</sup> or 2<sup>nd</sup> Street would have greater differentiating utility impacts. For both Profile 1 and 2 there are overhead lines and stormwater pipes that will likely need to be relocated from the intersection east to the river. If Profile 1 is selected, there is relatively minimal utility relocation work.

If Profile 2 is selected, a retaining wall and retained fill would be constructed on Van Buren between 1<sup>st</sup> and 2<sup>nd</sup> Street. Due to this, water lines, storm lines, manholes, and other underground utilities would be relocated outside of the retained fill. From a utility conflict and relocation standpoint, Profile 1 would have less impacts.

### ***Hazardous Materials***

Potential contaminated soils and existing tanks have been identified in the block of Van Buren between 1<sup>st</sup> and 2<sup>nd</sup> Street. Given that the sidewalks and roadway would be reconstructed for the landing at 1<sup>st</sup> Street, compared to a retaining wall being constructed for the landing at 2<sup>nd</sup> Street, it does not appear that these contaminated soils or existing tanks have a differentiating effect on the alternatives. Existing records show that the tanks are partially filled with concrete and if encountered would likely be removed or the ports would be cut down.

### ***Stormwater Management***

As shown in the exhibits in Appendix D, the stormwater treatment and management strategy include stormwater inlets and vaults on the west side of the river and a water quality swale on the east side of the river.

The horizontal alignment alternatives will not impact the stormwater treatment and management strategy significantly other than altering potential locations of inlets and swales.

The landing location does not impact the strategy significantly. The locations and costs of the options will be impacted incrementally. It is assumed that the 1<sup>st</sup> Street landing is the preferred alternative because less of the existing infrastructure will be impacted.

### ***Multi-Use Trail Connectivity***

As previously discussed, the multi-use trail connection on the west end will be heavily influenced by the profile selected. The roadway profile which lands at 2<sup>nd</sup> Street will have the greatest impact as the connection point to the bridge is 18-feet higher than the profile landing at 1<sup>st</sup> street. A bridge structure and approach will be constructed to connect the path to the park path. To reduce impacts in the park the profile grade will be 8% with required level landings to meet ADA slope requirements. The bridge will be approximately 370 feet long with an approach of 60 feet. The path connection on the east side of the bridge will be nearly the same for all alternatives.

The team looked at placing the multi-use path on the north side of the bridge as it would allow the new roadway alignment to be placed closer to the existing roadway and would improve the alignments. However due to the site constraints in the park there is not enough room to make a connection with curves meeting design standards. Reducing the horizontal curve radius from 27' to 20' would be needed to construct the path. A design exception would be required for constructing the path on the north side of the bridge within the park.

### ***Park Impacts***

Any impact to the park area within ODOT ROW is not considered a 4(f) park impact. Alternative 1 deviates farthest from the existing alignment and would have the most park impacts to mitigate or offset. As mentioned previously, park impacts may trigger a public vote on the changed use.

The profile landing at 1<sup>st</sup> Street would look very similar in the park as the existing bridge does today. The bridge will be wider and will have a larger footprint than the existing bridge. A short connection from the multi-use path would be provided on the south side of the bridge to make the connection. Alternative 1 would require a multi-use path connecting the existing bridge to the park path north of the new bridge.

The profile landing at 2<sup>nd</sup> Street would span over 1<sup>st</sup> Street and therefore would provide a more open and unobstructed view with a smaller abutment footprint however the path connection would be much longer and would extend under and to the north side of the bridge. The opening of the park due to the higher bridge would be somewhat offset by the new path structure coming down and landing in the park.

### ***Constructability***

Constructability and construction approach varies greatly between the three horizontal alignment alternatives. There is also some differentiation between the two landing alternatives which are similar among the three horizontal alignments.

Alternative 1 constructs the new bridge the furthest to the north of the existing alignment and assumes the existing bridge remains in place permanently. Construction of the new bridge would



occur from a work bridge located north of the new alignment. The existing bridge would be used to maintain traffic on its current alignment during construction. Traffic would be maintained as long as feasible on the current alignment until it was necessary to detour traffic to construct the 1<sup>st</sup> Street or 2<sup>nd</sup> Street tie in. The 1<sup>st</sup> Street landing would be much quicker to construct. The 2<sup>nd</sup> Street landing would require relocating electrical lines, City water and sewer lines, and construction of a retained fill. There are concerns with settlement in the area of the retained fill. The design team will investigate ways to mitigate this risk, such as using light weight fill, as the project moves into the design acceptance phase. The duration of closure and traffic impacts during the 2<sup>nd</sup> Street landing need to be evaluated further but, the design team believes this would be considerably longer to construct than the 1<sup>st</sup> Street landing possibly requiring staged construction.

## Alternative 2

Alternative 2, will locate the new bridge slightly south of Alternative 1, closer to the existing alignment. The new bridge would overlap with the existing bridge, which will require staged construction of the new bridge and a short duration closure to shift traffic.

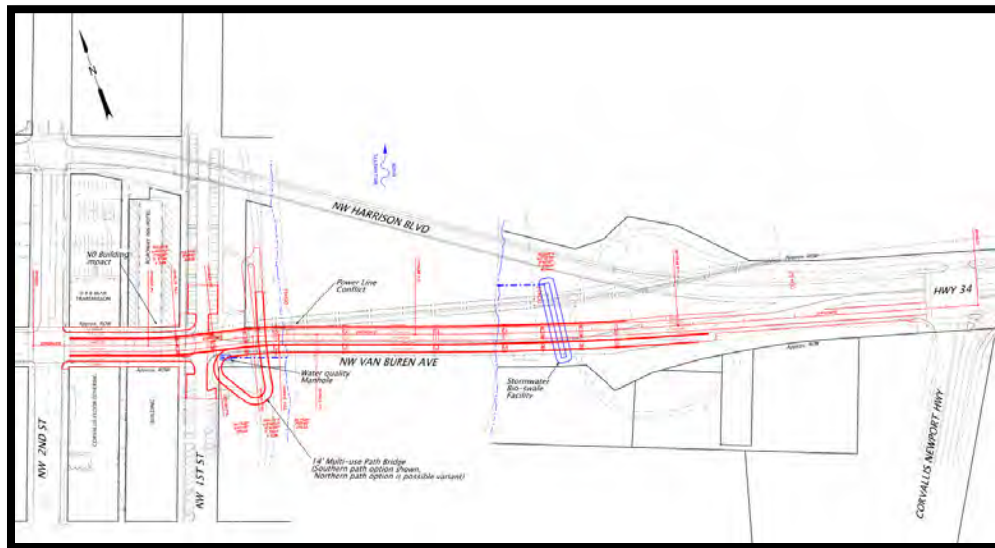


Figure 11 - Alternative 2 Plan View

### Horizontal Alignment

Alternative 2 assumes the ultimate decision for the existing bridge will be to remove it or move it to another location, which will require staged construction. This alignment provides an improved connection on the west end out of downtown. On the east end the connection is improved over existing but this alternative moves part of the curve onto the bridge. This alternative would maintain one lane of traffic at all times, utilizing the old bridge for traffic in the first stage and part of the new bridge in the second stage. This alignment is partially on existing City owned park land and partially within the existing ODOT Van Buren Avenue ROW.

### Existing Bridge Disposition

For Alternative 2 the new bridge would be stage constructed and traffic would then be shifted to the new structure. However, the location of the new bridge would require the existing bridge to be either removed or relocated prior to completing the new bridge. If the existing bridge must remain on its current alignment, Alternative 2 is not feasible. Alternative 2 is highly affected by the existing bridge disposition or ultimate location.

### **Access Control**

The Design team has determined that there is no differentiation for this criterion from that described for Alternative 1.

### **Intersection Layout/Signals**

The Design team has determined that there is no differentiation for this criterion from that described for Alternative 1.

### **Lighting**

The Design team has determined that there is no differentiation for this criterion from that described for Alternative 1.

### **Right of Way**

Alternative 2 would require the least amount of temporary ROW due to the stage construction of the new bridge. The stage construction minimizes the width needed outside of the current right of way for construction. Like Alternative 1, a ROW swap between ODOT and the City could trigger a public vote. This Alternative is highly vulnerable to ROW needs.

### **Environmental Impacts and Mitigation**

The environmental impacts and mitigation evaluation criteria span over multiple sub-criteria including noise, tree, and permitting impacts.

### **Noise Impacts**

The Design team has determined that there is no differentiation for this criterion from that described for Alternative 1.

### **Tree Impacts**

Alternative 2 is tighter to the existing alignment and would result in marginally less tree removal.

### **Environmental and Permitting Impacts**

Alternative 2 would require staged construction of the new bridge, necessitating two work bridges. No detour bridge would be required, similar to Alternative 1. This alternative assumes that the existing bridge is relocated or demolished. This alternative appears to have the least amount of permitting required for construction. There is no differentiator for landing at 1<sup>st</sup> Street or 2<sup>nd</sup> Street for Alternative 2.

### **Utilities**

The Design team has determined that there is no differentiation for this criterion from that described for Alternative 1.

### **Hazardous Materials**

The Design team has determined that there is no differentiation for this criterion from that described for Alternative 1.

### **Stormwater Management**

The Design team has determined that there is no differentiation for this criterion from that described for Alternative 1.

### **Multi-Use Trail Connectivity**

The Design team has determined that there is no differentiation for this criterion from that described for Alternative 1.

**Park Impacts**

Alternative 2 has less park impacts than Alternative 1 as it occupies most of the existing footprint.

**Constructability**

Alternative 2 will be partially constructed in the existing bridge’s footprint requiring staged construction. While staged construction is a typical construction method, it adds incremental difficulty to Alternative 1. Stage 1 construction may require a temporary approach be built before traffic can be switched to the new bridge. The existing bridge would then be relocated or demolished prior to construction of the rest of the bridge. Due to the proximity to the existing bridge, careful consideration would have to be given to where the new foundations are placed and how much removal of the existing foundations is needed. Similar constructability issues remain for the 1<sup>st</sup> Street and 2<sup>nd</sup> Street landing alternatives. This alignment alternative is considered less constructable than Alternative 1.

**Alternative 3**

Alternative 3 approximately occupies the existing bridge location with minor refinements to improve roadway geometry and assumes the ultimate decision for the existing bridge will be to demolish it or move it to another location.

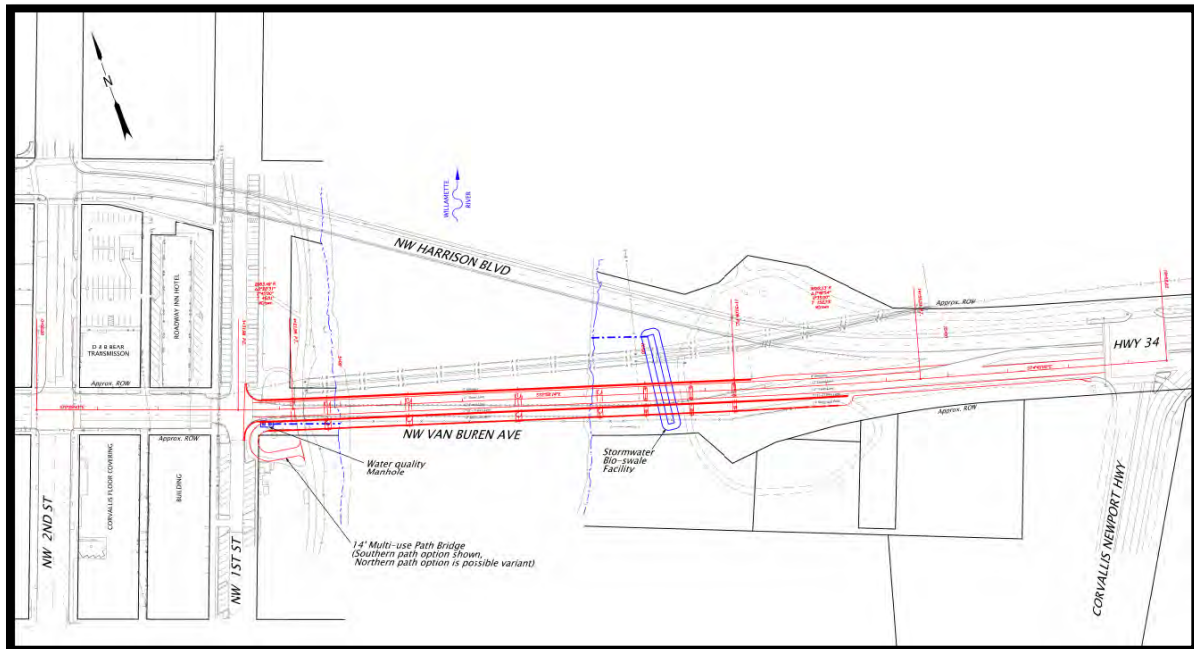


Figure 12 - Alternative 3 Plan View

The project team also explored moving the existing trusses to be used as a detour bridge with the potential for permanent relocation. This will be differentiated in the report where it differs from a standard temporary detour bridge.



Figure 13 - Alternative 3

### ***Horizontal Alignment***

Alternative 3 shifts the east end of the existing alignment slightly north by including flat curves on both approaches to the bridge. Alternative 3 would require that a detour bridge be constructed to the north so that traffic is impacted to the least extent possible. It is assumed that the connection to the detour alignment could be made in one short duration closure if the existing bridge is moved to the detour alignment. Once the detour is in place, the existing bridge would be relocated or demolished and the new bridge constructed, provided the existing bridge was not already relocated for use as a detour during construction. This alternative provides primarily a tangent alignment and maintains a crown roadway section across the bridge and approaches. From a roadway alignment perspective this is the preferred alternative although all alignments studied meet design criteria, this alignment is tangent.

### ***Existing Bridge Disposition***

The Alternative 3 horizontal alignment nearly completely overlaps the existing bridge. Alternative 3 requires the existing bridge to be relocated or removed.

### ***Access Control***

Alternative 3 maintains the existing alignment and therefore would have much less impact to the 1<sup>st</sup> Street intersection.

### ***Intersection Layout/Signals***

Alternative 3 maintains the existing alignment and therefore would have much less impact to the intersection.

### **Lighting**

The Design team has determined that there is no differentiation for this criterion from that described for Alternative 1.

### **Right of Way**

All horizontal alignments will require some ROW be acquired to accommodate the pedestrian trail connection path as previously described with the possible exception of Alternative 3 tying into the 1<sup>st</sup> Street intersection.

Alternative 3 would have similar temporary ROW impacts as Alternative 2. Alternative 3 would require the construction of a full temporary detour bridge occupying approximately the same footprint as the Alternative 2 staged construction. The final configuration of Alternative 3 is entirely within ODOT ROW making it the safest alternative from a ROW standpoint.

### **Environmental Impacts and Mitigation**

The environmental impacts and mitigation evaluation criteria span over multiple sub-criteria including noise, tree, and permitting impacts.

### **Noise Impacts**

From a noise perspective, of the three horizontal alignments it can be assumed that Alignment 3 is the preferred alignment as it is closest to the existing alignment and the noise environment remains similar, although the additional lane is a change.

### **Tree Impacts**

Alternative 3 would appear to have the least amount of tree removal but, the necessary detour bridge would land in the same footprint as Alternative 2.

### **Environmental and Permitting Impacts**

Alternative 3 assumes that the existing bridge is relocated or demolished. The new bridge would be constructed closest to the existing centerline. This alternative requires a detour bridge and two work bridges. While the permitting effort is slightly more than for Alternative 2, it is not considered a significant differentiator and is not seen as an undue risk to the project from a permitting standpoint.

### **Utilities**

The Design team has determined that there is no differentiation for this criterion from that described for Alternative 1.

### **Hazardous Materials**

The Design team has determined that there is no differentiation for this criterion from that described for Alternative 1.

### **Stormwater Management**

The Design team has determined that there is no differentiation for this criterion from that described for Alternative 1.

### **Multi-Use Trail Connectivity**

The Design team has determined that there is no differentiation for this criterion from that described for Alternative 1.

### Park Impacts

Alternative 3 is the only horizontal alignment that would have no permanent park impacts outside of ODOT ROW for the vehicular portion of the bridge.

### Constructability

Alternative 3 is located approximately on the existing alignment. A full temporary detour bridge and temporary approaches would need to be constructed to the north to carry traffic prior to relocating or demolishing the existing bridge. Once the existing bridge is no longer in conflict, the new bridge could be constructed. Building a temporary detour bridge is a common construction technique but does add some risk to construction. Similar constructability issues remain for the 1<sup>st</sup> Street and 2<sup>nd</sup> Street landing alternatives. This option is considered more constructable than Alternatives 1 and 2.

Once the new bridge is completed and traffic moved onto it, the detour bridge can be removed.

The project team has concluded that reusing the existing truss carries too much risk to the project, is not prudent, and should not be considered further. The risks identified include:

- The existing Van Buren Bridge may be damaged from the stresses of sliding and raising. Should fracture critical elements fail during the slide and raising, the bridge would experience catastrophic collapse.
- The existing Van Buren Bridge has been in service for over 100 years and may not reach a 50 year design life if repurposed after construction.
- Future repainting of the Van Buren Bridge carries the risk of environmental damage.
- If the existing Van Buren Bridge is slid and used as a detour structure, it would not meet the design load of HL-93 required for a temporary detour without strengthening. Sliding the existing Van Buren bridge into a detour location could require an additional in-water work period, delaying the project one year with a cost of \$0.5-\$1 million for construction delay.

## Summary and Recommendation

### Construction Costs

Table 1 below shows a cost summary of the seven alternatives. Detailed cost estimates for each alternative are included in Appendix E. Landing at 2<sup>nd</sup> Street will cost roughly \$13M more than landing at 1<sup>st</sup> Street.

These cost estimates include 13.5% for construction engineering, estimated ROW costs, \$100k for public outreach during construction, \$250k for reimbursable utilities, \$50k for APHIS and an overall 40% contingency.

Table 1 - Alternatives Cost Summary

Alternative	Cost	% over Least Cost
Alternative 1 - 1st Street	\$40.9M	0.0%
Alternative 1 - 2nd Street	\$53.8M	31.5%
Alternative 2 - 1st Street	\$47.8M	16.9%
Alternative 2 - 2nd Street	\$60.7M	48.4%
Alternative 3 - 1st Street (Temporary Detour)	\$48.7M	19.1%
Alternative 3 - 1st Street (Reuse Existing Trusses)	\$56.5M	38.1%
Alternative 3 - 2nd Street	\$61.5M	50.4%

Alternative 1 landing at 1<sup>st</sup> Street is the lowest cost at \$40.9M.

### **Summary of Alternatives**

The 2005 preferred alternative was a new Van Buren Bridge located slightly north of the existing bridge. The design team further explored six alternatives:

- Alternative 1 – Landing at 1<sup>st</sup> Street
- Alternative 1 – Landing at 2<sup>nd</sup> Street
- Alternative 2 – Landing at 1<sup>st</sup> Street
- Alternative 2 – Landing at 2<sup>nd</sup> Street
- Alternative 3 – Landing at 1<sup>st</sup> Street (Temporary Detour)
- Alternative 3 – Landing at 1<sup>st</sup> Street (Reuse Existing Trusses)
- Alternative 3 – Landing at 2<sup>nd</sup> Street.

Alternative 1 is constructed to the north of the existing bridge and allows the existing bridge to remain in place if a future owner is found. No detour bridge is required.

Alternative 2 is stage constructed slightly north of the existing bridge. Traffic will remain on the existing bridge in Stage 1 and be moved to a portion of the new bridge in Stage 2. The existing bridge would need to be relocated or demolished. ROW impacts from this alternative may trigger a public vote. No detour bridge is required.

Alternative 3 is constructed on the existing alignment and is preferred from a roadway geometry standpoint. The existing bridge would need to be relocated or demolished. No permanent ROW impacts are anticipated.

Alternative 3 reusing the existing trusses as a detour bridge appears to be challenged, not prudent, and not recommended for further consideration.

### **Recommendation**

The Roadway Alternatives Analysis evaluated the seven proposed alternatives against the following criteria: existing bridge disposition, access control, intersection layout/signals, lighting, ROW, environmental impacts and mitigation, utilities, hazardous materials, stormwater management, trail connectivity, park impacts, roadway geometry, mobility, constructability, and construction costs.

The design team weighted each of these evaluation criteria and assigned a score for each alternative. This is summarized in the decision matrix in Table 2 on the next page.

Table 2 – Roadway Alternatives Decision Matrix

Roadway Alternatives Decision Matrix															
Alternative	Alternative 1 1st St		Alternative 1 2nd St		Alternative 2 1st St		Alternative 2 2nd St		Alternative 3 1st St (Temporary Detour)		Alternative 3 1st St (Existing Trusses)		Alternative 3 2nd St		
	Weight	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score
Existing Bridge Disposition	8	8	64	8	64	0	0	0	0	0	0	8	64	0	0
Access Control	5	10	50	4	20	10	50	4	20	10	50	10	50	4	20
Intersection Layout/Signals	5	6	30	8	40	6	30	8	40	6	30	6	30	8	40
Lighting	2	10	20	9	18	10	20	9	18	10	20	10	20	9	18
Right of Way	8	2	16	2	16	3	24	3	24	9	72	9	72	9	72
Environmental Impacts and Mitigation	8	6	48	6	48	9	72	8	64	9	72	9	72	8	64
Utilities	7	7	49	5	35	8	56	6	42	8	56	8	56	6	42
Hazardous Materials	3	5	15	8	24	5	15	8	24	5	15	5	15	8	24
Stormwater Management	5	8	40	7	35	8	40	7	35	8	40	8	40	7	35
Trail Connectivity	5	8	40	5	25	8	40	5	25	8	40	8	40	5	25
Park Impacts	8	6	48	8	64	7	56	8	64	10	80	10	80	10	80
Roadway Geometry	7	6	42	6	42	8	56	8	56	10	70	10	70	10	70
Mobility	8	10	80	10	80	10	80	10	80	10	80	9	72	10	80
Constructability	9	9	81	5	45	7	63	4	36	10	90	3	27	6	54
Construction Costs	12	10	120	6.8	82	8.3	100	5.2	62	8.1	97	6.2	74	5.0	60
<b>TOTAL WEIGHTED SCORE</b>		<b>743</b>		<b>638</b>		<b>702</b>		<b>590</b>		<b>812</b>		<b>782</b>		<b>684</b>	

The design team recommends Alternative 3 landing at 1<sup>st</sup> Street (Temporary Detour) as the preferred alternative.

If the existing bridge remains in its existing location, Alternative 1 landing at 1<sup>st</sup> Street is the preferred alternative. The project team scored each criterion weighing heavily project risk and the best desired outcome for the new bridge.

The project team recommends Alternative 3 landing at 1<sup>st</sup> Street (Temporary Detour) because it is viewed as having the most desirable horizontal alignment, having the least impacts to access for existing business, potential for no permanent ROW impacts, not at risk for a public vote due to changing park use, is readily constructed, and construction cost is within the project budget.

Potential ROW and park impacts for Alternatives 2 add significant risks to the project. Alternative 2 is viewed as the least desirable alternative because it has an inferior horizontal alignment to Alternative 3, requires staged construction and has potential ROW risks due to park impacts.

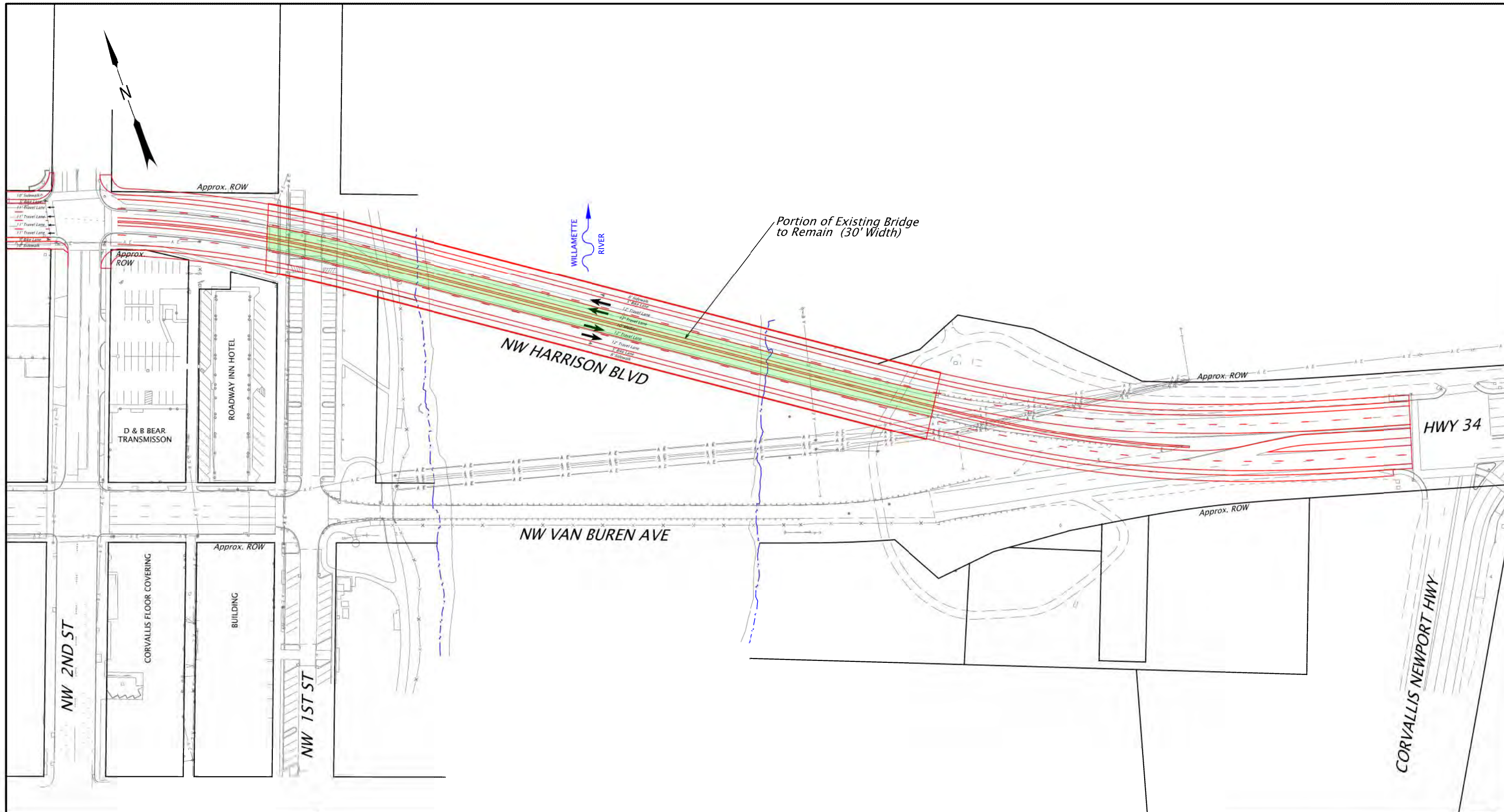
The design team opinion is that Alternative 1 landing at 1<sup>st</sup> Street would only be pursued if its determined that the existing bridge must remain in its current location.



Although landing at 2<sup>nd</sup> Street provides a safety benefit, the project team does not recommend landing at 2<sup>nd</sup> Street due to increased project costs, ROW impacts to the existing business due to the reduced alley access, and increased impacts to traffic due to reconstruction of the Van Buren block between 1<sup>st</sup> and 2<sup>nd</sup> Street.

**Appendix A — Harrison Widening — 2005  
Revalidation Exhibits and Cost Estimates**

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VAN BUREN BRIDGE PROJECT  
HARRISON BLVD BRIDGE

FIGURE 5

OREGON DEPARTMENT  
OF TRANSPORTATION

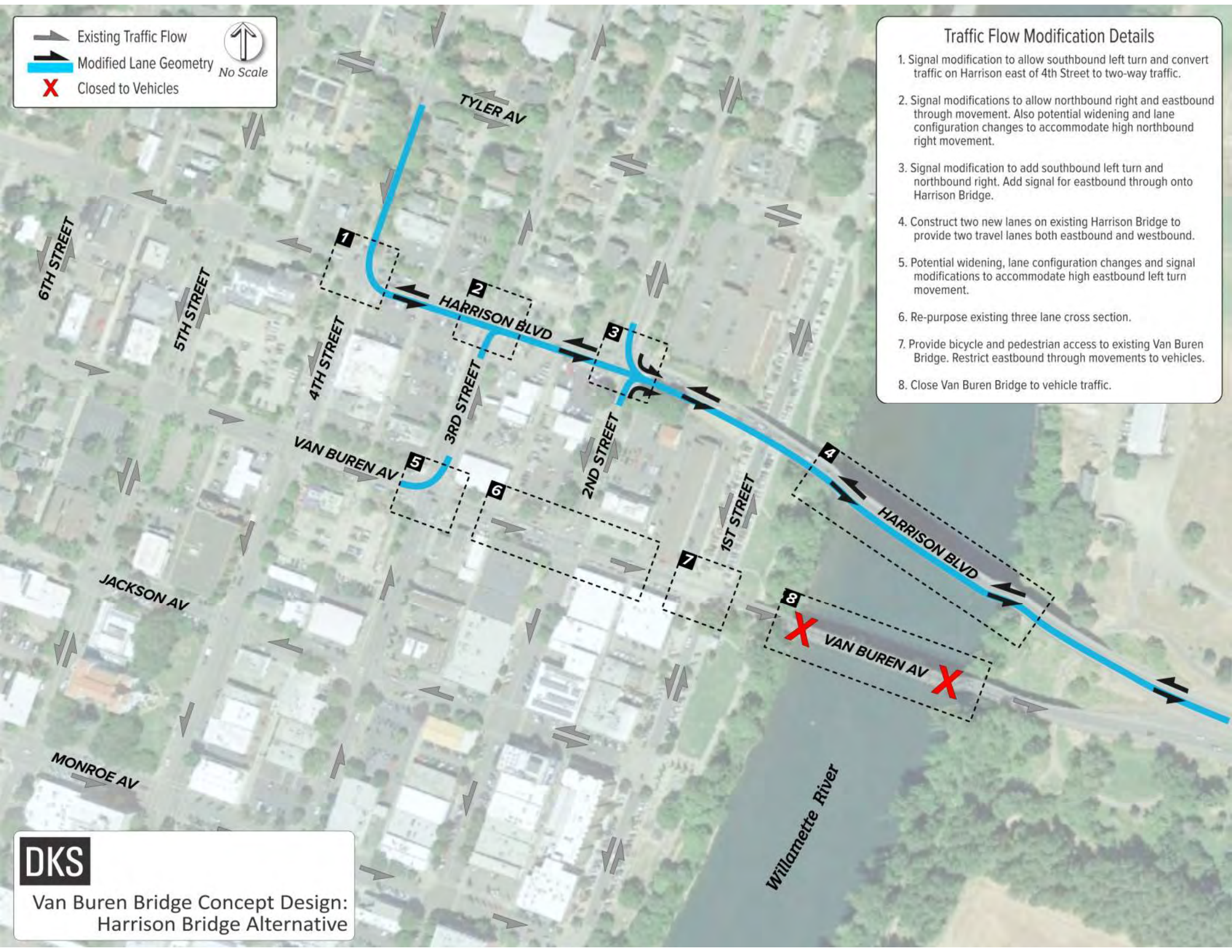


Corporate Office: 501 COUNTRY CLUB ROAD, SUITE 100B EUGENE, OREGON 97401-6089  
 5101 SW MEADOWS ROAD, SUITE 100 LAKE OSWEGO, OREGON 97035-4285  
 2025 MISSION STREET SE, SUITE 100 SALEM, OREGON 97305-1285  
 1333 POPLAR DRIVE MEDFORD, OREGON 97504-9307  
 WWW.OBEC.COM

 Existing Traffic Flow  
 Modified Lane Geometry  
 Closed to Vehicles  
 No Scale

### Traffic Flow Modification Details

1. Signal modification to allow southbound left turn and convert traffic on Harrison east of 4th Street to two-way traffic.
2. Signal modifications to allow northbound right and eastbound through movement. Also potential widening and lane configuration changes to accommodate high northbound right movement.
3. Signal modification to add southbound left turn and northbound right. Add signal for eastbound through onto Harrison Bridge.
4. Construct two new lanes on existing Harrison Bridge to provide two travel lanes both eastbound and westbound.
5. Potential widening, lane configuration changes and signal modifications to accommodate high eastbound left turn movement.
6. Re-purpose existing three lane cross section.
7. Provide bicycle and pedestrian access to existing Van Buren Bridge. Restrict eastbound through movements to vehicles.
8. Close Van Buren Bridge to vehicle traffic.




  
 Van Buren Bridge Concept Design:  
 Harrison Bridge Alternative

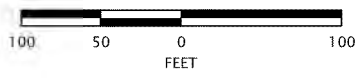
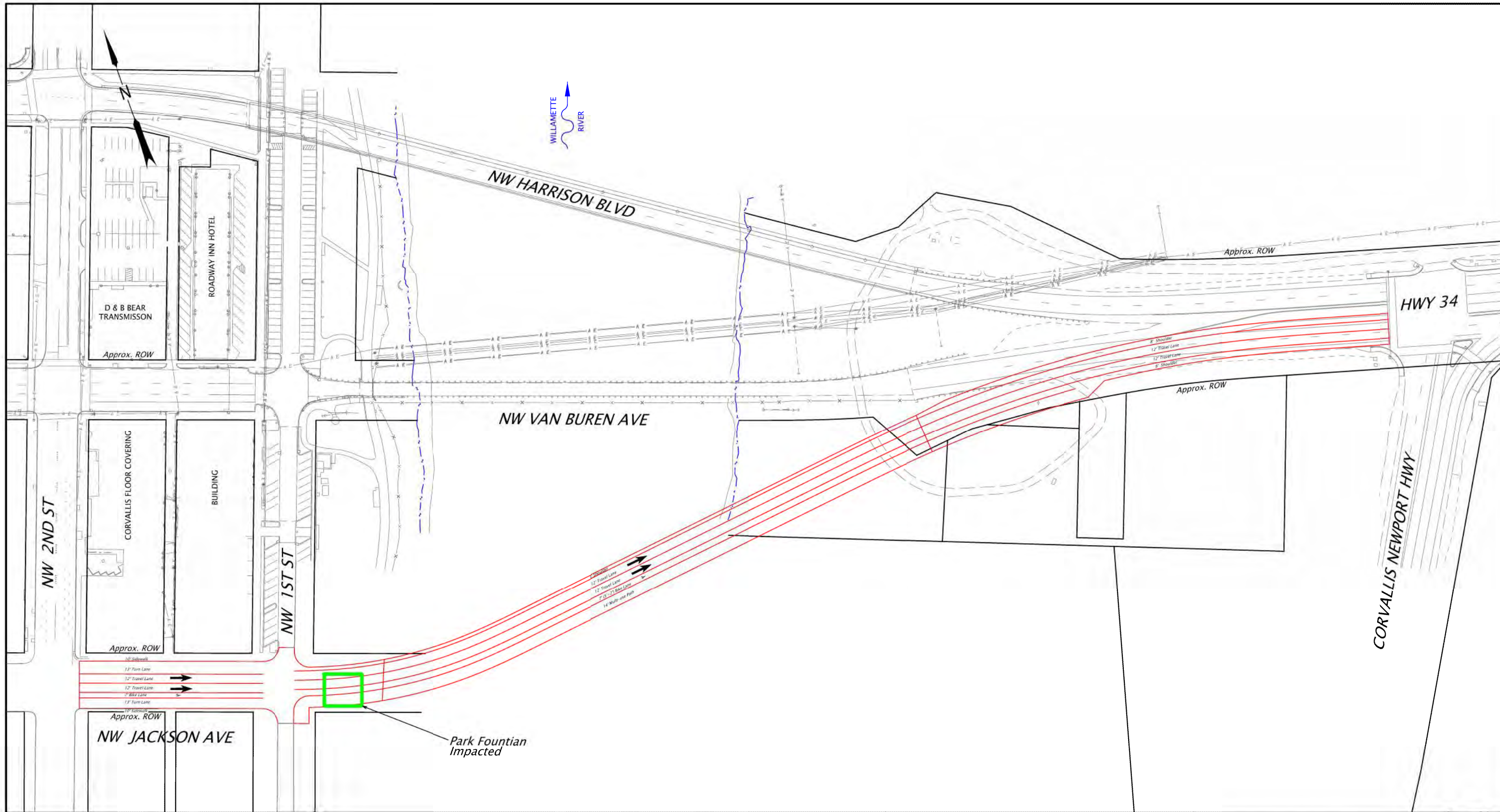
**K20688 Van Buren Bridge Project**  
**Grading, Drainage, Structure, Paving, Signing, Illumination, Signal and Roadside Development**  
**Benton County**

**Harrison Blvd Widening**  
**Engineer's Cost Estimate**  
**August 2, 2019**

Spec. No.	Item No.	Item	Bid Unit	Est. Unit	Quantity	Unit Price	Total Price
<b>TEMPORARY FEATURES AND APPURTENANCES</b>							
00210	10	Mobilization	Lump Sum	Lump Sum	1	\$ 4,541,891.63	\$ 4,541,891.63
00225	20	Temporary Work Zone Traffic, Complete	Lump Sum	Lump Sum	1	\$ 3,972,702.47	\$ 3,972,702.47
00253	30	New Construction Work Structure	Lump Sum	Lump Sum	1	\$ 900,000.00	\$ 900,000.00
00253	40	Temporary Work Access and Containment	Lump Sum	Lump Sum	1	\$ 250,000.00	\$ 250,000.00
00280	50	Erosion Control	Lump Sum	Lump Sum	1	\$ 25,000.00	\$ 25,000.00
00290	60	Pollution Control Plan	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
00290	70	Work Containment Plan	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
00294	80	Health and Safety Plan	Lump Sum	Lump Sum	1	\$ 5,000.00	\$ 5,000.00
<b>ROADWORK</b>							
00305	90	Construction Survey Work	Lump Sum	Lump Sum	1	\$ 352,700.00	\$ 352,700.00
00310	100	Removal of Structures and Obstructions	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
00320	110	Clearing and Grubbing	Lump Sum	Lump Sum	1	\$ 4,000.00	\$ 4,000.00
00330	120	General Excavation	Cu Yd	Cu Yd	7,100	\$ 35.00	\$ 248,500.00
<b>DRAINAGE AND SEWERS</b>							
00470	130	Concrete Manhole, Water Quality	Lump Sum	Lump Sum	1	\$ 60,000.00	\$ 60,000.00
00490	140	Drainage and Sewers, Complete	Lump Sum	Lump Sum	1	\$ 200,000.00	\$ 200,000.00
<b>BRIDGE AND RETAINING WALLS</b>							
xxxxx	150	Shoring and Cribbing Bridge New Construction	Lump Sum	Lump Sum	1	\$ 250,000.00	\$ 250,000.00
xxxxx	160	Harrison Blvd. Bridge Widening	Lump Sum	Sq Ft	52,300.0	\$ 350.00	\$ 18,305,000.00
xxxxx	170	Harrison Blvd. Bridge Retrofitting	Lump Sum	Sq Ft	27,000.0	\$ 300.00	\$ 8,100,000.00
xxxxx	180	Premium for Staged Construction (15%)	Lump Sum	Lump Sum	1	\$ 2,745,750.00	\$ 2,745,750.00
xxxxx	190	West Approach MSE Wall	Lump Sum	Sq Ft	3,150.0	\$ 70.00	\$ 220,500.00
xxxxx	200	Ground Improvements	Lump Sum	Cu Yd	8,889	\$ 250.00	\$ 2,222,222.22
<b>BASES</b>							
00641	200	Aggregate Base	Ton	Ton	9,000	\$ 35.00	\$ 315,000.00
<b>WEARING SURFACES</b>							
00744	210	Level 3, 1/2 Inch ACP Mixture	Ton	Ton	5,200	\$ 150.00	\$ 780,000.00
00759	220	Concrete Curbs, Standard Curb	Ft	Ft	600	\$ 30.00	\$ 18,000.00
00759	230	Concrete Walks	Sq Ft	Sq Ft	4,900	\$ 9.00	\$ 44,100.00
00759	240	Extra for Curb Ramps	Each	Each	8	\$ 2,000.00	\$ 16,000.00
00759	250	Truncated Domes on New Surfaces	Each	Each	8	\$ 500.00	\$ 4,000.00
xxxxx	260	Grinding and Inlay (per City Block)	Each	Each	6	\$ 42,000.00	\$ 252,000.00
xxxxx	270	Reconstruct Sidewalk Ramps (per City Block)	Each	Each	48	\$ 15,000.00	\$ 720,000.00
<b>PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES</b>							
00820	280	Concrete Barrier, Tall	Ft	Ft	530	\$ 75.00	\$ 39,750.00
00840	290	Securing Concrete Barrier	Ft	Ft	180	\$ 10.00	\$ 1,800.00
xxxxx	300	Permanent Pavement Markings, Complete	Lump Sum	Lump Sum	1	\$ 20,000.00	\$ 20,000.00
<b>PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS</b>							
xxxxx	310	Permanent Traffic Control Signs, complete	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
xxxxx	320	Illumination	Lump Sum	Lump Sum	1	\$ 300,000.00	\$ 300,000.00
xxxxx	330	Signal Modifications	Each	Each	3	\$ 100,000.00	\$ 300,000.00
xxxxx	340	Signing and Striping Improvements	Lump Sum	Lump Sum	1	\$ 25,000.00	\$ 25,000.00
<b>RIGHT-OF-WAY DEVELOPMENT AND CONTROL</b>							
01011	350	Stormwater Quality, Swale	Lump Sum	Lump Sum	1	\$ 40,000.00	\$ 40,000.00
xxxxx	360	Permanent Landscaping	Lump Sum	Lump Sum	1	\$ 100,000.00	\$ 100,000.00
<b>SUB-TOTAL OF ITEMS</b>							\$ 45,418,916.32
Construction Engineering at 13.5% (per PD-08)							\$ 6,359,658.08
Subtotal of Biddable Items and CE							\$ 51,778,574.41
<b>ANTICIPATED ITEMS</b>							
		Permanet ROW	Sq Ft		5,700	\$ 50.00	\$ 285,000.00
		Temporary Construction Easement	Sq Ft		10,700	\$ 10.00	\$ 107,000.00
		Permanent Park Easement	Sq Ft		1,200	\$ 50.00	\$ 60,000.00
		Temporary Park Construction Easement	Sq Ft		18,000	\$ 20.00	\$ 360,000.00
		Public Outreach			1	\$ 100,000.00	\$ 100,000.00
		Reimburseable Utilities			1	\$ 250,000.00	\$ 250,000.00
		APHIS			1	\$ 50,000.00	\$ 50,000.00
Additional Preliminary Engineering @ 10%							\$ 5,177,857.44
Contingencies @ 40%							\$ 23,267,372.74
<b>TOTAL</b>							<b>\$ 81,435,804.59</b>

**Appendix B — Jackson Avenue Bridge — 2005  
Revalidation Exhibits and Cost Estimates**

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VAN BUREN BRIDGE PROJECT  
JACKSON AVE BRIDGE

FIGURE 6

OREGON DEPARTMENT  
OF TRANSPORTATION

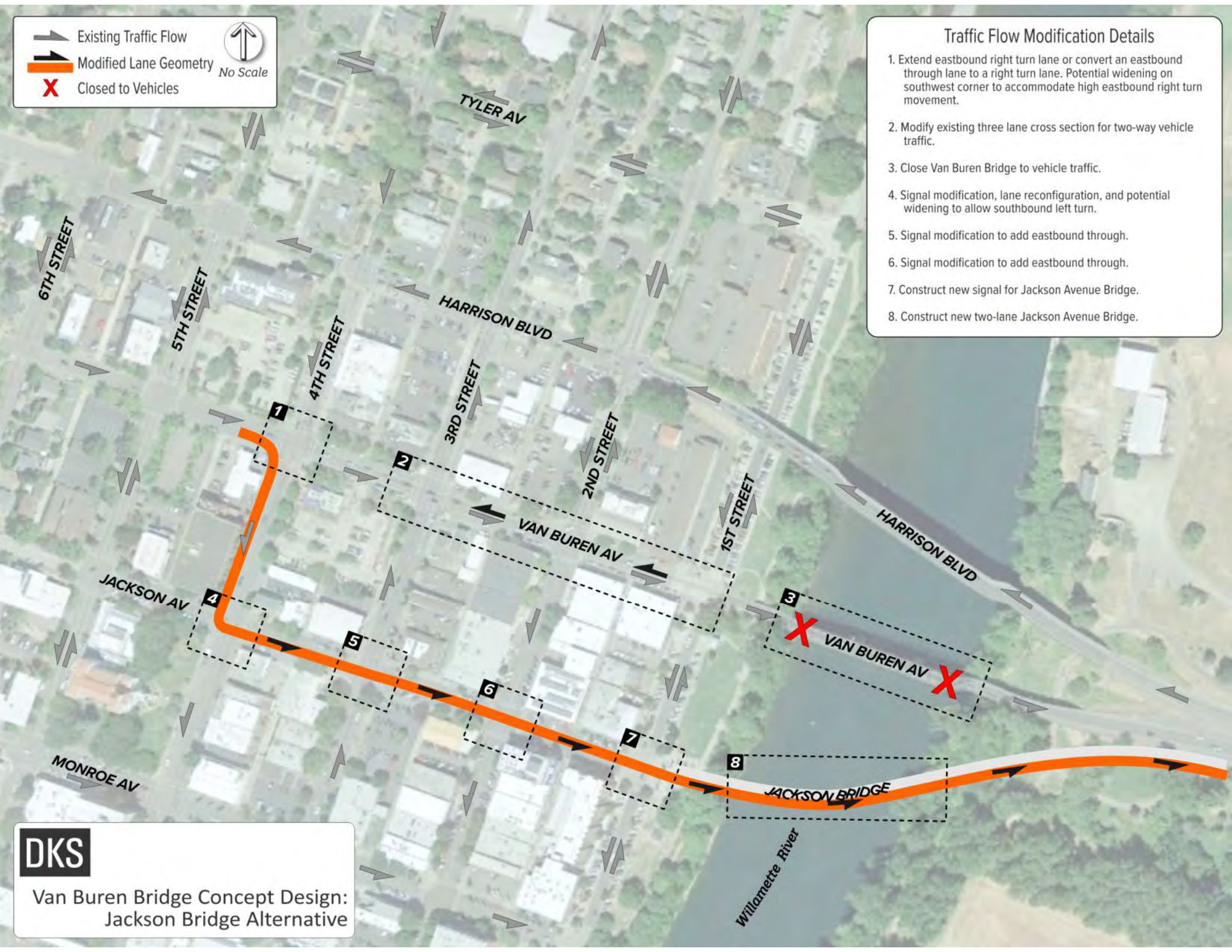



Corporate Office: 501 COUNTRY CLUB ROAD, SUITE 100B EUGENE, OREGON 97401-6089  
 5101 SW MEADOWS ROAD, SUITE 100 LAKE OSWEGO, OREGON 97035-4285  
 2025 MISSION STREET SE, SUITE 100 SALEM, OREGON 97305-1285  
 1331 POPLAR DRIVE MEDFORD, OREGON 97504-9307  
 WWW.ODEC.COM

 Existing Traffic Flow  
 Modified Lane Geometry  
 Closed to Vehicles  
 No Scale

### Traffic Flow Modification Details

1. Extend eastbound right turn lane or convert an eastbound through lane to a right turn lane. Potential widening on southwest corner to accommodate high eastbound right turn movement.
2. Modify existing three lane cross section for two-way vehicle traffic.
3. Close Van Buren Bridge to vehicle traffic.
4. Signal modification, lane reconfiguration, and potential widening to allow southbound left turn.
5. Signal modification to add eastbound through.
6. Signal modification to add eastbound through.
7. Construct new signal for Jackson Avenue Bridge.
8. Construct new two-lane Jackson Avenue Bridge.




  
 Van Buren Bridge Concept Design:  
 Jackson Bridge Alternative



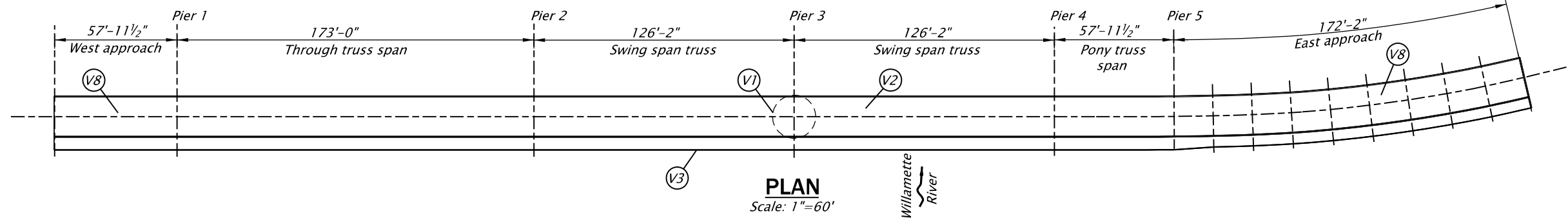
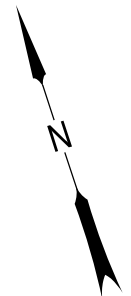
**K20688 Van Buren Bridge Project**  
**Grading, Drainage, Structure, Paving, Signing, Illumination, Signal and Roadside Development**  
**Benton County**

**Jackson Ave**  
**Engineer's Cost Estimate**  
**August 2, 2019**

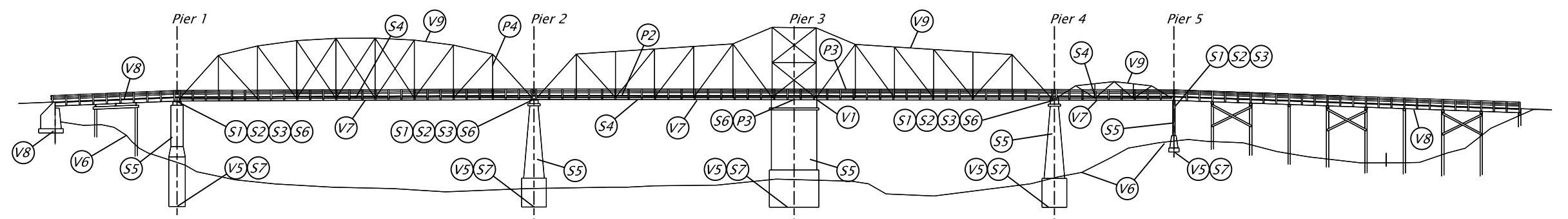
Spec. No.	Item No.	Item	Bid Unit	Est. Unit	Quantity	Unit Price	Total Price
<b>TEMPORARY FEATURES AND APPURTENANCES</b>							
00210	10	Mobilization	Lump Sum	Lump Sum	1	\$ 2,847,947.00	\$ 2,847,947.00
00225	20	Temporary Work Zone Traffic, Complete	Lump Sum	Lump Sum	1	\$ 2,448,152.00	\$ 2,448,152.00
00253	30	New Construction Work Structure	Lump Sum	Lump Sum	1	\$ 900,000.00	\$ 900,000.00
00253	40	Temporary Work Access and Containment	Lump Sum	Lump Sum	1	\$ 250,000.00	\$ 250,000.00
00280	50	Erosion Control	Lump Sum	Lump Sum	1	\$ 50,000.00	\$ 50,000.00
00290	60	Pollution Control Plan	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
00290	70	Work Containment Plan	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
00294	80	Health and Safety Plan	Lump Sum	Lump Sum	1	\$ 5,000.00	\$ 5,000.00
<b>ROADWORK</b>							
00305	90	Construction Survey Work	Lump Sum	Lump Sum	1	\$ 206,900.00	\$ 206,900.00
00310	100	Removal of Structures and Obstructions	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
00320	110	Clearing and Grubbing	Lump Sum	Lump Sum	1	\$ 4,000.00	\$ 4,000.00
00330	120	Embankment in Place	Cu Yd	Cu Yd	2,900	\$ 30.00	\$ 87,000.00
<b>DRAINAGE AND SEWERS</b>							
00470	130	Concrete Manhole, Water Quality	Lump Sum	Lump Sum	1	\$ 60,000.00	\$ 60,000.00
00490	140	Drainage and Sewers, Complete	Lump Sum	Lump Sum	1	\$ 200,000.00	\$ 200,000.00
<b>BRIDGE AND RETAINING WALLS</b>							
xxxxx	150	Shoring and Cribbing Bridge New Construction	Lump Sum	Lump Sum	1	\$ 250,000.00	\$ 250,000.00
xxxxx	160	Jackson Avenue Bridge	Lump Sum	Sq Ft	42,600.0	\$ 350.00	\$ 14,910,000.00
xxxxx	170	Ground Improvements	Lump Sum	Cu Yd	8,889	\$ 250.00	\$ 2,222,222.22
<b>BASES</b>							
00641	180	Aggregate Base	Ton	Ton	4,200	\$ 35.00	\$ 147,000.00
<b>WEARING SURFACES</b>							
00744	190	Level 3, 1/2 Inch ACP Mixture	Ton	Ton	2,300	\$ 150.00	\$ 345,000.00
00759	200	Concrete Curbs, Standard Curb	Ft	Ft	200	\$ 30.00	\$ 6,000.00
00759	210	Concrete Walks	Sq Ft	Sq Ft	1,300	\$ 9.00	\$ 11,700.00
00759	220	6 Inch Concrete Surfacing	Sq Ft	Sq Ft	7,000	\$ 25.00	\$ 175,000.00
00759	230	Extra for Curb Ramps	Each	Each	8	\$ 2,000.00	\$ 16,000.00
00759	240	Truncated Domes on New Surfaces	Each	Each	8	\$ 500.00	\$ 4,000.00
xxxxx	250	Grinding and Inlay (per City Block)	Each	Each	6	\$ 42,000.00	\$ 252,000.00
xxxxx	260	Reconstruct Sidewalk Ramps (per City Block)	Each	Each	48	\$ 15,000.00	\$ 720,000.00
<b>PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES</b>							
00820	270	Concrete Barrier, Tall	Ft	Ft	430	\$ 75.00	\$ 32,250.00
00840	280	Securing Concrete Barrier	Ft	Ft	430	\$ 10.00	\$ 4,300.00
xxxxx	290	Permanent Pavement Markings, Complete	Lump Sum	Lump Sum	1	\$ 20,000.00	\$ 20,000.00
<b>PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS</b>							
xxxxx	300	Permanent Traffic Control Signs, complete	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
xxxxx	310	Illumination	Lump Sum	Lump Sum	1	\$ 300,000.00	\$ 300,000.00
xxxxx	320	Signal Modifications	Each	Each	3	\$ 100,000.00	\$ 300,000.00
xxxxx	330	New Signals	Each	Each	2	\$ 250,000.00	\$ 500,000.00
xxxxx	340	Signing and Striping Improvements	Lump Sum	Lump Sum	1	\$ 25,000.00	\$ 25,000.00
<b>RIGHT-OF-WAY DEVELOPMENT AND CONTROL</b>							
01011	350	Stormwater Quality, Swale	Lump Sum	Lump Sum	1	\$ 40,000.00	\$ 40,000.00
xxxxx	360	New Fountain	Lump Sum	Lump Sum	1	\$ 1,000,000.00	\$ 1,000,000.00
xxxxx	370	Permanent Landscaping	Lump Sum	Lump Sum	1	\$ 100,000.00	\$ 100,000.00
<b>SUB-TOTAL OF ITEMS</b>							\$ 28,479,471.00
Construction Engineering at 13.5% (per PD-08)							\$ 3,992,794.00
Subtotal of Biddable Items and CE							\$ 32,472,265.00
<b>ANTICIPATED ITEMS</b>							
		Permanet ROW	Sq Ft		17,600	\$ 50.00	\$ 880,000.00
		Temporary Construction Easement	Sq Ft		0	\$ 10.00	\$ -
		Permanent Park Easement	Sq Ft		0	\$ 50.00	\$ -
		Temporary Park Construction Easement	Sq Ft		27,400	\$ 20.00	\$ 548,000.00
		Public Outreach			1	\$ 100,000.00	\$ 100,000.00
		Reimburseable Utilities			1	\$ 250,000.00	\$ 250,000.00
		APHIS			1	\$ 50,000.00	\$ 50,000.00
Additional Preliminary Engineering @ 10%							\$ 3,247,227.00
Contingencies @ 40%							\$ 15,018,997.00
<b>TOTAL</b>							<b>\$ 52,566,489.00</b>

**Appendix C - Van Buren Rehabilitation - 2005  
Revalidation Exhibits and Cost Estimates**

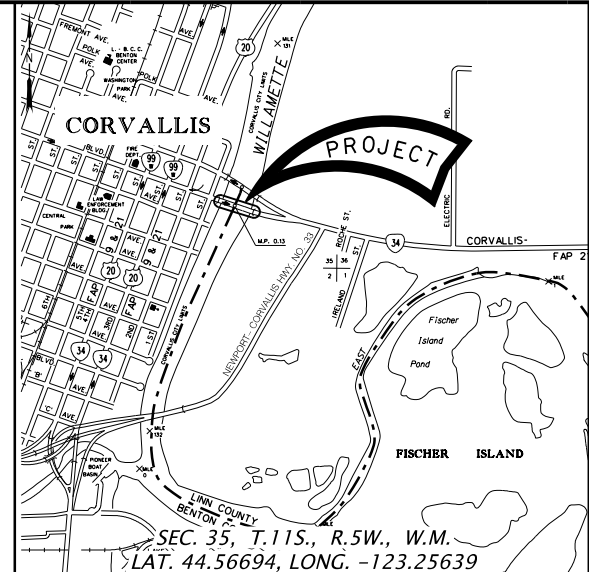
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**PLAN**  
Scale: 1"=60'



**ELEVATION**  
Scale: 1"=60'



**LOCATION MAP**  
No Scale

Seismic Rehabilitation Work

- (S1) Replace Bearings
- (S2) Extend Seat Width
- (S3) Transverse Restrainer
- (S4) Lateral Load System
- (S5) Column Strengthening
- (S6) Isolation Bearings
- (S7) Foundation Strengthening

Vehicular Rehabilitation Work

- (V1) Rehabilitate Turn Table Machinery
- (V2) Replace Stringers And Decking
- (V3) Replace Vehicular And Pedestrian Railings
- (V4) Safety Lighting
- (V5) Scour Remediation
- (V6) Riparian Slope Protection
- (V7) Replace Critical Fatigue Members
- (V8) Replace Approach
- (V9) Truss Strengthening

STRUCTURE NO.	02728
BDS DWG NO.	00000
CALC. BOOK	0000
HWY: 210 M.P. 0.13	
COUNTY Benton - Linn	
DATE	07/15/19

**SCALE WARNING**  
If scale bar doesn't measure one inch then drawing is not to scale

**DRAFT DESIGN  
ACCEPTANCE PLANS  
INFORMATION ONLY**

 A DOWL LLC Company	CORPORATE OFFICE: 920 COUNTRY CLUB ROAD, SUITE 100B EUGENE, OREGON 97401-6089 REGIONAL OFFICES: LAKE OSWEGO; SALEM; MEDFORD, OREGON; VANCOUVER, WASHINGTON	
	WILLAMETTE R_HWY 210_VAN BUREN AVE	

**OR34: WILLAMETTE RIVER (VAN BUREN AVE) BRIDGE**  
CORVALLIS - LEBANON HWY, 210 M.P. 0.13  
BENTON - LINN COUNTIES

Designer: Jacob McNutt, P.E.      Reviewer: Jeff Parker, P.E.  
 Drafter: Rodney Schultz      Checker: Jared Trowbridge, P.E.

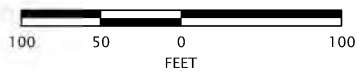
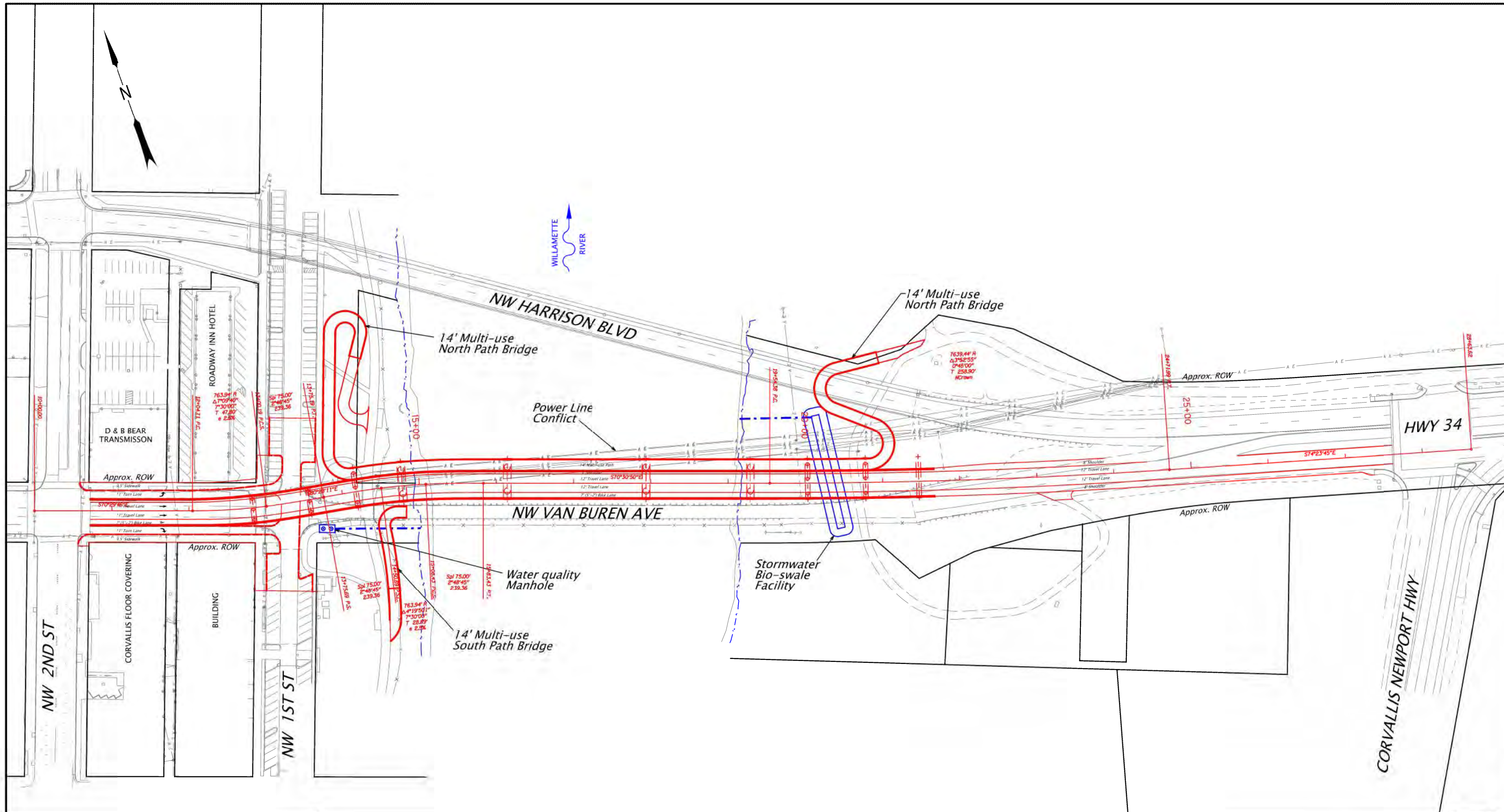
<b>PLAN AND ELEVATION</b>	SHEET NO. J01
---------------------------	------------------

**K20688 Van Buren Bridge Project**  
**Grading, Drainage, Structure, Paving, Signing, Illumination, Signal and Roadside Development**  
**Benton County**

**Van Buren Bridge Vehicular Rehabilitation**  
**Engineer's Cost Estimate**  
**August 2, 2019**

Spec. No.	Item No.	Item	Bid Unit	Est. Unit	Quantity	Unit Price	Total Price
<b>TEMPORARY FEATURES AND APPURTENANCES</b>							
00210	10	Mobilization	Lump Sum	Lump Sum	1	\$ 2,386,422.50	\$ 2,386,422.50
00225	20	Temporary Work Zone Traffic, Complete	Lump Sum	Lump Sum	1	\$ 1,844,380.25	\$ 1,844,380.25
00230	30	Construct and Remove Detours	Lump Sum	Lump Sum	1	\$ 120,000.00	\$ 120,000.00
00250	40	Temporary Detour Structure	Lump Sum	Lump Sum	1	\$ 1,764,000.00	\$ 1,764,000.00
00253	50	Work Structure	Lump Sum	Lump Sum	1	\$ 900,000.00	\$ 900,000.00
00253	60	Temporary Work Access and Containment	Lump Sum	Lump Sum	1	\$ 250,000.00	\$ 250,000.00
00280	70	Erosion Control	Lump Sum	Lump Sum	1	\$ 50,000.00	\$ 50,000.00
00290	80	Pollution Control Plan	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
00290	90	Work Containment Plan	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
00294	100	Health and Safety Plan	Lump Sum	Lump Sum	1	\$ 5,000.00	\$ 5,000.00
<b>ROADWORK</b>							
00305	110	Construction Survey Work	Lump Sum	Lump Sum	1	\$ 164,400.00	\$ 164,400.00
00310	120	Removal of Structures and Obstructions	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
00320	130	Clearing and Grubbing	Lump Sum	Lump Sum	1	\$ 1,000.00	\$ 1,000.00
00330	140	General Excavation	Cu Yd	Cu Yd	2,100	\$ 35.00	\$ 73,500.00
<b>DRAINAGE AND SEWERS</b>							
00470	150	Concrete Manhole, Water Quality	Lump Sum	Lump Sum	1	\$ 60,000.00	\$ 60,000.00
00490	160	Drainage and Sewers, Complete	Lump Sum	Lump Sum	1	\$ 100,000.00	\$ 100,000.00
<b>BRIDGE AND RETAINING WALLS</b>							
00501	170	Shoring and Cribbing Bridge	Lump Sum	Lump Sum	1	\$ 500,000.00	\$ 500,000.00
xxxxx	180	Van Buren Bridge Rehab	Lump Sum	Sq Ft	24,000.0	\$ 505.00	\$ 12,120,000.00
xxxxx	190	Turntable Rehab	Lump Sum	Lump Sum	1	\$ 1,000,000.00	\$ 1,000,000.00
xxxxx	200	Ground Improvements	Lump Sum	Cu Yd	8,889	\$ 250.00	\$ 2,222,222.22
<b>BASES</b>							
00641	200	Aggregate Base	Ton	Ton	1,000	\$ 35.00	\$ 35,000.00
<b>WEARING SURFACES</b>							
00744	210	Level 3, 1/2 Inch ACP Mixture	Ton	Ton	600	\$ 150.00	\$ 90,000.00
00759	220	Concrete Curbs, Standard Curb	Ft	Ft	50	\$ 30.00	\$ 1,500.00
00759	230	Concrete Walks	Sq Ft	Sq Ft	200	\$ 9.00	\$ 1,800.00
00759	240	6 Inch Concrete Surfacing	Sq Ft	Sq Ft	0	\$ 25.00	\$ -
00759	250	Extra for Curb Ramps	Each	Each	8	\$ 2,000.00	\$ 16,000.00
00759	260	Truncated Domes on New Surfaces	Each	Each	8	\$ 500.00	\$ 4,000.00
<b>PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES</b>							
00820	270						
<b>PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS</b>							
xxxxx	280	Permanent Traffic Control Signs, complete	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
xxxxx	290	Illumination	Lump Sum	Lump Sum	1	\$ 100,000.00	\$ 100,000.00
<b>RIGHT-OF-WAY DEVELOPMENT AND CONTROL</b>							
01011	300	Stormwater Quality, Swale	Lump Sum	Lump Sum	1	\$ 5,000.00	\$ 5,000.00
xxxxx	310	Permanent Landscaping	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
<b>SUB-TOTAL OF ITEMS</b>							<b>\$ 23,864,224.97</b>
Construction Engineering at 13.5% (per PD-08)							<b>\$ 3,347,928.83</b>
Subtotal of Biddable Items and CE							<b>\$ 27,212,153.80</b>
<b>ANTICIPATED ITEMS</b>							
		Permanet ROW	Sq Ft		0	\$ 50.00	\$ -
		Temporary Construction Easement	Sq Ft		0	\$ 10.00	\$ -
		Permanent Park Easement	Sq Ft		0	\$ 50.00	\$ -
		Temporary Park Construction Easement	Sq Ft		22,900	\$ 20.00	\$ 458,000.00
		Public Outreach			1	\$ 100,000.00	\$ 100,000.00
		Reimburseable Utilities			1	\$ 100,000.00	\$ 100,000.00
		APHIS			1	\$ 25,000.00	\$ 25,000.00
Additional Preliminary Engineering @ 10%							\$ 2,721,215.38
Contingencies @ 40%							<b>\$ 12,246,547.67</b>
<b>TOTAL</b>							<b>\$ 42,862,916.85</b>


## **Appendix D: Conceptual Plan Views of Alternatives**



VAN BUREN BRIDGE PROJECT  
 ALTERNATIVE 1 - 2nd STREET CONNECTION

FIGURE 1

OREGON DEPARTMENT OF TRANSPORTATION



OBEC CONSULTING ENGINEERS  
 www.obec.com

Corporate Office: 500 COUNTRY CLUB ROAD, SUITE 100B EUGENE, OREGON 97401-8089  
 5015 SW MEADOWS ROAD, SUITE 100 LAKE OSWEGO, OREGON 97035-4285  
 2025 MISSION STREET SE, SUITE 100 SALEM, OREGON 97302-1285  
 1233 POPLAR DRIVE MIDFORD, OREGON 97504-9307

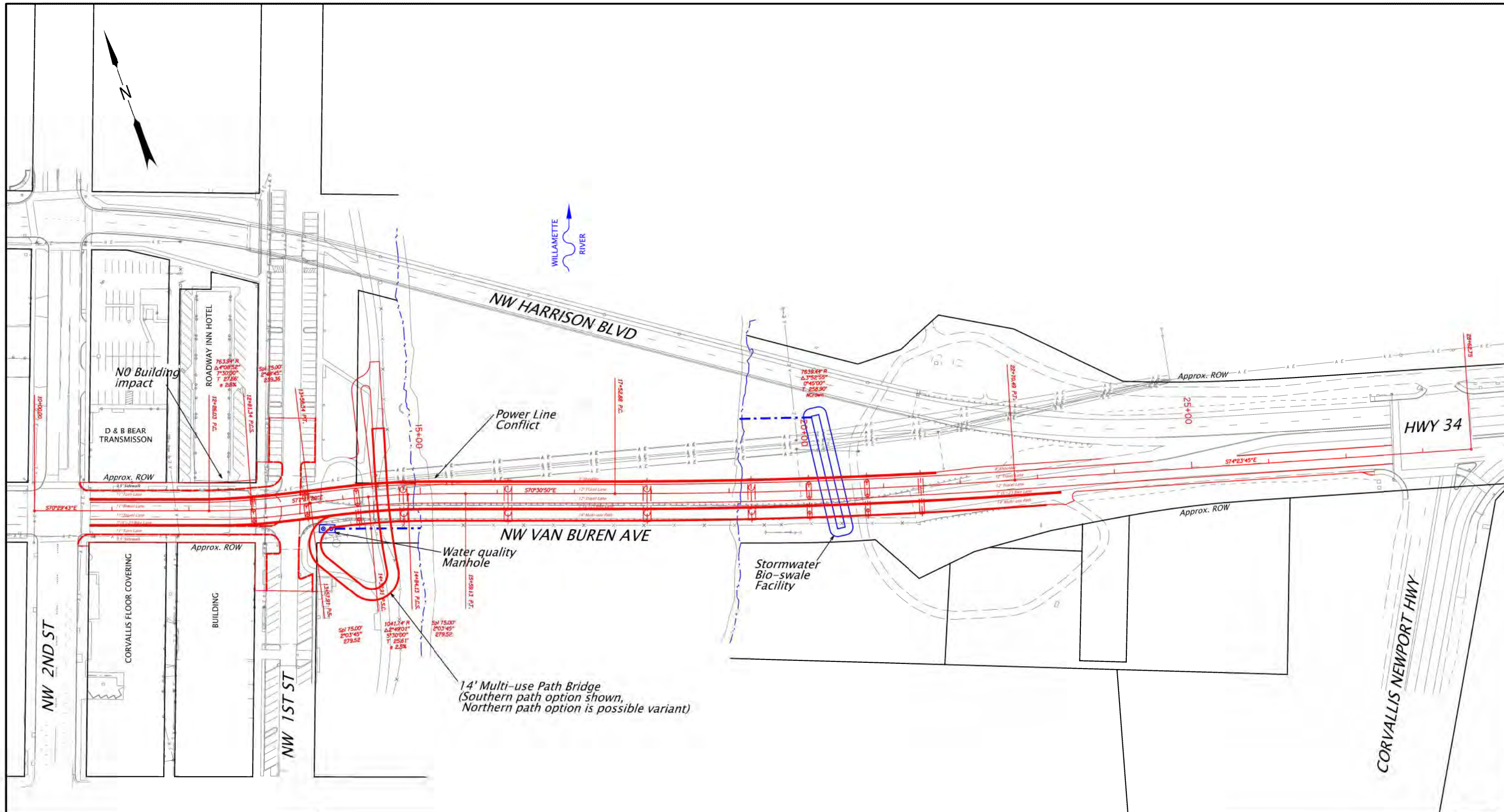


Van Buren Bridge Project  
Alternative 1 - Aerial Simulation



Van Buren Bridge Project  
Alternative 1 - Retrofitted Truss Simulation





VAN BUREN BRIDGE PROJECT  
 ALTERNATIVE 2 - 2nd STREET CONNECTION

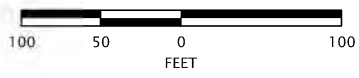
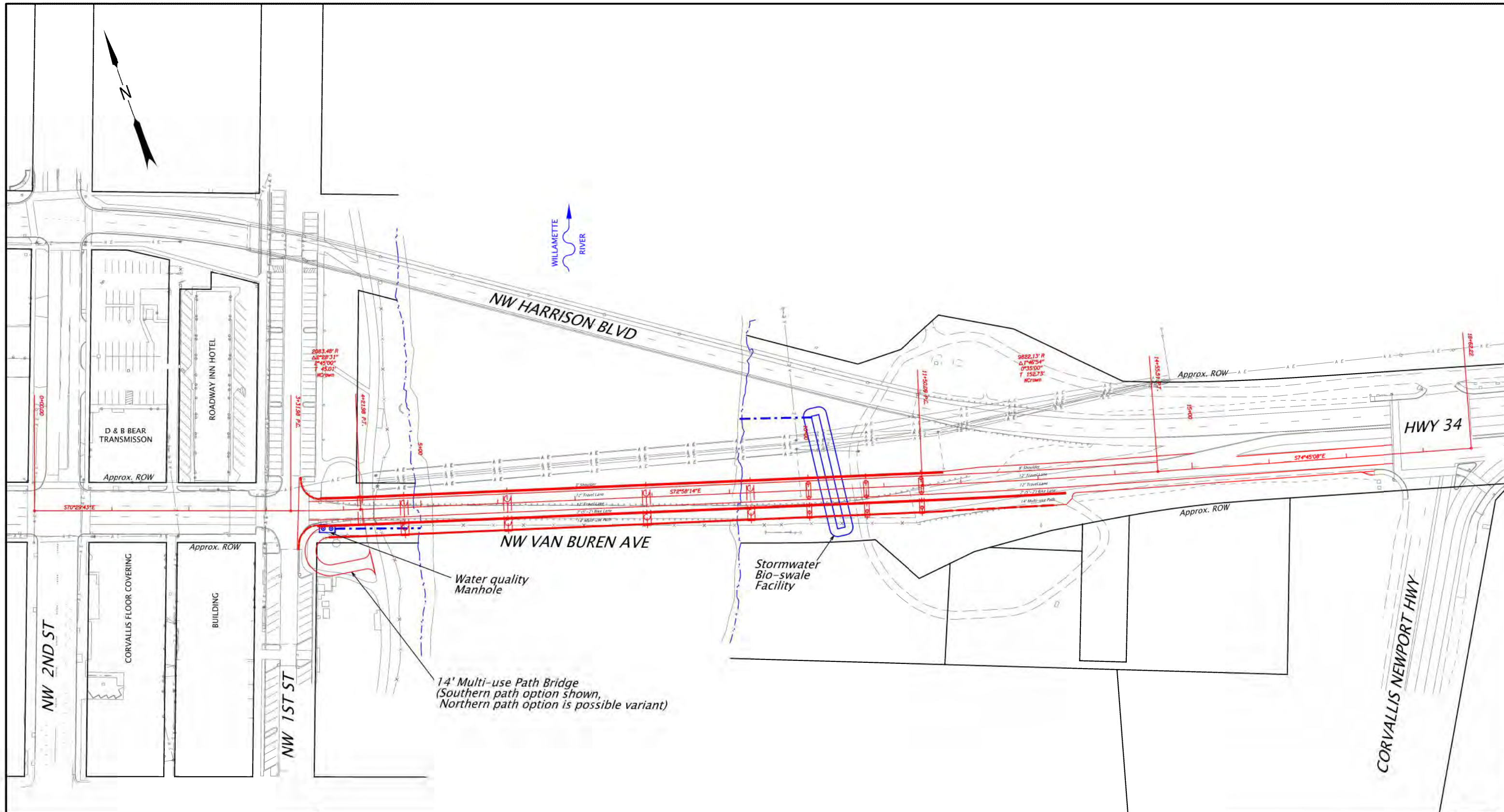
FIGURE 2

OREGON DEPARTMENT OF TRANSPORTATION

OBEC CONSULTING ENGINEERS

Corporate Office: 500 COUNTRY CLUB ROAD, SUITE 100B EUGENE, OREGON 97401-6089  
 5015 SW MEADOWS ROAD, SUITE 100 LAKE OSWEGO, OREGON 97035-4285  
 2025 MISSION STREET SE, SUITE 100 SALEM, OREGON 97302-1285  
 1333 POPLAR DRIVE MEDFORD, OREGON 97504-9307

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VAN BUREN BRIDGE PROJECT  
 ALTERNATIVE 3 - 1st STREET CONNECTION

FIGURE 3

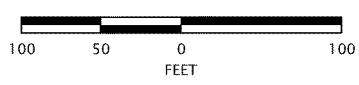
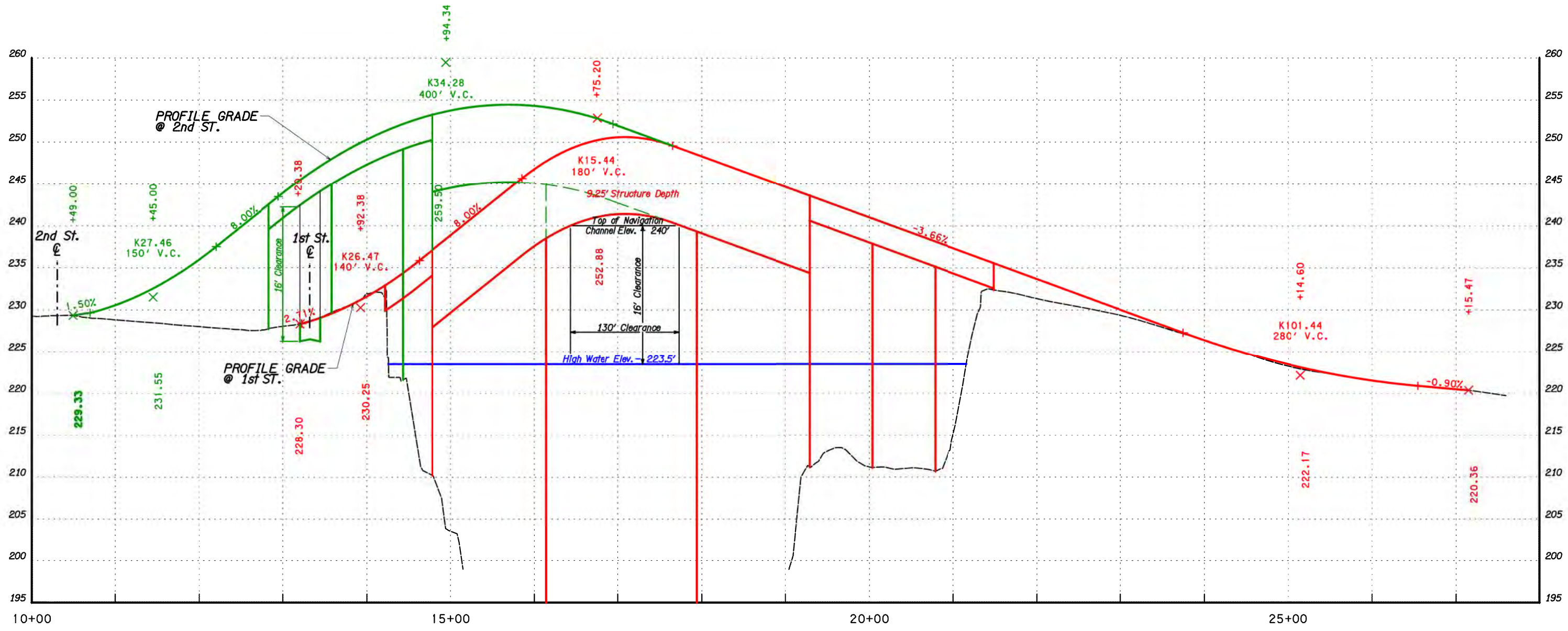
OREGON DEPARTMENT  
 OF TRANSPORTATION



Corporate Office: 501 COUNTRY CLUB ROAD, SUITE 100B EUGENE, OREGON 97401-8089  
 5101 SW MEADOWS ROAD, SUITE 100 LAKE OSWEGO, OREGON 97035-4285  
 2025 MISSION STREET SE, SUITE 100 SALEM, OREGON 97302-1285  
 1335 POPLAR DRIVE MEDFORD, OREGON 97504-9307  
 WWW.OBEC.COM



Van Buren Bridge Project  
Alternative 3 - Aerial Simulation



VAN BUREN BRIDGE PROJECT  
PROFILES – 1st AND 2nd STREET

FIGURE 4

OREGON DEPARTMENT OF TRANSPORTATION

OBEC CONSULTING ENGINEERS

Corporate Office: 500 COUNTRY CLUB ROAD, SUITE 100B EUGENE, OREGON 97401-6089  
 5100 SW MEADOWS ROAD, SUITE 100 LAKE OSWEGO, OREGON 97035-4285  
 2025 MISSION STREET SE, SUITE 100 SALEM, OREGON 97305-1285  
 1335 POPLAR DRIVE MEDFORD, OREGON 97504-9907

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## Appendix E: Cost Estimates

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**K20688 Van Buren Bridge Project**  
**Grading, Drainage, Structure, Paving, Signing, Illumination, Signal and Roadside Development**  
**Benton County**

**Alternative 1 - 1st Street**  
**Engineer's Cost Estimate**  
**August 2, 2019**

Spec. No.	Item No.	Item	Bid Unit	Est. Unit	Quantity	Unit Price	Total Price
<b>TEMPORARY FEATURES AND APPURTENANCES</b>							
00210	10	Mobilization	Lump Sum	Lump Sum	1	\$ 2,443,792.87	\$ 2,443,792.87
00225	20	Temporary Work Zone Traffic, Complete	Lump Sum	Lump Sum	1	\$ 1,994,413.58	\$ 1,994,413.58
00253	30	New Construction Work Structure	Lump Sum	Lump Sum	2	\$ 900,000.00	\$ 1,800,000.00
00253	40	Temporary Work Access and Containment	Lump Sum	Lump Sum	1	\$ 250,000.00	\$ 250,000.00
00280	50	Erosion Control	Lump Sum	Lump Sum	1	\$ 25,000.00	\$ 25,000.00
00290	60	Pollution Control Plan	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
00290	70	Work Containment Plan	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
00294	80	Health and Safety Plan	Lump Sum	Lump Sum	1	\$ 5,000.00	\$ 5,000.00
<b>ROADWORK</b>							
00305	90	Construction Survey Work	Lump Sum	Lump Sum	1	\$ 177,800.00	\$ 177,800.00
00310	100	Removal of Structures and Obstructions	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
00320	110	Clearing and Grubbing	Lump Sum	Lump Sum	1	\$ 3,000.00	\$ 3,000.00
00330	120	General Excavation	Cu Yd	Cu Yd	2,300	\$ 35.00	\$ 80,500.00
<b>DRAINAGE AND SEWERS</b>							
00470	130	Concrete Manhole, Water Quality, Proprietary	Lump Sum	Lump Sum	1	\$ 60,000.00	\$ 60,000.00
00490	140	Drainage and Sewers, Complete	Lump Sum	Lump Sum	1	\$ 200,000.00	\$ 200,000.00
<b>BRIDGE AND RETAINING WALLS</b>							
xxxxx	150	Shoring and Cribbing Bridge New Construction	Lump Sum	Lump Sum	1	\$ 250,000.00	\$ 250,000.00
xxxxx	160	Van Buren Street Bridge	Lump Sum	Sq Ft	39,250.0	\$ 350.00	\$ 13,737,500.00
xxxxx	170	Ground Improvements	Lump Sum	Cu Yd	8,889	\$ 250.00	\$ 2,222,222.22
<b>BASES</b>							
00641	180	Aggregate Base	Ton	Ton	4,000	\$ 35.00	\$ 140,000.00
<b>WEARING SURFACES</b>							
00744	190	Level 3, 1/2 Inch ACP Mixture	Ton	Ton	2,200	\$ 150.00	\$ 330,000.00
00759	200	Concrete Curbs, Standard Curb	Ft	Ft	510	\$ 30.00	\$ 15,300.00
00759	210	Concrete Walks	Sq Ft	Sq Ft	4,600	\$ 9.00	\$ 41,400.00
00759	220	6 Inch Concrete Surfacing	Sq Ft	Sq Ft	3,300	\$ 25.00	\$ 82,500.00
00759	230	Extra for Curb Ramps	Each	Each	5	\$ 2,000.00	\$ 10,000.00
00759	240	Metal Handrail, 3 Rails	Ft	Ft	180	\$ 120.00	\$ 21,600.00
00759	250	Truncated Domes on New Surfaces	Each	Each	5	\$ 500.00	\$ 2,500.00
<b>PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES</b>							
00820	260	Concrete Barrier, Tall	Ft	Ft	240	\$ 75.00	\$ 18,000.00
00840	270	Securing Concrete Barrier	Ft	Ft	240	\$ 10.00	\$ 2,400.00
xxxxx	280	Permanent Pavement Markings, Complete	Lump Sum	Lump Sum	1	\$ 20,000.00	\$ 20,000.00
<b>PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS</b>							
xxxxx	290	Permanent Traffic Control Signs, complete	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
xxxxx	300	Illumination	Lump Sum	Lump Sum	1	\$ 275,000.00	\$ 275,000.00
xxxxx	310	Traffic Signal at 2nd Street	Lump Sum	Lump Sum	1	\$ 50,000.00	\$ 50,000.00
<b>RIGHT-OF-WAY DEVELOPMENT AND CONTROL</b>							
01011	320	Storm Water Quality, Swale	Lump Sum	Lump Sum	1	\$ 40,000.00	\$ 40,000.00
xxxxx	330	Permanent Landscaping	Lump Sum	Lump Sum	1	\$ 100,000.00	\$ 100,000.00
<b>SUB-TOTAL OF ITEMS</b>							\$ 24,437,928.67
Construction Engineering at 13.5% (per PD-08)							\$ 3,428,089.58
Subtotal of Biddable Items and CE							\$ 27,866,018.25
<b>ANTICIPATED ITEMS</b>							
		Permanet ROW	Sq Ft		650	\$ 50.00	\$ 32,500.00
		Temporary Construction Easement	Sq Ft		400	\$ 10.00	\$ 4,000.00
		Permanent Park Easement	Sq Ft		2,670	\$ 50.00	\$ 133,500.00
		Temporary Park Construction Easement	Sq Ft		38,400	\$ 20.00	\$ 768,000.00
		Public Outreach			1	\$ 100,000.00	\$ 100,000.00
		Reimburseable Utilities			1	\$ 250,000.00	\$ 250,000.00
		APHIS			1	\$ 50,000.00	\$ 50,000.00
Contingencies @ 40%							\$ 11,681,607.30
<b>TOTAL</b>							<b>\$ 40,885,625.55</b>

**K20688 Van Buren Bridge Project**  
**Grading, Drainage, Structure, Paving, Signing, Illumination, Signal and Roadside Development**  
**Benton County**

**Alternative 1 - 2nd Street**  
**Engineer's Cost Estimate**  
**August 2, 2019**

Spec. No.	Item No.	Item	Bid Unit	Est. Unit	Quantity	Unit Price	Total Price
<b>TEMPORARY FEATURES AND APPURTENANCES</b>							
00210	10	Mobilization	Lump Sum	Lump Sum	1	\$ 3,113,916.32	\$ 3,113,916.32
00225	20	Temporary Work Zone Traffic, Complete	Lump Sum	Lump Sum	1	\$ 2,597,524.69	\$ 2,597,524.69
00253	30	New Construction Work Structure	Lump Sum	Lump Sum	2	\$ 900,000.00	\$ 1,800,000.00
00253	40	Temporary Work Access and Containment	Lump Sum	Lump Sum	1	\$ 250,000.00	\$ 250,000.00
00280	50	Erosion Control	Lump Sum	Lump Sum	1	\$ 25,000.00	\$ 25,000.00
00290	60	Pollution Control Plan	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
00290	70	Work Containment Plan	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
00294	80	Health and Safety Plan	Lump Sum	Lump Sum	1	\$ 5,000.00	\$ 5,000.00
<b>ROADWORK</b>							
00305	90	Construction Survey Work	Lump Sum	Lump Sum	1	\$ 231,500.00	\$ 231,500.00
00310	100	Removal of Structures and Obstructions	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
00320	110	Clearing and Grubbing	Lump Sum	Lump Sum	1	\$ 4,000.00	\$ 4,000.00
00330	120	General Excavation	Cu Yd	Cu Yd	2,800	\$ 35.00	\$ 98,000.00
<b>DRAINAGE AND SEWERS</b>							
00470	130	Concrete Manhole, Water Quality, Proprietary	Lump Sum	Lump Sum	1	\$ 60,000.00	\$ 60,000.00
00490	140	Drainage and Sewers, Complete	Lump Sum	Lump Sum	1	\$ 200,000.00	\$ 200,000.00
<b>BRIDGE AND RETAINING WALLS</b>							
xxxxx	150	Shoring and Cribbing Bridge New Construction	Lump Sum	Lump Sum	1	\$ 250,000.00	\$ 250,000.00
xxxxx	160	Van Buren Street Bridge	Lump Sum	Sq Ft	46,750.0	\$ 350.00	\$ 16,362,500.00
xxxxx	170	Pedestrian Path Connection	Lump Sum	Sq Ft	6,100	\$ 350.00	\$ 2,135,000.00
xxxxx	180	West Approach MSE Wall	Lump Sum	Sq Ft	5,000.0	\$ 70.00	\$ 350,000.00
xxxxx	190	Ground Improvements	Lump Sum	Cu Yd	8,889	\$ 250.00	\$ 2,222,222.22
<b>BASES</b>							
00641	200	Aggregate Base	Ton	Ton	5,000	\$ 35.00	\$ 175,000.00
<b>WEARING SURFACES</b>							
00744	210	Level 3, 1/2 Inch ACP Mixture	Ton	Ton	2,800	\$ 150.00	\$ 420,000.00
00759	220	Concrete Curbs, Standard Curb	Ft	Ft	1,510	\$ 30.00	\$ 45,300.00
00759	230	Concrete Walks	Sq Ft	Sq Ft	7,000	\$ 9.00	\$ 63,000.00
00759	240	6 Inch Concrete Surfacing	Sq Ft	Sq Ft	3,600	\$ 25.00	\$ 90,000.00
00759	250	Extra for Curb Ramps	Each	Each	12	\$ 2,000.00	\$ 24,000.00
00759	260	Metal Handrail, 3 Rails	Ft	Ft	120	\$ 120.00	\$ 14,400.00
00759	270	Truncated Domes on New Surfaces	Each	Each	12	\$ 500.00	\$ 6,000.00
<b>PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES</b>							
00820	280	Concrete Barrier, Tall	Ft	Ft	600	\$ 75.00	\$ 45,000.00
00840	290	Securing Concrete Barrier	Ft	Ft	180	\$ 10.00	\$ 1,800.00
xxxxx	300	Permanent Pavement Markings, Complete	Lump Sum	Lump Sum	1	\$ 20,000.00	\$ 20,000.00
<b>PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS</b>							
xxxxx	310	Permanent Traffic Control Signs, complete	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
xxxxx	320	Illumination	Lump Sum	Lump Sum	1	\$ 300,000.00	\$ 300,000.00
xxxxx	330	Traffic Signal at 2nd Street	Lump Sum	Lump Sum	1	\$ 50,000.00	\$ 50,000.00
<b>RIGHT-OF-WAY DEVELOPMENT AND CONTROL</b>							
01011	340	Storm Water Quality, Swale	Lump Sum	Lump Sum	1	\$ 40,000.00	\$ 40,000.00
xxxxx	350	Permanent Landscaping	Lump Sum	Lump Sum	1	\$ 100,000.00	\$ 100,000.00
<b>SUB-TOTAL OF ITEMS</b>						\$ 31,139,163.24	
Construction Engineering at 13.5% (per PD-08)						\$ 4,364,419.58	
Subtotal of Biddable Items and CE						\$ 35,503,582.82	
<b>ANTICIPATED ITEMS</b>							
		Permanet ROW	Sq Ft		650	\$ 50.00	\$ 32,500.00
		Temporary Construction Easement	Sq Ft		400	\$ 10.00	\$ 4,000.00
		Permanent Park Easement	Sq Ft		31,800	\$ 50.00	\$ 1,590,000.00
		Temporary Park Construction Easement	Sq Ft		43,500	\$ 20.00	\$ 870,000.00
		Public Outreach			1	\$ 100,000.00	\$ 100,000.00
		Reimburseable Utilities			1	\$ 250,000.00	\$ 250,000.00
		APHIS			1	\$ 50,000.00	\$ 50,000.00
Contingencies @ 40%						\$ 15,360,033.13	
<b>TOTAL</b>						<b>\$ 53,760,115.95</b>	

**K20688 Van Buren Bridge Project**  
**Grading, Drainage, Structure, Paving, Signing, Illumination, Signal and Roadside Development**  
**Benton County**

**Alternative 2 - 1st Street**  
**Engineer's Cost Estimate**  
**August 2, 2019**

Spec. No.	Item No.	Item	Bid Unit	Est. Unit	Quantity	Unit Price	Total Price
<b>TEMPORARY FEATURES AND APPURTENANCES</b>							
00210	10	Mobilization	Lump Sum	Lump Sum	1	\$ 2,869,594.10	\$ 2,869,594.10
00225	20	Temporary Work Zone Traffic, Complete	Lump Sum	Lump Sum	1	\$ 2,377,634.69	\$ 2,377,634.69
00253	30	Removal Work Structure	Lump Sum	Lump Sum	1	\$ 900,000.00	\$ 900,000.00
00253	40	New Construction Work Structure	Lump Sum	Lump Sum	1	\$ 900,000.00	\$ 900,000.00
00253	50	Temporary Work Access and Containment	Lump Sum	Lump Sum	1	\$ 250,000.00	\$ 250,000.00
00280	60	Erosion Control	Lump Sum	Lump Sum	1	\$ 25,000.00	\$ 25,000.00
00290	70	Pollution Control Plan	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
00290	80	Work Containment Plan	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
00294	90	Health and Safety Plan	Lump Sum	Lump Sum	1	\$ 5,000.00	\$ 5,000.00
<b>ROADWORK</b>							
00305	100	Construction Survey Work	Lump Sum	Lump Sum	1	\$ 210,500.00	\$ 210,500.00
00310	110	Removal of Structures and Obstructions	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
00320	120	Clearing and Grubbing	Lump Sum	Lump Sum	1	\$ 3,000.00	\$ 3,000.00
00330	130	General Excavation	Cu Yd	Cu Yd	2,300	\$ 35.00	\$ 80,500.00
<b>DRAINAGE AND SEWERS</b>							
00470	140	Concrete Manhole, Water Quality, Proprietary	Lump Sum	Lump Sum	1	\$ 60,000.00	\$ 60,000.00
00490	150	Drainage and Sewers, Complete	Lump Sum	Lump Sum	1	\$ 200,000.00	\$ 200,000.00
<b>BRIDGE AND RETAINING WALLS</b>							
00501	160	Bridge Removal Work	Lump Sum	Sq Ft	30,905	\$ 43.00	\$ 1,328,915.00
xxxxx	170	Shoring and Cribbing Bridge Removal	Lump Sum	Lump Sum	1	\$ 150,000.00	\$ 150,000.00
xxxxx	180	Shoring and Cribbing Bridge New Construction	Lump Sum	Lump Sum	1	\$ 250,000.00	\$ 250,000.00
xxxxx	190	Van Buren Street Bridge	Lump Sum	Sq Ft	38,950.0	\$ 350.00	\$ 13,632,500.00
xxxxx	200	Premium for Staged Construction (15%)	Lump Sum	Lump Sum	1	\$ 2,044,875.00	\$ 2,044,875.00
xxxxx	210	Ground Improvements	Lump Sum	Cu Yd	8,889	\$ 250.00	\$ 2,222,222.22
<b>BASES</b>							
00641	220	Aggregate Base	Ton	Ton	4,000	\$ 35.00	\$ 140,000.00
<b>WEARING SURFACES</b>							
00744	230	Level 3, 1/2 Inch ACP Mixture	Ton	Ton	2,200	\$ 150.00	\$ 330,000.00
00759	240	Concrete Curbs, Standard Curb	Ft	Ft	510	\$ 30.00	\$ 15,300.00
00759	250	Concrete Walks	Sq Ft	Sq Ft	4,600	\$ 9.00	\$ 41,400.00
00759	260	6 Inch Concrete Surfacing	Sq Ft	Sq Ft	3,300	\$ 25.00	\$ 82,500.00
00759	270	Extra for Curb Ramps	Each	Each	4	\$ 2,000.00	\$ 8,000.00
00759	280	Metal Handrail, 3 Rails	Ft	Ft	180	\$ 120.00	\$ 21,600.00
00759	290	Truncated Domes on New Surfaces	Each	Each	4	\$ 500.00	\$ 2,000.00
<b>PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES</b>							
00820	300	Concrete Barrier, Tall	Ft	Ft	240	\$ 75.00	\$ 18,000.00
00840	310	Securing Concrete Barrier	Ft	Ft	240	\$ 10.00	\$ 2,400.00
xxxxx	320	Permanent Pavement Markings, Complete	Lump Sum	Lump Sum	1	\$ 20,000.00	\$ 20,000.00
<b>PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS</b>							
xxxxx	330	Permanent Traffic Control Signs, complete	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
xxxxx	340	Illumination	Lump Sum	Lump Sum	1	\$ 275,000.00	\$ 275,000.00
xxxxx	350	Traffic Signal at 2nd Street	Lump Sum	Lump Sum	1	\$ 50,000.00	\$ 50,000.00
<b>RIGHT-OF-WAY DEVELOPMENT AND CONTROL</b>							
01011	360	Storm Water Quality, Swale	Lump Sum	Lump Sum	1	\$ 40,000.00	\$ 40,000.00
xxxxx	370	Permanent Landscaping	Lump Sum	Lump Sum	1	\$ 100,000.00	\$ 100,000.00
<b>SUB-TOTAL OF ITEMS</b>						\$ 28,695,941.02	
Construction Engineering at 13.5% (per PD-08)						\$ 4,023,040.36	
Subtotal of Biddable Items and CE						\$ 32,718,981.37	
<b>ANTICIPATED ITEMS</b>							
		Permanet ROW	Sq Ft		0	\$ 50.00	\$ -
		Temporary Construction Easement	Sq Ft		0	\$ 10.00	\$ -
		Permanent Park Easement	Sq Ft		8,000	\$ 50.00	\$ 400,000.00
		Temporary Park Construction Easement	Sq Ft		29,300	\$ 20.00	\$ 586,000.00
		Public Outreach			1	\$ 100,000.00	\$ 100,000.00
		Reimburseable Utilities			1	\$ 250,000.00	\$ 250,000.00
		APHIS			1	\$ 50,000.00	\$ 50,000.00
Contingencies @ 40%						\$ 13,641,992.55	
<b>TOTAL</b>						<b>\$ 47,746,973.92</b>	



**K20688 Van Buren Bridge Project**  
**Grading, Drainage, Structure, Paving, Signing, Illumination, Signal and Roadside Development**  
**Benton County**

**Alternative 2 - 2nd Street**  
**Engineer's Cost Estimate**  
**August 2, 2019**

Spec. No.	Item No.	Item	Bid Unit	Est. Unit	Quantity	Unit Price	Total Price
<b>TEMPORARY FEATURES AND APPURTENANCES</b>							
00210	10	Mobilization	Lump Sum	Lump Sum	1	\$ 3,549,199.04	\$ 3,549,199.04
00225	20	Temporary Work Zone Traffic, Complete	Lump Sum	Lump Sum	1	\$ 2,989,279.14	\$ 2,989,279.14
00253	30	Removal Work Structure	Lump Sum	Lump Sum	1	\$ 900,000.00	\$ 900,000.00
00253	40	New Construction Work Structure	Lump Sum	Lump Sum	1	\$ 900,000.00	\$ 900,000.00
00253	50	Temporary Work Access and Containment	Lump Sum	Lump Sum	1	\$ 250,000.00	\$ 250,000.00
00280	60	Erosion Control	Lump Sum	Lump Sum	1	\$ 25,000.00	\$ 25,000.00
00290	70	Pollution Control Plan	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
00290	80	Work Containment Plan	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
00294	90	Health and Safety Plan	Lump Sum	Lump Sum	1	\$ 5,000.00	\$ 5,000.00
<b>ROADWORK</b>							
00305	100	Construction Survey Work	Lump Sum	Lump Sum	1	\$ 265,000.00	\$ 265,000.00
00310	110	Removal of Structures and Obstructions	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
00320	120	Clearing and Grubbing	Lump Sum	Lump Sum	1	\$ 4,000.00	\$ 4,000.00
00330	130	General Excavation	Cu Yd	Cu Yd	2,800	\$ 35.00	\$ 98,000.00
<b>DRAINAGE AND SEWERS</b>							
00470	140	Concrete Manhole, Water Quality, Proprietary	Lump Sum	Lump Sum	1	\$ 60,000.00	\$ 60,000.00
00490	150	Drainage and Sewers, Complete	Lump Sum	Lump Sum	1	\$ 200,000.00	\$ 200,000.00
<b>BRIDGE AND RETAINING WALLS</b>							
00501	160	Bridge Removal Work	Lump Sum	Sq Ft	30,905	\$ 43.00	\$ 1,328,915.00
xxxxx	170	Shoring and Cribbing Bridge Removal	Lump Sum	Lump Sum	1	\$ 150,000.00	\$ 150,000.00
xxxxx	180	Shoring and Cribbing Bridge New Construction	Lump Sum	Lump Sum	1	\$ 250,000.00	\$ 250,000.00
xxxxx	190	Van Buren Street Bridge	Lump Sum	Sq Ft	46,350.0	\$ 350.00	\$ 16,222,500.00
xxxxx	200	Premium for Staged Construction (15%)	Lump Sum	Lump Sum	1	\$ 2,433,375.00	\$ 2,433,375.00
xxxxx	210	West Approach MSE Wall	Lump Sum	Sq Ft	5,000.0	\$ 70.00	\$ 350,000.00
xxxxx	220	Pedestrian Path Connection	Lump Sum	Sq Ft	5,300	\$ 350.00	\$ 1,855,000.00
xxxxx	230	Ground Improvements	Lump Sum	Cu Yd	8,889	\$ 250.00	\$ 2,222,222.22
<b>BASES</b>							
00641	240	Aggregate Base	Ton	Ton	5,000	\$ 35.00	\$ 175,000.00
<b>WEARING SURFACES</b>							
00744	250	Level 3, 1/2 Inch ACP Mixture	Ton	Ton	2,800	\$ 150.00	\$ 420,000.00
00759	260	Concrete Curbs, Standard Curb	Ft	Ft	1,510	\$ 30.00	\$ 45,300.00
00759	270	Concrete Walks	Sq Ft	Sq Ft	7,000	\$ 9.00	\$ 63,000.00
00759	280	6 Inch Concrete Surfacing	Sq Ft	Sq Ft	3,600	\$ 25.00	\$ 90,000.00
00759	290	Extra for Curb Ramps	Each	Each	12	\$ 2,000.00	\$ 24,000.00
00759	300	Metal Handrail, 3 Rails	Ft	Ft	120	\$ 120.00	\$ 14,400.00
00759	310	Truncated Domes on New Surfaces	Each	Each	12	\$ 500.00	\$ 6,000.00
<b>PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES</b>							
00820	320	Concrete Barrier, Tall	Ft	Ft	600	\$ 75.00	\$ 45,000.00
00840	330	Securing Concrete Barrier	Ft	Ft	180	\$ 10.00	\$ 1,800.00
xxxxx	340	Permanent Pavement Markings, Complete	Lump Sum	Lump Sum	1	\$ 20,000.00	\$ 20,000.00
<b>PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS</b>							
xxxxx	350	Permanent Traffic Control Signs, complete	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
xxxxx	360	Illumination	Lump Sum	Lump Sum	1	\$ 300,000.00	\$ 300,000.00
xxxxx	370	Traffic Signal at 2nd Street	Lump Sum	Lump Sum	1	\$ 50,000.00	\$ 50,000.00
<b>RIGHT-OF-WAY DEVELOPMENT AND CONTROL</b>							
01011	380	Storm Water Quality, Swale	Lump Sum	Lump Sum	1	\$ 40,000.00	\$ 40,000.00
xxxxx	390	Permanent Landscaping	Lump Sum	Lump Sum	1	\$ 100,000.00	\$ 100,000.00
<b>SUB-TOTAL OF ITEMS</b>							\$ 35,491,990.40
Construction Engineering at 13.5% (per PD-08)							\$ 4,972,618.36
Subtotal of Biddable Items and CE							\$ 40,464,608.76
<b>ANTICIPATED ITEMS</b>							
		Permanet ROW	Sq Ft		200	\$ 50.00	\$ 10,000.00
		Temporary Construction Easement	Sq Ft		400	\$ 10.00	\$ 4,000.00
		Permanent Park Easement	Sq Ft		31,200	\$ 50.00	\$ 1,560,000.00
		Temporary Park Construction Easement	Sq Ft		45,200	\$ 20.00	\$ 904,000.00
		Public Outreach			1	\$ 100,000.00	\$ 100,000.00
		Reimburseable Utilities			1	\$ 250,000.00	\$ 250,000.00
		APHIS			1	\$ 50,000.00	\$ 50,000.00
Contingencies @ 40%							\$ 17,337,043.50
<b>TOTAL</b>							<b>\$ 60,679,652.26</b>

**K20688 Van Buren Bridge Project**  
**Grading, Drainage, Structure, Paving, Signing, Illumination, Signal and Roadside Development**  
**Benton County**

**Alternative 3 - 1st Street (Temporary Detour)**  
**Engineer's Cost Estimate**  
**August 2, 2019**

Spec. No.	Item No.	Item	Bid Unit	Est. Unit	Quantity	Unit Price	Total Price
<b>TEMPORARY FEATURES AND APPURTENANCES</b>							
00210	10	Mobilization	Lump Sum	Lump Sum	1	\$ 2,918,114.00	\$ 2,918,114.00
00225	20	Temporary Work Zone Traffic, Complete	Lump Sum	Lump Sum	1	\$ 2,130,677.00	\$ 2,130,677.00
00250	30	Construct and Remove Detours	Lump Sum	Lump Sum	1	\$ 150,000.00	\$ 150,000.00
00253	40	Temporary Detour Structure	Lump Sum	Lump Sum	1	\$ 2,756,250.00	\$ 2,756,250.00
00253	30	Removal Work Structure	Lump Sum	Lump Sum	1	\$ 900,000.00	\$ 900,000.00
00253	50	New Construction Work Structure	Lump Sum	Lump Sum	1	\$ 900,000.00	\$ 900,000.00
00253	60	Temporary Work Access and Containment	Lump Sum	Lump Sum	1	\$ 250,000.00	\$ 250,000.00
00280	70	Erosion Control	Lump Sum	Lump Sum	1	\$ 25,000.00	\$ 25,000.00
00290	80	Pollution Control Plan	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
00290	90	Work Containment Plan	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
00294	100	Health and Safety Plan	Lump Sum	Lump Sum	1	\$ 5,000.00	\$ 5,000.00
<b>ROADWORK</b>							
00305	110	Construction Survey Work	Lump Sum	Lump Sum	1	\$ 189,900.00	\$ 189,900.00
00310	120	Removal of Structures and Obstructions	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
00320	130	Clearing and Grubbing	Lump Sum	Lump Sum	1	\$ 1,000.00	\$ 1,000.00
00330	140	General Excavation	Cu Yd	Cu Yd	1,400	\$ 35.00	\$ 49,000.00
<b>DRAINAGE AND SEWERS</b>							
00470	150	Concrete Manhole, Water Quality, Proprietary	Lump Sum	Lump Sum	1	\$ 60,000.00	\$ 60,000.00
00490	160	Drainage and Sewers, Complete	Lump Sum	Lump Sum	1	\$ 200,000.00	\$ 200,000.00
<b>BRIDGE AND RETAINING WALLS</b>							
00501	170	Bridge Removal Work	Lump Sum	Sq Ft	30,905	\$ 43.00	\$ 1,328,915.00
xxxxx	180	Shoring and Cribbing Bridge Removal	Lump Sum	Lump Sum	1	\$ 150,000.00	\$ 150,000.00
xxxxx	190	Shoring and Cribbing Bridge New Construction	Lump Sum	Lump Sum	1	\$ 250,000.00	\$ 250,000.00
xxxxx	200	Van Buren Street Bridge	Lump Sum	Sq Ft	39,110.0	\$ 350.00	\$ 13,688,500.00
xxxxx	210	Pedestrian Path Connection	Lump Sum	Sq Ft	0.0	\$ -	\$ -
xxxxx	220	Raise/Retrofit Historic Trusses	Lump Sum	Lump Sum	0.0	\$ -	\$ -
xxxxx	230	Ground Improvements	Lump Sum	Cu Yd	8,889	\$ 250.00	\$ 2,222,222.00
<b>BASES</b>							
00641	240	Aggregate Base	Ton	Ton	2,800	\$ 35.00	\$ 98,000.00
<b>WEARING SURFACES</b>							
00744	250	Level 3, 1/2 Inch ACP Mixture	Ton	Ton	1,700	\$ 150.00	\$ 255,000.00
00759	260	Concrete Curbs, Standard Curb	Ft	Ft	90	\$ 30.00	\$ 2,700.00
00759	270	Concrete Walks	Sq Ft	Sq Ft	960	\$ 9.00	\$ 8,640.00
00759	280	6 Inch Concrete Surfacing	Sq Ft	Sq Ft	2,500	\$ 25.00	\$ 62,500.00
00759	290	Extra for Curb Ramps	Each	Each	4	\$ 2,000.00	\$ 8,000.00
00759	300	Metal Handrail, 3 Rails	Ft	Ft	180	\$ 120.00	\$ 21,600.00
00759	310	Truncated Domes on New Surfaces	Each	Each	4	\$ 500.00	\$ 2,000.00
<b>PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES</b>							
00820	320	Concrete Barrier, Tall	Ft	Ft	272	\$ 75.00	\$ 20,400.00
00840	330	Securing Concrete Barrier	Ft	Ft	272	\$ 10.00	\$ 2,720.00
xxxxx	340	Permanent Pavement Markings, Complete	Lump Sum	Lump Sum	1	\$ 20,000.00	\$ 20,000.00
<b>PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS</b>							
xxxxx	350	Permanent Traffic Control Signs, complete	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
xxxxx	360	Illumination	Lump Sum	Lump Sum	1	\$ 275,000.00	\$ 275,000.00
xxxxx	370	Traffic Signal at 2nd Street	Lump Sum	Lump Sum	1	\$ 50,000.00	\$ 50,000.00
<b>RIGHT-OF-WAY DEVELOPMENT AND CONTROL</b>							
01011	380	Storm Water Quality, Swale	Lump Sum	Lump Sum	1	\$ 40,000.00	\$ 40,000.00
xxxxx	390	Permanent Landscaping	Lump Sum	Lump Sum	1	\$ 100,000.00	\$ 100,000.00
<b>SUB-TOTAL OF ITEMS</b>						\$ 29,181,138.00	
Construction Engineering at 13.5% (per PD-08)						\$ 4,090,835.00	
Subtotal of Biddable Items and CE						\$ 33,271,973.00	
<b>ANTICIPATED ITEMS</b>							
		Permanet ROW	Sq Ft		0	\$ 50.00	\$ -
		Temporary Construction Easement	Sq Ft		0	\$ 10.00	\$ -
		Permanent Park Easement	Sq Ft		8,400	\$ 50.00	\$ 420,000.00
		Temporary Park Construction Easement	Sq Ft		33,100	\$ 20.00	\$ 662,000.00
		Public Outreach			1	\$ 100,000.00	\$ 100,000.00
		Reimburseable Utilities			1	\$ 250,000.00	\$ 250,000.00
		APHIS			1	\$ 50,000.00	\$ 50,000.00
Contingencies @ 40%						\$ 13,901,589.00	
<b>TOTAL</b>						<b>\$ 48,655,562.00</b>	

**K20688 Van Buren Bridge Project**  
**Grading, Drainage, Structure, Paving, Signing, Illumination, Signal and Roadside Development**  
**Benton County**

**Alternative 3 - 1st Street (Reuse Existing Trusses)**  
**Engineer's Cost Estimate**  
**August 2, 2019**

Spec. No.	Item No.	Item	Bid Unit	Est. Unit	Quantity	Unit Price	Total Price
<b>TEMPORARY FEATURES AND APPURTENANCES</b>							
00210	10	Mobilization	Lump Sum	Lump Sum	1	\$ 3,409,044.00	\$ 3,409,044.00
00225	20	Temporary Work Zone Traffic, Complete	Lump Sum	Lump Sum	1	\$ 2,432,992.00	\$ 2,432,992.00
00250	30	Construct and Remove Detours	Lump Sum	Lump Sum	1	\$ 150,000.00	\$ 150,000.00
00253	40	Temporary Detour Structure	Lump Sum	Lump Sum	1	\$ 3,901,480.00	\$ 3,901,480.00
00253	30	Removal Work Structure	Lump Sum	Lump Sum	1	\$ 900,000.00	\$ 900,000.00
00253	50	New Construction Work Structure	Lump Sum	Lump Sum	1	\$ 900,000.00	\$ 900,000.00
00253	60	Temporary Work Access and Containment	Lump Sum	Lump Sum	1	\$ 500,000.00	\$ 500,000.00
00280	70	Erosion Control	Lump Sum	Lump Sum	1	\$ 25,000.00	\$ 25,000.00
00290	80	Pollution Control Plan	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
00290	90	Work Containment Plan	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
00294	100	Health and Safety Plan	Lump Sum	Lump Sum	1	\$ 5,000.00	\$ 5,000.00
<b>ROADWORK</b>							
00305	110	Construction Survey Work	Lump Sum	Lump Sum	1	\$ 189,900.00	\$ 189,900.00
00310	120	Removal of Structures and Obstructions	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
00320	130	Clearing and Grubbing	Lump Sum	Lump Sum	1	\$ 1,000.00	\$ 1,000.00
00330	140	General Excavation		Cu Yd	1,400	\$ 35.00	\$ 49,000.00
<b>DRAINAGE AND SEWERS</b>							
00470	150	Concrete Manhole, Water Quality, Proprietary	Lump Sum	Lump Sum	1	\$ 60,000.00	\$ 60,000.00
00490	160	Drainage and Sewers, Complete	Lump Sum	Lump Sum	1	\$ 200,000.00	\$ 200,000.00
<b>BRIDGE AND RETAINING WALLS</b>							
00501	170	Bridge Removal Work	Lump Sum	Sq Ft	30,905	\$ 33.00	\$ 1,019,865.00
xxxxx	180	Shoring and Cribbing Bridge Removal	Lump Sum	Lump Sum	1	\$ 150,000.00	\$ 150,000.00
xxxxx	190	Shoring and Cribbing Bridge New Construction	Lump Sum	Lump Sum	1	\$ 250,000.00	\$ 250,000.00
xxxxx	200	Van Buren Street Bridge	Lump Sum	Sq Ft	39,110.0	\$ 350.00	\$ 13,688,500.00
xxxxx	210	Pedestrian Path Connection	Lump Sum	Sq Ft	1,200.0	\$ 350.00	\$ 420,000.00
xxxxx	220	Raise/Retrofit Historic Trusses	Lump Sum	Lump Sum	1.0	\$ 2,609,880.00	\$ 2,609,880.00
xxxxx	230	Ground Improvements	Lump Sum	Cu Yd	8,889	\$ 250.00	\$ 2,222,222.00
<b>BASES</b>							
00641	240	Aggregate Base		Ton	2,800	\$ 35.00	\$ 98,000.00
<b>WEARING SURFACES</b>							
00744	250	Level 3, 1/2 Inch ACP Mixture		Ton	1,700	\$ 150.00	\$ 255,000.00
00759	260	Concrete Curbs, Standard Curb		Ft	90	\$ 30.00	\$ 2,700.00
00759	270	Concrete Walks		Sq Ft	960	\$ 9.00	\$ 8,640.00
00759	280	6 Inch Concrete Surfacing		Sq Ft	2,500	\$ 25.00	\$ 62,500.00
00759	290	Extra for Curb Ramps		Each	4	\$ 2,000.00	\$ 8,000.00
00759	300	Metal Handrail, 3 Rails		Ft	180	\$ 120.00	\$ 21,600.00
00759	310	Truncated Domes on New Surfaces		Each	4	\$ 500.00	\$ 2,000.00
<b>PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES</b>							
00820	320	Concrete Barrier, Tall		Ft	272	\$ 75.00	\$ 20,400.00
00840	330	Securing Concrete Barrier		Ft	272	\$ 10.00	\$ 2,720.00
xxxxx	340	Permanent Pavement Markings, Complete	Lump Sum	Lump Sum	1	\$ 20,000.00	\$ 20,000.00
<b>PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS</b>							
xxxxx	350	Permanent Traffic Control Signs, complete	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
xxxxx	360	Illumination	Lump Sum	Lump Sum	1	\$ 275,000.00	\$ 275,000.00
xxxxx	370	Traffic Signal at 2nd Street	Lump Sum	Lump Sum	1	\$ 50,000.00	\$ 50,000.00
<b>RIGHT-OF-WAY DEVELOPMENT AND CONTROL</b>							
01011	380	Storm Water Quality, Swale	Lump Sum	Lump Sum	1	\$ 40,000.00	\$ 40,000.00
xxxxx	390	Permanent Landscaping	Lump Sum	Lump Sum	1	\$ 100,000.00	\$ 100,000.00
							\$ 34,090,443.00
							\$ 4,776,787.00
							<b>\$ 38,867,230.00</b>
<b>ANTICIPATED ITEMS</b>							
		Permanet ROW		Sq Ft	0	\$ 50.00	\$ -
		Temporary Construction Easement		Sq Ft	0	\$ 10.00	\$ -
		Permanent Park Easement		Sq Ft	8,400	\$ 50.00	\$ 420,000.00
		Temporary Park Construction Easement		Sq Ft	33,100	\$ 20.00	\$ 662,000.00
		Public Outreach			1	\$ 100,000.00	\$ 100,000.00
		Reimburseable Utilities			1	\$ 250,000.00	\$ 250,000.00
		APHIS			1	\$ 50,000.00	\$ 50,000.00
							\$ 16,139,692.00
							<b>\$ 56,488,922.00</b>

**K20688 Van Buren Bridge Project**  
**Grading, Drainage, Structure, Paving, Signing, Illumination, Signal and Roadside Development**  
**Benton County**

**Alternative 3 - 2nd Street**  
**Engineer's Cost Estimate**  
**August 2, 2019**

Spec. No.	Item No.	Item	Bid Unit	Est. Unit	Quantity	Unit Price	Total Price
<b>TEMPORARY FEATURES AND APPURTENANCES</b>							
00210	10	Mobilization	Lump Sum	Lump Sum	1	\$ 3,662,609.53	\$ 3,662,609.53
00225	20	Temporary Work Zone Traffic, Complete	Lump Sum	Lump Sum	1	\$ 2,724,448.58	\$ 2,724,448.58
00230	30	Construct and Remove Detours	Lump Sum	Lump Sum	1	\$ 120,000.00	\$ 120,000.00
00250	40	Temporary Detour Structure	Lump Sum	Lump Sum	1	\$ 3,549,000.00	\$ 3,549,000.00
00253	50	Removal Work Structure	Lump Sum	Lump Sum	1	\$ 900,000.00	\$ 900,000.00
00253	60	New Construction Work Bridge	Lump Sum	Lump Sum	1	\$ 900,000.00	\$ 900,000.00
00253	70	Temporary Work Access and Containment	Lump Sum	Lump Sum	1	\$ 250,000.00	\$ 250,000.00
00280	80	Erosion Control	Lump Sum	Lump Sum	1	\$ 25,000.00	\$ 25,000.00
00290	90	Pollution Control Plan	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
00290	100	Work Containment Plan	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
00294	110	Health and Safety Plan	Lump Sum	Lump Sum	1	\$ 5,000.00	\$ 5,000.00
<b>ROADWORK</b>							
00305	120	Construction Survey Work	Lump Sum	Lump Sum	1	\$ 241,400.00	\$ 241,400.00
00310	130	Removal of Structures and Obstructions	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
00320	140	Clearing and Grubbing	Lump Sum	Lump Sum	1	\$ 4,000.00	\$ 4,000.00
00330	150	General Excavation	Cu Yd	Cu Yd	2,800	\$ 35.00	\$ 98,000.00
<b>DRAINAGE AND SEWERS</b>							
00470	160	Concrete Manhole, Water Quality	Lump Sum	Lump Sum	1	\$ 60,000.00	\$ 60,000.00
00490	170	Drainage and Sewers, Complete	Lump Sum	Lump Sum	1	\$ 200,000.00	\$ 200,000.00
<b>BRIDGE AND RETAINING WALLS</b>							
00501	180	Bridge Removal Work	Lump Sum	Sq Ft	30,905	\$ 43.00	\$ 1,328,915.00
xxxxx	190	Shoring and Cribbing Bridge Removal	Lump Sum	Lump Sum	1	\$ 150,000.00	\$ 150,000.00
xxxxx	200	Shoring and Cribbing Bridge New Construction	Lump Sum	Lump Sum	1	\$ 250,000.00	\$ 250,000.00
xxxxx	210	Van Buren Street Bridge	Lump Sum	Sq Ft	46,560.0	\$ 350.00	\$ 16,296,000.00
xxxxx	220	West Approach MSE Wall	Lump Sum	Sq Ft	5,000.0	\$ 70.00	\$ 350,000.00
xxxxx	230	Pedestrian Path Connection	Lump Sum	Sq Ft	5,300	\$ 350.00	\$ 1,855,000.00
xxxxx	240	Ground Improvements	Lump Sum	Cu Yd	8,889	\$ 250.00	\$ 2,222,222.22
<b>BASES</b>							
00641	250	Aggregate Base	Ton	Ton	5,000	\$ 35.00	\$ 175,000.00
<b>WEARING SURFACES</b>							
00744	260	Level 3, 1/2 Inch ACP Mixture	Ton	Ton	2,800	\$ 150.00	\$ 420,000.00
00759	270	Concrete Curbs, Standard Curb	Ft	Ft	1,510	\$ 30.00	\$ 45,300.00
00759	280	Concrete Walks	Sq Ft	Sq Ft	7,000	\$ 9.00	\$ 63,000.00
00759	290	6 Inch Concrete Surfacing	Sq Ft	Sq Ft	3,600	\$ 25.00	\$ 90,000.00
00759	300	Extra for Curb Ramps	Each	Each	12	\$ 2,000.00	\$ 24,000.00
00759	310	Metal Handrail, 3 Rails	Ft	Ft	120	\$ 120.00	\$ 14,400.00
00759	320	Truncated Domes on New Surfaces	Each	Each	12	\$ 500.00	\$ 6,000.00
<b>PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES</b>							
00820	330	Concrete Barrier, Tall	Ft	Ft	600	\$ 75.00	\$ 45,000.00
00840	340	Securing Concrete Barrier	Ft	Ft	180	\$ 10.00	\$ 1,800.00
xxxxx	350	Permanent Pavement Markings, Complete	Lump Sum	Lump Sum	1	\$ 20,000.00	\$ 20,000.00
<b>PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS</b>							
xxxxx	360	Permanent Traffic Control Signs, complete	Lump Sum	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
xxxxx	370	Illumination	Lump Sum	Lump Sum	1	\$ 300,000.00	\$ 300,000.00
xxxxx	380	Traffic Signal at 2nd Street	Lump Sum	Lump Sum	1	\$ 50,000.00	\$ 50,000.00
<b>RIGHT-OF-WAY DEVELOPMENT AND CONTROL</b>							
01011	390	Stormwater Quality, Swale	Lump Sum	Lump Sum	1	\$ 40,000.00	\$ 40,000.00
xxxxx	400	Permanent Landscaping	Lump Sum	Lump Sum	1	\$ 100,000.00	\$ 100,000.00
<b>SUB-TOTAL OF ITEMS</b>						\$ 36,626,095.34	
Construction Engineering at 13.5% (per PD-08)						\$ 5,131,081.17	
Subtotal of Biddable Items and CE						\$ 41,757,176.51	
<b>ANTICIPATED ITEMS</b>							
		Permanet ROW	Sq Ft		0	\$ 50.00	\$ -
		Temporary Construction Easement	Sq Ft		0	\$ 10.00	\$ -
		Permanent Park Easement	Sq Ft		15,800	\$ 50.00	\$ 790,000.00
		Temporary Park Construction Easement	Sq Ft		45,600	\$ 20.00	\$ 912,000.00
		Public Outreach			1	\$ 100,000.00	\$ 100,000.00
		Reimburseable Utilities			1	\$ 250,000.00	\$ 250,000.00
		APHIS			1	\$ 50,000.00	\$ 50,000.00
Contingencies @ 40%						\$ 17,543,670.60	
<b>TOTAL</b>						<b>\$ 61,402,847.11</b>	