Washington State Department of Transportation

Memorandum

DATE: December 20, 2018

TO: Derek Case
Assistant Construction Engineer
Headquarters, Mail Stop 47354

THRU: Denise Cieri / Dave Becher
Program Administrator, SR 520 Program, Mail Stop NB82-99

FROM: Stephen Strand
Project Engineer, West Approach Bridge North Project
Mail Stop TB-93, (206) 770-3565

PROJECT: C-8625 SR 520 West Approach Bridge North Project

SUBJECT: **SUPPLEMENT to CO # 194 – Project Closeout Agreement**

Requested Action:

☐ Review and Approval for Inclusion into CO #194 Documentation

This Memorandum Supplements the previously transmitted Change Order #194 change package.

General Description

WSDOT's processes and procedures include steps to be undertaken at various authority levels of the organization to ensure all change order documentation follows state and federal guidelines. The procedures also require confirmation that any agreements reached with the Contractor are fair in terms of cost and time. Part of these procedures include final reviews and approvals at the State HQ Construction Office prior to execution of change orders.

During the final review of CO #194, HQ questioned the allotted amounts for three items as well as the description of the Work included in *"Time Related Overhead & Associated Costs"*. After the Project Team reviewed the questions raised by HQ, it was determined that further research was required prior to execution of this change order.

After researching the questions, a conference call was held on December 17, 2018 between HQ Construction and the Project Office staff. Both parties agreed that the following information would supplement CO #194 to better explain the reasons and amounts of the changes. The change order itself does not need to be modified.

Item 1. Modular Expansion Joint Claim (CM#150)
WSDOT's estimated total cost for this issue is $2,526,465 excluding any contractor markups. The previous change order settlement for this item was set at $875,000, which did not include any amount for risk to WSDOT.

Although the justification and estimate did take into consideration the cost of litigation to the State, the DRB's recommendation regarding the MEJ Provision, and the risk of losing in court, WSDOT did not include any amount in the previous settlement for these potential costs.

After reviewing this issue in more detail, it has been determined that the settlement amount for this item should be increased by $250,000 for a portion of the costs associated with the risk of not settling the claim. The existing estimate does include the calculations for this amount. This brings the total settlement amount for the MEJ claim to $1,125,000.

Item 2. Decorative Pedestrian Railing Design Issues (CM#295)
WSDOT's estimated amount for this issue is $814,328; however, the previous settlement amount included in this change order was $590,000.

The total settlement amount for this issue was reduced from the total estimated amount because the Project Team believed that the Contractor could have been mitigated some of these costs by improved schedule management during installation of the railing.

After further review it was determined that WSDOT had not assigned enough value to this item because WSDOT was the Engineer of Record for this work and thus held the responsibility for the design changes. The amount for this item has been increased by $135,000 to $725,000, still substantially below the total estimate leaving some responsibility with the Contractor.

Item 7. Time Related Overhead & Associated Costs (CM#291)
WSDOT's estimated amount for this item was originally $1,744,978. The settlement amount included in this change order was $1,300,000.

After further review of this item it has been determined that the description of this item and the estimated and settlement amounts need to be modified to correctly represent this issue. The correct settlement amount for this item is $915,000. *(See attached estimate.)*

The previous justification to resolve this issue as part of CO #194, incorrectly assigned costs for time related overhead specifically attributable to executed CO#58, CO#59 and CO#159. Those change orders settled all costs, including extended overhead and therefore should not be the basis for settlement of this item.

This item should include those estimated costs caused by the multiple changes made throughout the project duration. Typically referred to as "Cumulative Change", this issue considers the following specific elements:

- 165 additive or no cost change orders totaling $18,483,000
- 21 deductive change orders totaling $4,915,000
- 926 RFI's (requests for information)
- 354 original bid items plus the change order items totaled $3,507,256 in net underruns ($714,422 is part of Item #9 of this change order) leaving $2,792,834 considered in this item

The estimated settlement amount for this issue includes the following estimated costs for the Contractor and its Subcontractors:

- Inefficiencies realized through the number of change orders and RFI's
- Inefficiencies realized through the amount of quantity changes
- Time related overhead and other associated costs impacted by the changes

WSDOT has only considered three general elements of the Work in its evaluation of what a reasonable approach is to assigning effects of cumulative change. This was determined by reviewing previous change orders to quantify where most changes and RFI's were affecting the original work. Most areas of Work were not affected beyond what has already been agreed to in previous change orders for inefficiencies. Those elements that appear to have the most cumulative change impact are:

1. Superstructure – includes changes to railing. Assuming 10% of the value of this Work realized inefficiencies of 5%.
2. Electrical – includes ITS and Illumination changes. Assuming 25% of the value of this Work realized inefficiencies of 5%.
3. Local Improvements – includes many of the unit pay items. Assuming 40% of this Work realized inefficiencies of 10%.

Note:
The above does not include those items addressed in Item #9, *Bid Item Over/Underrun Reconciliation (CM#285)*, which addresses those items related to WSDOT Standard Specifications Section 1-04.6 *Variation in Estimated Quantities*.

Summary

The total change order amount has not changed although the allotted amounts have been modified. The items and amounts shown in **BOLD** have changed.

Issue Title	WSDOT Estimate
CM 150 Modular Expansion Joint Claim	**$1,125,000**
CM 295 Decorative Pedestrian Railing Design	**$725,000**
CM 288 BCS Design & Commissioning	$65,000
CM 286 Barrier Elevations	$65,000
CM 297 Montlake Detectable Warning Surface	$0
CM 298 Pier 17 Casing Cut	$0
CM 299 TRV Barrier Move	$0
Cable Vault Drain Grout	$0
CM 291 Time Related Overhead & Associated Costs	**$915,000**
CM 292 Power Restoration to WSDOT Trailers	$25,000
CM 285 Bid Item Over/Underrun Reconciliation	$180,000
CM 303 DBE Commitment Cleanup	$0
CM 293 Neighborhood Repairs	($75,000)
CM 294 Scheduler Specification	$0
CM 301 Watertight Joint Testing	($20,000)
CM 302 Misc Electrical & ITS	$5,000
CM 304 Strip Seal Replacements	($20,000)
Beveled End Treatment	$0
Total	$2,990,000

Washington State Department of Transportation

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Change Record Page 1 of 13

Contract Number	Contract Title	Federal Aid Number
008625	SR 520 West Approach Bridge North Project	BR-NHPP-0520(053)
Change Order Number	**Change Description**	**Date**
194	Project Closeout Settlement	Dec 6, 2018
Region	**Project Engineer**	**Phone Number**
Northwest Region	Stephen Strand	(206) 770-3565
Prime Contractor / Design-Builder		
Flatiron West, Inc.		

☒ Ordered by Engineer under the terms of Section 1-04.4 of the Standard Specifications or the RFP

☒ Change proposed by Contractor / Design-Builder

Evolution & Description Of Change

General Description of the Change

As mutually agreed by WSDOT and the Contractor, this change order resolves all outstanding Project issues. This change order closes all Protests, Claims, and disputes along with providing compensation in full for all costs, time, delay, impacts, inefficiencies, and risk.

Primary elements covered by this change order:

- Settles the Contractor's Modular Expansion Joint Claim
- Resolves cost impacts resulting from the WABN Regional Shared Use Path (RSUP) Decorative Pedestrian Railing
- Resolves cost impacts resulting from the WABN Bridge Control System (BCS) and Fire Protection System (FPS) design and commissioning
- Resolves cost impacts resulting from unit price bid item over and underruns
- Modifies the Project Condition of Award (COA) Disadvantaged Business Enterprise (DBE) commitments for two subcontractors, while maintaining the total COA DBE commitment for the Project
- Establishes a credit for costs incurred by WSDOT for repairs to 14 parcels adjacent to the Project resulting from the Contractor's Work activities.
- Resolves all time-related overhead and associated costs
- Allows the Engineer to reduce Contractor scheduler requirements as Project needs evolve
- Deletes the WABN Modular Expansion Joint (MEJ) watertight joint testing requirement
- Accepts non-conforming luminaire foundation bolts and grounding wire at Pier 34
- Adds temporary electrical service for the westbound SR520 ramp to Montlake Blvd
- Requires furnishing six replacement strip seals
- Modifies an end treatment for a drainage pipe beveled end
- Closes miscellaneous FWI issues
- Resolves cumulative effect of all change orders and all other issues to date
- Resolves all differing site conditions, disputes, protests, and claims raised to date

Evolution of Change

See Pages 3 through 13 of this document.

DBE Statement

CO#138 deleted a portion of Contract Work which affected several COA subcontractors. Part of the deleted work to be performed by PSC was not included in the Contractor's COA substitution request for CO#138. As a result, the PCS COA paid to date amount for BI#148 is incorrect, too low. This change order makes the COA commitment reduction for PSC that was missed in CO#138 and increases participation by RBI by an equal amount. The total Project DBE goal is not affected by this change order.

Contract Number	Contract Title	Change Order Number
008625	SR 520 West Approach Bridge North Project	194

Basis of Cost & Justification:

After Substantial Completion of the WABN Project was granted and only punch list work remained to be completed, multiple Project issues, disputes, Claims, and change orders, which WSDOT and the Contractor had not resolved, were reviewed. Instead of negotiating each issue individually, WSDOT and the Contractor adopted a universal approach to clear all outstanding issues which would establish a new lump sum change order total.

WSDOT and FWI established independent lists of all Project issues requiring a change order to resolve for either contractual or cost reasons. WSDOT and FWI met on September 5, 2018 and October 4, 2018 and agreed that a change order would be required for a total lump sum amount of $2,940,585. The Engineer's Independent Estimate was based on information provided by Project staff's review of the work performed and other Project documents. Attachment B provides a summary of WSDOT's estimated amounts for the work included in this change order that establishes a new lump sum total.

Contract Time:

Physical Completion of the Project is scheduled to be achieved on January 31, 2019. Working days are no longer being charged.

Prior Approvals:

Project Engineer Approval: Stephen Strand	11/26/2018
Region Change Approval: Dave Becher	11/26/2018
HQ Construction Change Approval: Craig McDaniel	11/26/2018
FHWA Change Approval: Jeff Horton	11/29/2018
OEO Concurrence: John Huff	11/27/2018
Program Funding Concurrence: Janet Buoy	12/4/2018

List Attachments:

CCIS Change Order Document (8 pages)
Change Order Checklist (2 pages)
Change Approval Emails (Attachment A)
Engineer's Estimate (Attachment B)
DBE Correspondence (Attachment C)

Distribution By: Project Office
Copy of Change Records & Change Order w/Backup - Project Engineer
Copy of ONLY Change Order - Prime Contractor / Design-Builder
Electronic Copy of Change Records & Change Order w/Backup - State Construction Office
Original of Change Records & Change Order w/Backup - Region Construction Office
Region
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Evolution of the Change
This holistic approach to this change was reviewed and endorsed by SR 520 Program, HQ Construction and FHWA on previous large change orders that resolve multiple Project issues.

This change order addresses the following specific items where entitlement for additional compensation, a credit to WSDOT, documentation of Contract requirements, or documentation of closing the issue is warranted.

1. Modular Expansion Joint Claim (CM#150)
2. Decorative Pedestrian Railing Design Issues (CM#295)
3. BCS Design & Commissioning (CM#288)
4. Barrier Elevations (CM#286)
5. TRV Barrier Move (CM#299)
6. Cable Vault Drain Grout
7. Time Related Overhead & Associated Costs (CM#291)
8. Power Restoration to WSDOT Trailers (CM#292)
9. Bid Over/Underrun Reconciliation (CM#285)
10. DBE Commitment Cleanup (CM#303)
11. Neighborhood Repairs (CM#293)
12. Scheduler Specification (CM#294)
13. Watertight Joint Testing (CM#301)
14. Misc Electrical & ITS (CM#302)
15. Strip Seal Replacements (CM#304)
16. Beveled End Treatment

1. Modular Expansion Joint Claim (CM#150)
Description
The Contract Provisions require Modular Expansion Joints (MEJ) with noise abatement features to meet Project environmental commitments regarding noise pollution. The Provisions provide both an approved MEJ supplier, Mageba, along with performance requirement specifications for the MEJs. The performance requirements refer to proprietary noise cancellation systems developed by Mageba. While the Contract Provisions do not specify Mageba as a sole source supplier, the Provision is written in such a way that no other MEJ supplier would be able to meet the Project requirements. FWI contracted Watson Bowman Acme Corp. (WBAC) to provide the expansion joints who proposed an alternate MEJ design that WBAC asserted is equal or better than the product provided by Mageba.

Instead of rejecting the WBAC MEJs for not including noise abatement features, WSDOT notified FWI that the WBAC MEJs would be considered if FWI could show that the proposed joints were equal to or better than the contract requirements. Between October 2015 and May 2016, FWI prepared multiple design submittals that FWI claimed met the intent of the MEJ Provisions. Each submittal was rejected with the comment that the submittal packages did not prove to WSDOT's satisfaction that the WBAC MEJs are as quiet as the Mageba MEJs. WSDOT ultimately rejected the WBAC design for its lack of proprietary noise cancellation features and their inability to prove that their design was equal to or better than the contract requirements. WSDOT directed FWI to procure and install the Mageba MEJs.

The Contractor procured and installed the Mageba MEJs, but under Protest. FWI claimed that no established performance criteria existed in the Contract or had been provided by WSDOT since the execution of the Contact, to allow any MEJ other than the preapproved supplier. In their Protest, FWI stated that they could not have known that no measurable criteria existed to determine that the WBAC MEJs would not meet the performance specifications detailed in the Provisions when they prepared their bid. As the Mageba MEJs are significantly more expensive than the WBAC MEJs, FWI requested compensation for the added costs of the Mageba MEJs along with compensation for the MEJ submittals prepared for the WBAC MEJs. WSDOT denied FWI's request for additional compensation.

The issue was presented to the Disputes Review Board (DRB) for consideration. The DRB concluded that the WBAC MEJs did not meet the Contract requirements. However, the Board also opined that the Contract Provisions were not clear and did not provide measurable acceptance criteria for an alternate design. After receiving the DRB's recommendation, FWI informed WSDOT that they believed that they were still due compensation as a result of the lack of acceptance criteria. FWI notified WSDOT of their intent to pursue litigation if the issue could not be resolved. Taking into consideration the cost of litigation to the State, the DRB's recommendation regarding the MEJ Provision, and the risk of losing in court, WSDOT determined that it made financial sense to all parties to negotiate a resolution of this issue on a Project level. WSDOT and FWI agreed to settle the issue with both parties sharing in the cost.

Evolution

On February 22, 2016, FWI submitted FWI SL#0217 containing FWI's interpretation of the Contract MEJ Provisions and requesting a meeting with WSDOT for clarification of the Contract requirements. FWI's position was the Provision did not provide measurable acceptance criteria to prove that their product was equal to or better than the preapproved supplier.

WSDOT met with the Contractor on February 23, 2016 and responded on February 24, 2016 with WSDOT SL #0313. WSDOT stated that FWI had not provided any information that showed that the WABC MEJs provided noise cancellation features to confirm their claims that their product was equal to or better. WSDOT stated in the letter that the WABC MEJs could not be approved at that time.

FWI responded on March 2, 2016 with FWI SL#0224, which included a MEJ noise assessment asserting that their MEJ was equal to or better to the Mageba MEJ.

WSDOT responded on March 7, 2016 with WSDOT SL#0322 stating that the MEJ assessment did not provide meaningful new noise data. WSDOT rejected the submittal and expressed concern that FWI may not be able to gather the necessary data for the WBAC MEJ before there was an impact to the Project schedule.

FWI protested WSDOT's rejection of the WBAC MEJs on March 10, 2016 in FWI SL#0226 and provided their supplemental protest information on March 24, 2016 in FWI SL#0232. WSDOT rejected FWI's protest on March 30, 2016 in WSDOT SL #0337.

The issue progressed to the point where the dispute was sent to the DRB for consideration. On September 14, 2016, the DRB concluded that the WBAC MEJs did not meet the noise cancellation requirements detailed in the Provisions. However, the DRB also noted that the MEJ specification was defective and did not provide measurable acceptance criteria for an alternate design. The DRB also concluded that WBAC should be compensated for their time associated with the submittal process.

FWI spent eight months preparing multiple design submittals for the WABC MEJs for WSDOT consideration. As the Contract documents provided no measurable criteria to accept or reject those submittals, WSDOT concurred that FWI was entitled to compensation for costs incurred to prepare those submittals.

WSDOT and FWI agreed that it was in all parties' best interest to resolve the issue and avoid a time consuming and costly litigation. FWI had requested approximately $2.7M in its claim. After considering the risk of not winning in litigation, WSDOT has included an estimated amount in this change order to resolve this issue.

2. Decorative Pedestrian Railing Design Issues (CM#295)

Description

The WABN structure includes a Regional Shared Use Path (RSUP) on the north side of the structure for bike and pedestrian use. The RSUP runs along the top of the bridge deck for the majority of the structure, but also sits on steel platforms at six piers. The entire length of the path includes Decorative Pedestrian Railing (Railing). The Railing incorporates the RSUP lighting system which is installed at the base of the Railing. Although previous change orders addressed design changes known at that time, there remained multiple design issues, which were discovered later during the fabrication and installation of the Railing which created inefficiencies and added costs. Railing design issues resolved in this change order include:

- The Pier 42 edge of deck is curved, but the Railing design did not account for the curve. This resulted in field modifications, standby time, and general inefficiencies in performing the work.
- The Railing attached to deck panel A2 had an angle point that was not identified in the plans, which required modification to the Railing at that location.
- The Contract Plans did not adequately detail connections at the following locations:
    - Where the path switches from the bridge deck to the steel belvedere, necessitating multiple Requests for Information (RFIs) and resulting in inefficiencies in performing the work
    - Railing lighting conduit hangers beneath the belvedere sections of path required modification to adjust to field conditions
    - Design issues caused horizontal and vertical alignment problems between Railing sections. There were multiple RFIs and responses requiring modifications to Railing connections to account for the alignment issues, resulting in inefficiencies in performing the work

As the RSUP Railing was incorporated with the RSUP lighting system, delays to the Railing installation caused impacts to the lighting work as well. FWI's electrical subcontractor intended to install lighting in a linear fashion. Issues with the Railing installation and the conduit location

at the belvederes required the subcontractor to alter their sequence of construction resulting in delays to the RSUP lighting work for which FWI is entitled to compensation.

To resolve a concern about fabrication inspection, WSDOT directed FWI to perform destructive testing on Railing components to inspect welded connections. No weld defects were found. This change order also provides compensation for the costs incurred as a result of extra testing.

Evolution

Pier 42 Edge of Deck Issues

Between February and September of 2017, the Contractor submitted RFIs 649, 697, and 837. These RFIs all pertained to the Railing components to be installed along the edge of the WABN bridge deck. The Railing design did not account for angles and curves present in the edge of the bridge deck, that resulted in gaps between the handrail base and the edge of the deck. The Contractor submitted these three RFIs requesting details and direction on how to address these gaps. WSDOT responded to the RFIs with design modifications to the Railing section and added steel bands to the areas where the gap between the edge of deck and the Railing was greater than ½". This change order provides compensation to FWI to resolve these issues.

Handrail at Deck A2

While installing RSUP decorative pedestrian railing in October of 2017, the Contractor identified a potential omission in the plans. The belvedere Railing sections included a stanchion attachment to secure the railing to the belvederes. The plans did not detail this connection. On October 4, 2017, the Contractor met with WSDOT at which time the Contractor was directed to use a welded connection. This change order adds a welded connection for all of the Railing sections installed on the WSDOT belvederes and provides compensation to the Contractor for this added work.

Connection Details

Throughout the duration of the RSUP Railing installation, there have been instances where the plans did not fully detail the connections between railing components. There were also instances where the design created constructability issues. This has resulted in multiple RFIs and field modifications resulting in inefficiencies and additional work, including the following:

- The width of the RSUP Railing gates and panels vary at the equipment platform belvederes, requiring as-built dimensions of the openings before the gates and panels can be fabricated. At the time of bid, the Railing fabricator assumed that the plan dimensions could be used to fabricate the Railing sections before the belvederes were installed. This caused inefficiencies in the fabrication and installation of the Railing at the equipment belvederes.
- On September 1, 2017, the Contractor submitted RFI 838 detailing constructability issues in shop welding the Railing post at Piers 10, 16, 21, 24, 28 and 38. Stainless steel portions of Railing were installed adjacent to galvanized portions. To ensure that the stainless steel and galvanized components were installed correctly, the Contractor requested that the stainless-steel railing sections be field welded. Field welding created inefficiencies in installing the Railing at the locations detailed above.
- The Contact Plans did not sufficiently detail the connections for the RSUP lighting conduit where it was attached to the bottom of the WABN belvederes. On May 24, 2017, the

Contractor submitted RFI 708 proposing adding a unistrut standard two-piece strap to secure the conduit installed under the belvedere. WSDOT approved the proposal.

- Railing connections were not fully detailed in the Contract Plans, which has resulted in multiple instances of railing sections not aligning vertically or horizontally, particularly at the steel belvederes. Between June 2017 and March 2018, the Contractor submitted 15 RFIs resulting in modified connections, added shims, and other field modifications required to resolve horizontal and vertical alignment issues.

This change order provides compensation for the added work and inefficiencies resulting from the lack of design details.

Impacts to RSUP Lighting Installation

The RSUP lighting is installed inside the handrail. As a result, impacts or changes to the installation of the Railing have a direct impact on the lighting installation work. After evaluating all of the impacts to the railing installation, the Contractor submitted FWI SL#371 on March 20, 2018 detailing the associated impacts on the RSUP lighting work. This change order provides compensation for those impacts.

Quality Welding Inspection

On September 15, 2017, WSDOT submitted WSDOT SL#0607 requesting destructive testing of portions of the RSUP Railing. WSDOT was concerned that there was a fabrication issue involving welding of the Railing. The testing was completed, no defects were found, and FWI responded to WSDOT's letter with FWI SL#0358 on September 19, 2017. WSDOT responded with WSDOT SL#0622 on October 25, 2017 stating no further action was required. This change order provides compensation for the Contractor's investigation and testing.

Change Order Request

The Contractor submitted FWI SL#0371 on March 20, 2018 compiling all of the issues detailed above into a single issue and providing cost impacts for which they are requesting compensation. WSDOT has prepared an independent estimate of these cost impacts which was used to settle this issue. This change order encompasses all of the impacts stemming from the WSDOT Railing design.

3. BCS Design & Commissioning (CM#288)

Description

When the WABN Project went to ad, the WABN Bridge Control System (BCS) was to be fully integrated with the Floating Bridge & Landings (FB&L) Project. The BCS includes items such as bridge lighting, the Fire Protection System (FPS), and Intelligent Transportation System (ITS) features. Change Order (CO)#140 redesigned the WABN BCS so that the two systems (WABN and FB&L) were separate and operate independently. That resulted in inefficiencies in the BCS installation to ensure that items like bridge lighting, the FPS, and ITS systems work concurrently when needed. For example, the automated navigation lighting for the floating bridge needs to turn on at the same time as the automated WABN navigation lighting, which was not a consideration if the systems were fully integrated. The two bridge control systems did not function as expected with the revised WABN BCS design. That resulted in an extended BCS commissioning process which increased costs to FWI and its subcontractors. This change order

provides compensation resulting from impacts and inefficiencies in installing the revised WABN BCS.

Evolution

On February 9, 2018, FWI submitted FWI SL#0369 notifying WSDOT of cost and schedule impacts to FWI and their subcontractors performing the BCS and FPS work. Multiple minor modifications and issues resulting from the CO#140 modifications to the BCS and FPS resulted in inefficiencies in the BCS commissioning process. Added work included:

- Additional BCS commissioning meetings with FWI and their subcontractors Wood Harbinger, Panatrol, and Elcon. These meetings were a direct result of WSDOT design issues.
- Issues with the integration of the FPS control panel with the BCS system resulted in multiple Integrated Functional Performance Test (IFPT) failures. Additional testing was required resulting from changes to the BCS design.
- The CO#140 decoupling resulted in modification to an FPS valve which impacted the retesting of the system.
- Additional testing required traffic control for BCS testing and commissioning.

On February 27, 2018, WSDOT responded to FWI's letter acknowledging that there were BCS design issues for which FWI was entitled to compensation but noted multiple issues raised in the letter appeared to be a result of the Contractor's actions and not WSDOT directed changes to the Contract. WSDOT requested a cost proposal for the added work, and this change order will provide compensation for the inefficiencies and the extension of the BCS commissioning process. See Attachment B for an independent estimate of these cost impacts which was used to settle this issue.

4. Barrier Elevations (CM#286)

Description

Precast Barrier

The Contract includes the installation of precast and cast in place barrier transition sections along mainline SR520. The Contract Plans refer to WSDOT Standard Plans for the various transition sections. In multiple locations, the dimensions shown in the Standard Plans did not fit the actual field conditions. That resulted in custom transition barrier sections and general inefficiencies in performing the construction that was not anticipated. This change order provides the Contractor compensation for that work.

WDXV/Montlake Tie-in

The Contract Plans detail interim alignments through multiple stages of construction. A temporary alignment provided roadway slopes that conflict with the slopes detailed in the final paving plans near the westernmost end of the westbound SR520 to Montlake Blvd exit. As a result, the subgrade for an area approximately 36 feet wide and 75 feet long was constructed to an incorrect profile slope in an earlier stage of construction. During construction of the final configuration of the Montlake Blvd off ramp, the profile issue was discovered and resolved using additional crews and resources. This change order provides compensation for those additional efforts.

Evolution

On June 26, 2017, FWI submitted FWI SL#0336 requesting a change order for cost and schedule impacts resulting from the Contract paving plans. The letter detailed the following two issues resulting from the plans:

Precast Barrier

The Contractor referred to RFIs 690, 702, 723, 738, 744-747, and 751 resulting from either incomplete plan sheet information or conflicting information between the Contract Plans and the WSDOT Standard Plans. FWI was required to resolve this issue by field fitting the barrier transition sections instead of simply using the Standard Plan dimensions, which caused standby time, inefficiencies, and rework of the subgrade where barrier sections needed to be moved to make the transitions work.

WDXV/Montlake Tie-in

On June 14, 2017, the Contractor submitted RFI 748 *WDXV Cross Slope* pointing out inconsistencies in the ramp cross slopes between the profile and plan sheets. WSDOT responded to this RFI that the correct information was presented in the profile sheets, and that the information in the profile sheets should be used. As portions of the ramp had already been constructed incorrectly, using the plan sheets, the Contractor was required to remove previously-installed materials, rework the ramp, and replace the removed items.

FWI followed up FWI SL#0336 with SL#0373 on April 16, 2018. The letter detailed the full scope of the additional work. This portion of the change order was then initiated to provide compensation for the *Precast Barrier* and *WDXV/Montlake Tie-in* issues described above. See Attachment B for an independent estimate of the cost impacts which was used to settle this issue.

5. TRV Barrier Move (CM#299)

There is an area between the pedestrian path to the westbound SR520 flyer stop (TRV) and westbound SR520 bus lanes (MLHV) which the Contract Plans called out as being filled with precast barrier at the top. The Contractor claims that there were plan sheet errors that provided conflicting alignments for the barrier on the TRV side. The Contractor also claimed that the slope between the two alignments was greater than the plans indicated, causing inefficiencies and delays in the work for which they were due compensation. WSDOT disagreed with FWI's position. This issue is closed as a result of this change order.

6. Cable Vault Drain Grout

The WABN ITS system includes a pull vault between the ITS cabinets and the Bridge for pulling fiber optic cable. That pull box included a drain at the bottom of the vault. FWI did not install the drain when the vault was built. Instead of removing the vault, excavating, and installing a new drain pipe, then reinstalling the vault, FWI requested that they be allowed to cut into the side of the vault to drain water out of the vault. WSDOT accepted the proposal.

Due to the slope of the bottom of the vault, water could pool inside the vault. FWI submitted RFI 858 *Pull Vault Drain* proposing to fill the bottom of the vault with grout to allow the water to drain. WSDOT responded to the RFI that the proposal was acceptable. Since WSDOT agreed to

the location of the modified drain, FWI's position was that the water pooling was a design issue and therefore added work. WSDOT's disagreed and considered this was a Contractor error and their responsibility to correct. This issue is closed as a result of this change order.

7. Time Related Overhead & Associated Costs (CM#291)
To date, WSDOT has executed CO#58, CO#59, and CO#139 that have added time to the Contract totaling 58 working days. While each of those change orders provided compensation for direct costs and markups; time related overhead and other associated costs were not addressed. FWI and some of their major subcontractors have incurred an additional 58 working days of equipment rental costs, field office costs, home office costs, office staff, and supervision for which neither FWI nor their subcontractors have received compensation. This change order provides compensation for extended overhead and other associated costs resulting from days added to the Contract by change order. WSDOT has prepared an independent estimate of these cost impacts which was used to settle this issue

8. Power Restoration to WSDOT Trailers (CM#292)
On January 10, 2018, a tree was blown over and landed on the overhead power lines to the WSDOT WABN field trailers. The WSDOT Project office power was out until FWI's electrical subcontractor removed the limb and repaired the line. During that time, the Contractor provided power to the WSDOT offices by installing and running a temporary generator during office hours. This change order provides the Contractor compensation for the additional work required to remove the fallen tree, repair the line, and the generator rental and fuel costs for the duration of the outage.

9. Bid Item Over/Underrun Reconciliation (CM#285)
WSDOT Standard Specifications Section 1-04.6 *Variation in Estimated Quantities* allows for renegotiation of unit price items with final paid quantities over 125% of their original quantities or under 75% of their original quantities. In total, there is an estimated net $700K in Project underruns over multiple bid items for which the Contractor is eligible for renegotiation. Examples of large over/underruns include:

- Removing Asphalt Concrete Pavement – The Contract estimated a total of $150K, when only $75K of work was needed.
- Structure Excavation Class B & Extra Shoring – The Contract estimated a total of over $350K when only approximately $200K of work was needed. The design did not account for roadway excavation quantities above the structure excavation class B zone, creating the underrun.
- On-Land Contaminated and Impacted Soils – The Contract estimated $625K in contaminated and impacted soil removal on land and during shaft excavation when only $275K in work was needed. Initial testing suggested that more contaminated material would be encountered.
- Trench Backfill – The Contract estimated $100K in backfill for stormwater pipe installation work while only $20K was needed. Nearly all of the native material excavated for storm sewer line installation was suitable as backfill.

Instead of renegotiating a new unit price for each item, the change order establishes a new lump sum total to provide compensation for costs for the items with Project over/underruns. See Attachment B for a breakdown of all of the Project over and underruns.

10. DBE Commitment Cleanup (CM#303)
In August 2018 while reviewing the status of the Project DBE Program against the work left to be performed on the Contract, it was noticed that Pavement Surface Control (PSC) was roughly $130K short of their goal for Bid Item (BI)#148 with all of that bid item work complete. FWI was contacted and it was determined that the shortfall was due to work deleted in CO#138. That change order deleted multiple COA items of work performed by PSC which was substituted by work assigned to Rebar International, Inc. (RBI). When FWI prepared their COA substitution proposal for that change order, they overlooked the PSC (BI #148) deleted work. This change order reduces PSC's participation for the work deleted in CO#138 and replaces that participation with an equal amount of work performed by RBI.

11. Neighborhood Repairs (CM#293)
During the course of the Project, vibrations from construction activities have caused damage to 14 parcels in the Shelby Hamlin neighborhood. Project Work in the vicinity of the neighborhood included pile driving for a soldier pile tie-back wall, shoring for the north approach at the 24th Avenue Bridge, and the use of vibratory rollers. Repairs will likely be required to address cosmetic cracking and complete related painting, address separation cracks at exterior brick fascia and interior tile, and fix cracked concrete walks and patios. This change order takes a credit for those home repairs that will be negotiated with the property owners and paid directly by WSDOT. Other property damage outside of these homes in the Shelby Hamlin neighborhood will be covered by the standard WSDOT tort claim process.

12. Scheduler Specification (CM#294)
The Contract Provisions detail requirements for a Contractor scheduler which includes full-time status, minimum experience requirements, and proficiency with the Project's scheduling software. As the Project progressed and major items of work were completed, the schedule analysis and Progress Schedule preparation became less complex. The Contractor requested that the scheduler requirements be reduced to match the complexity of the job as milestones were met and the Project schedule risk decreased. This change order allows the Engineer to reduce scheduler requirements as the Project needs evolve.

13. Watertight Joint Testing (CM#301)
The Contract Provisions required the Contractor to flood the WABN MEJs with water to ensure that the joints were watertight. While preparing the Project punchlist, WSDOT identified the watertight testing requirement as an item to be completed. As testing the joints would require a full closure of the WABN structure, FWI requested that the watertight joint requirement be removed.

WDSOT has not identified any problems to date related to the MEJ's watertight performance. Since there are no SR520 full closures scheduled in the immediate future, it was determined that this requirement could be waived. Future stages of SR520 construction will begin in the 2019,

creating potential opportunities for that testing to be performed by others if any issues are noted by WSDOT Maintenance.

In addition to the impacts to the public, watertight joint testing is a Project specific requirement and is not required for concrete structures in the WSDOT Standard Specifications. The Project Office contacted HQ Bridge and Structures who confirmed that the requirement could be deleted. WSDOT accepted the Contractor's proposal and this change order removes that requirement from the Contract Provisions. WSDOT has prepared an independent estimate of the credit which was used to settle this issue

14. Misc Electrical & ITS (CM#302)

Description

While resolving punch list items, several items of work installed by the electrical subcontractor were noted to be either non-compliant with the Contract or added by WSDOT. This change order resolves the following WSDOT initiated and Contractor requested changes to the Contract:

Luminaire Anchor Bolts

WSDOT Standard Specifications require two bolt turns of anchor bolt thread to extend beyond the top of the anchor bolt nut for all luminaire foundations. Five luminaires were identified with one or more anchor bolts with less than 2 turns of thread extending beyond the top of the anchor bolt nut. This change order accepts this non-compliant work for a credit.

Pier 34 Grounding

The Contract Plans call for grounding wire to be tied to the Pier 34 column rebar for future SR520 projects (light rail). When the column concrete was placed, the ground wire was encased in concrete. Instead of chipping through the column concrete to expose the ground wire, this change order will allow the Contractor to place a new ground wire in a new junction box to be used by others. This change order documents the repair of the non-compliant work.

SCL Service Connection

CO#85 provided compensation for the Contractor to install, and later remove, a temporary electrical service which was the plans state should be performed by Seattle City Light (SCL). The final change order was a combination of multiple change management issues combined into one change order. One set of force account sheets was missed and no compensation was provided for that shift in CO#85. This change order establishes a new pay item for that work.

Evolution

Luminaire Anchor Bolts

On April 18, 2018, the Contractor submitted RFI#922 Luminaire Anchor Bolts. In the request, the Contractor stated that some of the anchor bolts were cast too deep into the traffic barrier to allow two full turns of the nut of bolt thread as required by the WSDOT Standard Specifications. The Contractor pointed out that of the 5 luminaires with non-conforming bolts, all of the nuts were at least flush with the top of the anchor bolts. To achieve conformance with the WSDOT Standard Specifications, the contractor would require concrete barrier demolition, grout pad demolition, barrier repair, grout pad repair, pulling conductors, and traffic control. To avoid

impacts to the already completed work as well as the public, the Contractor requested that they be allowed to leave the anchor bolts as constructed.

The Engineer of Record (EOR) reviewed the condition of the bolts as constructed and determined that the Contractor's proposal was acceptable.

Pier 34 Grounding
On October 24, 2017, the Contractor submitted RFI#857 Pier 34 Grounding for WSDOT consideration. In the RFI, the Contractor explained that the ground wire attached to the Pier 34 column rebar was completely encased in the column concrete and was not installed per plan. The Contractor requested that WSDOT provide an acceptable procedure to expose the ground wire. The WSDOT EOR reviewed the RFI and determined that new wire could be coiled inside of a new junction box mounted to Pier 34. The RFI was responded to accordingly, and this change order documents the repair procedure for that non-compliant work.

SCL Service Connection
While performing project closeout work, the Contractor found extra work sheets and invoices for a temporary electrical connection made at the WB SR520 off ramp and Montlake intersection CCTV camera cabinet. After reviewing the information, the Contractor realized that the work was part of CO#85 but was not included in their cost proposal for that work. The Contractor provided the information to WSDOT and requested compensation for that work.

The Project Office reviewed the change order documentation and daily construction reports and determined that the work should have been included as part of CO#85. This change order provides compensation for that work which was performed as part of CO#85, but not included in the lump sum change order pay item.

15. Strip Seal Replacements (CM#304)
While performing pavement marking removal work on the SR520 Floating Bridge, the Contractor damaged six rubber strip seals that keep water from running through the bridge deck joints between pontoons. Repair of the strip seals would require closures of SR520, of which none are planned until 2019. Instead of having the Contractor remove and replace the seals, WSDOT determined that repairing the seals once the next phase of the SR520 Program begins would reduce impacts to the public without resulting in further damage to the structure. The Contractor agreed to provide replacement seals for the damaged seals and a credit for the removal and installation work which they will not perform. This change order establishes that credit and documents the delivery requirements of the replacement seals.

16. Beveled End Treatment
While preparing the Project punchlist, a missing end treatment was identified on drainage structure DR02-40. The outfall should have included fall protection in accordance with Standard Plan B-75.60-00. On September 25, 2018, FWI submitted RFI 925 proposing an alternate end treatment. WSDOT reviewed the RFI and determined that the modified end treatment would be acceptable. This change order documents that modification.

Contract:	8625	West Approach Bridge North (WABN)	
Change Order Title:	**Flatiron Extended Indirects & Cumulative Change Impacts**		
Change Order No. :	**194**	CM No. 291	
Estimate Prepared by:	Jon Danks	Date Prepared: 12/18/2018	

This estimate is based on the effects that cumulative changes have on the overall project with the following factual elements taken into account.

1) 165 additive or no cost change orders were executed for a total amount of $18,483,000
2) 21 deductive change orders were executed for a total amount of -$4,915,000
3) 926 RFI's were submitted and answered
4) 354 original bid items plus change order items had net underruns of $2,792,834 (excludes those addressed in Item #9 of this change order)
5) 53 Working Days (2 1/2 Mos) were added to the Contract in previous change orders. The months added to the end of Phys Completion were Nov, Dec, Jan.

Original Contract Summary:	Final Contract Summary:	Change	% Change
1) Contract Value $199,537,370	1) Contract Value $213,105,506	1) $13,568,136	6.80%
2) Contract Time 795 Working Days	2) Contract Time 848 Working Days	2) 53 Working Days	6.70%

The effects of cumulative change on this project include: (a) Inefficiencies to production of original and previously changed work (b) Loss of efficient supervision (c) Moving orginal late work activities to winter weather

Projects can realize impacts to its planned productions from a relative low % to extremely high % depending on the types of work, locations, size of projects and numerous other reasons. WABN experienced less than 10% change in both Contract Value and Contract Time, and when eliminating the amount of deductive change orders, using only the additive amounts, the % would be higher but still most likely no more than 10% of the original Contract. Considering this low % of change the inefficiencies realized should also be low. Online research indicates a varying degree of production inefficiencies.

For the purpose of arriving at a reasonable amount of cost for the WABN project a % loss in productivity will be applied to specific areas of work. The primary areas that are being considered are Superstructure, Electrical, and Local Improvements. Some areas such as Foundations had significant changes; however previous change orders took into account the inefficiencies at that time and included those estimated costs in the settlement. Bridge demolition also had changes but was included in previous change orders.

Since so many unit bid prices changed significantly, a higher amount has been used for calculating the Local Improvements area of work.

Area	Contract Value	% Impacted	Impacted $	Inefficiency %	Inefficiency $	
General	11,637,371	0%	0	0%	0	
Mobilization	21,000,000	0%	0	0%	0	
Workbridge	30,000,000	0%	0	0%	0	
Foundations	37,000,000	0%	0	0%	0	Paid as part of existing CO's
Columns & Bearings	11,700,000	0%	0	0%	0	
Superstructure	56,500,000	10%	5,650,000	5%	282,500	
Electrical	10,700,000	25%	2,675,000	5%	133,750	
Bridge Demo	6,000,000	0%	0	0%	0	Paid as part of existing CO's
Local Improvements	15,000,000	40%	6,000,000	10%	600,000	
Total	199,537,371		14,325,000		1,016,250	
				Use	**915,000**	

Washington State Department of Transportation

Change Order Checklist

Cont. #: 8625 Cont. Title: SR 520 West Approach Bridge North (WABN) C.O. #: 194 C.O. Title: Project Closeout Agreement	If yes, State Construction Office Approval Required.
I. Executed by the State Construction Office	
1. Cost or credit equal to or exceeding $500,000. *1, *3	☒ Yes ☐ No
2. Change in the contract documents beyond the scope, intent or termini of the original contract. *2	☐ Yes ☒ No
3. Any proposed revision or deletion of work that affects the condition of award requirements. (Must be coded "CO" in CCIS, Includes changes to goal or commitment)	☒ Yes ☐ No
4. Change in contract time greater than 30 working days, or a change in contract time not related to any change order. *1	☐ Yes ☒ No
II. Executed by the Region	
5. Determination of impacts and/or overhead.	☒ Yes ☐ No
6. Change to Contract Provisions or Standard Plans.	☒ Yes ☐ No
7. Material or product substitution. (Excludes materials associated with Std. Specification Sections 6-07, 8-01, 8-02, 8-12, 8-18 & 8-20)	☐ Yes ☒ No
8. Structural design change in the roadway section. (Requires concurrence from designer)	☐ Yes ☒ No
9. Determination of changed condition. *(Section 1-04.7 of the Standard Specifications)*	☐ Yes ☒ No
10. Settlement of a claim. *(Section 1-09.11(2) of the Standard Specifications)*	☒ Yes ☐ No
11. Repair of damage regarding "acts of God" or "acts of the public enemy or of government authorities".*(Section 1-07.13 of the Standard Specification)*	☐ Yes ☒ No
12. Structural change to structures	☒ Yes ☐ No

Approvals obtained:

Project Engineer: Stephen Strand Date: 11/26/2018

Region: Dave Becher Date: 11/26/2018

State Construction Office: Craig McDaniel Date: 11/26/2018

Other (Local Agency, FHWA, Surety, etc.): Jeff Horton Date: 11/29/2018

To be completed by the Project Engineer :

CO Reason(s) (See "2008 Codes and Definitions" on State Construction Office web page): AI-14, UC, AW & DW

Change Order Prepared By: Brian Grieve Date: 11/26/2018

Is this project under full FHWA stewardship oversight (Project Of Division Interest)? *1 ☒ Yes ☐ No

To be completed by the Region :

Is the change eligible for Federal participation where applicable? ☒ Yes ☐ No

Change Order Reviewed by: Jon Danks Date: 12-6-18

*1 Change (Cost or Credit) greater than $200,000 or greater than 30 days on Projects of Division Interest (PODI) requires FHWA approval. (see Construction Manual - Chapter 1-00.10, Chapter SS 1-04.4, and State Construction Office web page)

*2 Per RCW 47.28.050, any change beyond $7,500 that is beyond the original scope shall go through the competitive bidding process.

*3 Engineering error changes over $500,000 requires reporting (See reporting instructions & template on State Construction Office web page)

This form represents the **minimum** information required by the State Construction Office. If you wish to supplement this information, you may do so on a separate sheet of paper.

Washington State Department of Transportation

Change Order Checklist

SR 520 Corridor Program: Change Order Page 2 - Checklist Supplement

Cont. #: 8625

C.O. #: 194

To be completed by the Project Engineer:

Does this change order require coordination with other SR 520 Projects / Program Areas? ☐ Yes ☒ No

Coordination has taken place with:

Contract Project (identify your project): SR 520 West Approach Bridge North

Pontoon	☐ Yes ☒ No ☐ N/A	Name: N/A	Date:
Pontoon Mitigation	☐ Yes ☒ No ☐ N/A	Name: N/A	Date:
Pontoon Moorage	☐ Yes ☒ No ☐ N/A	Name: N/A	Date:
Eastside HOV	☐ Yes ☒ No ☐ N/A	Name: N/A	Date:
Evans Creek	☐ Yes ☒ No ☐ N/A	Name: N/A	Date:
FB&L	☐ Yes ☒ No ☐ N/A	Name: N/A	Date:
WCB	☐ Yes ☒ No ☐ N/A	Name: N/A	Date:
WABN	☐ Yes ☐ No ☒ N/A	Name: N/A	Date:

Identified risk has been entered into the SR 520 Risk Management Database: ☒ Yes ☐ No ☐ N/A

Risk ID Number (if pending, identify as Pending):

Project Risk ID No.: WN.CNS.900.01

Project Risk ID No.: N/A

Project Risk ID No.: N/A

To be coordinated with Program Finance, Budget and Controls Group:

Program Funding Concurrence? ☒ Yes ☐ No — Funding Concurrence Obtained on: Date: 12/4/2018

Is Sales Tax Included in CO Cost? ☐ Yes ☒ No — Is sales tax deferred? ☒ Yes ☐ No

Max Payment Curve Changes discussed with: N/A Date:

Third Party Agreements discussed with: N/A Date:

Coordination with Others:

Design / Technical Lead:	Name: John Huff - OEO	Date:	11/27/2018
Maintenance:	Name: N/A	Date:	
Environmental Commitments:	Name: N/A	Date:	

Issue Title	WSDOT Estimate
CM 150 Modular Expansion Joint Claim	$875,000
CM 295 Decorative Pedestrian Railing Design	$590,000
CM 288 BCS Design & Commissioning	$65,000
CM 286 Barrier Elevations	$65,000
CM 291 Time Related Overhead & Associated Costs	$1,300,000
CM 292 Power Restoration to WSDOT Trailers	$25,000
CM 285 Bid Item Over/Underrun Reconciliation	$180,000
CM 293 Neighborhood Repairs	($75,000)
CM 301 Watertight Joint Testing	($20,000)
CM 302 Misc Electrical & ITS	$5,000
CM 304 Strip Seal Replacements	($20,000)
Total	**$2,990,000**

CM 150 – Modular Expansion Joint Claim

Contract:	8625 West Approach Bridge North (WABN)
Change Order Title:	**Modular Expansion Joint Claim**
Change Order No. :	**194** CM No. 150
Estimate Prepared by:	Matt Weinberger Date Prepared: 5/18/2017

SUMMARY

Line	DESCRIPTION	QUANTITY	UNIT	LABOR	EQUIPMENT	MATERIAL	SUBS	OTHER	TOTAL	
1	Mageba vs. WB Material	1.00	LS					1,763,965	$1,763,965	
2	WB Submittals	1.00	LS					287,300	$287,300	
3	WSDOT Litigation	1.00	LS					475,200	$475,200	
	TOTAL Cost			0	0	0	0	2,526,465	$2,526,465	*2,526,465 Check*
	NO MARKUPS									
	TOTAL COST with Project Markups			0	0	0	0	2,526,465	$2,526,465	*2,526,465 Check*

Flatiron Bond, Ins, HO G&A	0%	$0
Total with Flatiron Bond, Ins, HO G&A		**$2,526,465**
WSDOT allow 33% of Material Cost Difference		**$587,400**
WSDOT allow 100% of WB Submittals		**$287,300**
WSDOT allow 0% of Risk		**$0**
Total Estimate for Settlement		**$874,700**
	USE	**$875,000**

Notes:

1 WSDOT provided detailed specifications for the Modular Expansion Joints; however intended that Mageba be the supplier.
2 FWI proposed the use of Watson Bowman as the MEJ supplier.
3 WSDOT allowed on-going discussions and submittals in attempts to give FWI the ability to proove that WB was equal to Mageba.
4 After several months of submittals WSDOT directed FWI to provide Mageba joints.
5 The DRB heard the dispute and although they suggested only compensating FWI for the efforts performed by WB, they did state that the specifications were not well done. FWI did not accept the DRB suggestions and submitted a Claim in the amount of $2.7M. The DRB comments causes WSDOT to consider its risk in continuing to litigation.
6 This estimate partially compensates FWI for costs related to the WB submittal efforts.
7 This estimate provides for WSDOT's participation in some of the costs related to the material difference between WB and Mageba.
8 This estimate considers the risk of continuing with litigation and associated costs estimated to be about $500,000; however that amount is NOT included above.
9 This estimate does not include any markups for the contractor.

Contract:	8625 West Approach Bridge North (WABN)		
Change Order Title:	**Modular Expansion Joint Claim**		
Change Order No. :	194	CM No. 150	
Estimate Prepared by:	Matt Weinberger	Date Prepared: 5/18/2017	

Activity Description: MEJ Materials and related costs

Quantity 1.00 LS

Basis	Description
1	The cost of MEJs supplied by Mageba USA and those by Watson Bowman are as follows. Mageba USA Furnished MEJs $3,290,265 + Mageba USA Tech Installation Support $21,000 = $3,311,265. ... Watson Bowman Furnished MEJs $1,536,100 + Watson Tech Install Support $11,200 = $1,547,300. ... The difference between Mageba and WB is $1,763,965.
2	The cost of Watson Bowman Design Engineers, Office Engineers, Draft Technicians related to Submittal and RFI Production. Also includes services by Wakefield Accoustics who Watson hired to perform sound tests. $287,300
3	Estimated risk of continuing to litigation could be substantial. Costs would include WSDOT staff and HQ; Consultants; and AGO. Use 3 FTE's at average of $150/hr x 176 hrs/mo x 6 months for the purpose of this estimate. Costs could be much higher. $475,200

MEJ Settlement Estimate Summary

Basis	Description	Quantity	Units	$ / Unit	Total $	Notes	
1	Mageba vs. WB Material	1	LS	1,763,965.00	$ 1,763,965.00	Total cost difference	
2	WB Submittals	1	LS	287,300.00	$ 287,300.00	Total estimated cost to WB	
3	WSDOT Litigation	1	LS	475,200.00	$ 475,200.00	Total estimated cost to WSDOT	
Total Material Cost					$ 2,526,465.00		$ 2,526,465

Notes

1 Although the risk to WSDOT for litigation costs are estimated to be about $500,000, this amount is not used in the final estimate value but was considered when settling this i

MEJ - DRB finding

DRB hearing on August 17, 2016.

Conclusion:
The DRB recommends that Watson Bowman Acme Corp (WBAC) be compensated for its costs in preparation of submittals, including comparative noise assessment studies.

List of Submittals and Noise assesment done by WBAC

- 1st Submittal - November 2, 2015
  Rejected by WSDOT on November 12, 2015 due to not meeting contract requirements - no sinus plates and no robo-mute system

- 2nd Submittal - November 12, 2015 - WBAC added structural calculations for center beams, support bar
  Rejected by WSDOT on November 17, 2015 due to the absorption blankets were not what was specified in SP.

- FWI submitted RFIs to have WSDOT provide objective performance criteria. WSDOT did not provide criteria.

- FWI obtained noise criteria from Mageba. 1.5dB was used

- 3rd Submittal - January 12, 2016 - WBAC stated that their joints met the criteria with a 'Comparative Noise Assessment'
  WSDOT inappropriately sent this to Mageba to review.
  WSDOT rejected submittal on February 16, 2016 with five comments, all related to noise.

- 4th Submittal - March 2, 2016 - a revised noise submittal with direct quantitative comparison of WBAC's MEJ to show that their MEJ were quieter than Mageba MEJ.
  WSDOT rejected submittal on March 7, 2016 indicating that the submittal did not provide any meaningful noise

- FWI issued a notice of intent to execute a Purchase Order for MEJ with Mageba on March 19, 2016.

- 5th Submittal - April 27, 2016 with a Quantitative Comparison of MEJ Systems, MEJ and revised shop drawings.
  WSDOT rejected submittal on May 26, 2016 for failure to meet requirements of the contract.

WABN

EXPANSION JOINTS - COST ESTIMATE FOR WBAC

12/4/2018

Modular Expansion Joint Claim Estimate - Estimated Cost of Submittals Process for Watson Bowman

Personnel	Rate	MAN-HOURS						Amount
		1st Submittal	2nd Submittal	RFIs	3rd Submittal	4th Submittal	5th Submittal	
Design Engineers	$210	320	160	-	80	80	80	$ 151,200
Office Engineers	$150	160	80	80	40	40	40	$ 66,000
Draft Technicians	$120	320	-	-	80	-	80	$ 57,600
Comparitive Noise Assessments								$ 12,500
Total								**$ 287,300**

40 hrs/wk

Notes:

1. Rates used above assume WB office and other overhead costs are included in the hourly engineering rates.

CM 295 – Pedestrian Rail Design Issues

Contract:	8625 West Approach Bridge North (WABN)
Change Order Title:	**Decorative Pedestrian Railing Design Issues**
Change Order No. :	**194** CM No. 295
Estimate Prepared by:	Matt Weinberger Date Prepared: 4/12/2018

SUMMARY

Line	DESCRIPTION	QUANTITY	UNIT	LABOR	EQUIPMENT	MATERIAL	SUBS	OTHER	TOTAL
1	1_Handrail A2 stanchion attachment at belvedere/edge of deck transition.	8.00	EA	17,712.00	10,176.00	0.00	0.00	2400.00	$30,288
2	2_Belvedere Handrail/Gate around Sign Bridges	1.00	EA	70,848.00	36,096.00	0.00	0.00	9600.00	$116,544
3	3_Belvedere handrail at Apex of Double Belvedere	1.00	EA	9,536.00	6,016.00	0.00	0.00	1600.00	$17,152
4	4_Belvedere/Equipment Platform Conduit Hangers	1.00	EA	23,232.00	10,896.00	0.00	0.00	2400.00	$36,528
5	5_Standard Handrail Stanchion Anchor Bolt conflict with Equip Platform Embed	1.00	EA	9,536.00	6,016.00	0.00	0.00	6600.00	$22,152
6	6_Belvedere/Equipment Platform Knee Bracing & Grating Infill	1.00	EA	47,232.00	24,064.00	1,000.00	0.00	6400.00	$78,696
7	7_Belvedere/Equipment Platform Connection Plate Modifications	1.00	EA	18,450.00	9,400.00	500.00	0.00	2500.00	$30,850
8	8_A2 Panel Spacing Frame 1 & 2	1.00	EA	11,000.00	1,200.00	180.00	0.00	2000.00	$14,380
9	9_Span 13 Edge of Deck Angle Point	1.00	EA	15,488.00	6,016.00	0.00	6,000.00	1600.00	$29,104
10	10_Weld Quality Inspection	1.00	EA	15,488.00	6,016.00	0.00	0.00	1600.00	$23,104
11	11_Span 42 Existing Edge of Deck Handrail	1.00	EA	16,880.00	7,520.00	0.00	6,000.00	2000.00	$32,400
12	12_Multiple Field Adjustments	1.00	EA	19,800.00	6,390.00	0.00	0.00	2250.00	$28,440
13	13_Elcon - Belvedere Extra Work	1.00	EA				32,430.00		$32,430
14	14_Elcon - Schedule Inefficiencies	1.00	EA				125,525.00		$125,525
	TOTAL Cost			275,202.00	129,806.00	1,680.00	169,955.00	40,950.00	$617,593
	Flatiron Markups %			29%	21%	21%	12%	21%	
	Flatiron Markups $			79,808.58	27,259.26	352.80	20,394.60	8,599.50	$136,415
	TOTAL COST with Project Markups			355,010.58	157,065.26	2,032.80	190,349.60	49,549.50	$754,008
					Flatiron Bond, Ins, HO G&A			8%	$60,321
					Total with Flatiron Bond, Ins, HO G&A				$814,328
								USE	$590,000

Contract:	8625	West Approach Bridge North (WABN)	
Change Order Title:	**Decorative Pedestrian Railing Design Issues**		
Change Order No. :	**194**	CM No. 295	
Estimate Prepared by:	Matt Weinberger	Date Prepared: 4/12/2018	

Activity Description: 1 Handrail A2 stanchion attachment at belvedere/edge of deck transition.

Quantity 8.00 EA

FLATIRON WORK

Basis	Production Analysis *(Determine Crew Hours)*:
	Drawings did not provide connection detail for stanchion of A2 panel where it meets edge of deck at pedestrian belvederes. Attachment required field-fit and welding at each of 8 stanchions. 6 crew hours each stanchion = 48 crew hours.
	One of the carpenters is considered foreman.
	Use ironworker wage rate for welders

LABOR

Classification	Qty	$/MH	Total $
Carpenter	3	71	213
Ironworker	1	80	80
Operator	1	76	76
			-
Total Labor per Hour			369

EQUIPMENT & TOOLS

Type	Qty	$/HR	Total $
Teleboom Forklift	1	73	73
Flatbed	1	39	39
Club Car	1	15	15
Hydra Platform	1	85	85
Total Equipment per Hour			212

Total Crew Hours		48
Total Labor Cost		$ 17,712
Total Equipment Cost		$ 10,176

MATERIAL

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Material Cost					$ -		$ -

MINOR SUBCONTRACTORS (Includes Subs Markups)

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Subcontractor Cost					$ -		$ -

OTHER / EXPENDABLES

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
	small tools	48	HR	50.00	$ 2,400.00	small tools and expendables	
					$ -		
					$ -		
Total Indirect Cost					$ 2,400.00		$ 2,400

SUMMARY

Labor	$ 17,712
Equipment & Tools	$ 10,176
Materials	$ -
Subcontractors	$ -
Other / Expendables	$ 2,400
Total Activity Cost	$ 30,288

Cost per Unit $ 3,786

Contract:	8625	West Approach Bridge North (WABN)	
Change Order Title:	**Decorative Pedestrian Railing Design Issues**		
Change Order No. :	194	CM No. 295	
Estimate Prepared by:	Matt Weinberger	Date Prepared: 4/12/2018	

Activity Description: 2_Belvedere Handrail/Gate around Sign Bridges

Quantity 1.00 EA

FLATIRON WORK

Basis	Production Analysis *(Determine Crew Hours)*:
	Design drawings did not provide enough detail to install as presented which resulted in field-fit scenarios at each of the 4 belvedere/equipment platform gate locations. Total of 4 locations, 48 crew hours each dedicated to field measurement, temporary installs and removal of same for field fitment, reinstallation, welding when needed, and coordination with rail manufacturer. Use 192 crew hours.
	One of the carpenters is considered foreman.
	Use ironworker wage rate for welders

LABOR

Classification	Qty	$/MH	Total $
Carpenter	3	71	213
Ironworker	1	80	80
Operator	1	76	76
			-
Total Labor per Hour			369

EQUIPMENT & TOOLS

Type	Qty	$/HR	Total $
Teleboom Forklift	1	73	73
Pickup	1	15	15
Club Car	1	15	15
Hydra Platform	1	85	85
Total Equipment per Hour			188

Total Crew Hours	192
Total Labor Cost	$ 70,848
Total Equipment Cost	$ 36,096

MATERIAL

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Material Cost					$ -		$ -

MINOR SUBCONTRACTORS (Includes Subs Markups)

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Subcontractor Cost					$ -		$ -

OTHER / EXPENDABLES

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
	small tools	192	HR	50.00	$ 9,600.00	small tools and expendables	
					$ -		
Total Indirect Cost					$ 9,600.00		$ 9,600

SUMMARY

Labor	$ 70,848
Equipment & Tools	$ 36,096
Materials	$ -
Subcontractors	$ -
Other / Expendables	$ 9,600
Total Activity Cost	$ 116,544

Cost per Unit $ 116,544

Contract:	8625 West Approach Bridge North (WABN)		
Change Order Title:	**Decorative Pedestrian Railing Design Issues**		
Change Order No. :	194	CM No. 295	
Estimate Prepared by:	Matt Weinberger	Date Prepared: 4/12/2018	

Activity Description: 3_Belvedere handrail at Apex of Double Belvedere

Quantity 1.00 EA

FLATIRON WORK

Basis	Production Analysis *(Determine Crew Hours)*:
	Drawings lacked sufficient detail to allow for production of rail without custom field fitting, installation of template parts, removal of same and coordination with manufacturer was necessary. Field fitment at SST apex of pier 10 & 24 pedestrian only belvederes following installation of adjecent panels: 16 hrs x 2 locations = 20 crew hours.
	One of the carpenters is considered foreman.
	Use ironworker wage rate for welders

LABOR

Classification	Qty	$/MH	Total $
Carpenter	2	71	142
Ironworker	1	80	80
Operator	1	76	76
			-
Total Labor per Hour			298

EQUIPMENT & TOOLS

Type	Qty	$/HR	Total $
Teleboom Forklift	1	73	73
Pickup	1	15	15
Club Car	1	15	15
Hydra Platform	1	85	85
Total Equipment per Hour			188

Total Crew Hours	32
Total Labor Cost	$ 9,536
Total Equipment Cost	$ 6,016

MATERIAL

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Material Cost					$ -		$ -

MINOR SUBCONTRACTORS (Includes Subs Markups)

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Subcontractor Cost					$ -		$ -

OTHER / EXPENDABLES

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
	small tools	32	HR	50.00	$ 1,600.00	small tools and expendables	
					$ -		
Total Indirect Cost					$ 1,600.00		$ 1,600

SUMMARY

Labor	$ 9,536
Equipment & Tools	$ 6,016
Materials	$ -
Subcontractors	$ -
Other / Expendables	$ 1,600
Total Activity Cost	$ 17,152

Cost per Unit $ 17,152

Contract:	8625 West Approach Bridge North (WABN)		
Change Order Title:	**Decorative Pedestrian Railing Design Issues**		
Change Order No. :	194	CM No. 295	
Estimate Prepared by:	Matt Weinberger	Date Prepared: 4/12/2018	

Activity Description: 4 Belvedere/Equipment Platform Conduit Hangers

Quantity 1.00 EA

FLATIRON WORK

Basis	Production Analysis *(Determine Crew Hours)*:
	Modify conduit platform hangers at each of four equipment platforms; not enough info in contract drawings to have them installed in a coordinated fashion. 12 hrs x 4 locatio = total of 48 crew hours.
	Locations: Equipment Platforms at piers 16, 21, 28, and 36.

LABOR

Classification	Qty	$/MH	Total $
Carpenter	4	71	284
Laborer	2	62	124
Operator	1	76	76
			-
			-
Total Labor per Hour			484

EQUIPMENT & TOOLS

Type	Qty	$/HR	Total $
Teleboom Forklift	1	73	73
Flatbed	1	39	39
Pickup	1	15	15
Club Car	1	15	15
Hydra Platform	1	85	85
Total Equipment per Hour			227

Total Crew Hours	48
Total Labor Cost	$ 23,232
Total Equipment Cost	$ 10,896

MATERIAL

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Material Cost					$ -		$ -

MINOR SUBCONTRACTORS (Includes Subs Markups)

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Subcontractor Cost					$ -		$ -

OTHER / EXPENDABLES

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
	small tools	48	HR	50.00	$ 2,400.00	small tools and expendables	
					$ -		
Total Indirect Cost					$ 2,400.00		$ 2,400

SUMMARY

Labor	$ 23,232
Equipment & Tools	$ 10,896
Materials	$ -
Subcontractors	$ -
Other / Expendables	$ 2,400
Total Activity Cost	$ 36,528

Cost per Unit $ 36,528

Contract:	8625	West Approach Bridge North (WABN)	
Change Order Title:	**Decorative Pedestrian Railing Design Issues**		
Change Order No. :	194	CM No. 295	
Estimate Prepared by:	Matt Weinberger	Date Prepared: 4/12/2018	

Activity Description: 5_Standard Handrail Stanchion Anchor Bolt conflict with Equip Platform Embed

Quantity 1.00 EA

FLATIRON WORK

Basis	Production Analysis *(Determine Crew Hours)*:
	Edge of Deck handrail stanchion anchor bolt conflicting with equipment platform embed at 2 panels. Custom field fit and welding required at 2 locations. 16 crew hours each. Total of 32 crew hours.
	One of the carpenters is considered foreman.
	Ironworker is considered welder

LABOR

Classification	Qty	$/MH	Total $
Carpenter	2	71	142
Ironworker	1	80	80
Operator	1	76	76
			-
Total Labor per Hour			298

EQUIPMENT & TOOLS

Type	Qty	$/HR	Total $
Teleboom Forklift	1	73	73
Pickup	1	15	15
Club Car	1	15	15
Hydra Platform	1	85	85
Total Equipment per Hour			188

Total Crew Hours	32
Total Labor Cost	$ 9,536
Total Equipment Cost	$ 6,016

MATERIAL

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Material Cost					$ -		$ -

MINOR SUBCONTRACTORS (Includes Subs Markups)

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Subcontractor Cost					$ -		$ -

OTHER / EXPENDABLES

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
	Burly (mfr): WSDOT directed destructive testing	1	ea	2,000.00	$ 2,000.00		
	Trucking (to and from)	2	ea	1,500.00	$ 3,000.00		
	small tools	32	HR	50.00	$ 1,600.00	small tools and expendables	
					$ -		
Total Indirect Cost					$ 6,600.00		$ 6,600

SUMMARY

Labor	$ 9,536
Equipment & Tools	$ 6,016
Materials	$ -
Subcontractors	$ -
Other / Expendables	$ 6,600
Total Activity Cost	$ 22,152

Cost per Unit $ 22,152

Contract:	8625	West Approach Bridge North (WABN)	
Change Order Title:	**Decorative Pedestrian Railing Design Issues**		
Change Order No. :	194	CM No. 295	
Estimate Prepared by:	Matt Weinberger	Date Prepared: 4/12/2018	

Activity Description: 6_Belvedere/Equipment Platform Knee Bracing & Grating Infill

Quantity 1.00 EA

FLATIRON WORK

Basis	Production Analysis *(Determine Crew Hours)*:
	Equipment Platforms and Bridge Curvature: The Equipment Platform drawings did not account for the curvature of the edge of deck. Field modifications were required at platforms 16, 21, 28 and 36. 32 crew hours x 4 locations = total of 128 crew hours.
	Modifications included infill of grating at gaps between grating and edge of deck. Also included closing gaps between tub girder and structural frame of pedestrian belvedere
	One of the carpenters is considered foreman.
	Ironworker is considered welder

LABOR

Classification	Qty	$/MH	Total $
Carpenter	3	71	213
Ironworker	1	80	80
Operator	1	76	76
			-
Total Labor per Hour			369

EQUIPMENT & TOOLS

Type	Qty	$/HR	Total $
Teleboom Forklift	1	73	73
Pickup	1	15	15
Club Car	1	15	15
Hydra Platform	1	85	85
Total Equipment per Hour			188

Total Crew Hours	128
Total Labor Cost	$ 47,232
Total Equipment Cost	$ 24,064

MATERIAL

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
	Miscellaneous metals	1	EA	1,000.00	$ 1,000.00	Strips for grating infill, flatbar for shims.	
					$ -		
Total Material Cost					$ 1,000.00		$ 1,000

MINOR SUBCONTRACTORS (Includes Subs Markups)

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Subcontractor Cost					$ -		$ -

OTHER / EXPENDABLES

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
	small tools	128	HR	50.00	$ 6,400.00	small tools and expendables	
					$ -		
Total Indirect Cost					$ 6,400.00		$ 6,400

SUMMARY

Labor	$ 47,232
Equipment & Tools	$ 24,064
Materials	$ 1,000
Subcontractors	$ -
Other / Expendables	$ 6,400
Total Activity Cost	$ 78,696

Cost per Unit $ 78,696

Contract:	8625	West Approach Bridge North (WABN)	
Change Order Title:	**Decorative Pedestrian Railing Design Issues**		
Change Order No. :	194	CM No. 295	
Estimate Prepared by:	Matt Weinberger	Date Prepared: 4/12/2018	

Activity Description: 7_Belvedere/Equipment Platform Connection Plate Modifications

Quantity 1.00 EA

FLATIRON WORK

Basis	Production Analysis *(Determine Crew Hours)*:
	Post to beam connection plates did not match did not match elevations for connection to Belvedere above. 5 locations.
	Required cutting "ears" off post to beam seats at 5 locations, fab and weld on new plates. Cold galv worked areas. 10 crew hours each location.
	One of the carpenters is considered foreman.
	Ironworker is considered welder

LABOR

Classification	Qty	$/MH	Total $
Carpenter	3	71	213
Ironworker	1	80	80
Operator	1	76	76
			-
Total Labor per Hour			369

EQUIPMENT & TOOLS

Type	Qty	$/HR	Total $
Teleboom Forklift	1	73	73
Pickup	1	15	15
Club Car	1	15	15
Hydra Platform	1	85	85
Total Equipment per Hour			188

Total Crew Hours	50
Total Labor Cost	$ 18,450
Total Equipment Cost	$ 9,400

MATERIAL

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
	Flatstock galv steel, avg 4"x8"x3/8" thick. Bolt holes pre drilled by mfr.	5	EA	100.00	$ 500.00		
					$ -		
Total Material Cost					$ 500.00		$ 500

MINOR SUBCONTRACTORS (Includes Subs Markups)

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Subcontractor Cost					$ -		$ -

OTHER / EXPENDABLES

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
	small tools	50	HR	50.00	$ 2,500.00	small tools and expendables	
					$ -		
Total Indirect Cost					$ 2,500.00		$ 2,500

SUMMARY

Labor	$ 18,450
Equipment & Tools	$ 9,400
Materials	$ 500
Subcontractors	$ -
Other / Expendables	$ 2,500
Total Activity Cost	$ 30,850

Cost per Unit $ 30,850

Contract:	8625	West Approach Bridge North (WABN)	
Change Order Title:	**Decorative Pedestrian Railing Design Issues**		
Change Order No. :	**194**	CM No. 295	
Estimate Prepared by:	Matt Weinberger	Date Prepared: 4/12/2018	

Activity Description: 8_A2 Panel Spacing Frame 1 & 2

Quantity 1.00 EA

FLATIRON WORK

Basis	**Production Analysis** *(Determine Crew Hours)*:
	Lengths of A2 panels conflict with 20' max length requirements. Cut pockets into concrete deck, install achor bolt clusters, form and pourback (4 locations). ... Demolition: Cutout dims approx 8" wide, 8" deep, 12" long. Diamond blade chopsaw, chipping hammer, contain potential flyaway material from entering lake, 8 crew hours each location ... install new embed, form, place concrete. Cure, strip and clean. 8 crew hours each. Total Crew hours: (8+8) x 2 each = 32 chrs.
	Cut back bolts in locations were they were incorrectly placed due to design conflict. Torch back into bridge deck, sack resulting openings. 4 chrs each x 2 locations = 8 chrs.
	One of the carpenters is considered foreman.

LABOR

Classification	Qty	$/MH	Total $
Carpenter	3	71	213
Laborer	1	62	62
			-
Total Labor per Hour			275

EQUIPMENT & TOOLS

Type	Qty	$/HR	Total $
Pickup	1	15	15
Club Car	1	15	15
			-
Total Equipment per Hour			30

Total Crew Hours	40
Total Labor Cost	$ 11,000
Total Equipment Cost	$ 1,200

MATERIAL

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
	DOT repair mix	2	EA	40.00	$ 80.00	55# bags	
	Embeds	2	EA	50.00	$ 100.00	estimated	
					$ -		
Total Material Cost					$ 180.00		$ 180

MINOR SUBCONTRACTORS (Includes Subs Markups)

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Subcontractor Cost					$ -		$ -

OTHER / EXPENDABLES

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
	small tools	40	HR	50.00	$ 2,000.00	small tools and expendables	
					$ -		
Total Indirect Cost					$ 2,000.00		$ 2,000

SUMMARY

Labor	$ 11,000
Equipment & Tools	$ 1,200
Materials	$ 180
Subcontractors	$ -
Other / Expendables	$ 2,000
Total Activity Cost	$ 14,380

Cost per Unit $ 14,380

Contract:	8625 West Approach Bridge North (WABN)		
Change Order Title:	**Decorative Pedestrian Railing Design Issues**		
Change Order No. :	194	CM No. 295	
Estimate Prepared by:	Matt Weinberger	Date Prepared: 4/12/2018	

Activity Description: 9 Span 13 Edge of Deck Angle Point

Quantity 1.00 EA

FLATIRON WORK

Basis	Production Analysis *(Determine Crew Hours)*:
	Lack of rail design at angle point near pier 13. Panel was installed to determine potential fix, then removed. New panels(s) designed, fabricated, delivered and installed. 32 crew hours for removal/measurements&template/re-install.
	Handrail mfr, Burly: design and custom fabrication. CADD designer: 10 hrs at $80/hr. Fabricators, 2 each for 40hrs, 80 hrs total at $65/hr. $65 x 80hrs = $5200 + $800 CADD designer = $6,000.
	One of the carpenters is considered foreman.

LABOR

Classification	Qty	$/MH	Total $
Carpenter	4	71	284
Laborer	2	62	124
Operator	1	76	76
			-
Total Labor per Hour			484

EQUIPMENT & TOOLS

Type	Qty	$/HR	Total $
Teleboom Forklift	1	73	73
Pickup	1	15	15
Club Car	1	15	15
Hydra Platform	1	85	85
Total Equipment per Hour			188

Total Crew Hours	32
Total Labor Cost	$ 15,488
Total Equipment Cost	$ 6,016

MATERIAL

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Material Cost					$ -		$ -

MINOR SUBCONTRACTORS (Includes Subs Markups)

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
	Handrail mfr	1	EA	6,000.00	$ 6,000.00		
					$ -		
Total Subcontractor Cost					$ 6,000.00		$ 6,000

OTHER / EXPENDABLES

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
	small tools	32	HR	50.00	$ 1,600.00	small tools and expendables	
					$ -		
Total Indirect Cost					$ 1,600.00		$ 1,600

SUMMARY

Labor	$ 15,488
Equipment & Tools	$ 6,016
Materials	$ -
Subcontractors	$ 6,000
Other / Expendables	$ 1,600
Total Activity Cost	$ 29,104

Cost per Unit $ 29,104

Contract:	8625 West Approach Bridge North (WABN)		
Change Order Title:	**Decorative Pedestrian Railing Design Issues**		
Change Order No. :	194	CM No. 295	
Estimate Prepared by:	Matt Weinberger	Date Prepared: 4/12/2018	

Activity Description: 10_Weld Quality Inspection

Quantity 1.00 EA

FLATIRON WORK

Basis	Production Analysis *(Determine Crew Hours)*:
	WSDOT requested destructive testing of several panels: remove, pack and ship selected panels to mfr for testing. Panel repair by Burley (mfr), return delivery to Project, reinstall panels. 16 crew hours to remove, 16 to install. Total of 32 crew hours.
	One of the carpenters is considered foreman.

LABOR

Classification	Qty	$/MH	Total $
Carpenter	4	71	284
Laborer	2	62	124
Operator	1	76	76
			-
Total Labor per Hour			484

EQUIPMENT & TOOLS

Type	Qty	$/HR	Total $
Pickup	1	15	15
Club Car	1	15	15
Teleboom Forklift	1	73	73
Hydra Platform	1	85	85
Total Equipment per Hour			188

Total Crew Hours	32
Total Labor Cost	$ 15,488
Total Equipment Cost	$ 6,016

MATERIAL

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Material Cost					$ -		$ -

MINOR SUBCONTRACTORS (Includes Subs Markups)

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Subcontractor Cost					$ -		$ -

OTHER / EXPENDABLES

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
	small tools	32	HR	50.00	$ 1,600.00	small tools and expendables	
					$ -		
Total Indirect Cost					$ 1,600.00		$ 1,600

SUMMARY

Labor	$ 15,488
Equipment & Tools	$ 6,016
Materials	$ -
Subcontractors	$ -
Other / Expendables	$ 1,600
Total Activity Cost	$ 23,104

Cost per Unit $ 23,104

Contract:	8625 West Approach Bridge North (WABN)		
Change Order Title:	**Decorative Pedestrian Railing Design Issues**		
Change Order No. :	**194**	CM No. 295	
Estimate Prepared by:	Matt Weinberger	Date Prepared: 4/12/2018	

Activity Description: 11_Span 42 Existing Edge of Deck Handrail

Quantity 1.00 EA

FLATIRON WORK

Basis	Production Analysis *(Determine Crew Hours)*:
	FWI measurements, template production, and communication of same to handrail mfr. Crew of 3 carpenters, 1 is foreman. 40crew hours.
	Handrail mfr. Burly: design and custom fabrication. CADD designer: 10 hrs at $80/hr. Fabricators, 2 each for 40hrs, 80 hrs total at $65/hr. $65 x 80hrs = $5200 + $800 CADD designer = $6,000.
	One of the carpenters is considered foreman.

LABOR

Classification	Qty	$/MH	Total $
Carpenter	4	71	284
Laborer	1	62	62
Operator	1	76	76
			-
Total Labor per Hour			**422**

EQUIPMENT & TOOLS

Type	Qty	$/HR	Total $
Pickup	1	15	15
Club Car	1	15	15
Teleboom Forklift	1	73	73
Hydra Platform	1	85	85
Total Equipment per Hour			**188**

Total Crew Hours	40
Total Labor Cost	$ 16,880
Total Equipment Cost	$ 7,520

MATERIAL

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Material Cost					$ -		$ -

MINOR SUBCONTRACTORS (Includes Subs Markups)

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
	Handrail mfr	1	EA	6,000.00	$ 6,000.00		
					$ -		
Total Subcontractor Cost					$ 6,000.00		$ 6,000

OTHER / EXPENDABLES

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
	small tools	40	HR	50.00	$ 2,000.00	small tools and expendables	
					$ -		
Total Indirect Cost					$ 2,000.00		$ 2,000

SUMMARY

Labor	$ 16,880
Equipment & Tools	$ 7,520
Materials	$ -
Subcontractors	$ 6,000
Other / Expendables	$ 2,000
Total Activity Cost	$ 32,400

Cost per Unit $ 32,400

Contract:	8625 West Approach Bridge North (WABN)		
Change Order Title:	**Decorative Pedestrian Railing Design Issues**		
Change Order No. :	194	CM No. 295	
Estimate Prepared by:	Matt Weinberger	Date Prepared: 4/12/2018	

Activity Description: 12_Multiple Field Adjustments

Quantity 1.00 EA

FLATIRON WORK

Basis	Production Analysis *(Determine Crew Hours)*:
	Multiple minor field fitting and adjustments related to RFIs 266, 737, 815, 816, 854, 878, 880, 897, 899, 900, 901, 902, 907, 912 & 913. Work resulted in additional direct crew hours, as well as inefficiencies due to multiple stops/starts. 3 crew hours x 15 incidents = total of 45 crew hours
	One of the carpenters is considered foreman.
	Ironworker is considered welder

LABOR

Classification	Qty	$/MH	Total $
Carpenter	4	71	284
Ironworker	1	80	80
Operator	1	76	76
			-
Total Labor per Hour			440

EQUIPMENT & TOOLS

Type	Qty	$/HR	Total $
Teleboom Forklift	1	73	73
Flatbed	1	39	39
Pickup	1	15	15
Club Car	1	15	15
Total Equipment per Hour			142

Total Crew Hours		45
Total Labor Cost		$ 19,800
Total Equipment Cost		$ 6,390

MATERIAL

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Material Cost					$ -		$ -

MINOR SUBCONTRACTORS (Includes Subs Markups)

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Subcontractor Cost					$ -		$ -

OTHER / EXPENDABLES

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
	small tools	45	HR	50.00	$ 2,250.00	small tools and expendables	
					$ -		
Total Indirect Cost					$ 2,250.00		$ 2,250

SUMMARY

Labor	$ 19,800
Equipment & Tools	$ 6,390
Materials	$ -
Subcontractors	$ -
Other / Expendables	$ 2,250
Total Activity Cost	$ 28,440

Cost per Unit $ 28,440

Contract:	8625	West Approach Bridge North (WABN)	
Change Order Title:	**Decorative Pedestrian Railing Design Issues**		
Change Order No. :	**194**	CM No. 295	
Estimate Prepared by:	Matt Weinberger	Date Prepared: 4/12/2018	

Activity Description: 13_Elcon - Belvedere Extra Work

Quantity 1.00 EA

PRIME SUBCONTRACTOR WORK

Basis	Production Analysis *(Determine Crew Hours)*:
	There was a lack of design showing conduit placement and transitions at the pedestrian belvederes which resulted in field welding of supports and cutting of installed rail panels. Work resulted in additional direct crew hours, as well as inefficiencies due to multiple stops/starts
	There were 4 belvederes with an equipment platform and 2 belvederes without for a total of 6 belvederes. Each Belevedere added 2 additional crew days; ten crew hour days x 12 days = 120 crew hours.

LABOR

Classification	Qty	$/MH	Total $
Electrician Journeyman	1	80.20	80.20
Electrician Apprentice	1	56.00	56
Total Labor per Hour			136.20

EQUIPMENT & TOOLS

Type	Qty	$/HR	Total $
Pickup	1	15	15
Club Car	1	15	15
Total Equipment per Hour			30

Total Crew Hours	120
Total Labor Cost	$ 16,344
Total Equipment Cost	$ 3,600

MATERIAL

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Material Cost					$ -		$ -

MINOR SUBCONTRACTORS (Includes Subs Markups)

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Subcontractor Cost					$ -		$ -

OTHER / EXPENDABLES

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
	small tools	120	HR	50.00	$ 6,000.00	small tools and expendables	
					$ -		
Total Indirect Cost					$ 6,000.00		$ 6,000

SUMMARY

Labor	$ 16,344
Equipment & Tools	$ 3,600
Materials	$ -
Subcontractors	$ -
Other / Expendables	$ 6,000
Total Activity Cost	$ 25,944

Prime Sub Markup	25%	$ 6,486
Total Prime Sub Estimate		$ 32,430
	Cost per Unit	$ 32,430

Contract:	8625	West Approach Bridge North (WABN)	
Change Order Title:	**Decorative Pedestrian Railing Design Issues**		
Change Order No. :	194	CM No. 295	
Estimate Prepared by:	Matt Weinberger	Date Prepared: 4/12/2018	

Activity Description: 14_Elcon - Schedule Inefficiencies

Quantity 1.00 EA

PRIME SUBCONTRACTOR WORK

Basis	Production Analysis *(Determine Crew Hours)*:
	The RSUP lighting installation bid probably assumed that the RSUP railing would be built frame by frame and with the ability to install the the conduit sytem and lighting in a continuous, linear order. Changes in the rail caused impacts to the lighting. Due to numerous panels not being installed resulted in delays and fragmentation to the conduit and fixture installation at these locations. There are 5 frames and each frame was effected 4 days. Crew size of 6 electricians, 10 crew hours/day x 20days = 200 crew hours .

LABOR

Classification	Qty	$/MH	Total $
Electrician Journeyman	1	80.20	80.20
Electrician Journeyman	1	80.20	80.20
Electrician Journeyman	1	80.20	80.20
Electrician Apprentice	1	55.50	55.50
Electrician Apprentice	1	55.50	55.50
Electrician Apprentice	1	55.50	55.50
Total Labor per Hour			407.10

EQUIPMENT & TOOLS

Type	Qty	$/HR	Total $
Pickup	1	15	15
Pickup	1	15	15
Club Car	1	15	15
			-
			-
			-
Total Equipment per Hour			45

Total Crew Hours	200
Total Labor Cost	$ 81,420
Total Equipment Cost	$ 9,000

MATERIAL

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Material Cost					$ -		$ -

MINOR SUBCONTRACTORS (Includes Subs Markups)

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Subcontractor Cost					$ -		$ -

OTHER / EXPENDABLES

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
	small tools	200	HR	50.00	$ 10,000.00	small tools and expendables	
					$ -		
Total Indirect Cost					$ 10,000.00		$ 10,000

SUMMARY

Labor	$ 81,420
Equipment & Tools	$ 9,000
Materials	$ -
Subcontractors	$ -
Other / Expendables	$ 10,000
Total Activity Cost	$ 100,420

Prime Sub Markup	25%	$ 25,105
Total Prime Sub Estimate		$ 125,525
	Cost per Unit	

CM 288 – BCS Design & Commissioning

Contract:	8625 West Approach Bridge North (WABN)
Change Order Title:	**BCS Design & Commissioning**
Change Order No. :	**194** CM No. 288
Estimate Prepared by:	Brian Grieve Date Prepared: 5/8/2018

SUMMARY

Line	DESCRIPTION	QUANTITY	UNIT	LABOR	EQUIPMENT	MATERIAL	SUBS	OTHER	TOTAL	
1	Flatiron	1	Est	$ 9,500	$ 1,140	$ -	$ -	$ -	$ 10,640	
2	Wood Harbinger	1	Est				$ 16,538		$ 16,538	
3	Panatrol	1	Est				$ 18,088		$ 18,088	
4	Elcon	1	Est				$ 7,075		$ 7,075	
	TOTAL Cost			9,500.00	1,140.00	0.00	$ 41,700	0.00	$ 52,340	52,340 Check
	Flatiron Markups %			29%	21%	21%	$ 0	21%		
	Flatiron Markups $			2,755.00	239.40	0.00	$ 5,004	0.00	$ 7,998	
	TOTAL COST with Project Markups			12,255.00	1,379.40	0.00	$ 46,704	0.00	$ 60,338	60,338 Check
					Flatiron Bond, Ins, HO G&A			8%	$ 4,827	
					Total with Flatiron Bond, Ins, HO G&A				$ 65,165	
								Use	$65,000	

Notes:

Due to BCS network communication and integration issues with the WSDOT facilities in Shoreline and Medina, additional work was required before BCS testing could be complete.

Contract:	8625	West Approach Bridge North (WABN)	
Change Order Title:	**BCS Design & Commissioning**		
Change Order No. :	**194**	CM No. 288	
Estimate Prepared by:	Brian Grieve	Date Prepared: 5/8/2018	

Activity Description: Flatiron

Quantity 1 Est

FLATIRON WORK

Basis	Production Analysis *(Determine Crew Hours)*:
1	Due to BCS network communication and integration issues with the WSDOT facilities in Shoreline and Medina, additional work was required before BCS testing could be complete. Those issues were resolved during on site and remote meetings which resolved other Contract issues. - Of the 5 commissioning meetings, assume half of each was devoted to WSDOT caused integration issues. Use 18 Hours - One day was lost determining what the communications and integration issues were with the existing WSDOT system. Use 10 Hour. - One day was spent retesting. Add time for FWI rep on site. Use 10 Hour.
2	Primary troubleshooting occurred during a 3 week period; apply equivalent of a dedicated Flatiron Foreman during this time to facilitate efforts between FWI, subs, Wood Harbinger.
3	*Note: Assume these are Additional supervisors just for this effort and does not include standard overhead staff included in markups.

LABOR

Classification	Qty	$/MH	Total $
Flatiron Superintendent/Manager	1	150	150
Flatiron General Lead Foreman	1	100	100
Total Labor per Hour			250

EQUIPMENT & TOOLS

Type	Qty	$/HR	Total $
Pickup Truck	2	15	30
			-
Total Equipment per Hour			30

Total Crew Hours	38
Total Labor Cost	$ 9,500
Total Equipment Cost	$ 1,140

MATERIAL

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Material Cost					$ -		$ -

MINOR SUBCONTRACTORS (Includes Subs Markups)

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Subcontractor Cost					$ -		$ -

OTHER / EXPENDABLES

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Indirect Cost					$ -		$ -

SUMMARY

Labor	$ 9,500
Equipment & Tools	$ 1,140
Materials	$ -
Subcontractors	$ -
Other / Expendables	$ -
Total Activity Cost	$ 10,640

Cost per Unit $ 10,640

Contract:	8625 West Approach Bridge North (WABN)		
Change Order Title:	BCS Design & Commissioning		
Change Order No. :	194	CM No.	288
Estimate Prepared by:	Brian Grieve	Date Prepared:	5/8/2018

Activity Description: Wood Harbinger

Quantity 1 Est

PRIME SUBCONTRACTOR WORK

Basis	Production Analysis (Determine Crew Hours):
	Due to BCS network communication and integration issues with the WSDOT facilities in Shoreline and Medina, additional work was required before BCS testing could be complete. Those issues were resolved during on site and remote meetings which resolved other Contract issues. - Of the 5 commissioning meetings, assume half of each was devoted to WSDOT caused integration issues. Use 18 Hours - Add one site visit and one additional onsite test was required when remote WSDOT locations were not able to integrate into the WABN system during a previous site visit. Use 16 Hours. - Revisions were required to the Integrated Functional Performance Test (IFPT) after mutiple failures. Use 8 Hours to prepare & submit a revised IFTP documentation.

LABOR

Classification	Qty	$/MH	Total $
Wood Harbinger	2	150	300
			-
Total Labor per Hour			300

EQUIPMENT & TOOLS

Type	Qty	$/HR	Total $
Pickup Truck	1	15	15
			-
Total Equipment per Hour			15

Total Crew Hours	42
Total Labor Cost	$ 12,600
Total Equipment Cost	$ 630

MATERIAL

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Material Cost					$ -		$ -

MINOR SUBCONTRACTORS (Includes Subs Markups)

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Subcontractor Cost					$ -		$ -

OTHER / EXPENDABLES

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Indirect Cost					$ -		$ -

SUMMARY

Labor	$ 12,600
Equipment & Tools	$ 630
Materials	$ -
Subcontractors	$ -
Other / Expendables	$ -
Total Activity Cost	$ 13,230

Prime Sub Markup	25%	$ 3,308
Total Prime Sub Estimate		$ 16,538
	Cost per Unit	$ 16,538

Contract:	8625 West Approach Bridge North (WABN)		
Change Order Title:	**BCS Design & Commissioning**		
Change Order No. :	194	CM No. 288	
Estimate Prepared by:	Brian Grieve	Date Prepared: 5/8/2018	

Activity Description: Panatrol

Quantity 1 Est

PRIME SUBCONTRACTOR WORK

Basis	Production Analysis (Determine Crew Hours) :
	Due to BCS network communication and integration issues with the WSDOT facilities in Shoreline and Medina, additional work was required before BCS testing could be complete. Those issues were resolved during on site and remote meetings which resolved other Contract issues. - Of the 5 commissioning meetings, assume half of each was devoted to WSDOT caused integration issues. Use 18 Hours - One day was lost determining what the communications and integration issues were with the existing WSDOT system. Use 10 Hour. - Panatrol was forced to make an additional trip out to Washington State as a result of the communication and integration issues. Add an extra day and travel expenses to get the Panatrol representative out on site. Use 10 Hours.

LABOR

Classification	Qty	$/MH	Total $
Panatrol Representative	2	150	300
			-
Total Labor per Hour			300

EQUIPMENT & TOOLS

Type	Qty	$/HR	Total $
Pickup Truck	1	15	15
			-
Total Equipment per Hour			15

Total Crew Hours	38
Total Labor Cost	$ 11,400
Total Equipment Cost	$ 570

MATERIAL

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Material Cost					$ -		$ -

MINOR SUBCONTRACTORS (Includes Subs Markups)

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Subcontractor Cost					$ -		$ -

OTHER / EXPENDABLES

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
	Travel Expenses	1	Est	2,500.00	$ 2,500.00	Flight, hotel, and rental car in seattle for 2 nights	
					$ -		
Total Indirect Cost					$ 2,500.00		$ 2,500

SUMMARY

Labor	$ 11,400
Equipment & Tools	$ 570
Materials	$ -
Subcontractors	$ -
Other / Expendables	$ 2,500
Total Activity Cost	$ 14,470

Prime Sub Markup	25%	$ 3,618
Total Prime Sub Estimate		$ 18,088
	Cost per Unit	$ 18,088

Contract:	8625 West Approach Bridge North (WABN)		
Change Order Title:	**BCS Design & Commissioning**		
Change Order No. :	**194**	CM No. 288	
Estimate Prepared by:	Brian Grieve	Date Prepared: 5/8/2018	

Activity Description: Elcon

Quantity 1 Est

PRIME SUBCONTRACTOR WORK

Basis	Production Analysis *(Determine Crew Hours)* :
	Due to BCS network communication and integration issues with the WSDOT facilities in Shoreline and Medina, additional work was required before BCS testing could be complete. Those issues were resolved during on site and remote meetings which resolved other Contract issues. - Of the 5 commissioning meetings, assume 1 hour each was devoted to WSDOT caused integration issues. Use 5 Hours - One day was lost determining what the communications and integration issues were with the existing WSDOT system. Use 8 Hour. - One day was spent retesting. Add time for rep on site. Use 7 Hour.
	Actual Work for ELCON - use 2 Electricians for the entire time of work. Use (2) 10 hr days

LABOR

Classification	Qty	$/MH	Total $
Electrician	2	84	168
Superintendent for Mtgs	1	100	100
Total Labor per Hour			268

EQUIPMENT & TOOLS

Type	Qty	$/HR	Total $
Pickup Truck	1	15	15
			-
Total Equipment per Hour			15

Total Crew Hours	20
Total Labor Cost	$ 5,360
Total Equipment Cost	$ 300

MATERIAL

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Material Cost					$ -		$ -

MINOR SUBCONTRACTORS (Includes Subs Markups)

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Subcontractor Cost					$ -		$ -

OTHER / EXPENDABLES

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Indirect Cost					$ -		$ -

SUMMARY

Labor	$ 5,360
Equipment & Tools	$ 300
Materials	$ -
Subcontractors	$ -
Other / Expendables	$ -
Total Activity Cost	$ 5,660

Prime Sub Markup	25%	$ 1,415
Total Prime Sub Estimate		$ 7,075
	Cost per Unit	$ 7,075

CM 286 – Barrier Elevations

Contract:	8625 West Approach Bridge North (WABN)
Change Order Title:	**Barrier Elevations**
Change Order No. :	**194** CM No. 286
Estimate Prepared by:	Matt Weinberger Date Prepared: 7/18/2018

SUMMARY

Line	DESCRIPTION	QUANTITY	UNIT	LABOR	EQUIPMENT	MATERIAL	SUBS	OTHER	TOTAL
1	Regrade for precast barrier	1	Est	$ 31,696.00	$ 15,624.00	$ -	$ 3,000.00	$ -	$50,320
2	Regrade at Montlake tie-in	1	Est	$ 5,660.00	$ 3,440.00	$ -	$ 1,500.00	$ 2,997.00	$13,597
	TOTAL Cost			**37,356.00**	**19,064.00**	**0.00**	**4,500.00**	**2,997.00**	**$63,917**
	Flatiron Markups %			29%	21%	21%	12%	21%	
	Flatiron Markups $			**10,833.24**	**4,003.44**	**0.00**	**540.00**	**629.37**	**$16,006**
	TOTAL COST with Project Markups			**48,189.24**	**23,067.44**	**0.00**	**5,040.00**	**3,626.37**	**$79,923**
								Flatiron Bond, Ins, HO G&A 8%	$6,394
								Total with Flatiron Bond, Ins, HO G&A	**$86,317**
								USE	**$65,000**

Notes:

Each of the 2 attenuator transition sections (PV02-2 and PV02-7) have a pair of 20' long precast barriers that lead up to them. Design drawings, a subsequent RFI response, and stationing sheet PV20 provided conflicting placement information. As a result, the four 20' long precast "lead up barriers", upon delivery, were set to the side rather than directly to their final installation location due to unconfirmed placement locations. An attempt to install precast barrier pair PV02-4 resulted in affirmation of incorrect placement information. Precast barrier pair PV02-4 was then removed and set aside while inquiries into both PV02-2 and PV02-4 station locations were confirmed. Upon receiving updated information, subgrade for PV02-2 and PV02-4 was adjusted accordingly, then the 2 pairs of barriers were re-set.

The Plans called for varying barrier height and embedment in multiple locations. The precast barrier could not be placed on a paved foundation per Standard Specifications at these locations but were instead placed directly onto a minimum 6" base of compacted CSBC. This occured at all precast barrier transition zones (MLHV 17+01 - 17+41, WDXV 20+96 – 21+56, and WDXV 21+00 – 21+60). Efforts outside of the Contract required work including: survey crew review and layout, asphalt removal and disposal, grading barrier base areas/supplying CSBC and compacting same, as well as removing and re-setting barrier.

WSDOT used a lower amount in the settlement agreement than estimated as some of the cost of this work could have been mitigated by FWI.

Contract:	8625 West Approach Bridge North (WABN)		
Change Order Title:	**Barrier Elevations**		
Change Order No. :	194	CM No. 286	
Estimate Prepared by:	Matt Weinberger	Date Prepared: 7/18/2018	

Activity Description: Regrade for precast barrier

Quantity 1 Est

FLATIRON WORK

Basis	Production Analysis *(Determine Crew Hours)*:
	Each of the 2 attenuator transition sections (PV02-2 and PV02-7) have a pair of 20' long precast barriers that lead up to them. Design drawings, a subsequent RFI response and stationing sheet PV20 provided conflicting placement information. As a result, the four 20' long precast "lead up barriers", upon delivery, were set to the side rather than directly to their final installation location due to unconfirmed placement locations. An attempt to install precast barrier pair PV02-4 resulted in affirmation of incorrect placeme information. Precast barrier pair PV02-4 was then removed and set aside while inquiries into both PV02-2 and PV02-4 station locations were confirmed. Upon receiving updated information, subgrade for PV02-2 and PV02-4 was adjusted accordingly, then the 2 pairs of barriers were re-set. General field observations concluded efforts relate to this activity were the equivalent of 24 hours of work for the crew and equipment listed in this estimate.
	The Plans called for varying barrier height and embedment in multiple locations. The precast barrier could not be placed on a paved foundation per Standard Specifications at these locations but were instead placed directly onto a minimum 6" base of compacted CSBC. This occured at all precast barrier transition zones (MLHV 17+01 - 17+41, WDXV 20+96 – 21+56, and WDXV 21+00 – 21+60). Efforts outside of the Contract required work including: survey crew review and layout, asphalt removal and disposal, grading barrier base areas/supplying CSBC and compacting same, as well as removing and re-setting barrier. General field observations concluded efforts related to this activity were the equivalent of 32 hours of work for the crew and equipment listed in this estimate.
	5th operator represents the foreman.
	10 crew hours represents time to set PV02-4, remove PV02-4, re-grade both areas and re-compact CSBC, install both pairs of precast barriers.

LABOR

Classification	Qty	$/MH	Total $
Operator	5	76	380
Laborer	3	62	186
			-
			-
			-
			-
Total Labor per Hour			566

EQUIPMENT & TOOLS

Type	Qty	$/HR	Total $
Pickup	1	15	15
Flatbed	1	39	39
Forklift	1	73	73
Loader	1	39	39
Grader	1	54	54
Compactor	1	59	59
Total Equipment per Hour			279

Total Crew Hours	56
Total Labor Cost	$ 31,696
Total Equipment Cost	$ 15,624

MATERIAL

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Material Cost					$ -		$ -

MINOR SUBCONTRACTORS (Includes Subs Markups)

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
	1-Alliance (survey)	1	Day	1,500.00	$ 1,500.00	Survey efforts related to PV02-2 and PV02-7.	
	1-Alliance (survey)	1	Day	1,500.00	$ 1,500.00	Survey efforts related to Varying Barrier Height	
					$ -		
Total Subcontractor Cost					$ 3,000.00		$ 3,000

OTHER / EXPENDABLES

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Indirect Cost					$ -		$ -

SUMMARY

Labor	$ 31,696
Equipment & Tools	$ 15,624
Materials	$ -
Subcontractors	$ 3,000
Other / Expendables	$ -
Total Activity Cost	$ 50,320

Cost per Unit $ 50,320

Contract:	8625	West Approach Bridge North (WABN)	
Change Order Title:	**Barrier Elevations**		
Change Order No. :	194		CM No. 286
Estimate Prepared by:	Matt Weinberger		Date Prepared: 7/18/2018

Activity Description: Regrade at Montlake tie-in

Quantity 1 Est

FLATIRON WORK

Basis	**Production Analysis** *(Determine Crew Hours)*:
	Design drawings provided conflicting slope information near the westernmost end of the MLB exit. As a result, the subgrade of an area of approximately 36' wide and 75' long was constructed to an incorrect profile slope in an earlier stage. During construction of the final configuration of the MLB WB offramp the issue was discovered and resolved using the resources included in this estimate.
	The correction of the slope in the subject area was accomplished during scheduled road construction and grading in the same location. All necessary equipment was already onsite and in use; crew and equipment hours in this estimate represent additional time and resources to correct the slope adjustment.
	Due to Contract Drawing conflicts the location of the Montlake Exit tie-in was further west than originally anticipated. This resulted in additional asphalt removal and disposal costs.
	5th Operator is considered foreman.

LABOR

Classification	Qty	$/MH	Total $
Operator	5	76	380
Laborer	3	62	186
			-
			-
			-
			-
Total Labor per Hour			566

EQUIPMENT & TOOLS

Type	Qty	$/HR	Total $
Backhoe	1	46	46
Loader	1	89	89
Pickup	1	15	15
Flatbed	1	39	39
Grader	1	85	85
Roller	1	70	70
Total Equipment per Hour			344

Total Crew Hours	10
Total Labor Cost	$ 5,660
Total Equipment Cost	$ 3,440

MATERIAL

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Material Cost					$ -		$ -

MINOR SUBCONTRACTORS (Includes Subs Markups)

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
	1-Alliance (survey)	1	EA	1,500.00	$ 1,500.00	Assume 1 day at this rate (plug)	
					$ -		
Total Subcontractor Cost					$ 1,500.00		$ 1,500

OTHER / EXPENDABLES

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
	Asphalt Disposal	111	SY	27.00	$ 2,997.00	Area: 25' wide X 40' Long = 1,000SF / 9sf per Sy = 111 SY. Used $27/SY value from BI 25 "Removing Aphalt Conc. Pavement" as multiplier.	
					$ -		
Total Indirect Cost					$ 2,997.00		$ 2,997

SUMMARY

Labor	$ 5,660
Equipment & Tools	$ 3,440
Materials	$ -
Subcontractors	$ 1,500
Other / Expendables	$ 2,997
Total Activity Cost	$ 13,597

Cost per Unit $ 13,597

CM 291 – Time Related Overhead & Associated Costs

Contract:	8625 West Approach Bridge North (WABN)
Change Order Title:	**Time Related Overhead & Associated Costs**
Change Order No. :	**194** CM No. 291
Estimate Prepared by:	Matt Weinberger Date Prepared: 9/16/2018

SUMMARY

Line	DESCRIPTION	QUANTITY	UNIT	LABOR	EQUIPMENT	MATERIAL	SUBS	OTHER	TOTAL	
1	Staffing	2.50	MO	794,294					$794,294	
2	Equipment	2.50	MO		165,427.00				$165,427	
3	Office Costs	2.50	MO					86,000	$86,000	
4	Subcontractors	2.5	MO				570,000		$570,000	
	TOTAL Cost			794,294	165,427	0	570,000	86,000	$1,615,721	1,615,721 Check
	Flatiron Markups $								$0	NO MARKUPS
	TOTAL COST with Project Markups			794,294	165,427	0	570,000	86,000	$1,615,721	1,615,721 Check
					Flatiron Bond, Ins, HO G&A			8%	$129,258	
					Total with Flatiron Bond, Ins, HO G&A				$1,744,978	
								USE	$1,300,000	

Notes:

1 Change Orders 058, 059 and 159 added 5, 10 and 38 working days respectively to the Contract. Those previous CO's included standard markups and costs for additional efforts. However, those COs did not include added indirect costs for the additional time to the entire scope of work within the Contract. This estimate addresses additional overhead costs incurred by the Contractor due to the added 53 working days, which converts to 75 calendar days and 2.5 months.

2 The staff and equipment used in this estimate is based on the approximate organization and resources assigned to the project at the time the 53 working days were added to the Contract time. The previous change orders containing time extensions were for work during late 2014 and 2015 and early 2018. Reviewing organization charts and IDR's at those times provides various quantities of resources. WSDOT has therefore estimated the quantities of staff and resources based on its oversight of the project during the entire duration.

3 The equipment rates used were developed from Blue Book.

4 Labor rates and office costs used are based on WSDOT research through the years negotiating and auditing overhead costs on numerous other SR520 projects. Each rate is detailed within this estimate.

5 Although the time used in this estimate is based on the total days added to the Contract due to WSDOT change orders, it is the opinion of the estimators and WSDOT project staff that some of the duration and therefore extended overhead costs could have been mitigated by FWI by agressivley pursuing the work and avoiding its own impacts to the schedule, which would have completed the project earlier than realized. For that reason the WSDOT settlement did not include the full amount of the estimate.

Contract:	8625	West Approach Bridge North (WABN)	
Change Order Title:	**Time Related Overhead & Associated Costs**		
Change Order No. :	**194**	CM No. 291	
Estimate Prepared by:	Matt Weinberger	Date Prepared: 9/16/2018	

Activity Description: Staff

Quantity 2.50 MO

STAFFING

LABOR

Classification	Person	Est. $/MO (2013)	With Inflation 15%	Months	Total
Project Manager	Allington/Curtis	17,875	20,556	2.5	$ 51,391
Construction Manager	Van Winden	16,445	18,912	2.5	$ 47,279
Scheduler	Bloss	10,725	12,334	2.5	$ 30,834
Project Engineer	Gould	14,300	16,445	2.5	$ 41,113
Engineer - Superstructure	Krutz	10,725	12,334	2.5	$ 30,834
Engineer - Marine	Jordan	10,725	12,334	2.5	$ 30,834
Engineer - Substructure	Chavez	10,725	12,334	2.5	$ 30,834
Engineer - Civil/Utilities	Dougherty	10,725	12,334	2.5	$ 30,834
Engineers - Field/Office	Engebreth	10,725	12,334	2.5	$ 30,834
Business Manager	McMillian	10,010	11,512	2.5	$ 28,779
Office Manager	Holden	7,436	8,551	2.5	$ 21,379
Compliance	Allington	7,436	8,551	2.5	$ 21,379
Document Control	Parker	7,436	8,551	2.5	$ 21,379
Certified Payroll	Gentile	7,436	8,551	2.5	$ 21,379
General Superintendent	Kidwell	15,015	17,267	2.5	$ 43,168
Environmental Lead	Mosier	13,585	15,623	2.5	$ 39,057
Superintendent - Civil	Corbett	13,585	15,623	2.5	$ 39,057
Superintendent - Structures	Hamilton	13,585	15,623	2.5	$ 39,057
Superintendent - Marine	Turner	13,585	15,623	2.5	$ 39,057
Superintendent - Nights	Klug	13,585	15,623	2.5	$ 39,057
Equipment Manager	Bulta	12,870	14,801	2.5	$ 37,001
Equipment Purchasing	Silva	7,436	8,551	2.5	$ 21,379
Equipment Dispatch	Moore	7,436	8,551	2.5	$ 21,379
Equipment Mechanic	Smith	12,870	14,801	2.5	$ 37,001
Total		**276,276**	**317,717**		**$ 794,294**

Notes

1 Typical company burden rates for staff labor runs about 42% of salary, which is included above.

Contract:	8625 West Approach Bridge North (WABN)		
Change Order Title:	**Time Related Overhead & Associated Costs**		
Change Order No. :	**194**	CM No. 291	
Estimate Prepared by:	Matt Weinberger	Date Prepared: 9/16/2018	

Activity Description: Equipment

Quantity 2.50 MO

OTHER / EXPENDABLES

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments
	Pickups	15	EA	765.00	$ 11,475.00	Assume each Superintendent and Engineer has a pickup
	Flatbeds	5	EA	855.00	$ 4,275.00	Assume each Crew has a flatbed
	Forklifts	5	EA	3,545.00	$ 17,725.00	Assume each Crew has a forklift
	Cranes	2	EA	25,924.00	$ 51,848.00	Assume Cranes are needed for support of subs and material yard
	Misc Support Equipment	20	EA	1,276.00	$ 25,520.00	Generators, Pumps,
	Flatiron Barges	2	EA	27,292.00	$ 54,584.00	Support to subs
Total Indirect Cost					**$ 165,427.00**	

Notes
1 Rates used above are Average MONTLY for those listed in the Blue Book rates shown on the attachment.
2 Equipment rates used do NOT include operating costs.
3 IDR's were reviewed for 2015. Staff determined the above equipment should be considered for this estimate.

Contract:	8625	West Approach Bridge North (WABN)	
Change Order Title:	**Time Related Overhead & Associated Costs**		
Change Order No. :	194		CM No. 291
Estimate Prepared by:	Matt Weinberger		Date Prepared: 9/16/2018

Activity Description: Office Costs

Quantity 2.50 MO

OTHER / EXPENDABLES							
Basis	**Description**	**Quantity**	**Units**	**$ / Unit**		**Total $**	**Source / Comments**
	Computers, Software, Infrastructure	2.5	MO	10,000.00	$	25,000.00	
	Staff Office Expenses & Supplies	2.5	MO	10,000.00	$	25,000.00	
	Utilities	2.5	MO	4,000.00	$	10,000.00	Water & sewer, Electric, Trash, cleaning services
	Cell Phones	2.5	MO	5,000.00	$	12,500.00	
	FWI field Office Trailers	2.5	MO	3,000.00	$	7,500.00	3 trailers @ $1,000/mo / each = $3,000/mo
	Sanitation (Toilets)	2.5	MO	2,400.00	$	6,000.00	8 ea $300/mo/ea = $2,400 / mo
	FWI Home Office				$	-	NOT Included
Total Indirect Cost				**34,400.00**	**$**	**86,000.00**	

Note:
1 A previous SR520 Project was about $175,000 / Month vs. $34,400 used in this estimate on this project

Contract:	8625	West Approach Bridge North (WABN)	
Change Order Title:	**Time Related Overhead & Associated Costs**		
Change Order No. :	194	CM No. 291	
Estimate Prepared by:	Matt Weinberger	Date Prepared: 9/16/2018	

Activity Description: Subcontractors

Quantity 2.50 MO

SUBCONTRACTORS (Includes Subs Markups)							
Basis	**Description**	**Quantity**	**Units**	**$ / Unit**		**Total $**	**Source / Comments**
	Prime Full-Time Subcontractor Extended Overhead	75	Days	6,000.00	$	450,000.00	Extended overhead costs for 3 Prime Subcontractors: Rebar International, Elcon Electric and KLB; $2,000/day per Subcontractor x 3 Subs = $6k/day
	Prime Part-Time Subcontractor Extended Overhead	30	Days	4,000.00	$	120,000.00	Extended overhead costs for 2 Part-Time Subcontractors: Malcolm Drilling, Pacific Pile and Marine, $2,000/day per Subcontractor x 2 Subs = $4k/day. Use 30 days
Total Subcontractor Cost					$	570,000.00	

SR 520 West Approach Bridge North
Equipment List w/ Blue Book Rates

Equipment		Ownership					Operating	Totals		
Category	Manufacturer/Model	Monthly	Weekly	Daily	Hourly	Hourly Based on Monthly Rate	Estimated Hrly Operating Costs	Calculated Total Hourly Rate based on Monthly Use	FHWA Hourly Rate	USE
Earthwork										
Compactors - Vibe Single Drum	Cat CS-563 - 145 hp	$3,510.00	$985.00	$245.00	$37.00	$19.94	$38.50	$58.44	$58.44	$ 59
Compactors - Vibe Single Drum	Cat CP-563E - 143 hp	$5,035.00	$1,410.00	$355.00	$53.00	$28.61	$41.70	$70.31	$70.31	$ 70
Compactors - Vibe Single Drum	Dynapac, CA602D - 190 hp	$6,635.00	$1,860.00	$465.00	$70.00	$37.70	$47.70	$85.40	$85.40	$ 85
Dozer	Caterpillar, D6K LGP - 125 hp	$7,515.00	$2,105.00	$525.00	$79.00	$42.70	$44.40	$87.10	$87.10	$ 87
Dozer	Caterpillar, D7R LGP, 240 hp	$11,260.00	$3,155.00	$790.00	$120.00	$63.98	$77.70	$141.68	$141.68	$ 142
Dozer	Caterpillar, D5M XL, 110 hp	$4,975.00	$1,395.00	$350.00	$53.00	$28.27	$38.40	$66.67	$66.67	$ 67
Dozer	Caterpillar, D6R XL Series III - 200 hp	$9,555.00	$2,675.00	$670.00	$100.00	$54.29	$64.35	$118.64	$118.64	$ 119
Dozer	Caterpillar, D7R Series II - 240 hp	$10,605.00	$2,970.00	$745.00	$110.00	$60.26	$73.95	$134.21	$134.21	$ 134
Dozer	Caterpillar, D8N, 285 hp	$11,660.00	$3,265.00	$815.00	$120.00	$66.25	$88.65	$154.90	$154.90	$ 155
Backhoes	Caterpillar, 430D 4x4, 97 hp, 1.4 cy	$3,215.00	$900.00	$225.00	$34.00	$18.27	$27.40	$45.67	$45.67	$ 46
Backhoes	Deere, 710G, 4x4, 118 hp, 1.2 cy	$6,135.00	$1,720.00	$430.00	$65.00	$34.86	$40.45	$75.31	$75.31	$ 75
Loaders	Caterpillar IT28, 105 hp, 2 cy	$2,345.00	$655.00	$165.00	$25.00	$13.32	$25.00	$38.32	$38.42	$ 39
Loaders	Caterpillar 950B, 150 hp, 3 cy	$3,345.00	$935.00	$235.00	$35.00	$19.01	$35.10	$54.11	$54.11	$ 54
Loaders	Caterpillar 966G Series II, 246 hp, 5 cy	$6,170.00	$1,730.00	$435.00	$65.00	$35.06	$53.85	$88.91	$88.91	$ 89
Loaders	Caterpillar 980G, 300 hp, 7.5 cy	$7,810.00	$2,185.00	$545.00	$82.00	$44.38	$72.60	$116.98	$116.97	$ 117
Excavators	Caterpillar 219D LC (disc. 1992), 21 - 34 MTons	$7,345.00	$2,055.00	$515.00	$77.00	$41.73	$51.10	$92.83	$92.83	$ 93
Excavators	Caterpillar, 320CL, 138 hp, 1.25 cy	$8,305.00	$2,325.00	$580.00	$87.00	$47.19	$51.10	$98.29	$98.29	$ 98
Excavators	Caterpillar, 325DL, 188 hp, 1.44 cy	$11,225.00	$3,145.00	$785.00	$120.00	$63.78	$67.85	$131.63	$131.63	$ 132
Excavators	Caterpillar, 330L, 222 hp, 1.75 cy	$9,825.00	$2,750.00	$690.00	$105.00	$55.82	$75.40	$131.22	$131.22	$ 131
Excavators	Caterpillar, 330CL, 244 hp, 2.25 cy	$10,745.00	$3,010.00	$755.00	$115.00	$61.05	$78.90	$139.95	$139.95	$ 140
Excavators	Caterpillar, 350, 286 hp, 3.5 cy	$13,965.00	$3,910.00	$980.00	$145.00	$79.35	$100.05	$179.40	$179.40	$ 179
Pickup	Diesel 4x2, 160 hp, 1/2 ton pickup	$725.00	$205.00	$51.00	$8.00	$4.12	$10.30	$14.42	$14.42	$ 15
Service Truck	Diesel 4x2, 195 hp, 1 ton service truck	$835.00	$235.00	$59.00	$9.00	$4.74	$12.35	$17.09	$17.09	$ 17
End Dump	Diesel 6x4, 400 hp, 70k GVW, 18 CY dump	$4,410.00	$1,235.00	$310.00	$47.00	$25.06	$63.45	$88.51	$88.51	$ 89
Water Truck	Diesel 250 hp, 4,000 gal water truck	$3,755.00	$1,050.00	$265.00	$40.00	$21.34	$39.50	$60.84	$60.84	$ 61
Graders	Caterpillar, 120G, 125 hp	$3,525.00	$985.00	$245.00	$37.00	$20.03	$33.55	$53.58	$53.58	$ 54
Graders	Caterpillar, 140H, 165 hp	$6,685.00	$1,870.00	$470.00	$71.00	$37.98	$46.70	$84.68	$84.68	$ 85
Graders	Caterpillar, 14H, 220 hp	$9,590.00	$2,685.00	$670.00	$100.00	$54.49	$59.95	$114.44	$114.44	$ 115
Pile										
Pile Drivers - Vibe	ICE 1412B Diesel 800 hp, 150 ton pull, 222 ton drive	$15,615.00	$4,370.00	$1,095.00	$165.00	$88.72	$157.00	$245.72	$245.72	$ 246
Pile Drivers - Diesel	American, D100-13 310 hp, 150-300k flb	$25,410.00	$7,115.00	$1,780.00	$265.00	$144.38	$94.80	$239.18	$239.18	$ 239
Pile Drivers - Diesel	American, D46-32 120 hp, 100-149k flb	$9,105.00	$2,550.00	$650.00	$96.00	$51.73	$47.05	$98.78	$98.78	$ 99
Pile Drivers - Hydraulic	American, JUNTTAN HHK18A Diesel 625 hp, 150k + flb	$24,120.00	$6,755.00	$1,690.00	$255.00	$137.05	$324.30	$461.35	$461.35	$ 461
Pile Drivers - Hydraulic	American, JUNTTAN HHK14A Diesel 625 hp, 100-149k flb	$21,645.00	$6,060.00	$1,515.00	$225.00	$122.98	$319.45	$442.43	$442.23	$ 442
Pile Drivers - Pneumatic	Vulcan, 530 2076 cfm, 150k + flb	$13,555.00	$3,795.00	$950.00	$145.00	$77.02	$35.20	$112.22	$112.22	$ 112
Pile Drivers - Pneumatic	Conmaco, 5200/200E5 1700 cfm, 100-149k flb	$12,520.00	$3,505.00	$875.00	$130.00	$71.14	$27.75	$98.89	$98.89	$ 99
Hoisting										
Manlifts	Genie, S-60, 51 hp, up to 60 foot platform height	$5,755.00	$1,610.00	$405.00	$61.00	$32.70	$17.55	$50.25	$50.25	$ 50
Manlifts	Genie, S-100, 78 hp, up to 100 foot platform height	$9,820.00	$2,750.00	$690.00	$105.00	$55.80	$30.20	$86.00	$86.00	$ 86
Forklift	Xtreme XRM 1245 RT Tele Boom	$6,165.00	$1,725.00	$430.00	$65.00	$35.03	$37.60	$72.63	$72.63	$ 73
Forklift	Hyster 10,000 - 12,000 lbs, Straight Mast RT	$2,865.00	$800.00	$200.00	$30.00	$16.28	$29.50	$45.78	$45.78	$ 46
Forklift	JLG G 12-55A Forklift - Tele RT	$7,310.00	$2,045.00	$510.00	$77.00	$41.53	$42.45	$83.98	$83.98	$ 84

Forklift	Genie GTH -1048 Forklift - Tele RT	$4,860.00	$1,360.00	$340.00	$51.00	$27.61	$29.15	$56.76	$56.76	$ 57
Forklift	Diesel 57.4 hp, 5,000 # capacity	$890.00	$250.00	$63.00	$9.00	$5.06	$10.25	$15.31	$15.31	$ 15
Forklift	Diesel 86 hp, 11,000 # capacity	$1,225.00	$345.00	$86.00	$13.00	$6.96	$15.05	$22.01	$22.01	$ 22
Forklift	Diesel 97.8 hp, 15,000 # capacity	$1,500.00	$420.00	$105.00	$16.00	$8.52	$17.15	$25.67	$25.67	$ 26
Crane	Terex/American, HC50, 197 hp, 45 Ton	$11,935.00	$3,340.00	$835.00	$125.00	$67.81	$65.70	$133.51	$133.51	$ 134
Crane	Manitowoc, 10000, 316 hp, 90 Ton	$21,100.00	$5,910.00	$1,480.00	$220.00	$119.89	$101.65	$221.54	$221.54	$ 222
Crane	Manitowoc, 12000, 332 hp, 109 Ton	$21,540.00	$6,030.00	$1,510.00	$225.00	$122.39	$108.10	$230.49	$230.49	$ 231
Crane	Manitowoc, 999 Series 3, 375 hp, 250 Ton	$33,935.00	$9,500.00	$2,375.00	$355.00	$192.81	$152.60	$345.41	$345.41	$ 346
Crane	Manitowoc, 2250 Series 2, 450 hp, 272 Ton	$41,110.00	$11,510.00	$2,880.00	$430.00	$233.58	$181.25	$414.83	$414.83	$ 415
Demo Equipment										
Concrete Crunchers	Caterpillar, P25, 35 in Jaw	$2,210.00	$620.00	$155.00	$23.00	$12.56	$23.95	$36.51	$36.51	$ 37
Concrete Crunchers	Caterpillar, P40, 41 inch Jaw	$3,185.00	$890.00	$225.00	$34.00	$18.10	$30.40	$48.50	$48.50	$ 49
Hydraulic Impact Breakers	Caterpillar, H140, 3000-4000 flb	$4,415.00	$1,235.00	$310.00	$47.00	$25.09	$15.15	$40.24	$40.24	$ 40
Small Equipment										
Air Compressors	Diesel 185 cfm, 80 hp	$770.00	$215.00	$54.00	$8.00	$4.38	$14.65	$19.03	$19.02	$ 19
Air Compressors	Diesel 300 cfm, 125 hp	$1,610.00	$450.00	$115.00	$17.00	$9.15	$23.85	$33.00	$33.00	$ 33
Workskiff Aluminum Boat	Misc. Models, size class: 299 hp	$3,530.00	$990.00	$250.00	$38.00	$20.06	$60.65	$80.71	$80.71	$ 81
Generator Sets	Diesel 16 hp, 10,000 W	$735.00	$205.00	$51.00	$8.00	$4.18	$6.15	$10.33	$10.33	$ 10
Generator Sets	Diesel 26.5 hp, 15,000 W	$850.00	$240.00	$60.00	$9.00	$4.83	$8.65	$13.48	$13.48	$ 14
Generator Sets	Diesel 35 hp, 20 kW Enclosed	$750.00	$210.00	$53.00	$8.00	$4.26	$11.80	$16.06	$16.06	$ 16
Generator Sets	Diesel 48 hp, 30 kW Enclosed	$870.00	$245.00	$61.00	$9.00	$4.94	$14.90	$19.84	$19.84	$ 20
Pumps	4 in pump, 3 in solids, 460 V, req'd power- 10	$735.00	$205.00	$51.00	$8.00	$4.18	$3.05	$7.23	$7.23	$ 7
Pumps	6 in pump, 3 in solids, 460 V, req'd power- 25	$980.00	$275.00	$69.00	$10.00	$5.57	$3.30	$8.87	$8.87	$ 9
Pumps	8 in pump, 3 in solids, 460 V, req'd power- 75	$1,930.00	$540.00	$135.00	$20.00	$10.97	$4.30	$15.27	$15.27	$ 15
Pickup	Trucks 3/4 4x2 - Gasoline	$765.00	$215.00	$54.00	$8.00	$4.35	$10.40	$14.75	$14.75	$ 15
Flatbed	Flatbed - 14,001 - 16,000 GVW	$855.00	$240.00	$41.00	$6.00	$4.86	$21.15	$26.01	$38.91	$ 39

Pickup	3/4 Ton 4x2 Pickup	$765.00	$215.00	$54.00	$8.00	$4.35	$10.40	$14.75	$14.75	$ 15
Flatbed	Flatbed Truck 2 Ton	$855.00	$240.00	$41.00	$6.00	$4.86	$21.15	$26.01	$38.91	$ 39
Excavator	Caterpillar 219D LC	$7,345.00	$2,055.00	$515.00	$77.00	$41.73	$51.10	$92.83	$92.83	$ 93
Manlift	Skyjack VR-1044D	$4,695.00	$1,315.00	$330.00	$50.00	$26.68	$28.10	$54.78	$54.78	$ 55
Container	9 each Baker Tanks				$70.00	$0.00		$0.00		$ 70
Boat	Aluminum Work Skiff				$0.00	$0.00		$0.00		$ 17
Generator Sets	Diesel 48 hp, 30 kW Enclosed	$870.00	$245.00	$61.00	$9.00	$4.94	$14.90	$19.84	$19.84	$ 20
Crawler Mounted Lattice Boom Cran	Crane	$41,110.00	$11,510.00	$2,880.00	$430.00	$233.58	$181.25	$414.83	$414.83	$ 415
Marine	Winches and spuds on barge				$150.00	$0.00		$0.00		$ 150
Air Compressor	Atlas Copco Air Compressor	$1,205.00	$335.00	$84.00	$13.00	$6.85	$16.35	$23.20	$23.20	$ 24
Portable Light Tower	Light Tower	$1,005.00	$280.00	$70.00	$11.00	$5.71	$4.45	$10.16	$10.16	$ 10
	Small Unlisted Equip									$ 10

FWI Barges			Weekly
999 Barge (JMC)			7,000
KRS (2250 Barge)			9,000
KP1 Barge			2,500
KP2 Barge			2,500
Mr. Ed			5,000
Kusko Scout			3,500
Heeler			3,500
			33,000

Bluebook Barge Cost

Deck Cargo Barges, Miscellaneous Models

Configuration	length	width	depth	tons	Monthly	Weekly	Daily	Hourly	Est Operating Costs hourly	FWHA Rate hourly
1	50	35	9	313	8140	2280	570	86	9.45	55.70
2	90	35	9	564	11660	3265	815	120	17.65	83.90
3	120	45	10	1074	14220	3980	995	150	21.40	102.20
4	140	45	10	1253	15275	4275	1070	160	23.85	110.64
5	160	45	11	1575	17165	4805	1200	180	28.25	125.78
6	170	45	11	1673	17740	4965	1240	185	29.55	130.35
7	200	60	13	3102	26175	7330	1835	275	49.10	197.82
8	240	60	17	4867	36560	10235	2560	385	73.20	280.93
9	280	75	18	7516	52185	14610	3655	550	109.40	405.91
10	300	75	25	11184	73795	20665	5165	775	159.50	578.79

Total	272,915
AVG	27,292

CM 292 - Power Restoration to WSDOT Trailers

Contract:	8625	West Approach Bridge North (WABN)	
Change Order Title:	**Power Restoration to WSDOT Trailers**		
Change Order No. :	**194**	CM No. 292	
Estimate Prepared by:	Brian Grieve	Date Prepared: 10/15/2018	

SUMMARY

Line	DESCRIPTION	QUANTITY	UNIT	LABOR	EQUIPMENT	MATERIAL	SUBS	OTHER	TOTAL	
1	FWI Assistance	1	Est	2,760.00	600.00	0.00	0.00	0.00	$3,360	
2	Elcon Repairs Damaged Lines	1	Est				11787.50		$11,788	
3	Elcon Establishes New Service	1	Est				6,137.50		$6,138	
	TOTAL Cost			2,760.00	600.00	0.00	17,925.00	0.00	$21,285	21,285 Check
	Flatiron Markups %			29%	21%	21%	12%	21%		
	Flatiron Markups $			800.40	126.00	0.00	2,151.00	0.00	$3,077	
	TOTAL COST with Project Markups			3,560.40	726.00	0.00	20,076.00	0.00	$24,362	24,362 Check
					Flatiron Bond, Ins, HO G&A			8%	$1,949	
					Total with Flatiron Bond, Ins, HO G&A				$26,311	
								USE	$25,000	

Notes:
Work involves temp electrical service to the project office and repairing and establishing new service due to damage caused by a fallen tree during storm.

Contract:	8625	West Approach Bridge North (WABN)	
Change Order Title:	**Power Restoration to WSDOT Trailers**		
Change Order No. :	194	CM No. 292	
Estimate Prepared by:	Brian Grieve	Date Prepared: 10/15/2018	

Activity Description: FWI Assistance

Quantity 1 Est

FLATIRON WORK

Basis	Production Analysis (Determine Crew Hours):
	Use operator rate for foreman to assist Elcon
	Assume Flatiron staff is on site the entire time Elcon staff is on site. Use 20 Hours

LABOR

Classification	Qty	$/MH	Total $
Foreman	1	76	76
Laborer	1	62	62
Total Labor per Hour			138

EQUIPMENT & TOOLS

Type	Qty	$/HR	Total $
Pickup Truck	2	15	30
			-
Total Equipment per Hour			30

Total Crew Hours	20
Total Labor Cost	$ 2,760
Total Equipment Cost	$ 600

MATERIAL

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Material Cost					$ -		$ -

MINOR SUBCONTRACTORS (Includes Subs Markups)

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Subcontractor Cost					$ -		$ -

OTHER / EXPENDABLES

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Indirect Cost					$ -		$ -

SUMMARY

Labor	$ 2,760
Equipment & Tools	$ 600
Materials	$ -
Subcontractors	$ -
Other / Expendables	$ -
Total Activity Cost	$ 3,360
Cost per Unit	$ 3,360

Contract:	8625	West Approach Bridge North (WABN)	
Change Order Title:	Power Restoration to WSDOT Trailers		
Change Order No. :	194		CM No. 292
Estimate Prepared by:	Brian Grieve		Date Prepared: 10/15/2018

Activity Description: Elcon Repairs Damaged Lines

Quantity 1 Est

PRIME SUBCONTRACTOR WORK

Basis	Production Analysis (Determine Crew Hours) :
	Use (1) 10 Hour shift to remove tree and damaged electrical equipmen

LABOR

LABOR	Qty	$/MH	Total $
Electrician	4	84	336
			-
			-
Total Labor per Hour			336

EQUIPMENT & TOOLS

Type	Qty	$/HR	Total $
Truck	2	15	30
Flatbed Truck	1	39	39
Manlift	1	86	86
Total Equipment per Hour			155

Total Crew Hours		10
Total Labor Cost		$ 3,360
Total Equipment Cost		$ 1,550

MATERIAL

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Material Cost					$ -		$ -

MINOR SUBCONTRACTORS (Includes Subs Markups)

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Subcontractor Cost					$ -		$ -

OTHER / EXPENDABLES

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
	Generator for Temporary Power	176	Hr	20.00	$ 3,520.00		
	Fuel	1	Est	1,000.00	$ 1,000.00		
					$ -		
Total Indirect Cost					$ 4,520.00		$ 4,520

SUMMARY

Labor	$ 3,360
Equipment & Tools	$ 1,550
Materials	$ -
Subcontractors	$ -
Other / Expendables	$ 4,520
Total Activity Cost	$ 9,430

Prime Sub Markup	25%	$ 2,358
Total Prime Sub Estimate		$ 11,788
	Cost per Unit	$ 11,788

Contract:	8625 West Approach Bridge North (WABN)		
Change Order Title:	**Power Restoration to WSDOT Trailers**		
Change Order No. :	194	CM No. 292	
Estimate Prepared by:	Brian Grieve	Date Prepared:	10/15/2018

Activity Description: Elcon Establishes New Service

Quantity 1 Est

PRIME SUBCONTRACTOR WORK

Basis	Production Analysis (Determine Crew Hours):
	Use (1) 10 Hour shift to establish a new service

LABOR

Classification	Qty	$/MH	Total $
Electrician	4	84	336
			-
			-
Total Labor per Hour			336

EQUIPMENT & TOOLS

Type	Qty	$/HR	Total $
Truck	2	15	30
Flatbed Truck	1	39	39
Manlift	1	86	86
Total Equipment per Hour			155

Total Crew Hours	10
Total Labor Cost	$ 3,360
Total Equipment Cost	$ 1,550

MATERIAL

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Material Cost					$ -		$ -

MINOR SUBCONTRACTORS (Includes Subs Markups)

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Subcontractor Cost					$ -		$ -

OTHER / EXPENDABLES

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Indirect Cost					$ -		$ -

SUMMARY

Labor	$ 3,360
Equipment & Tools	$ 1,550
Materials	$ -
Subcontractors	$ -
Other / Expendables	$ -
Total Activity Cost	$ 4,910

Prime Sub Markup	25%	$ 1,228
Total Prime Sub Estimate		$ 6,138
	Cost per Unit	$ 6,138

CM 285 – Bid Item Over/Underrun Reconciliation

Contract:	8625 West Approach Bridge North (WABN)
Change Order Title:	**Bid Item Over/Underrun Reconciliation**
Change Order No. :	**194** CM No. 285
Estimate Prepared by:	Brian Grieve / Curt Hamilton Date Prepared: 10/15/2018

SUMMARY

Line	DESCRIPTION	QUANTITY	UNIT	LABOR	EQUIPMENT	MATERIAL	SUBS	OTHER	TOTAL
	Quantity Underruns - 75% or Less	1	LS				(971,554)		($971,554)
	Quantity Overruns - 125% or More	1	LS				257,132		$257,132
	TOTAL Lost Revenue for MAJOR Changes			0	0	0	(714,422)	0	($714,422)
	Adjustment for Subs	15	%						$107,163
	Adjustment for FWI	10	%						$71,442
	TOTAL COST with Project Markups			0	0	0		0	$178,605
					Flatiron Bond, Ins, HO G&A			8%	$14,288
					Total with Flatiron Bond, Ins, HO G&A				$192,894
								USE	$180,000

(714,422) Check

Notes:

1 Some original bid items overran planned quantities
2 Some original bid items underran planned quantities
3 Previous change orders modified the original planned quantities and have been taken into account in this estimate
4 This estimate compensates the contractor for inefficiencies experienced due to changes in planned and CO quantities
5 This estimate compensates the contractor for only the major quantity changes (75% or less in underruns and 125% or more in overruns)
6 The total underruns was significantly more than that shown above.
7 IF the underruns subject to the 75% guidelines were paid to 75% of Contract amounts that would be about $500,000 payment, so the % used in the above calculations is a reasonable approach to this estimate.

Contract 8625
West Approach Bridge North (WABN)
Bid Item Over/Underrun Reconciliation

Underruns

ITEM NO.	ITEM DESCRIPTION	New Current Contract Amount	Paid to Date (PE 53)	% Paid to Date	Underrun Amount	75% of Contract Amount	Difference between Paid to Date and 75% Value
4	SELECTIVE PRUNING	$5,500.00	$550.00	10.0%	($4,950)	$4,125	$3,575
5	REMOVING DRAINAGE STRUCTURE	$23,400.00	$16,200.00	69.2%	($7,200)	$17,550	$1,350
25	REMOVING ASPHALT CONC. PAVEMENT	$135,810.00	$62,564.40	46.1%	($73,246)	$101,858	$39,293
28	REMOVING GUARDRAIL	$10,360.00	$6,976.00	67.3%	($3,384)	$7,770	$794
29	REMOVING GUARDRAIL ANCHOR	$660.00	$220.00	33.3%	($440)	$495	$275
30	REMOVING TEMPORARY PAVEMENT MARKING	$12,077.00	$4,230.85	35.0%	($7,846)	$9,058	$4,827
33	REMOVING PLASTIC CROSSWALK LINE	$2,372.50	$1,152.45	48.6%	($1,220)	$1,779	$627
34	REMOVING RAISED PAVEMENT MARKER	$8,332.50	$4,923.60	61.1%	($3,244)	$6,249	$1,326
40	COMMON BORROW INCL. HAUL	$23,240.00	$0.00	0.0%	($23,240)	$17,430	$17,430
41	SELECT BORROW INCL. HAUL	$9,900.00	$0.00	0.0%	($9,900)	$7,425	$7,425
47	STREAMBED COBBLES	$4,940.00	$531.05	10.8%	($4,409)	$3,705	$3,174
51	DRAIN PIPE 6 IN. DIAM.	$19,950.00	$14,920.00	74.8%	($5,030)	$14,963	$43
55	ATRIUM GRATE	$2,760.00	$1,380.00	50.0%	($1,380)	$2,070	$690
67	CL. IV REINF. CONC. STORM SEWER PIPE 12 IN. DIAM.	$2,175.00	$0.00	0.0%	($2,175)	$1,631	$1,631
78	SEWER CLEANOUT	$27,500.00	$17,500.00	63.6%	($10,000)	$20,625	$3,125
85	COS SFTY TRCH EXCAV MIN BID=$0.80-AGRMT UTB1163	$51,570.00	$34,238.70	66.4%	($17,331)	$38,678	$4,439
87	COS CDF FOR STR BACKFILL-AGRMT UTB1163	$1,890.00	$1,285.20	68.0%	($605)	$1,418	$132
88	COS CDF FOR PIPE BEDDING-AGRMT UTB1163	$3,078.00	$1,296.00	42.1%	($1,782)	$2,309	$1,013
99	COS GRAVEL BACKFILL-AGRMT UTB1163	$1,000.00	$0.00	0.0%	($1,000)	$750	$750
100	COS PIPE PSS CONC REIN CL V 24 IN-AGRMT UTB1163	$118,400.00	$118,246.00	0.0%	($154)	$88,800	($29,446)
102	COS CASING PIPE, 42 IN. DIAM.-AGRMT UTB1163	$16,900.00	$0.00	0.0%	($16,900)	$12,675	$12,675
107	GATE VALVE 6 IN.	$2,300.00	$1,150.00	50.0%	($1,150)	$1,725	$575
180	PREFABRICATED DRAINAGE MAT	$1,430.00	$1,124.20	0.0%	($306)	$1,073	($52)
190	ANTI-STRIPPING ADDITIVE	$13,373.00	$0.00	0.0%	($13,373)	$10,030	$10,030
191	CEMENT CONC. PAVEMENT	$40,000.00	$29,212.50	73.0%	($10,788)	$30,000	$788
193	CORROSION RESISTANT DOWER BAR	$11,050.00	$5,440.00	49.2%	($5,610)	$8,288	$2,848
194	TIE BAR WITH DRILL HOLE	$1,000.00	$0.00	0.0%	($1,000)	$750	$750
222	BEAM GUARDRAIL TYPE 1 - 8 FT. LONG POST	$656.00	$0.00	0.0%	($656)	$492	$492
237	FLEXIBLE GUIDE POST	$1,302.00	$868.00	66.7%	($434)	$977	$109
239	PLASTIC LINE	$107.25	$29.70	27.7%	($78)	$80	$51
242	PLASTIC WIDE LANE LINE	$85.75	$0.00	0.0%	($86)	$64	$64
277	DIRECTIONAL BORING	$70,000.00	$42,980.00	61.4%	($27,020)	$52,500	$9,520
281	PAINTING CURB	$1,295.00	$610.75	47.2%	($684)	$971	$361
288	SCHEDULE UPDATE	$195,000.00	$125,000.00	64.1%	($70,000)	$146,250	$21,250
289	STRUCTURE EXCAVATION CLASS B INCL. HAUL	$358,000.00	$212,555.50	59.4%	($145,445)	$268,500	$55,945
290	SHORING OR EXTRA EXCAVATION CLASS B	$45,510.00	$20,142.80	44.3%	($25,367)	$34,133	$13,990
291	GRAVEL BACKFILL FOR DRAIN	$30,040.00	$11,280.00	37.5%	($18,760)	$22,530	$11,250
300	CEMENT CONC. CURB RAMP TYPE PERPENDICULAR B	$10,500.00	$4,200.00	40.0%	($6,300)	$7,875	$3,675
312	ABANDON EXISTING MANHOLE	$7,000.00	$4,000.00	57.1%	($3,000)	$5,250	$1,250
313	CONNECTION TO DRAINAGE STRUCTURE	$6,500.00	$4,500.00	69.2%	($2,000)	$4,875	$375
315	ADJUST CATCH BASIN	$1,000.00	$500.00	50.0%	($500)	$750	$250
318	ADJUST VALVE BOX	$150.00	$0.00	0.0%	($150)	$113	$113
350	ON-LAND CONTAM. SOIL EXCAVATION, HANDLING & DISPOSAL	$337,450.00	$63,979.50	19.0%	($273,471)	$253,088	$189,108
352	MARINE SHAFT CONTAM. SOIL HANDLING & DISPOSAL	$21,000.00	$0.00	0.0%	($21,000)	$15,750	$15,750
358	CO 9, SS Trench Backfill Material	$99,900.00	$20,789.19	20.8%	($79,111)	$74,925	$54,136
393	CO 114 IMPACTED SHAFT SPOILS	$136,500.00	$66,668.94	48.8%	($69,831)	$102,375	$35,706
			Total Underruns 75% or Less		($971,554)	$1,404,723	$503,478

Overruns

ITEM NO.	ITEM DESCRIPTION	New Current Contract Amount	Paid to Date	Overrun (%)	Overrun Amount
31	REMOVING PAINT LINE	$11,382.00	$15,626.80	1268%	$14,394.80
39	UNSUITABLE FOUNDATION EXCAVATION INCL. HAUL	$26,208.00	$54,177.60	176%	$23,457.60
49	QUARRY SPALLS	$0.01	$9,711.10	462%	$7,611.10
126	GRAVEL BACKFILL FOR WALL	$72,030.00	$100,321.20	128%	$22,201.20
135	FURNISHING AND DRIVING STEEL TEST PILE	$80,000.00	$120,000.00	150%	$40,000.00
187	DYNAMIC PILE TESTING	$19,200.00	$28,800.00	150%	$9,600.00
195	PLANING BITUMINOUS PAVEMENT	$31,758.75	$45,967.50	105%	$2,122.50
220	PRECAST SLOPED MOUNTABLE CURB	$1,271.00	$1,599.00	126%	$328.00
232	TEMPORARY CONC. BARRIER TYPE NARROW BASE	$17,400.00	$28,637.50	165%	$11,237.50
233	REMOVING AND RESETTING EXISTING PERMANENT BARRIER	$7,637.50	$11,381.50	146%	$3,588.00
234	TEMPORARY IMPACT ATTENUATOR	$3,500.00	$14,000.00	400%	$10,500.00
236	RESETTING IMPACT ATTENUATOR	$3,225.00	$6,450.00	200%	$3,225.00
256	TEMPORARY PAVEMENT MARKING - LONG DURATION	$5,710.00	$23,671.50	415%	$17,961.50
295	BOLLARD TYPE 1	$3,900.00	$11,700.00	300%	$7,800.00

299	CEMENT CONC. CURB RAMP TYPE PERPENDICULAR A	$21,000.00	$27,300.00	130%	$6,300.00
306	COATED END, GATE, CORNER, PULLPOST FOR CHAIN LINK FENCE	$6,375.00	$14,280.00	156%	$5,100.00
307	DOUBLE 14 FT. COATED CHAIN LINK GATE	$2,100.00	$6,300.00	150%	$2,100.00
309	MODIFIED BARRIER GLARE SCREEN	$21,000.00	$34,562.50	165%	$13,562.50
328	CONSTRUCTION GEOTEXTILE FOR SOIL STABILIZATION	$6,540.00	$8,325.90	127%	$1,785.90
332	NO TRESPASSING SIGN	$7,200.00	$9,450.00	131%	$2,250.00
351	ON-LAND SHAFT CONTAM. SOIL HANDLING & DISPOSAL	$152,250.00	$204,256.50	134%	$52,006.50
			Total Overruns 125% or More		$257,132.10

CM 293 – Neighborhood Repairs

Contract:	8625 West Approach Bridge North (WABN)
Change Order Title:	**Neighborhood Repairs**
Change Order No. :	**Final Project Settlement** CM No. 293
Estimate Prepared by:	Matt Weinberger Date Prepared: 10/10/2018

SUMMARY

Line	DESCRIPTION	QUANTITY	UNIT	LABOR	EQUIPMENT	MATERIAL	SUBS	OTHER	TOTAL	
1	Repairs to homes affected by construction activities	10.00	EA	0.00	0.00	0.00	(62,500.00)	0.00	$ (62,500)	
	TOTAL Cost			0.00	0.00	0.00	-62,500.00	0.00	$ (62,500)	-62,500 Check
	Flatiron Markups %			29%	21%	21%	12%	21%		
	Flatiron Markups $			0.00	0.00	0.00	-7,500.00	0.00	$ (7,500)	
	TOTAL COST with Project Markups			0.00	0.00	0.00	-70,000.00	0.00	$ (70,000)	-70,000 Check
					Flatiron Bond, Ins, HO G&A			8%	$ (5,600)	
					Total with Flatiron Bond, Ins, HO G&A				$ (75,600)	
								USE	$ (75,000)	
								EA	$ (7,500)	

Notes:

Credit is for estimated costs to repair homes in the Shelby Hamlin neighborhood caused by construction activities that FWI is responsible for; however WSDOT will administer.

Assumptions: Work involves minor cosmetic repairs to drywall cracking and repainting.

For this estimate assume 10 homes require some form of repair at $6250/home. Total includes credit for FWI markups bringing total to $7,500 / home.

Contract:	8625 West Approach Bridge North (WABN)		
Change Order Title:	Neighborhood Repairs		
Change Order No. :	Final Project Settlement	CM No. 293	
Estimate Prepared by:	Matt Weinberger	Date Prepared: 10/10/2018	

Activity Description: Repairs to homes affected by construction activities

Quantity 1.00 LS

FLATIRON WORK - SUBCONTRACTORS

Basis	Production Analysis *(Determine Crew Hours)*:
	Construction activities resulted in vibration at homes adjacent to the Project. This estimate addresses potential minor repairs to those structures
	Credit to WSDOT from FWI for potential future repairs to homes adjacent to construction project in the Shelby Hamlin neighborhood
	Majority of this work would be specialized subcontractors. Some could be difficult due to the age of the homes
	Estimates are based on estimators experiences in these areas of work and assumptions made as to the condition and extent of damage.

LABOR

Classification	Qty	$/MH	Total $
			-
			-
			-
Total Labor per Hour			-

EQUIPMENT & TOOLS

Type	Qty	$/HR	Total $
			-
			-
			-
Total Equipment per Hour			-

Total Crew Hours	
Total Labor Cost	$ -
Total Equipment Cost	$ -

MATERIAL

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
Total Material Cost					$ -		$ -

MINOR SUBCONTRACTORS (Includes Subs Markups)

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
	separation cracks at exterior brick fascia	5	EA	(2,500.00)	$ (12,500.00)	Brick fascia and chimneys are a common sight in the Shelby Hamlin neighborhood adjacent to the Project. Many of the homes are in the range of 100 years old which suggests aged and potentially weakened mortar joints. Subcontractor Mason; Point & Tuck for general cosmetic repair, blend new work to match old.	
	sheetrock crack repair & follow up painting	10	EA	(1,500.00)	$ (15,000.00)	Subcontractor sheetrock and paint: smoothwall rock repair to flush, blend with surrounding surfaces. Painting to address entire wall or room as necessary to complete repair.	
	adjust sticking windows	5	EA	(1,000.00)	$ (5,000.00)	Subcontractor window repair; adjust and troubleshoot windows sticking due to movement resulting from construction activities: double hung, casement, hopper, etc.	
	adjust sticking doors	5	EA	(1,000.00)	$ (5,000.00)	Subcontractor door repair; adjust and troubleshoot sticking doors due to movement resulting from construction activities. Interior and exterior, garage as well.	
	cracked concrete walks & patios	5	EA	(3,000.00)	$ (15,000.00)	Subcontractor Flatwork repair: separation cracks resulting from movement caused by construction activities. Jacking, if necessary, included.	
	Tile repairs	5	EA	(2,000.00)	$ (10,000.00)	Subcontractor Tile repair: separation cracks resulting from movement caused by construction activities. Interior and/or exterior.	
Total Subcontractor Cost					$ (62,500.00)		$ (62,500)

OTHER / EXPENDABLES

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Indirect Cost					$ -		$ -

SUMMARY

Labor	$ -
Equipment & Tools	$ -
Materials	$ -
Subcontractors	$ (62,500)
Other / Expendables	$ -
Total Activity Cost	$ (62,500)

Cost per Unit $ (62,500)

CM 301 – Watertight Joint Testing

Contract:	8625 West Approach Bridge North (WABN)
Change Order Title:	**Watertight Joint Testing**
Change Order No. :	**194** CM No. 301
Estimate Prepared by:	Brian Grieve Date Prepared: 10/15/2018

SUMMARY

Line	DESCRIPTION	QUANTITY	UNIT	LABOR	EQUIPMENT	MATERIAL	SUBS	OTHER	TOTAL	
1	Watertight Joint Testing	1	LS	(9600.00)	(3936.00)	0.00	0.00	0.00	($13,536)	
	TOTAL Cost			(9600.00)	(3936.00)	0.00	0.00	0.00	($13,536)	(13536.00) Check
	Flatiron Markups %			0.29	0.21	21%	12%	21%		
	Flatiron Markups $			(2784.00)	(826.56)	0.00	0.00	0.00	($3,611)	
	TOTAL COST with Project Markups			(12384.00)	(4762.56)	0.00	0.00	0.00	($17,147)	(17146.56) Check
					Flatiron Bond, Ins, HO G&A			8%	($1,372)	
					Total with Flatiron Bond, Ins, HO G&A				($18,518)	
								USE	($20,000)	

Notes:
Credit for not performing watertight testing of the modular expansion joints as specified in the contract.
Joints are performing without incident and are not leaking.

Contract:	8625	West Approach Bridge North (WABN)	
Change Order Title:	**Watertight Joint Testing**		
Change Order No. :	194		CM No. 301
Estimate Prepared by:	Brian Grieve		Date Prepared: 10/15/2018

Activity Description: Watertight Joint Testing

Quantity 1 Est

FLATIRON WORK

Basis	Production Analysis *(Determine Crew Hours)*:
	Use a full weekend (two 12 hour shifts) to form up, fill, test, and drain the joints

LABOR

Classification	Qty	$/MH	Total $
Operator	2	76	152.00
Laborer	4	62	248.00
			0.00
			0.00
Total Labor per Hour			400

EQUIPMENT & TOOLS

Type	Qty	$/HR	Total $
Pickup Truck	1	15	15
Flatbed Truck	1	39	39
Water Truck	1	35	35
Backhoe	1	75	75
Total Equipment per Hour			164

Total Crew Hours	(24)
Total Labor Cost	$ (9,600)
Total Equipment Cost	$ (3,936)

MATERIAL

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Material Cost					$ -		$ -

MINOR SUBCONTRACTORS (Includes Subs Markups)

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Subcontractor Cost					$ -		$ -

OTHER / EXPENDABLES

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Indirect Cost					$ -		$ -

SUMMARY

Labor	$ (9,600)
Equipment & Tools	$ (3,936)
Materials	$ -
Subcontractors	$ -
Other / Expendables	$ -
Total Activity Cost	$ (13,536)

Cost per Unit $ (13,536)

CM 302 – Misc Electrical & ITS

Contract:	8625 West Approach Bridge North (WABN)
Change Order Title:	**Misc Electrical & ITS**
Change Order No. :	**194** CM No. 302
Estimate Prepared by:	Brian Grieve Date Prepared: Multiple

SUMMARY

Line	DESCRIPTION	QUANTITY	UNIT	LABOR	EQUIPMENT	MATERIAL	SUBS	OTHER	TOTAL	
1	Establish Temporary for SCL	1	Est				5,137.50		$5,138	
2	Bolt Replacement Credit	5	Est				(868.75)		($869)	
	TOTAL Cost			0.00	0.00	0.00	4,268.75	0.00	$4,269	4,269 Check
	Flatiron Markups %			29%	21%	21%	12%	21%		
	Flatiron Markups $			0.00	0.00	0.00	512.25	0.00	$512	
	TOTAL COST with Project Markups			0.00	0.00	0.00	4,781.00	0.00	$4,781	4,781 Check
					Flatiron Bond, Ins, HO G&A			8%	$382	
					Total with Flatiron Bond, Ins, HO G&A				$5,163	
								USE	$5,000	

Notes:
This estimate compensates the contractor for costs they incurred for work that was not included in CO 85.
Bolts at a luminaire were not compliant however were accepted with a credit.

Contract:	8625	West Approach Bridge North (WABN)	
Change Order Title:	**Misc Electrical & ITS**		
Change Order No. :	**194**		CM No. 302
Estimate Prepared by:	Brian Grieve		Date Prepared: Multiple

Activity Description: Establish Temporary for SCL

Quantity 1 Est

PRIME SUBCONTRACTOR WORK

Basis	Production Analysis *(Determine Crew Hours)*:
	Work compensates the Contractor for work done but not paid in previous CO 85 to perform work identified as SCL but done by FWI Sub.
	All materials are temporary. Assume all materials were removed and reused later.
	Assume it takes one shift to establish temporary power. Use 10Hr
	Crew & equiment is based on crews documented in WSDOT daily construction reports

LABOR

Classification	Qty	$/MH	Total $
Electrician	2	84	168
Laborer	2	62	124
			-
			-
Total Labor per Hour			292

EQUIPMENT & TOOLS

Type	Qty	$/HR	Total $
Pickup Truck	2	15	30
Flatbed Truck	1	39	39
Manlift	1	50	50
			-
Total Equipment per Hour			119

Total Crew Hours	10
Total Labor Cost	$ 2,920
Total Equipment Cost	$ 1,190

MATERIAL

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Material Cost					$ -		$ -

MINOR SUBCONTRACTORS (Includes Subs Markups)

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Subcontractor Cost					$ -		$ -

OTHER / EXPENDABLES

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Indirect Cost					$ -		$ -

SUMMARY

Labor	$ 2,920
Equipment & Tools	$ 1,190
Materials	$ -
Subcontractors	$ -
Other / Expendables	$ -
Total Activity Cost	$ 4,110

Prime Sub Markup	25%	$ 1,027.50
Total Prime Sub Estimate		$ 5,138
	Cost per Unit	$ 5,138

Contract:	8625 West Approach Bridge North (WABN)		
Change Order Title:	**Misc Electrical & ITS**		
Change Order No. :	**194**	CM No. 302	
Estimate Prepared by:	Brian Grieve	Date Prepared:	Multiple

Activity Description: Bolt Replacement Credit

Quantity 5 Est

PRIME SUBCONTRACTOR WORK

Basis	Production Analysis *(Determine Crew Hours)* :
	Use 1/2 Shift (5 Hours) to replace all of the luminaire bolts and nuts
	Use 2 laborers and a pickup truck to remove and replace the bolts on 5 luminaires

LABOR

Classification	Qty	$/MH	Total $
Laborer	2	62	124
Total Labor per Hour			124

EQUIPMENT & TOOLS

Type	Qty	$/HR	Total $
Pickup Truck	1	15	15
Total Equipment per Hour			15

Total Crew Hours	(5)
Total Labor Cost	$ (620)
Total Equipment Cost	$ (75)

MATERIAL

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Material Cost					$ -		$ -

MINOR SUBCONTRACTORS (Includes Subs Markups)

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Subcontractor Cost					$ -		$ -

OTHER / EXPENDABLES

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Indirect Cost					$ -		$ -

SUMMARY

Labor	$ (620)
Equipment & Tools	$ (75)
Materials	$ -
Subcontractors	$ -
Other / Expendables	$ -
Total Activity Cost	$ (695)

Prime Sub Markup 25% $ (174)

Total Prime Sub Estimate $ (869)

Cost per Unit $ (174)

CM 304 – Strip Seal Replacements

Contract:	8625 West Approach Bridge North (WABN)
Change Order Title:	**Strip Seal Replacements**
Change Order No. :	**194** CM No. 304
Estimate Prepared by:	Brian Grieve Date Prepared: 10/15/2018

SUMMARY

Line	DESCRIPTION	QUANTITY	UNIT	LABOR	EQUIPMENT	MATERIAL	SUBS	OTHER	TOTAL	
1	Remove & Replace Strip Seals	7	LS	9,072.00	2,800.00	0.00	3500.00	0.00	$15,372	
	TOTAL Cost			9,072.00	2,800.00	0.00	3,500.00	0.00	$15,372	15,372 Check
	Flatiron Markups %			29%	21%	21%	12%	21%		
	Flatiron Markups $			2,630.88	588.00	0.00	420.00	0.00	$3,639	
	TOTAL COST with Project Markups			11,702.88	3,388.00	0.00	3,920.00	0.00	$19,011	19,011 Check
					Flatiron Bond, Ins, HO G&A			8%	$1,521	
					Total with Flatiron Bond, Ins, HO G&A				$20,532	
								USE	($20,000)	

Note:

Damage was caused to 7 strip seals by the contractor.

Instead of removing and replacing now with lane closures FWI will furnish and deliver 7 new seals for installation under the next Contract.

A credit is also included for the labor costs.

Contract:	8625 West Approach Bridge North (WABN)		
Change Order Title:	**Strip Seal Replacements**		
Change Order No. :	**194**	CM No.	304
Estimate Prepared by:	Brian Grieve	Date Prepared:	10/15/2018

Activity Description: Remove & Replace Strip Seals

Quantity 7 Each

FLATIRON WORK

Basis	Production Analysis *(Determine Crew Hours)*:
	The West Approach Bridge North (WABN) has modular expansion joints at the following piers: 1 (Abutment), 9, 18, 27, 34, 41 and 4.
	Use 4 crews hours to remove and replace each seal. 7 seals x 4 hrs each = 28 crew hours
	Allow added cost for risk for traffic control.

LABOR

Classification	Qty	$/MH	Total $
Operator	1	76	76
Laborer	4	62	248
			-
			-
Total Labor per Hour			324

EQUIPMENT & TOOLS

Type	Qty	$/HR	Total $
Pickup Truck	1	15	15
Flatbed Truck	1	39	39
Backhoe	1	46	46
Total Equipment per Hour			100

Total Crew Hours	28
Total Labor Cost	$ 9,072
Total Equipment Cost	$ 2,800

MATERIAL

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Material Cost					$ -		$ -

MINOR SUBCONTRACTORS (Includes Subs Markups)

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
	Traffic Control Risk	7	EA	500.00	$ 3,500.00		
					$ -		
Total Subcontractor Cost					$ 3,500.00		$ 3,500

OTHER / EXPENDABLES

Basis	Description	Quantity	Units	$ / Unit	Total $	Source / Comments	
					$ -		
					$ -		
Total Indirect Cost					$ -		$ -

SUMMARY

Labor	$ 9,072
Equipment & Tools	$ 2,800
Materials	$ -
Subcontractors	$ 3,500
Other / Expendables	$ -
Total Activity Cost	$ 15,372
Cost per Unit	$ 2,196

Labor & Equipment Rates

SR 520 West Approach Bridge North
Equipment List w/ Blue Book Rates

Equipment		Ownership					Operating	Totals		
Category	Manufacturer/Model	Monthly	Weekly	Daily	Hourly	Hourly Based on Monthly Rate	Estimated Hrly Operating Costs	Calculated Total Hourly Rate based on Monthly Use	FHWA Hourly Rate	USE
Hoisting										
Manlifts	Genie, S-60, 51 hp, up to 60 foot platform height	$5,755.00	$1,610.00	$405.00	$61.00	$32.70	$17.55	$50.25	$50.25	$ 50
Manlifts	Genie, S-100, 78 hp, up to 100 foot platform height	$9,820.00	$2,750.00	$690.00	$105.00	$55.80	$30.20	$86.00	$86.00	$ 86
Forklift	Xtreme XRM 1245 RT Tele Boom	$6,165.00	$1,725.00	$430.00	$65.00	$35.03	$37.60	$72.63	$72.63	$ 73
Forklift	Hyster 10,000 - 12,000 lbs, Straight Mast RT	$2,865.00	$800.00	$200.00	$30.00	$16.28	$29.50	$45.78	$45.78	$ 46
Forklift	JLG G 12-55A Forklift - Tele RT	$7,310.00	$2,045.00	$510.00	$77.00	$41.53	$42.45	$83.98	$83.98	$ 84
Forklift	Genie GTH -1048 Forklift - Tele RT	$4,860.00	$1,360.00	$340.00	$51.00	$27.61	$29.15	$56.76	$56.76	$ 57
Forklift	Diesel 57.4 hp, 5,000 # capacity	$890.00	$250.00	$63.00	$9.00	$5.06	$10.25	$15.31	$15.31	$ 15
Forklift	Diesel 86 hp, 11,000 # capacity	$1,225.00	$345.00	$86.00	$13.00	$6.96	$15.05	$22.01	$22.01	$ 22
Forklift	Diesel 97.8 hp, 15,000 # capacity	$1,500.00	$420.00	$105.00	$16.00	$8.52	$17.15	$25.67	$25.67	$ 26
Crane	Terex/American, HC50, 197 hp, 45 Ton	$11,935.00	$3,340.00	$835.00	$125.00	$67.81	$65.70	$133.51	$133.51	$ 134
Crane	Manitowoc, 10000, 316 hp, 90 Ton	$21,100.00	$5,910.00	$1,480.00	$220.00	$119.89	$101.65	$221.54	$221.54	$ 222
Crane	Manitowoc, 12000, 332 hp, 109 Ton	$21,540.00	$6,030.00	$1,510.00	$225.00	$122.39	$108.10	$230.49	$230.49	$ 231
Crane	Manitowoc, 999 Series 3, 375 hp, 250 Ton	$33,935.00	$9,500.00	$2,375.00	$355.00	$192.81	$152.60	$345.41	$345.41	$ 346
Crane	Manitowoc, 2250 Series 2, 450 hp, 272 Ton	$41,110.00	$11,510.00	$2,880.00	$430.00	$233.58	$181.25	$414.83	$414.83	$ 415
Demo Equipment										
Concrete Crunchers	Caterpillar, P25, 35 in Jaw	$2,210.00	$620.00	$155.00	$23.00	$12.56	$23.95	$36.51	$36.51	$ 37
Concrete Crunchers	Caterpillar, P40, 41 inch Jaw	$3,185.00	$890.00	$225.00	$34.00	$18.10	$30.40	$48.50	$48.50	$ 49
Hydraulic Impact Breakers	Caterpillar, H140, 3000-4000 flb	$4,415.00	$1,235.00	$310.00	$47.00	$25.09	$15.15	$40.24	$40.24	$ 40
Small Equipment										
Air Compressors	Diesel 185 cfm, 80 hp	$770.00	$215.00	$54.00	$8.00	$4.38	$14.65	$19.03	$19.02	$ 19
Air Compressors	Diesel 300 cfm, 125 hp	$1,610.00	$450.00	$115.00	$17.00	$9.15	$23.85	$33.00	$33.00	$ 33
Workskiff Aluminum Boat	Misc. Models, size class: 299 hp	$3,530.00	$990.00	$250.00	$38.00	$20.06	$60.65	$80.71	$80.71	$ 81
Generator Sets	Diesel 16 hp, 10,000 W	$735.00	$205.00	$51.00	$8.00	$4.18	$6.15	$10.33	$10.33	$ 10
Generator Sets	Diesel 26.5 hp, 15,000 W	$850.00	$240.00	$60.00	$9.00	$4.83	$8.65	$13.48	$13.48	$ 14
Generator Sets	Diesel 35 hp, 20 kW Enclosed	$750.00	$210.00	$53.00	$8.00	$4.26	$11.80	$16.06	$16.06	$ 16
Generator Sets	Diesel 48 hp, 30 kW Enclosed	$870.00	$245.00	$61.00	$9.00	$4.94	$14.90	$19.84	$19.84	$ 20
Pumps	4 in pump, 3 in solids, 460 V, req'd power: 10	$735.00	$205.00	$51.00	$8.00	$4.18	$3.05	$7.23	$7.23	$ 7
Pumps	6 in pump, 3 in solids, 460 V, req'd power: 25	$980.00	$275.00	$69.00	$10.00	$5.57	$3.30	$8.87	$8.87	$ 9
Pumps	8 in pump, 3 in solids, 460 V, req'd power: 75	$1,930.00	$540.00	$135.00	$20.00	$10.97	$4.30	$15.27	$15.27	$ 15
Pickup	Trucks 3/4 4x2 - Gasoline	$765.00	$215.00	$54.00	$8.00	$4.35	$10.40	$14.75	$14.75	$ 15
Flatbed	Flatbed - 14,001 - 16,000 GVW	$855.00	$240.00	$41.00	$6.00	$4.86	$21.15	$26.01	$38.91	$ 39

SR 520 West Approach Bridge North

Labor Rates

Classification			ST	OT	Premium	40 x ST	20 x OT	60 Hr Wage	60 Hr Rate	USE
1	Carpenters		$ 63.00	$ 86.00	$ 23.00	$ 2,520.00	$ 1,720.00	$ 4,240.00	$ 70.67	71
2	Laborers		$ 55.00	$ 75.00	$ 20.00	$ 2,200.00	$ 1,500.00	$ 3,700.00	$ 61.67	62
3	Ironworkers		$ 72.00	$ 96.00	$ 24.00	$ 2,880.00	$ 1,920.00	$ 4,800.00	$ 80.00	80
4	Piledrivers		$ 63.00	$ 86.00	$ 23.00	$ 2,520.00	$ 1,720.00	$ 4,240.00	$ 70.67	71
5	Operators		$ 68.00	$ 92.00	$ 24.00	$ 2,720.00	$ 1,840.00	$ 4,560.00	$ 76.00	76
6	Truckers		$ 63.00	$ 92.00	$ 29.00	$ 2,520.00	$ 1,840.00	$ 4,360.00	$ 72.67	73
7	Electricians		$ 74.50	$ 102.00	$ 27.50	$ 2,980.00	$ 2,040.00	$ 5,020.00	$ 83.67	84
8	Asbestos Workers		$ 52.00	$ 72.00	$ 20.00	$ 2,080.00	$ 1,440.00	$ 3,520.00	$ 58.67	59
9	Cement Masons		$ 64.00	$ 87.00	$ 23.00	$ 2,560.00	$ 1,740.00	$ 4,300.00	$ 71.67	72
10	Divers		$ 135.00	$ 195.00	$ 60.00	$ 5,400.00	$ 3,900.00	$ 9,300.00	$ 155.00	155
11	Fencers		$ 47.00	$ 64.00	$ 17.00	$ 1,880.00	$ 1,280.00	$ 3,160.00	$ 52.67	53
12	Flaggers		$ 45.00	$ 61.00	$ 16.00	$ 1,800.00	$ 1,220.00	$ 3,020.00	$ 50.33	51
13	Boatmen		$ 71.00	$ 106.00	$ 35.00	$ 2,840.00	$ 2,120.00	$ 4,960.00	$ 82.67	83

Washington State Department of Transportation

Letter of Transmittal NWR

From: Stephen Strand, Project Engineer	Date: December 6, 2018
To: To: Derek Case (MS 47354) Thru: Dave Becher (NB 82-99) DPB	Subject: Change Order #194 Project Closeout Agreement C8625 SR520 West Approach Bridge North (WABN)

We are transmitting the following:

Copies	Description
1	CO#194 Project Closeout Agreement

These are transmitted:

☐ For Your Information	☐ For Review and Comment	☐ Resubmit	☐ Other
☒ For Action	☒ For Signature	☐ Correct and Return	
☐ For Approval	☐ Per Your Request	☒ Attach Material	

Comments:

WABN Project Office is submitting the package for Change Order #194 Project Closeout Agreement for your signature and further processing. Below is a list of attached documents:

- Change Record
- Change Order (HQ Executed)
- Change Order Checklist
- Attachment A - Approvals
- Attachment B - Engineer's Estimate
- Attachment C - DBE Correspondence

Signature:	Title:
Stephen M Strand	Project Engineer

DOT Form 230-035
Revised 10/2012